AIDS 2022

AIDS 2022
abstract book

The 24th International AIDS Conference

aids2022.org

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Abstract submission

Over 6,000 abstracts were submitted to the 24th International AIDS Conference.

The Organizing Committee (OC) is very grateful for all the abstract submissions received. While the OC found many very high-quality abstracts among the submissions, due to limitations in the conference programme, more abstracts were rejected than accepted – with an overall acceptance rate of 40%.

All abstracts went through a blind peer-review process completed by over 700 abstract reviewers. These reviewers are international experts in the field of HIV, including members of the OC and track committees. Each abstract was reviewed by three to four reviewers. The abstracts were reviewed for the quality and originality of the work. Late-breaking abstract reviews included an additional assessment of the late-breaking nature of the research.

All reviewers were instructed to abstain from scoring any abstract on which they were an author or co-author, had a financial or personal conflict of interest, or did not have the appropriate expertise to evaluate. Each abstract was scored numerically against five pre-determined criteria, which were equally weighted to get a final score. The final score ranged from one (the lowest) to six (the highest). Any abstracts that received less than two reviews or where there was a scoring discrepancy between reviewers were additionally reviewed by the track committees.

Statistics for abstracts

6248 Regular abstracts submitted

2515 Regular abstracts accepted

120 Oral abstracts

300 Poster exhibition abstracts

2095 E-poster abstracts

652 Late-breaking abstracts submitted

101 Late-breaking abstracts accepted

29 Late-breaking oral abstracts

12 Late-breaking poster exhibition abstracts

60 Late-breaking e-poster abstracts

6900 Total abstracts submitted

2616 **Total abstracts accepted**

Abstract Mentor Programme

The Abstract Mentor Programme (AMP) was introduced at the 15th International AIDS Conference (AIDS 2004), with the objective to help young or less experienced researchers improve their abstracts before submitting them, in order to increase the chance of their work being presented at conferences.

Over the years, the AMP has proven to increase the motivation of early career researchers, as well as the number of abstract submissions received from resource-limited countries. In total this year, 174 mentors were enlisted and 162 abstracts from 135 people were reviewed by mentors. 78% of the reviewed abstracts were submitted to AIDS 2022 and the following were selected (32%):

- 2 in an oral abstract session (one as back up)
- 2 in Posters Exhibition
- 40 in E-Posters

We would like to thank all volunteer abstract mentors, listed below, who supported early-career HIV researchers improve the quality of their abstracts:

Abdullahi Aborode, Nigeria
Abdulwasiu Tiamiyu, Nigeria
Abraham Gizaw, Ethiopia
Ahmed Cordie, Egypt
Ajeh Rogers Awoh, Cameroon
Akarin Hiransuthikul, Thailand
Akif Khawaja, United Kingdom
Alan Winston, United Kingdom
Alex Radunsky, United States
Ali Judd, United Kingdom
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Waimar Tun, Argentina
Wangnan Cao, China
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Xueying Yang, United States
Ye Kyaw Aung, Myanmar
Yong Gun Lee, United States
Yusuf Hassan Wada, Nigeria

International Abstract Review Committee

The 24th International AIDS Conference received more than 6,200 abstract submissions, which went through a blind, peer-reviewed process carried out by an international panel of reviewers who play a critical role in designing a strong scientifc programme.

More than 700 specialists from around the world volunteered their time and expertise to serve as peer reviewers, helping to ensure that the abstracts presented were selected on the basis of rigorous review and were of the highest scientifc quality.

We extend our special thanks to the large pool of abstract reviewers for the time they dedicated to the success of the conference:

Abu Abdul-Quader, United States
Sophie Abgrall, France
Elaine Abrams, United States
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Oral abstract sessions

OAA01 The view from the bench: Advances in HIV basic and translational research

OAA0102

Pharmacological enhancement of IL-15 signaling to improve 'shock-and-kill' strategies against latent HIV

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Background: Despite effective anti-retroviral therapy (ART), the largest barrier to HIV cure remains the formation of a latent reservoir early after initial infection that cannot be cleared by subsequent ART treatment.

Finding novel therapeutic strategies that can **S**hock latent HIV, enhance **T**ranslation of viral transcripts, enhance immune **E**ffector functions, and **S**ensitize reactivated cells to apoptosis could enhance **K**illing and elimination of latent HIV reservoirs.

As such, development of **STESK** strategies have the potential to improve the efficacy of current "shock and kill" strategies. Among the clinically relevant latency reversing agents (LRA) under investigation, IL-15 or the IL-15 superagonist N-803 have been shown to reactivate latent HIV *ex vivo* and *in vivo*. However, the clinical benefit of IL-15 can be hindered by the transient nature of cytokine signaling.

We previously identified a small molecule, HODHBt, that enhances the biological activity of IL-15 by increasing STAT5 phosphorylation and transcriptional activity leading to enhanced IL-15- mediated viral reactivation *ex vivo* in cells isolated from ART-suppressed participants.

Methods: We used the Connectivity Map to identify compounds with similar transcriptional profiles to HODHBt and identified five clinically relevant FDA-approved candidates. We evaluated their ability to promote viral reactivation from latency.

Results: From the 5 tested compounds, only one, a retinoid derivative, shared a similar transcriptional profile to HODHBt in CD4T cells. Next, we tested the ability of the retinoid to reactivate latent HIV in a primary cell model of latency. The retinoid (10mM) increased viral reactivation mediated by IL-15 to a similar extent as HODHBt (100mM) but unlike HODHBt, specifically promoted cell death of latently infected cells compared to controls when combined with IL-15. In contrast to HODHBt, the retinoid did not increase IL-15-induced STAT5 phosphorylation.

This indicates that the retinoid is able to reactivate latent HIV through a mechanism mediated by IL-15 but not directly dependent on STAT5 phosphorylation. There are a number of additional retinoid structural analogues, which we are now investigating for their potential LRA activity.

Conclusions: In conclusion, retinol derivatives have the potential to enhance IL-15 LRA activity and can be ideal candidates for the development of *STESK* strategies against latent HIV.

OAA0103

Pharmacological targeting of REV-ERB to modulate HIV transcription and viral outgrowth in CD4+ T cells

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Background: Current antiretroviral drugs block the different steps of the viral replication cycle, except the transcription, a process under the control of the host-cell machinery. Residual HIV transcription in viral reservoirs (VR) persisting during antiretroviral therapy (ART) is a major cause of chronic immune activation and non-AIDS comorbidities. The Th17-polarized $CD4^+$ T cells are highly enriched in VR in people living with HIV (PLWH) receiving viral-suppressive ART. In previous studies, we demonstrated that the transcriptional signature associated with HIV permissiveness in Th17 cells includes the circadian clock components/regulators REV-ERBa/b, BMAL1 and RORC2. Of note, REV-ERB acts as a transcriptional repressor of BMAL1 (a transcriptional activator binding to E-boxes in the HIV promoter) and RORC2 (the master regulator of Th17 polarization). Thus, we hypothesized that REV-ERB regulates both BMAL1-mediated HIV transcription/replication and RORC2-mediated effector functions in Th17 cells.

Methods: To test this hypothesis, we used the REV-ERB agonist SR9011 and antagonist SR8278. Memory $CD4^+$ T cells from uninfected individuals were stimulated with CD3/CD28 antibodies and exposed to replication-competent HIV_{NbaI} and single-round VSV-G-pseudotyped HIV (HIV_{VSVG}) *in vitro* in the presence/absence of drugs. A viral outgrowth assay (VOA) was performed with memory $CD4^+$ T cells of ART-treated PLWH activated *via* CD3/CD28. Cytokines and HIV-p24 levels were measured by ELISA and/or flow cytometry. HIV-DNA integration was quantified by nested real-time PCR.

Results: CD3/CD28-mediated triggering in memory $CD4^+$ T cells resulted in a significant downregulation of both REV-ERBa/β mRNA. As expected, the expression of BMAL1 and RORC2 transcripts was upregulated. Upon HIV_{VSVG} exposure, the antagonist SR8278 increased HIV-DNA in-

tegration and intracellular HIV-p24 expression (p=0.0103, p=0.0001 respectively), revealing its latency reversing potential. However, SR8278 did not increase HIV-p24 release from HIV_{VSVG}-infected cells, which indicates a post-translational REV-ERB-dependent block in HIV replication. In contrast, the agonist SR9011 potently inhibited HIV_{NbaI} replication *in vitro* (p=0.0024) and viral outgrowth in cells of ART-treated PLWH. The antiviral effects of SR9011 coincided with a decrease of IL-17A and IFN-γ production.
Conclusions: These results provide a strong rationale for further evaluating the possibility to therapeutically target REV-ERB in an effort to modulate BMAL1/RORC2-dependent HIV transcription and subsequently improve the efficacy of current ART regimen in PLWH.

OAA0104
Interactome of HIV proteins and their host RNA interaction partners

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Background: The HIV genome encodes a limited set of proteins, depending heavily on the exploitation of host cell molecules to complete its viral life cycle and maintaining latency. Recent findings show that HIV hijacks cellular (non-coding) RNA molecules to aid in these crucial viral processes.
Therefore, this study aims to systematically determine this new layer of physical interactions of each for the 18 HIV proteins with host RNA molecules.
Methods: An RNA immunoprecipitation (RIP)-seq strategy was established in Jurkat cell lines that express a single FLAG- and streptavidin-tagged HIV protein upon doxycycline induction. For each of the 18 HIV proteins, FLAG-based immunoprecipitations (IPs) were performed (triplicate), followed by RNA purification, stranded total RNA library preparation and sequencing (50M reads/sample, Illumina NextSeq).
Background controls included mouse IgG antibody and FLAG-tagged GFP protein IP. Enriched RNA transcripts were identified after mapping (STAR), background filtering based on background controls and performing a differential expression analysis (DEseq2). For 6 HIV proteins also Streptavidin-based RIPseq was performed (triplicate).
Results: The identified interactome comprises a set of 1162 HIV protein – host RNA interactions (FC > 4 and padj < 0.05) across 8 HIV proteins: Nucleocapsid (939), Rev (94), Gag (57), Matrix (47), Tat (12), Integrase (5), Pol (5) and Protease (3). The majority of the identified RNA interaction partners are mRNAs (55%), and also include tRNAs (7%), pseudogenes (25%) and (long) non-coding RNAs (3%), indicating a wide variety of RNA families that are recruited during replication.
Furthermore, this interactome corroborates previous work, as known interactors were identified for Matrix, Gag, Rev (tRNAs) and Tat (7SKRNA). For Tat in specific, additional RNA interaction partners include mRNAs for which the translation protein products are known interactors of Tat within the super elongation complex (SEC), hinting at a regulatory role of Tat in the expression of these SEC subunits.
Conclusions: This unique and comprehensive dataset of HIV protein – human RNA interactions broadens our understanding on how HIV manipulates the RNA component of the host's cellular machinery during the course of infection and to establish and maintain latency. This information will support the search for latency reversing agents for a potent shock-and-kill strategy.

OAA0105
Inducibility and distribution of HIV proviruses in early treated Thai children on suppressive ART

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Background: Although vertically infected infants display detectable levels of HIV DNA in CD4 T-cells, inducible assays such as QVOA and TILDA often yield negative results. These observations suggest that CD4 T-cells from children are refractory to stimulation, possibly because they mostly display a naïve phenotype. We assessed the distribution and inducibility of HIV proviruses in CD4 T-cell subsets over time, since frequencies of memory cells increase as children age.
Methods: Eight vertically-infected children who initiated ART within 5 months of life were followed longitudinally and provided blood samples collected at median ages of 1.7 (V1) and 4.3 (V2) years. Frequencies of CD4 T-cells producing msRNA and p24 protein upon PMA/ionomycin stimulation were measured by TILDA and HIV-Flow, respectively. Stimulated CD4 T-cells for HIV-Flow analy-

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sis were concomitantly sorted by flow cytometry to obtain naïve (CD45RA+CCR7+CD27+), central memory (CM, CD45RA-CCR7+CD27+), transitional memory (TM, CD45RA-CCR7-CD27+) and effector memory (EM, CD45RA-CCR7-CD27-) cells. Integrated HIV DNA was quantified in sorted subsets.

Results: Despite high frequencies of naïve CD4 T-cells (>70%), naïve cells were rarely infected (median 38 [6-143] and 7 [0-12] integrated HIV DNA copies/10^6 cells at V1 and V2, respectively). Most proviruses were detected in memory subsets, and infection frequencies increased with cell differentiation (EM>TM>CM, median 2820 [176-9469], 1432 [129-6711] and 507 [142-1309] integrated HIV DNA copies/10^6 cells, respectively at V1 and 260 [74-2161], 195 [89-1350] and 100 [40-426] integrated HIV DNA copies/10^6 cells, respectively at V2).

Frequencies of infected naïve and CM cells decreased over time (p=0.05 and p=0.008, respectively). Despite the low frequency of memory cells, CM cells were the main contributor to the pool of cells carrying integrated proviruses at both visits (46% and 50% at V1 and V2, respectively). Importantly, there were no significant changes in TILDA or HIV-Flow values over time, which were barely detectable at both visits.

Conclusions: Although high levels of HIV genomes are present in memory cells from vertically infected children on ART, they do not produce detectable levels of p24 protein upon stimulation. The latent reservoir seems poorly inducible in children and inducibility does not increase over time.

OAA02 Responding to the virus: Advances in HIV immunology

OAA0202

An immunological signature for subclinical atherosclerosis in people living with HIV-1 receiving antiretroviral therapy

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Background: Cardiovascular disease (CVD) is an important co-morbidity in people living with HIV (PLWH) receiving antiretroviral therapy (ART+PLWH). This study explores immunological patterns associated with subclinical coronary artery atherosclerosis during ART-treated HIV infection in relationship with alterations in gut-associated lymphoid tissues.

Methods: Uninfected (HIV-; n=61) and ART+PLWH (n=21) with/without subclinical atherosclerosis participants were included in the Canadian HIV and Aging Cohort Study (CHACS)/CVD Cohort. Total plaque volume (TPV), and low attenuated plaque volume (LAPV) were determined by coronary CT angiography.Markers of microbial translocation (LBP, I-FABP, sCD14, CCL20, MIF and CX3CL1), lipid profiles (LDL, HDL and triglycerides) and coagulation (D-dimer, fibrinogen) were quantified in plasma.

Flow cytometry analysison peripheral blood mononuclear cells were performed to characterize the frequency and expression of chemokine receptors involved in atherosclerotic plaque infiltration (CCR2, CCR6, CCR9, CX3CR1) in Th17 (CCR6+CD26+CD161+), Tregs (CD25highCD127-FOXP3+), classical/intermediate/non-classical monocyte (CD14/CD16/M-DC8) and myeloid (CD1c+HLA-DR+)/plasmacytoid (BDCA2+/CD123+) dendritic cells.

Results: ART+PLWH distinguished from HIV- by lower levels of HDL and higher levels of sCD14, FABP2, CCL20, MIF, CX3CL1, and triglycerides. Additionally,ART+PLWHshowed higher frequencies of Tregs and lower Th17/Treg ratios compared to HIV- participants. The stratification of ART+PLWH based on the presence (TPV+) or the absence (TPV-) of subclinical coronary atherosclerotic plaque demonstrated reduced Th17 frequencies and Th17/Treg ratios in TPV+*versus*TPV-.

Also, there was a superior frequency of non-classical CCR9- and M-DC8+ monocytes expressing high levels of HLA-DR in TPV+ *versus* TPV- ART+PLWH. A logistic regression model was used to determine the association between covariates and the presence of coronary atherosclerotic plaque. In crude analyses, the frequency of non-classical CCR9+HLADRlow [OR: 0.30 (0.15-0.63)] and non-classical CCR9-HLADRhigh [OR:3.56(1.45-8.74)] monocytes, as well as the Th17/Treg ratio [0.38(0.18-0.83)] were associated with TPV values.

After adjusting for age, smoking and LDL or statins, smoking and triglycerides, only the frequency of CCR9+HLADR low and CCR9-HLADR high monocytes remained significantly associated with coronary plaque, whereas Th17/Tregs ratio kept its significant association exclusively when adjusted for age, smoking and LDL.

Conclusions: We identified a new immunological signature associated with presence of coronary plaque that may serve in clinical practices for an improved management of CVD risk in ART+PLWH.

OAA0203
Investigating the development of T cell immunity in acute HIV-1 infection through a longitudinal analysis of the TCR repertoire

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Background: Evidence suggests that many events leading to the long-term T-cell dysfunction that is a hallmark of HIV infection, occur during the acute phase. Previous longitudinal study of individuals identified in hyper-acute infection showed those mounting a rapid and large CD8 cytotoxic T-cells (CTL) response achieved superior natural control of HIV.
However, due to sample availability, the dynamic response of the T-cell compartment during this acute phase remains poorly understood, as does the potential involvement of non-classical T-cells. Consequently, Antigen-specific T cell responses remain a key feature in understanding the relationship between the disease and host.
Methods: This study used longitudinal DNA samples of pre-infected and post infected young african women between 18-23 years of age. For TCRα sequencing, purified genomic DNA was sequenced by Adaptive Biotechnologies using the ImmunoSEQ assay.
Analysis were carried using R and python to determine TCR clusters and predict antigen-driven TCR clustering, additional methodologies like VDJtools were also used to determine the TCR repertoire diversity.
Results: In this study, we used bulk TCR sequencing to track the dynamics of the TCR repertoire longitudinally in HIV individuals sampled before infection and serially through the untreated acute phase. Using this approach, we find that, in multiple individuals, the TCR landscape is highly dynamic during the acute phase of infection. This landscape is characterised by large clonal expansions, reaching 30% frequency during Pre-infection to 60%; 51% and 52% in early, mid and late infection respectively.
Interestingly, some TCR clonotypes persist while others rapidly disappear and are replaced by new and previously unexpanded clonotypes. Antigen prediction tools are being employed to determine the specificity of persisting TCRs and those that are lost. In contrast to convention TCRs, invariant and semi-invariant clonotypes, including MAITS, iNKTs, and gamma delta TCRs, show no significant expansions during the acute phase.
This observation implies that Donor Unrestricted T-cells (DURTS) do not respond directly to HIV antigen or acute phase cytokines and that HIV-associated changes in these subsets occur during the chronic phase
Conclusions: Together these data demonstrate extensive skewing of the T-cell repertoire that occurs during acute HIV infection and may impact long-term immune health.

OAA0204
Optimization of a VLP-forming HIV-1 *env-gag*mRNA vaccine by inclusion of *gag-pol* mRNA to express the viral protease

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Background: The development of a protective vaccine remains a top priority for the control of the HIV/AIDS pandemic. Taking advantage of recent advances in mRNA technology, we developed an *env-gag* mRNA vaccine that yielded promising results in macaques.
Methods: Five groups of wild-type (WT) Balb-c mice (n=8 per group) were sequentially immunized with mRNA encoding different forms of a clade-C HIV-1 envelope (Env), 426c, bearing a truncated gp41 cytoplasmic tail to enhance expression, starting with two immunizations (weeks 0, 4) with an open form lacking three N-glycans (276, 460, 463) around the CD4-binding site (3Δgly), followed at week 16 by a partially glycan-restored form lacking only the 276 glycan (Δ276), and finally at week 20 by WT 426c *env*.
The *env* mRNA was inoculated at 2.5 µg/dose either alone (Arm 1) or co-formulated with SIV *gag* mRNA at 2.5 µg/dose in order to induce the *in vivo* formation of virus-like particles (VLP) (Arm 2), or with SIV *gag* and *gag-pol*mRNA in order to express the viral protease, which is essential for processing Gag to its mature form.
To identify the optimal dose of *gag-pol*mRNA, different *gag:gag-pol*molar ratios were tested (5:1, 10:1, and 20:1, Arms 3-5). Serum was collected after each immunization and tested for trimer-binding antibodies by ELISA and neutralizing antibodies (NAbs) by the TZMbl assay.
Results: *In vitro*, co-transfection of *gag-pol*mRNA with *env* and *gag*mRNA resulted in both quantitative and qualitative improvements in VLP production. All groups of immunized mice developed trimer-binding antibodies. NAbs against 426c-3Δgly, and to a lesser extent 426c-Δ276, started to appear after the second immunization, with the highest titers in Arm 3 (with *gag-pol*mRNA at 1:5). Boosting with 426c-Δ276 enhanced NAb titers, especially against 426c-Δ276, with *gag-pol*-containing regimens showing the highest titers, followed by *env+gag*and, lastly,*env* alone. No neutralization of WT virus was observed.
Conclusions: Our results illustrate a further improvement of our VLP-forming HIV-1 *env-gag* mRNA vaccine platform through the addition of *gag-pol* mRNA to promote Gag processing. The triple mRNA co-formulation provides an optimized platform to test the efficacy of different HIV-1 Env immunogens in pre-clinical and clinical studies.

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OAA0205
Exceptional post-treatment control associated with strong NK and Yδ cytotoxic T cells

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Background: Although ART is effective in suppressing viral replication, HIV persists in reservoirs and rebounds after stopping therapy. However, there are few patients, such as post-treatment controllers (PTC), who are able to maintain viral loads below detection limits without ART, being a realistic model for the HIV-functional-cure. We describe the mechanisms of control of an exceptional PTC (>15 years).

Methods: A 59-year woman with sexually-acquired acute HIV-infection was included in the 'Immune-mediated PHI trial' (NCT00979706), involving several interventions: short course of low doses of CsA, IL-2, GM-CSF and Peg-α-IFN followed by analytical STI.

Virological studies were performed: total and integrated HIV-1 DNA in CD4$^+$ T-cells and rectal tissue, viral outgrowth assay (qVOA), HIV-1 infectivity in PBMC and CD4$^+$ T-cells cultures and viral inhibitory activity (VIA) of autologous CD4$^+$T-cells with NK and CD8$^+$ T-cells.

NK and T-cell phenotype was determined by flow-cytometry.HLA class I, Δ32CCR5 and NKG2C alleles were genotyped.

Results: After antiretroviral and immunomodulatory treatment, the patient maintained undetectable viral load in plasma for 15 years. HIV-1 subtype was CFR_02AG, R5-tropic. We found a pronounced and progressive fall of the viral reservoir (VR): total HIV-DNA (from 4573.50 to 95.33 copies/10^6 CD4$^+$T-cells) and integrated proviral DNA (from 85.37 to 5.25 copies/10^6 CD4$^+$T-cells).VR in rectal biopsy was 3 HIV DNA total copies/10^6 cells and qVOA detected 1.61 UIMP at year 9. VIA assay showed strong inhibition of *in vitro* replication in co-cultures with autologous NK-cells or CD8$^+$T-cells at 1:2 ratio (75% and 62%, respectively). Co-cultures with NK and CD8$^+$T-cells resulted in 93% inhibition of HIV-replication. Higher levels of both NKG2C$^+$-memory-like NK-cells and NKG2C$^+$γδ$^+$T-cells than referenced data from untreated normal HIV-infected progressors were detected (46.2% versus 24.0% and 64.9% versus 19.7%, respectively). The patient has A*29:01/A*29:01, B*44:03/B*44:03, C*16:01/C*16:01 HLA-I, wt/wt CCR5 and wt/wt NKG2C alleles.

Conclusions: We describe the case of functional cure in a 59-years-old woman treated during PHI that has maintained undetectable viral load for 15 years without ART. Replication-competent HIV-1 could be isolated by qVOA. NKG2C$^+$-memory-like NK-cells and γδ$^+$CD8$^+$T-cells contribute to the control of viral-replication and functional-cure observed. Strategies able to expand these cells could help to achieve HIV-functional-cure.

OAA03 Finding the needle in the haystack: Progress in understanding the HIV reservoir

OAA0302
Scarcity of intact HIV genomes in vertically infected Thai children who initiated ART during the first months of life

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Background: Latently infected cells harboring intact HIV genomes persist in children living with HIV receiving suppressive ART. However, the dynamics of these genetically intact viral genomes over time remains unclear.

Methods: Thai children vertically infected with HIV who initiated ART within the first 6 months of life were enrolled in the HIVNAT209 & HIVNAT194 studies and followed longitudinally. We used cross sectional blood samples collected from infants before initiation of ART (n=3) as well as in virally suppressed children on ART for 2 years (n=6), 3 years (n=5) and more than 3 years (n=5). Near-full length (NFL) proviral sequences were obtained by FLIPS on enriched CD4 T cells and PacBio sequencing.

Results: We obtained a total of 939 NFL HIV genomes (200 before ART and 282, 263 and 194 after 2, 3,and>3 years of ART, respectively). Prior to ART initiation, 48% of the viral genomes were genetically intact (Fig. 1).

This proportion drastically decreased to 11%, 6% and 1% after 2, 3 and >3 years of ART, respectively, while proviruses presenting large internal deletions largely dominated (>79%). Clonally expanded proviruses (i.e., 100% identical sequences) were rare before ART initiation (7%) and observed in only 1 of the 3 samples studied.

However, the proportion of identical genomes dramatically increased to 36% after 2 years of ART and remained stable afterwards (36% and 40% at 3 and >3 years of ART, respectively). None of these clonally expanded genomes during suppressive ART were genetically intact.

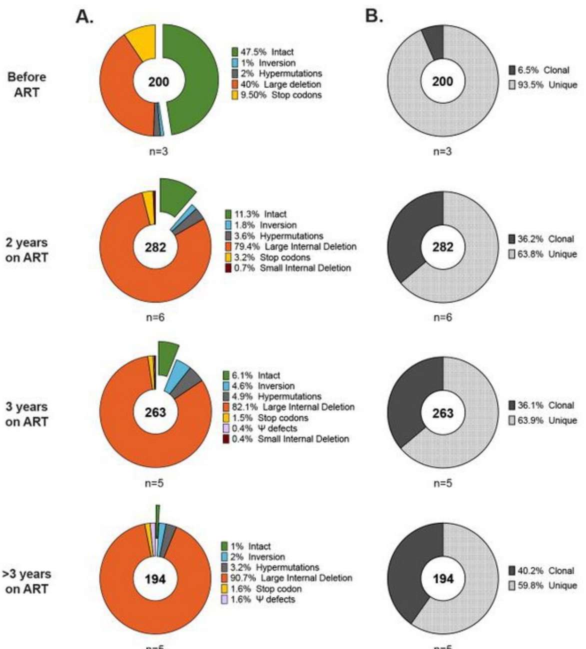

Fig. 1: *Genetic integrity and clonality of the proviral populations in vertically HIV-infected Thai children.*

A) Genetic integrity: The percentage of HIV genomes presenting a given defect is color-coded. Intact genomes are represented in green. Numbers in the centers of the pie-charts denote the number of sequences included at each time point. The number of participants at each time point is indicated below each pie-chart. B) Clonality: Unique and clonally expanded (i.e. genetically identical) HIV genomes are represented in light and dark greys, respectively.

Conclusions: These results suggest that genetically intact HIV genomes are massively depleted during the first years of ART in children who initiated treatment during the first months of life.

Although clonal expansions of defective proviruses were frequently observed during ART, genetically intact HIV genomes were scarce and always unique.

OAA0303

HIV SMRTcap, a novel single molecule, long-read sequencing assay to characterize the HIV-1 reservoir in cells and tissues across multiple subtypes

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Background: HIV reservoir characterization has focused on classifying integration sites and examining the integrity of proviral genomes, many of which contain defects rendering them replication incompetent. Current methods mainly examine either integration sites or proviral integrity, and perform robustly in cell-based assays, with limited application to tissue-specific reservoirs. There has also been scant effort to expand these assays to non-subtype B samples.

To address these limitations, we developed a novel single molecule assay, HIV SMRTcap, that provides simultaneous resolution of the "HIV integron" (proviral genome and matched integration sites) in cells and tissues across all major HIV-1 subtypes.

Methods: HIV+ genomic DNA is extracted from cells or tissues and sheared into 11-15kb fragments. Oligo-based enrichment is performed using a custom panel of biotinylated 120-mers specific for HIV genomes representing all major subtypes. Oligo-bound fragments are enriched with streptavidin beads and used for sequencing library preparation. Sequencing is performed on the Sequel IIe system to obtain highly accurate (>99.99%) long reads, which allow for simultaneous characterization of the integration site, proviral intactness, and clonality.

Results: HIV SMRTcap successfully enriched HIV integron events by >2400-fold from multiple sources: *in vitro* infection, primary PBMC, multiple autopsy- and biopsy-derived tissues (including spleen, kidney, liver, lymph node, basal ganglia), and across samples infected with HIV subtypes A, B, C, and D. HIV SMRTcap resolved both intact and defective proviral genomes, demonstrating that partial

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tiling of oligo baits was sufficient for capture. Intriguingly, analysis of samples using HIV SMRTcap revealed integration into repeat elements (i.e., LINEs, SINEs) absent from matched data obtained with linker-mediated PCR, likely due to limitations in mapping short-read data.

Conclusions: Standard short-read HIV reservoir measurement methods do not provide direct simultaneous evaluation of the complete HIV integron, limiting investigations of the impact of integration site on clonal expansion and retention of intact proviral genomes in patient samples.

Moreover, specialized methods that can link this information (i.e., MIP-seq) are often prohibitively expensive and labor intensive. HIV SMRTcap utilizes long-read sequencing to characterize complete HIV integrons in a cost-effective, scalable manner, and has tremendous potential to accurately investigate HIV reservoir dynamics during evaluation of HIV cure strategies.

OAA0304

Intact HIV proviruses persist in the central nervous system despite viral suppression with antiretroviral therapy

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Background: HIV persistence in blood and tissue reservoirs represents the major barrier to HIV cure and is a possible cause of comorbid disease. HIV is known to infect the central nervous system (CNS); however, to date the size and replication competent nature of the CNS reservoir is unclear.

Methods: Here we employed a droplet digital PCR assay to detect total HIV DNA and the intact proviral DNA assay (IPDA) to provide the first quantitative assessment of the intact and defective HIV reservoir in well-characterized brain tissues from autopsies. Further phenotypic characterization of brain reservoir cells was provided by in situ hybridization (DNAscope) targeting HIV DNA and laser capture microdissection and PCR of CD68+ brain cells.

Results: HIV DNA was present at similar levels in brain tissues from untreated viremic or antiretroviral (ART)-suppressed individuals (n=36; median: 22.3 vs 26.2 HIV *pol* copies/10^6 cells), reflecting a stable CNS reservoir that persists despite therapy.

Furthermore, 9/12 viremic and 5/8 virally suppressed individuals also harbored intact proviruses in the CNS (13.5 vs 4.63 intact copies/10^6 cells). CNS and peripheral reservoirs harbored a similar frequency of intact proviruses (~20% of proviruses). In situ hybridization (DNAscope) identified the presence of HIV DNA in brain myeloid cells and sequences of proviruses isolated from purified brain myeloid cells compartmentalized relative to those from matched peripheral lymphoid tissue reservoirs, indicating that the CNS harbors a distinct reservoir.

Conclusions: Thus, here we provide the first evidence of an intact, potentially replication competent, HIV reservoir in the CNS of virally suppressed people living with HIV.

OAA0305

SARS-CoV-2 mRNA vaccination exposes latent HIV to Nef-specific CD8+ T cells

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Background: SARS-CoV-2 mRNA vaccines activate TLR and inflammatory signaling pathways, and thus may activate transcription from HIV proviruses. We hypothesized that, in addition to virological measures, a key manifestation of this would be*in vivo*boosting of T-cell responses specific for the early gene product HIV-Nef. This was based upon our previously reported findings that Nef-specific T-cells disproportionately recognize residual antigen expression during long-term antiretroviral therapy (ART), enforcing an effector profile (granzyme-B release).

Methods: HIV RNA in PBMC supernatants was measured by RT-qPCR. T-cell responses to HIV gene products were measured at baseline and ~2 weeks after SARS-CoV-2 mRNA vaccine prime and boost in 13 ART-treated adults using IFN-gor granzyme-B ELISPOT, as well as activation induced marker (AIM) assays. Total and unspliced HIV mRNA, as well as intact and defective (IPDA) HIV DNA were measured in parallel by digital droplet PCR (ddPCR).

Results: Treatment of PBMCs from ART-treated donors with SARS-CoV-2 mRNA vaccines drove release of HIV RNA into supernatants (n=6, p=0.03). Within days of vaccinations, we observed transient*in vivo*increases in cell-associated HIV RNA. Nef-specific T-cell responses increased following vaccine-prime by granzyme-B ELISPOT (3.1-fold increase, p=0.002), with a parallel trend by AIM assay (1.5-fold, p=0.06). Analogous increases were not observed in responses to late gene products. Unspliced and total

HIV mRNA decreased modestly between baseline and 2 weeks post vaccine-boost, unspliced-1.6-fold decrease p=0.03; total-1.5-fold decrease p=0.05.
Changes in total HIV mRNA showed strong inverse correlations with Nef-specific granzyme B-producing (spearman'sr=-0.73, p=0.006) and Nef-specific CD8+ AIM T-cell responses (r=-0.76, p=0.006) following vaccine prime. Neither total nor intact HIV DNA changed significantly across the study.
Conclusions: SARS-CoV-2 mRNA vaccination induced a degree of HIV latency reversal, resulting in engagement of HIV-Nef-specific CD8+ T-cells with a cytotoxic profile. The strong correlations between increases in these responses and subsequent decreases in cell-associated HIV RNA suggest some elimination of transcriptionally-active cells. However, this was not accompanied by reductions in intact or total HIV DNA. This may reflect that only a minority of proviruses were responsible for transcription, both at baseline and following latency reversal, consistent with recent observations in the field.

OAA04 Shake and bake: Promising strategies for HIV cure

OAA0402
Potent latency reversal enables in-depth transcriptomic analyses of the HIV reservoir

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Background: Extensive characterization of the translation-competent reservoir has been hampered by the limited capacity of current latency reversing agents (LRAs) at inducing HIV reactivation *in vitro*. Here, we describe a new LRA combination (JNJ877+PNB) that induces potent latency reversal without inducing global T cell activation, and we took advantage of these unique properties to study transcriptomic features of the inducible reservoir.
Methods: CD4 T cells from 22 ART-treated individuals were stimulated for 24H with PMA/ionomycin (PMA/i) or with JNJ877 in combination with panobinostat (PNB). The frequency of cells expressing p24 and viral release in the supernatant were assessed by HIV-Flow and p24-SIMOA, respectively. HIV clones reactivated by JNJ877+PNB were compared to those reactivated with PMA/i using the STIP-seq assay, which allows for the simultaneous assessment of the integration site and proviral sequence from p24+ cells. Single-cell RNA-seq on sorted p24-/p24+ cells from 7 ART-treated individuals was used to study cellular and viral transcripts following stimulation with JNJ877 or JNJ877+PNB.
Results: JNJ877+PNB induced HIV reactivation in a larger fraction of CD4 T cells than PMA/i (n=22, p<0.00001, fold increase=5X). Similar results were obtained with SIMOA (n=4), confirming an effective release of viral particles in the supernatant. Clones reactivated with JNJ877+PNB were mostly shared with the ones induced by PMA/i, although some were represented in different proportions. Single-cell RNA-seq analyses showed that JNJ877 does not modify the cellular transcriptome of CD4 T cells.
Following JNJ877 treatment, p24+ cells significantly expressed higher levels of a novel long non-coding RNA, *SOD1P3*, *CCL5* and *GZMA*, while expressing lower levels of *ATG10* and *IL7R* when compared to p24- cells.
Finally, transcriptomic analyses on 321 p24+ cells revealed that proviruses with a defective major splice donor (MSD) site use alternative splice sites up- and/or downstream of the MSD, suggesting an underestimated role of these proviruses in HIV pathogenesis.
Conclusions: We report a combination of LRAs that induces latency reversal in a higher proportion of latently infected cells compared to PMA/i, without inducing global T cell activation. Therefore, JNJ877+PNB appears as a promising LRA combination to reactivate HIV *in vitro* and *in vivo*, paving the way to an HIV cure.

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OAA0403

In vivo preclinical efficacy of MGD014 and MGD020 (HIV-1 envelope x CD3 DART molecules) and first-in-human phase 1 clinical safety evaluation of MGD014

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Background: MGD014 and MGD020 are bispecific DART® molecules that bind CD3 and HIV-1 env; anti-env specificities are from non-neutralizing mAbs A32 and 7B2, respectively. They redirect CD3+ T lymphocytes to kill HIV-1-infected CD4+ T cells. We evaluated the in vivo antiviral efficacy of MGD014 and MGD020 in HIV-1-infected humanized mice on antiretroviral therapy (ART). We also completed an initial phase 1 safety study of MGD014 in persons with HIV-1 (PWH) on ART [NCT03570918].

Methods: MGD014 and MGD020 were administered (300 mcg/kg, QW) to HIV-1-infected humanized mice on ART. To assess the effects on cell-associated HIV-1 RNA (caRNA), tissues (spleen, liver, bone marrow, lymph node, organoid) were collected after 2 DART molecule doses. To assess the effects on rebound viremia, 7 DART molecule doses were administered; ART was discontinued after the 4th DART molecule dose.

The MGD014 clinical study evaluated 21 participants in Part 1 (single dose escalation, 0.1 to 300 mcg/kg) and 3 participants in Part 2 (300 mcg/kg, Q2Wx3). Endpoints included incidence of DLTs, PK, ADA, cytokines, immunophenotype, and residual plasma viremia.

Results: The efficacy study in HIV-1-infected humanized mice revealed that MGD014, MGD020, or MGD014+MGD020 [combination] reduced mean caRNA levels in tissues by 3.7-fold (p=0.0161), 1.9-fold (p=0.0132) or 6.2-fold (p <0.0001), respectively (Mann-Whitney test). Importantly, following ART discontinuation, median time to viremia rebound was 7 days for MGD014 (p=0.0444), 12 days for MGD020 (p=0.009) or 19 days for MGD014+MGD020 (p=0.0001) (Kaplan-Meier analysis). In the MGD014 clinical study, no DLT or SAE was observed. At 300 mcg/kg, MGD014 bound an average of 92% and 72% of circulating CD4+ and CD8+ T cells, respectively, without inducing activation markers or serum cytokines. MGD014 half-life was ~12 days and trough serum concentrations exceeded EC_{90} for redirected CD8+ T cell killing of HIV-infected CD4+ T cells in vitro by ≥ 20-fold.

Conclusions: Administration of MGD020+MGD014 mediated greater HIV-1 clearance activity than individual DART molecules in HIV-1-infected humanized mice. MGD014 was well-tolerated in PWH on ART. A first-in-human study with MGD020+MGD014 in PWH on ART will begin in 2022. Our data support future clinical studies combining DART molecules and latency reversing agents. [Funded by NIAID (HHSN272201500032C) and NCI (75N91019D00024) contracts.]

OAA0404

AZD5582 and SIV Env-targeting rhesus monoclonal antibodies (RhmAbs) ± N-803 in SIV-infected ART-suppressed rhesus macaques

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Background: Latency reversal and clearance of infected cells is a major strategy for HIV cure. The IAP inhibitor AZD5582 reverses latency systemically in animal models. Here, we investigated the ability of AZD5582 in combination with a cocktail of 4 rhesus-derived SIV Env-specific monoclonal antibodies (RhmAbs) ± the IL-15 superagonist N-803 to reduce viral reservoirs in ART-suppressed rhesus macaques (RMs).

Methods: 30 RMs were infected with SIV_{mac239}. ART was initiated 8 wks after infection. After 90 wks of ART, RMs were divided into 4 groups with continuous ART exposure: ART control (n=6), RhmAbs control (n=6), RhmAbs+AZD5582

(n=9), and RhmAbs+AZD5582+N-803 (n=9). RhmAbs targeting V2, CD4 binding site, CD4 binding site proximal, and MPER were dosed twice at 20 mg/kg s.c. each; AZD5582 at 0.1 mg/kg i.v. wkly for 10 wks, and N-803 at 0.1 mg/kg s.c. twice.
Concentrations of RhmAbs were evaluated by ELISA. Plasma SIV RNA and CD4+ T-cell SIV*gag* DNA/quantitative virus outgrowth were measured to quantify latency reversal and reservoir frequency, respectively.
Results: ART was successful in suppressing viremia. Anti-SIV Env RhmAbs peaked in all treated RMs 24h after infusion with mean half-life of 7.4 ± 2d. Serum concentrations were reduced for 3/4 RhmAbs in RMs who received N-803, likely due to development of anti-drug antibodies (ADA). Latency reversal (on-ART viremia) was observed in 7/9 RhmAbs+AZD5582-treated and 9/9 RhmAbs+AZD5582+N-803-treated RMs.
At study end, RMs treated with RhmAbs+AZD5582±N-803 had reduced splenic CD4+ T-cell SIV*gag* DNA (p=0.03 for each comparison) and trended toward lower viral outgrowth compared to the combined ART and RhmAbs control groups. Only RMs that received RhmAbs+AZD5582 without N-803 showed reduced lymph node CD4+ T-cell SIV*gag* DNA (p=0.01) and virus outgrowth compared to controls (p=0.04).
Finally, increased levels of CD4+ T-cell activation/proliferation in lymph nodes following N-803 was observed.
Conclusions: Our findings give insight into HIV cure interventions in a relevant preclinical model, confirm the efficacy of AZD5582 in inducing SIV reactivation, and provide new *in vivo* data showing latency reversal in all RMs treated with the combination of AZD5582+N-803.
This study also suggests that elimination of infected cells in tissues using an IAP inhibitor and anti-SIV Env RhmAb cocktail is possible.

OAA0405
Temsavir treatment of HIV-1-infected cells decreases envelope glycoproteins recognition by broadly-neutralizing antibodies

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Background: The heavily glycosylated HIV-1 envelope glycoprotein (Env) is the sole viral antigen present on virion and infected cells, representing the main target for antibody responses. The FDA-approved small molecule temsavir acts as an HIV-1 attachment inhibitor by preventing Env-CD4 interaction. This molecule also stabilizes Env in a prefusion "closed" conformation that is preferentially targeted by several broadly neutralizing antibodies (bNAbs).
A recent study showed that an analog of temsavir (BMS-377806), affects the cleavage and addition of complex glycans on Env. In this study, we investigated the impact of temsavir on the overall glycosylation, proteolytic cleavage, cell-surface expression and antigenicity of Env.
Methods: SinceBMS-377806limits Env conformational flexibility, we first investigated temsavir's impacton overall Env processing and glycosylation by immunoprecipitation. Next, we evaluated if this alteration affected the recognition of Env at the surface of infected cells and virionsby a panel of bNAbs and non-neutralizing antibodies (nnAbs).Finally, we investigated ifthe capacity of bNAbs to eliminate infected cells by ADCC was also affected.
Results: We found that temsavir substantially impacts Env glycosylation and processing at physiological concentrations. This significantly alters the capacity of several bNAbs to recognize Env present on virions and HIV-1-infected cells. Temsavir treatment also reduces the capacity of bNAbs to eliminate HIV-1-infected cells by ADCC.
Conclusions: Temsavir has a profound impact on Env antigenicity at the surface of viral particles and infected cells.This new information needs to be considered for the development of new antibody-based approaches in temsavir-treated individuals.

OAB01 People at the centre

OAB0102
Chronic injection opioid use increases the systemic inflammation and T cell immune activation in virally suppressed people living with HIV

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Background: Opioid dependence is a major health problem in the US. Our group is investigating the immunologic consequences of opioid dependence in HIV-infected (HIV+) and HIV-uninfected (HIV-) participants. We hypothesize that virally controlled HIV+ injecting opioid users manifest immune perturbations.
Methods: In an ongoing study, opioid users (OP+) are recruited from our needle exchange program and opioid non-users (OP-) from the clinics. Participants are grouped as HIV+OP+ (Gp1), HIV-OP+ (Gp2), HIV+OP- (Gp3), and HIV-OP- (Gp4), median age 48yr with 62% Male: 36% Female: and 2% Transgender Women. HIV+ were on ART with <HIV

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	Gp1 (HIV+OP+) n=28	Gp2 (HIV-OP+) n=54	Gp3 (HIV+OP-) n=47	Gp4 (HIV-OP-) n=28	GP1 vs Gp2	GP1 vs Gp3	GP1 vs Gp4	GP2 vs Gp3	GP2 vs Gp4	GP3 vs Gp4
CCL2/MCP1	300	239	195	180	ns	0.009	<0.001	ns	0.026	ns
sCD25	1159	1231	768	608	ns	ns	ns	0.18	<0.001	ns
ICAM-1	673804	662013	563118	415068	ns	ns	0.002	ns	0.008	ns
IL-10	1.61	1.74	0.59	0.41	ns	ns	ns	0.025	0.004	ns
IL-6	3.97	3.65	1.41	1.53	ns	0.012	0.006	0.015	0.006	ns
sCD14	2417148	2209260	1869346	1755549	ns	0.002	<0.001	0.045	0.003	ns
sTNFR-I	1888	1551	1286	1052	ns	0.007	<0.001	0.045	<0.001	0.017
sTNFR-II	4610	3732	3068	2210	ns	0.009	<0.001	ns	<0.001	<0.001
TNFa	23.2	16.4	12.6	10.9	ns	0.007	<0.001	ns	0.003	ns
VCAM-1	1430419	1406530	1095150	976373	ns	ns	ns	0.003	<0.001	ns
Cytokine Score*	0.77	0.58	0.28	0.07	ns	<0.001	<0.0001	<0.01	<0.0001	< 0.05
CD4 1A	2.24	1.84	2.39	1.29	ns	<0.05	<0.05	ns	ns	ns
CD8 1A	11.41	5.77	8.93	2.61	< 0.05	<0.001	<0.0001	ns	<0.05	ns
	Mean: Concentration (pg/ml), Score, or IA (% of HLADR+CD38+)				Adjusted P-value of Dunn's Multiple Comparisons					

OAB0102 Table. Opioid use and HIV infection increases activation markers, inflammation and cell adhesion.
$^*Normalized_{cytokine} + log_2(cytokine_{subj}/Median_{HealthyControlYearCytokine})$ Score = $(\sum_{cytokine}^{n} Normalized_{cytokine})/n_{cytokine}$

200 copies/mL. Statistical methods include non-parametric group comparisons (Kruskal-Wallis), Spearman correlations and Multiple regression. (Table)

Results: Plasma biomarkers showed differences in OP+ (Gp1 and Gp2) compared to Gp4 (HIV-OP-), with higher soluble activation markers (sTNFR-I, -II), inflammatory biomarkers (TNFa, IL-6, sCD25), adhesion mediators (ICAM-1, VCAM-1), monocyte chemotaxis protein (CCL2) and monocyte activation (sCD14). Cytokine scores for OP+ were higher than the OP- groups, and among the OP- groups, HIV+ (Gp3) were higher than HIV- (Gp4). In a regression model that included gender, race, ethnicity, and age, cytokine scores differed by HIV status (HIV+:higher scores, p<0.002) and opioid use (OP+:higher scores, p<0.0000001) and moderated relationship by race, p<0.02. T cell phenotype (flow cytometry) revealed inverted CD4/CD8 ratio. Immune activation (IA), measured as frequencies of HLA-DR+CD38+ T cells, was significantly higher in the CD8 compartment in OP+ groups, compared to Gp4. CD8 T cell IA positively associated with cytokine score (rho= 0.5, p<0.0001).

Conclusions: Chronic injection opioid use (Gp1 and Gp2) increases systemic inflammation and T cell immune activation. Contribution of virally controlled HIV status was less striking and limited to cytokines. Exacerbation of immune dysfunction by opioids in the syndemic of HIV and chronic injection opioid use may pose a risk for comorbidities in this population.

OAB0103

Impact of gender identity- and HIV-related stigmas and psychosocial resources on mental health and alcohol use among transgender women newly diagnosed with HIV in India: a longitudinal cohort study

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Background: Transgender women (TGW) living with HIV may be subject to intersectional stigma at multiple levels – enacted (experiences of discrimination/devaluation); anticipated (expectations of discrimination); internalized (negative self-valuation due to stigmatized status) – that are associated with negative health outcomes, as posited by the health stigma framework.

However, few studies have examined the association between stigma and mental health or hazardous alcohol use among TGW living with HIV.

We investigated the longitudinal influence of multiple stigmas on depression, anxiety, and alcohol use in TGW living with HIV in India.

Methods: We enrolled a prospective cohort of 140 TGW newly diagnosed with HIV from 11 Indian states. Participants completed surveys via telephone-interviews at three timepoints – baseline, three-months, and six-months (Aug. '20 - Oct. '21) – about enacted, anticipated, and internalized stigmas related to positive HIV status and transgender identity, as well as: gender affirmation in healthcare settings, social support, and resillency resources.

Surveys also captured depression (PHQ-9), generalized anxiety (GAD-2), and hazardous alcohol use (AUDIT-C) scores. Longitudinal analyses used multivariable regression with generalized estimating equations (which account for clustering within individuals and provide robust population-averaged estimates of the outcomes) for each of the three outcomes (results reported as β [95% CI]).

Results: Increasing anticipated HIV-stigma (3.2, [1.7,4.7], p<.001), enacted HIV-stigma (3.5, (2, 5.1), p<.001), anticipated TG-stigma (1.7 [.4, 3], p=.01), internalized TG-stigma (3.1 [1.2,4.9], p=.001), and hazardous alcohol use scores (0.1 [0.03,0.2], p=.006) were associated with increased depression; increasing resiliency resources (-0.3 [-0.5,-0.1], p=.002) and gender affirmation in healthcare (-0.08 [-0.2,-0.004], p=.039) was associated with decreased depression.

Increasing enacted HIV-stigma (0.9 [0.5,1.3], p<.001) and internalized HIV-stigma (2.1 [1.4,2.8], p<.001) were associated with increased generalized anxiety; increasing gender affirmation (-0.2 [-0.3,-0.1], p<.001), social support (-0.8 [-1.3,-0.3], p=.001.) was associated with decreased generalized anxiety.

Finally, increasing gender affirmation in healthcare-settings was associated with lower hazardous alcohol use scores (-.1 [-0.16,-0.004],p=.04).

Conclusions: Transgender identity- and HIV-specific stigmas strongly impacted depression and anxiety. Increasing levels of psychosocial resources including gender affirmation in healthcare-settings were associated with improved mental health and reduced alcohol use scores. These findings provide empirical evidence for intervention targets for addressing the well-being of TGW newly diagnosed with HIV.

OAB0104

Forty-eight week outcomes of a combined cognitive behavioral therapy and medication management algorithm for treatment of depression among youth living with HIV in the United States (IMPAACT 2002)

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Background: Studies suggest that manualized depression treatmentguided by symptom measurementis more efficacious than usual care but that its impact can wane. Our study among youth living with HIV (YLWH), ages 12-24 years at United States clinical research sites in the International Maternal Pediatric Adolescent AIDS Clinical Trials Network (IMPAACT), found a significant reduction in depressive symptoms at Week 24 among YLWH who received a manualized, measurement-guided intervention (Brown, L. JAIDS, 2021). This abstract reports outcomes at Weeks 36 and 48, after the study's intervention ended.

Methods: Eligibility included diagnosis of nonpsychotic depression and current depressive symptoms. Using restricted randomization, sites were assigned to either combination cognitive behavioral therapy and medication management algorithm (COMB-R) tailored for YLWH or Enhanced Standard of Care (ESC), which provided standard psychotherapy and medication management. Site-level mean Quick Inventory for Depression Symptomatology Self-Report (QIDS-SR) scores and proportion of youth with treatment response (>50% decrease from baseline) and remission (QIDS-SR£5) were compared across arms using t-tests.

Results: Thirteen sites enrolled 156 YLWH, with baseline demographic factors, depression severity, and HIV status comparable across arms. At Weeks 36 and 48, the mean proportion of youth with a treatment response-was greaterat COMB-R sites compared to ESC sites (52.0% vs. 18.8%, p=0.015; 58.7% vs. 33.4%, p=0.047). At Week 36,a greater mean proportion of youth at COMB-R sites re-

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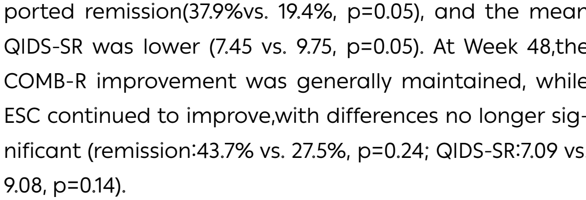
ported remission(37.9%vs. 19.4%, p=0.05), and the mean QIDS-SR was lower (7.45 vs. 9.75, p=0.05). At Week 48,the COMB-R improvement was generally maintained, while ESC continued to improve,with differences no longer significant (remission:43.7% vs. 27.5%, p=0.24; QIDS-SR:7.09 vs. 9.08, p=0.14).

Conclusions: The evidence for maintenance of the intervention's impact after the intervention concluded suggests promise. The intervention is feasible in clinic settings with existing staff and can be implemented without increasing the burden of additional clinic visits for patients.

Future research can investigate how to better prevent relapse for those who achieve remission and promote a treatment response for those whom treatment is not effective in the first 24 weeks.

OAB0105

Long-term risk of hospitalization and chronic disease among children who were HIV-exposed uninfected (cHEU) compared to population controls in Montreal, Canada

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Background: While studies have demonstrated increased risk of morbidity and mortality among cHEU in early life, the need for specialized follow-up of cHEU once their HIV status has been confirmed negative is not clear.

The primary objective of this study was to determine the long-term risk of hospitalization, and incidence of chronic disease, among cHEU compared to HIV-unexposed uninfected (cHUU) controls.

Methods: Longitudinal cohort study linking data from the Centre Maternel et Infantile sur le SIDA (CMIS) cohort to administrative data from the Régie de l'Assurance Maladie du Quebec (RAMQ), a universal health system with unique single patient identifiers, covering all care services provided. ICD-9 codes were extracted and grouped by system for measures of chronic diseases and cHEU matched 1:3 by age, gender and postal code to cHUU controls. Survival analysis was used to determine risk of hospitalization and chronic disease.

Results: Among 847 cHEU enrolled in the CMIS cohort between 1988 and 2015, 726 were linked to the RAMQ database, and matched to 2178 cHUU. Median follow-up was 11.1 [6.6 – 15.9] years.

There was a significantly higher risk of hospitalization among cHEU *vs.* cHUU over their life-span (HR 1.42 [1.26 – 1.61], p<0.001), which remained significant after adjusting for gestational age (aHR 1.23 [1.08 – 1.40], p=0.001), and in a sensitivity analysis excluding prolonged (>5 days) birth hospitalization (HR 1.21 [1.06 – 1.41] (Figure 1).

Over their lifespan, cHEU had a significantly higher risk of neuropsychiatric disorders (33.3% *vs.* 26.1%, RR 1.28 [1.13 – 1.45], p<0.001) and congenital anomalies (5.5%*vs.* 3.5%, RR 1.58 [1.09 – 2.3], p=0.016), though there was no difference in risk of chronic cardiovascular, respiratory or neoplastic disease.

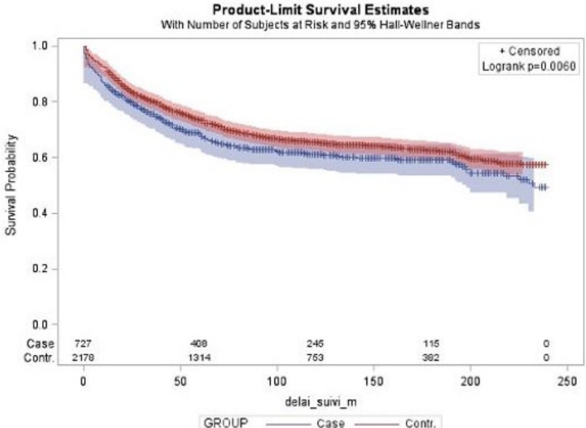

Figure 1. Hospitalization free survival - sensitivity analysis excluding first hospitalization.

Conclusions: In this resource-rich setting with universal health-care, cHEU had increased risk of hospitalization and neuro-psychiatric disorders, suggesting that cHEU would benefit from enhanced pediatric care, including early neurodevelopmental assessment.

OAB02 Outcomes in paediatric and adolescent HIV: Beyond ART

OAB0202

The fast and the continuous: dolutegravir-based antiretroviral therapy achieves impressive viral load suppression in CALHIV in the short- and long-term

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Background: As dolutegravir (DTG)-based antiretroviral therapy (ART) is used as the preferred ART for children and adolescents living with HIV (CALHIV), questions remain about its short- and long-term effectiveness in the real-world. We describe longitudinal viral load suppression (VLS) trends of CALHIV using DTG in six African countries.

Methods: Retrospective chart review from 2016 through 2021 analyzing clinical characteristics and VLS rates of CALHIV ages 0-19 years old prescribed DTG at clinics in Botswana, Eswatini, Lesotho, Malawi, Tanzania, and Uganda. VLS was defined as VL<1000 copies/mL. VL results were coded at 6 month intervals from DTG start date, with +/- 90 day buffer range. Initial VLS rate at 6 month post-DTG was used as the comparator for the longitudinal VLS rates and differences.

Results: 11,799 CALHIV received DTG; 56.0% (6604/11799) were female and average age of 13.4 years (SD 4.0 yr). By study end, 93.7% (11059/11799) remained active in care, 4.7% (549/11799) transferred out, 1.2% (145/11799) were lost to follow up, and 0.4% (46/11799) died. 22,577 VL results were documented, ranging from 6 months to 60 months post-DTG and average follow up time post-DTG was 22.4 months (SD 12.4). Initial 6 month post-DTG VLS rate was 92.1%, similar across sexes (Females 91.6%, Males 92.7%) and ages (Figure 1). VLS rates were maintained without significant loss across the entire cohort, by sex and by age groups (Figure 2).

Cohort of CALHIV on DTG	Time point of VL post-DTG								
	6 month	12 month	18 month	24 month	30 month	36 month	42 month	48 month	≥54 month
All CALHIV (VLs=22577)	92.1% (8120/8816)	92.7% (5917/6863)	92.4% (4177/4522)	91.0% (1888/2074)	90.0% (422/469)	89.9% (179/199)	94.9% (74/78)	95.8% (23/24)	100.0% (12/12)
Females (VLs=11252)	91.6% (4134/4514)	92.9% (2984/3212)	91.3% (2023/2215)	90.0% (898/998)	88.0% (161/183)	87.2% (68/78)	97.8% (44/45)	90.0% (9/10)	100.0% (9/9)
Males (VLs=11325)	92.7% (3985/4301)	91.3% (2023/2215)	93.4% (2154/2307)	92.0% (990/1076)	91.3% (261/286)	91.7% (111/121)	97.8% (44/45)	100.0% (15/15)	100.0% (2/2)
0-4.99yo (VLs=37)	88.9% (16/18)	100.0% (6/6)	100.0% (5/5)	100.0% (3/3)	100.0% (3/3)	100.0% (2/2)	N/A	N/A	N/A
5-9.99yo (VLs=1689)	94.1% (870/925)	95.9% (467/487)	91.6% (164/179)	91.4% (53/58)	100.0% (19/19)	85.7% (12/14)	100.0% (7/7)	N/A	N/A
10-14.99yo (VLs=8563)	93.5% (3359/3592)	93.7% (2349/2508)	92.9% (1505/1620)	89.6% (576/643)	88.4% (107/121)	94.1% (48/51)	94.7% (18/19)	100.0% (6/6)	100.0% (3/3)
15-19.99yo (VLs=12228)	90.5% (3876/4282)	91.5% (3094/3381)	92.1% (2503/2718)	91.7% (1256/1370)	89.9% (293/326)	88.6% (117/132)	94.2% (49/52)	94.7% (18/19)	100.0% (8/8)

Figure 1. Summary of VLS rates among CAHLIV on DTG over time overall, by sex and by age groups

Cohort of CALHIV on DTG	Time point of VL post-DTG								
	6 month	12 month	18 month	24 month	30 month	36 month	42 month	48 month	≥54 month
All CALHIV (VLs=22577)	92.1%	0.6% [-0.3%, 1.4%]	0.3% [-0.7, 1.2%]	-1.1% [-2.5%, 0.2%]	-2.1% [-5.2%, 0.4%]	-2.2% [-7.2%, 1.3%]	2.8% [-4.5%, 6.0%]	3.7% [-12.4%, 7.2%]	7.9% [-16.4%, 8.5%]
Females (VLs=11252)	91.6%	1.3% [0.1%, 2.5%]	-0.3% [-1.8%, 1.1%]	-1.6% [-3.8%, 0.3%]	-3.6% [-9.2%, 0.4%]	-4.4% [-13.6%, 1.36]	-0.7% [-15.2%, 5.3%]	7.3% [-11.2%, 8.1%]	7.3% [-58.5%, 8.1%]
Males (VLs=11325)	92.7%	-0.2% [-1.4%, 1.0%]	-1.6% [-3.8%, 0.3%]	-1.6% [-3.8%, 0.3%]	-3.6% [-9.2%, 0.4%]	-4.4% [-13.6%, 1.36]	5.1% [-4.3%, 7.1%	7.3% [-11.2%, 8.1%]	7.3% [-58.5%, 8.1%]
0-4.99yo (VLs=37)	88.9%	11.1% [-28.8%,32.8%]	11.1% [-33.1%, 32.8%]	11.1% [-45.6%, 32.8%]	11.1% [-45.6%, 32.8%]	11.1% [-55.2%, 32.8%]	N/A	N/A	N/A
5-9.99yo (VLs=1689)	94.1%	1.8% [-0.7%, 4.0%]	-2.5% [-7.7%, 1.2%]	-2.7% [-12.8%, 2.5%]	5.9% [-11.0%, 7.6%]	-8.3% [-34.1%, 2.0%]	5.9% [-29.6%, 7.6%]	N/A	N/A
10-14.99yo (VLs=8563)	93.5%	0.2% [-1.1%, 1.4%]	-0.6% [-2.2%, 0.8%]	-3.9% [-6.6%, -1.6%]	-5.1% [-12.1%,- 0.5%]	0.6% [-9.5%, 4.6%]	1.2% [-18.2%, 5.6%]	6.5% [-32.5%, 7.4%]	6.5% [-49.7%, 7.4%]
15-19.99yo (VLs=12228)	90.5%	1.0% [-0.3%, 2.3%]	1.6% [0.2%, 2.9%]	1.2% [-0.6%, 2.8%]	-0.6% [-4.4%, 2.4%]	-1.9% [-8.5%, 2.6%]	3.7% [-6.2%, 7.6%]	4.2% [-15.2%, 8.7%]	9.5% [-23.0%, 10.4%]

Figure 2. Comparison of VLS rate differences post-DTG over time (using 6 month VLS rate as the comparator), % [95% CI]

Conclusions: DTG rapidly achieved and consistently maintained VLS for years among CALHIV in real world settings. These findings support the widespread use of DTG in CALHIV.

OAB0203

Optimal timing for ART initiation in ART-naive children and adolescents living with HIV following the diagnosis of HIV-associated TB

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Background: There is no direct evidence in children and adolescents living with HIV (CALHIV) to guide the timing of antiretroviral treatment (ART) initiation following TB treatment. To address this gap, we evaluated the risk of mortality associated with the timing of ART initiation in ART-naive CALHIV treated for TB in a large, multinational retrospective cohort from high-burden settings throughout sub-Saharan Africa.

Methods: Data was extracted from electronic medical records of ART-naïve patients, aged 0-19 years treated for HIV-associated TB at a Baylor Center of Excellence in Botswana, Eswatini, Malawi, Lesotho, Tanzania, or Uganda between 2014 and 2020. Data was analyzed against a primary outcome of all-cause mortality with Cox proportional hazard models.

The models included time of ART initiation as a time dependent variable to limit immortal time bias and were adjusted for age, body mass index, immune status, clinical site, and location of TB disease.

Results: The study population included 731 CALHIV with variable timing of ART initiation following TB treatment initiation: ART started within two weeks of TB treatment (n=260), ART started two weeks after but in less than two months of TB treatment (n=379), ART started after two months of TB treatment (n=64) and no ART (n=28).

Adjusted Cox proportional hazard models demonstrated an increased risk of mortality by year three from TB treatment initiation in children never started on ART compared to children initiating ART between two weeks and two months from TB treatment; however, the risk of mortality did not differ in the less than two week group ((adjusted Hazard Ratio (aHR)) 0.93; 95% CI 0.30 to 2.84) or in the greater than two month group (aHR 1.87; 95% CI 0.22 to 15.96) as compared to ART initiation between two weeks and two months from TB treatment.

Conclusions: Our study demonstrates no increased risk of mortality in CALHIV initiating ART less than two-weeks from TB treatment initiation. Given the broad health benefits of ART, this evidence supports the World Health Organization recommendation for CALHIV to initiate ART within two-weeks of initiating TB treatment.

OAB0204

Subcortical brain volumes of children who are HIV-exposed and uninfected in the first three years of life: a South African birth cohort study

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Background: Children who are HIV-exposed and uninfected (CHEU) are at risk for early neurodevelopmental impairment. Neuroimaging studies are scarce, although recently we reported smaller volumes of basal ganglia structures in CHEU compared to children who are HIV-unexposed (CHU) at 2-6 weeks of age. However, no studies have examined subcortical brain volumes through childhood. We aimed to investigate whether the effects of *in utero* exposure to HIV/ART on subcortical brain structures detected in infancy are evident at age 3 years.

Methods: The Drakenstein Child Health Study is a population-based birth cohort in South Africa. Pregnant women were enrolled in the second trimester of pregnancy and mother-child pairs received HIV testing per local guidelines; all mothers with HIV were initiated on ART. A subgroup of children had magnetic resonance imaging (MRI) aged 2-3 years. Structural T1-weighted images were acquired on a 3T Siemens MRI scanner during natural sleep and images were processed using FreeSurfer software, blinded to HIV status. Bilateral subcortical volumes were extracted from segmented images, and CHEU and CHU groups were compared using multivariable linear regression.

Results: One hundred and sixty-two children (70 CHEU; 92 CHU) (mean age 34 months; 58% male) had high resolution scans. Socioeconomic characteristics were similar between groups. CHEU had lower overall putamen volume compared to CHU (4381 mm^3 versus 4597 mm^3, p=0.016, Cohen's d -0.37 [-0.69 to -0.06]), with similar reductions when analysed by hemisphere (left p=0.023; right p=0.018). The findings held after adjusting for multiple covariates including age, sex, socioeconomic status and intracranial volume. Compared to CHU, CHEU also had lower hippocampus volume (3043 mm^3 versus 3149 mm^3, p=0.046, Cohen's d -0.31 [-0.62 to 0.00]). The left hemisphere difference persisted after adjusting for covariates (p=0.038).

Conclusions: Altered morphometry in the basal ganglia region can be detected in CHEU across the first 3 years of life. Further, CHEU showed smaller volumes of the hippocampus at 3 years, a region known to be vulnerable to early-life exposures.

These findings suggest that *in utero* HIV/ART exposure may affect early subcortical brain development with enduring impact. Follow up studies are needed to determine the underlying mechanisms and long-term trajectories.

OAB0205

Probability of AIDS and non-AIDS-related mortality of early-treated children living with HIV-1

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Background: The mortality of early treated children born with HIV in Sub-Saharan Africa during first years of life is still higher than baseline. We assessed the probability of AIDS-related mortality of a cohort of early treated children born with HIV, and factors related to them.

Methods: EARTH-EPIICAL Cohort is underway in Mozambique, Mali, and South Africa. From May 1st, 2018 to May 1st, 2021, infants with HIV who started ART in the first 3 months of life, are followed up for 24 months. To describe the probability of AIDS-related death, a competing risk joint model was performed consisting of a multivariable mixed linear model for longitudinal CD4 trajectory and a survival Cox proportional model. The model was adjusted by ART initiation regimen, age at HIV diagnosis, and weight-for-age.

Results: 212 participants were enrolled and followed during a median time of 17 [6.8;27.5] months; 84 reached 2 years of follow-up. ART started at 34 [26;74] days of life. 23 patients (10.8%) died, at a median of 2.5 [0.6;6.8] months of age; 12 due to AIDS-related causes.

At 2 years, overall probability (P) of death was 12% (CI95%,7 to 17). The excess of mortality compared to baseline mortality was 7%; the excess of mortality due to AIDS-related causes was 5.7%, and due to non-AIDS related causes was 1.4%. According to the joint model, there was an inverse statistically significant association between the probability of AIDS-related mortality and the percentage of CD4 (%CD4) during the time to follow up and (HR:0.9 [CI95%, 0.86-0.98], p=0.046). An increase in CD4 count decrease a 10% the probability of AIDS-related mortality.

Notably, these estimates had opposite sign for the non-AIDS-attributable deaths (HR:1.09 [CI95%, 1.02-1.15], p=0.003). Interestingly, baseline VL was significantly associated with non-AIDS-related mortality (HR:4.34 (CI95%, 1.84-20.7), p=0.026).

Conclusions: Despite early treatment, excess of AIDS- and non-AIDS-related mortality remains high in children living with HIV-1. Differentiating AIDS and non-AIDS related mortality in children with HIV may allow us to understand better the risk factors associated with mortality. CD4 percentage changes over time, and it impacts the probability of death. Infants with high baseline VL and low CD4% require specific attention.

OAB03 ART in evidence

OAB0302

Efficacy and safety of dolutegravir plusemtricitabine *vs* combined antiretroviral therapy for the maintenance of viral suppression: 144-week results of the SIMPL'HIV trial

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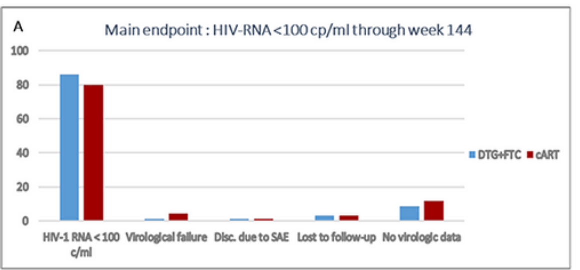
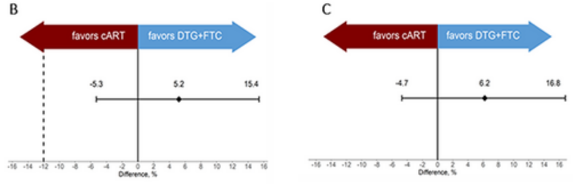
Background: Simplified treatment is needed to address challenges associated with daily oral HIV treatment in people living with HIV.

Methods: SIMPL'HIV is a phase 3, randomized, open-label, multicentre, factorial study conducted among HIV-1 infected adults on cART in Switzerland. At baseline, pa-

tients with HIV-RNA <50 copies/ml for at least 24 weeks were randomised to switching to dolutegravir (DTG) plus emtricitabine (FTC) or continuing standard combined antiretroviral therapy (cART), and to a reduced biological and medical surveillance *vs*continuation of standard 3-monthly monitoring. The main endpoint was the proportion of participants maintaining HIV-1 RNA <100 copies/mL throughout 144 weeks.

Results: 93 participants were randomly assigned to DTG+FTC and 94 to cART (mean nadir CD4 count, 259 cells/mm3 [SD=187]; 17%, female). Through 144 weeks, 3 participants in the DTG+FTC group and 6 in the cART group had HIV-RNA levels >100 copies/ml with an adjusted difference of -3.1% (95% CI -9.2-3.1%) in the intention-to-treat population.





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Outcome	DTG+FTC (N=93)	cART (N=94)	Adj. Risk Diff. (95%-CI)
Any AE (w0 to w144)	68 (73.1%)	65 (64.9%)	
AEs occurring in >10% in either group			
• Upper respiratory Infection	20 (21.5%)	19 (20.2%)	
• Headache	10 (10.8%)	9 (9.6%)	
• Diarrhea	12 (12.9%)	2 (2.1%)	
AEs leading to study withdrawal (w48 to w144)	0	0	
AE grade 3 or 4 (w48 to w96)	5 (5.4%)	3 (3.2%)	2.2% [-3.6%;8.0%]
AE grade 3 or 4 (w48 to w144)	8 (8.6%)	6 (6.4%)	2.3% [-5.3%;9.8%]
SAE (w48 to w96)	3 (3.2%)	2 (2.1%)	1.2% [-3.5%;5.8%]
SAE (w48 to w144)	6 (6.5%)	4 (4.3%)	2.2% [-4.3%;8.7%]

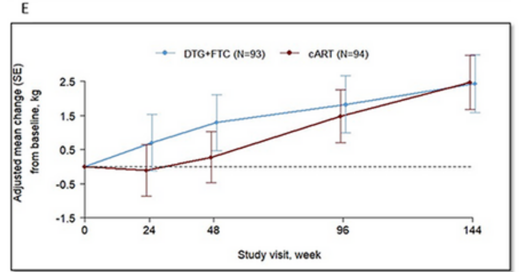

Figure 1. Efficacy and safety results. A) Primary endpoint: HIV-RNA<100 cp/ml through week 144; B) Primary endpoint: DTG+FTC non-inferior to cART (>100 cp/ml) through week 144; C) FDA snapshot: DTG+FTC non-inferior to cART (>50 cp/ml at week 144. D) Adverse events through week 144 by treatment group. E) Weight change through week 144 by treatment group.

At week 144 HIV-RNA was >50 copies/ml in one patient in the DTG+FTC group and four patients in the cART group (adjusted difference -3.2%; 95%-CI -7.7-1.5%). Mean CD4 gain between baseline and week 144 was 8.4 (±195.3) and 34.7 (±193.6) cell/mm³ with DTG+FTC and cART, respectively (adjusted difference -19.4; 95% CI -74.2-35.4).

Twelve (12.9%) participants in the DTF+FTC group and 15 (18.1%) in the cART group presented with serious AEs through week 144.

Adjusted average weight gain between baseline and 144 weeks was 2.4 (±4.7)*vs* 2.3 (±4.1) kg with DTG+FTC and cART, respectively; participants with 10% or more weight gain were 7.5% and 6.4% in the DTG+FTC and cART groups, respectively.

Conclusions: DTG+FTC remains safe and non-inferior to standard care in the maintenance of viral suppression in adults with HIV-1 at 144 weeks. No new safety signals were observed and change weight was similar between groups.

OAB0303

Dual therapy based on DRVr plus 3TC in HIV-1 naïve patients: global 48 week results from ANDES Study

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Background: Dual therapy has been explored in different drug combination. A generic fixed dose combination(FDC) DRV/r 800/100 mg is available in Argentina. We designed a study to compare efficacy (non-inferiority) and safety of this FDC plus 3TC to standard-of care antiretroviral therapy based on the same drugs plus tenofovir. ClinicalTrials.gov:NCT02770508

Methods: ANDES is a randomized, open-label, phase IV study designed to compare dual therapy (DT) with DRV/r 800/100mg FDC plus 3TC (300mg) vs. triple therapy (TT) with DRV/r plus 3TC/TDF (300/300mg) in treatment-naïve HIV-1 infected patients.

Primary endpoint: proportion of patients with HIV viral load (pVL) <50 copies/mL at week 48 (FDA snapshot-ITTe analysis). The study was carried out in two steps as pre-planned protocol study design. First step results were presented at CROI 2018. Final results (first step/second step) at week 48 are presented here.

Results: Out of 395 patients screened, 336 were randomized to receive: DT (n:171) or TT (n:165). Demographic characteristic were similar between arms: 94% CDC stage A, 90% males, 23% pVL >100,000 copies/mL. Median (IQR) HIV pVL log: 4.5 (4.1-5.0), Median (IQR) CD4 T-cell/uL: 415 (300-599).

At week 48, 92.7% on TT vs 90.6% on DT achieved pVL<50 copies/mL, difference (95%CI): -2.1% (-7.0; 2.9%). Patients with baseline pVL >100,000 copies/mL showed 90.3% response in TT vs. 86.7% in DT, difference (95%CI): -3.7% (-15.7;8.4%). Per-protocol population analysis: 98.7% were responder in TT vs. 98.1% in DT, difference (95%CI): -0.6% (-2.9;1.7%).

Seven patients had Protocol-Defined virologic failure: 2 at week 24 (1 TT/1 DT) and 5 at week 48 (2 TT/ 3 DT). Mean pVL at week 48 failure: 73.8 copies/mL. Mean CD4+ change from baseline: TT: +238.1 cells/uL, DT: +275.3 cells/mm3 (p:0.4). Fifty-nine grade 2-3 related adverse events (AEs) were reported among 53 patients (TT:33 / DT:20, p:0,04). Most frequent were: rash (TT: 5%; DT: 6%; p: 0.70), diarrhea (TT: 5%; DT: 1%; p: 0.06**), abdominal pain (TT: 5%; DT: 1%; p: 0.03). AEs leading to discontinuation were rare (TT:2, DT: 2). Two possible treatment-related SAEs were reported (both lipase increase G4) in TT arm. Laboratory changes from baseline to week 48 were similar except to lipid profile with higher change in DT arm: total cholesterol (TT: 8%; DT: 20%; p<0.01), LDL-cholesterol (TT: 8%; DT: 19%; p: 0.01), Triglycerides (TT: 38%; DT: 56%; p=0.05).

Conclusions: A generic FDC of DRV/r plus 3TC showed non-inferiority to standard TT with DRV/r plus TDF/3TC at 48 weeks in both ITTe and per-protocol populations. The DT strategy was safe and well tolerated and could be considered as an alternative option for treatment naïve population.

OAB0304

Dolutegravir versus efavirenz-400 as first-line ART in Cameroon: week 192 data of NAMSAL trial

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Background: The NAMSAL main objective was the comparison of two first-line antiretroviral treatments (ARTs) in real-life conditions in low- and middle-income countries (LMIC): dolutegravir 50 mg (DTG) and low-dose of efavirenz (ie 400 mg; EFV400) daily both combined with tenofovir-disoproxil-fumarate [TDF]/lamivudine [3TC]. The 48-week outcomes provided decision-making elements to World Health Organization (WHO) to recommend DTG as first-line ART in 2019. Outcomes were confirmed at 96 weeks. We assessed long-term efficacy and safety of these two regimens.

Methods: NAMSAL was an open-label, multicenter, randomized, phase 3 non inferiority trial conducted in Cameroon over 96-week, extended as post-trial follow-up as a prospective cohort until 192-week. HIV-1 infected ARV-naive adults with HIV-RNA viral load (VL)>1000 copies/mL were randomized and maintained in the base arm (1-DTG:1-EFV). The primary end point was the proportion of participants with a VL of less than 50 copies/mL at week 48; secondary outcomes were assessed with superiority-test.

Results: At week 192, proportions of participants with a VL of less than 50 copies/mL in intention-to-treat (ITT) were 69% (DTG: 214/310) and 62% (EFV400: 187/303) respectively (difference, 7.3%; CI-95%, [-0.20;14.83], p-value=0.057; Figure 1). *Per-protocol* results were 75% (DTG: 172/230) and 66% (EFV400: 178/271) respectively (difference, 9.1%; CI-95%, [1.13;17.07], p-value=0.027).

During the four-year of follow-up, five (DTG: 2; EFV400: 3) new virological failures (WHO-definition) without related resistance mutations and 24 new severe adverse-events (SAE) were observed (DTG: 13, EFV400: 11). Over four years, weight gain was more important on DTG group compared to EFV400 group: Median weight-gain (Women (W): DTG +8.0 Kg, EFV400 +5.0 Kg, p-value=0.010; Men (M): DTG +6.0 Kg, EFV400 +4.0 kg; p-value=0.024); Obesity incidence (W: DTG 17%, EFV400 11%, p-value=0.140; M: DTG 26%, EFV400 4%; p<0.001); Proportion of patients who had a weight-gain of at least 15% compared to their initial weight (W: DTG 43%, EFV400 31%, p-value=0.030; M: DTG 23%, EFV400 25%; p- value= 0.848; Figure2).

Conclusions: DTG-based and low dose EFV-based regimens has durable efficacy and safety for use in treatment-naïve patients with HIV-1. There was significantly more weight gain with the DTG-containing regimen.

OAB0305

Survival in advanced AIDS patients treated with efavirenz or dolutegravir in Brazil: a multicenter, observational study

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Background: Most of studies on integrase inhibitors efficacy were conducted on healthy patients. There is scarce information on DTG use in late-presenters HIV patients. We compared the effect of ART regimens based on Efavirenz (EFV) or Dolutegravir (DTG) on survival of patients with advanced AIDS.

Methods: We enrolled symptomatic AIDS patients starting therapy with a CD4 count<50 cells/ml in 5 Brazilian cities. We compared patients starting DTG-based ART (2018 to 2020) or EFV-based regimens (2013 to 2016), as controls regarding early mortality, rates of viral suppression at 24 and 48 weeks, changes in CD4 count, incidence of adverse events, and therapy discontinuation.

Results: We included 92 patients per arm mean age 39.4 (DTG) and 37.3 years (EFV), 68 % males, mean baseline CD4 count=23 cells/ml, mean HIV viral load= 5.5 copies/ml $\log_{10}$. Viral suppression rates (<50 copies/ml) were higher in DTG than in EFV group at 24 (67% vs 42%,) and at 48 weeks (65% vs 46%, p<0.01). At 48 weeks median CD4 count was similar for DTG and EFV groups (213 cells/ml vs. 222 cells/ml), but more patients in DTG group presented with CD4 >200 cells/ml (45% vs. 29%, p=0.03). Levels of total cholesterol (189 vs 168 mg/dL), triglycerides (188 vs 129 mg/dL) and VLDL cholesterol(35 vs 26 mg/dL) were higher in EFV than in DTG group (p<0.01 for comparisons). Creatinine levels were higher in DTG (0.97 mg/dL) than in EFV (0.86 mg/dL, p=0.02) group. Survival was higher in DTG group, mostly driven by treatment changes (1% vs. 17%, p<0.0001) or loss to follow up (11% vs. 15%).

Conclusions: Advanced AIDS patients treated with DTG had a higher proportion of viral suppression/survival rate/ immune restoration, less lipids changes, and lower discontinuation rates after 48 weeks than patients treated com EFV. DTG is confirmed as a preferential option to treat advanced AIDS patients.

OAB04 HIV and other conditions

OAB0402

Efficacy and safety results in participants co-infected with HIV from TB-PRACTECAL Clinical Trial

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Background: Globally, TB/HIV coinfection accounts for 477461 notified cases and 456000 cases of rifampicin-resistant tuberculosis (RR-TB) are estimated. TB-PRACTECAL clinical trial (NCT02589782) evaluated the safety and efficacy of three 24-week all-oral regimens for the treatment of pulmonary RR-TB in adults and adolescents above 15 years from Uzbekistan, Belarus and South Africa. Participants were randomised to receive one of three investigational regimens or the control. BPaL arm consisted of bedaquiline, pretomanid and linezolid. Clofazimine was added in BPaLC or moxifloxacin in BPaLM arm.

The primary efficacy outcome was the percentage of patients with a composite unfavourable outcome (treatment failure, death, treatment discontinuation, recurrence, loss to follow-up) at 72 weeks post-randomization. We present the efficacy and safety of regimens in the HIV coinfected patients.

Methods: All patients were offered a HIV test and were eligible irrespective of CD4 count. Antiretroviral treatment was modified to minimise drug-drug interactions and co-trimoxazole prophylaxis offered. Pre-specified analyses were conducted for primary efficacy and safety outcomes at 72 weeks post-randomization for HIV status in mITT and ITT populations, respectively.

HIV status	Unfavourable outcome Control n/N (%)	Unfavourable outcome Experimental Arm n/N (%)	Risk difference (one-sided 98.3% CI)	Interaction p-value	Grade ≥3 and/or SAEs Control n/N (%)	Grade ≥3 and/or SAEs Experimental Arm n/N (%)	Risk difference (one-sided 98.3% CI)	Interaction p-value
BPaLM versus control								
Negative Positive	26/51 (51.0) 6/15 (40.0)	3/48 (6.3) 4/14 (28.6)	-44.7% (-∞to -28.1%) -11.4% (-∞to 25.6%)	p = 0.08	33/56 (58.9) 10/17 (58.8)	11/55 (20.0) 3/17 (17.6)	-38.9% (-∞to -20.9%) -41.2% (-∞to -9.2)	p = 0.89
BPaLC versus control								
Negative Positive	26/51 (51.0) 6/15 (40.0)	7/50 (14.0) 5/14 (35.7)	-37.0% (-∞ to -18.9%) -4.3% (-∞to 33.9%)	p = 0.10	33/56 (58.9) 10/17 (58.8)	17/57 (29.8) 6/15 (40.0)	-29.1% (-∞to -10.1%) -18.8% (-∞to 18.0%)	p = 0.60
BPaL versus control								
Negative Positive	26/51 (51.0) 6/15 (40.0)	10/46 (21.7) 4/14 (28.6)	-29.2% (-∞to -9.6%) -11.4% (-∞to 25.6%)	p = 0.37	33/56 (58.9) 10/17 (58.8)	11/51 (21.6) 4/18 (22.2)	-37.4% (-∞to -18.8%) -36.6% (-∞to -3.9%)	p = 0.97

Results: 552 patients were enrolled, of whom 153 were HIV positive. Median CD4 count at baseline was 330, 297, 326 and 250 cells/µL in BPaLM, BPaLC , BPaL and control arm, respectively. In mITT population 28.6%, 35.7%, 28.6% and 40% of HIV-positive patients experienced unfavourable outcomes in BPaLM, BPaLC, BPaL and control arm, respectively. The small sample size and P-values don't provide strong evidence of interaction. In ITT population grade 3 or above and/or serious adverse events (SAEs) were no more frequent in HIV-positive versus negative patients across arms.

Conclusions: Current TB-PRACTECAL data supports the use of 24-week regimens irrespective of HIV status. A trend towards the shorter regimens being more efficacious in HIV-negative patients was observed. However, this trend was not seen in the safety outcomes for the BPaL and BPaLM arms. The trial is accruing more data and will update at a later date.

OAB0403

Impact of a community-wide HIV test and treat intervention on population-level tuberculosis transmission in rural Uganda

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Background: HIV and TB are linked epidemics. We tested whether a community-wide universal HIV testing and treat strategy would reduce population-level TB transmission in the SEARCH trial.

Methods: SEARCH was 32-community cluster-randomized trial conducted in rural Uganda and Kenya from 2013-2017 (NCT:01864603). Intervention communities received population-level HIV test and treat; control communities received enhanced standard-of-care. We measured incident TB infection in a nested cohort of children and adults ages (≥5 years) in in 4 intervention and 5 control communities (8 and 10 parishes, respectively) in Eastern Uganda. All people in the cohort had a negative tuberculin skin test (TST) at baseline (induration <10mm or <5 mm among PWH); the cohort was enriched with PWH. Incident TB infection (primary outcome) was defined as TST conversion from negative to positive one year after baseline TST (2015-2017). Incident TB was compared between arms, adjusted for sampling and participation, and parish-level drivers of incident TB infection and accounting for clustering using Targeted Maximum Likelihood Estimation.

Results: The TST negative cohort was comprised of 3,242 persons in the intervention and 4,125 persons in the control arms; 2,922 (39.7%) were children (5-11 years) and 4,445 (60.3%) youth and adults (ages 12+ years). Within the cohort 53.3% were women, and PWH comprised 16.6% of adults, 1.1% of children.

One-year cumulative incidence of TB infections was 16% in the intervention and 22% in the control; the population-level intervention reduced risk of incident TB infection by 27% (aRR of 0.73; 95% CI: 0.58-0.93, one-sided p=0.007). The effect was largest among children aged 5-11 years (Figure 1).

Conclusions: A universal HIV test and treat intervention reduced incident TB infection, a marker of population-level TB transmission. Investments in community-level HIV interventions have direct impacts on HIV and broader population-level benefits, including reductions in TB.

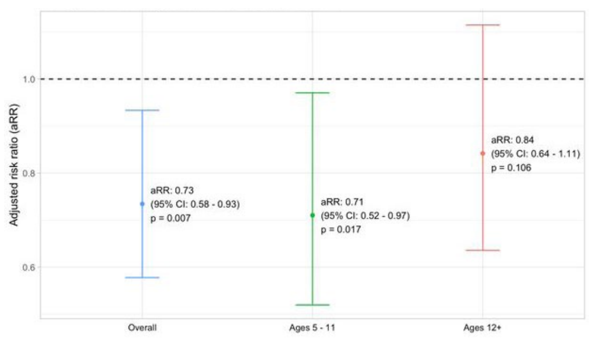

Figure 1. Relative risk of incident TB infection in the intervention vs. control arm of the SEARCH trial, overall and stratified by age.

Incident TB infection defined as tuberculin skin test conversion from negative at baseline to positive one year later. One-sided p-values to test the null hypothesis that the SEARCH intervention did not reduce TB.

OAB0404

Are people living with HIV at higher risk of severe and fatal COVID-19?

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Background: WHO has established a Global Clinical Platform aiming to assess clinical features and risk factors for severe/fatal COVID-19 among hospitalized individuals.

Methods: Between January 2020-June 2021 anonymized individual-level clinical data from 338,566 patients hospitalized in 38 countries were reported to WHO using a standardized case report form. Descriptive and regression analyses assessed whether HIV status was a risk factor for severity at admission and in-hospital mortality among people hospitalized for COVID-19.

Results: Of 197,479 patients reporting HIV status, 8.6% (16,955) were living with HIV (PLHIV), and 94.6% (16,283) were from Africa; 37.1% were male, mean age was 45.5 years, 38.3% were admitted with severe or critical illness and 24.7% died in-hospital. 91.5% of 10,166 PLHIV were on antiretroviral therapy (ART). Compared to those without HIV, PLHIV had 15% increased odds of severe/critical presentation (aOR=1.15, 95%CI 1.10–1.20) and were 38% more likely to die in-hospital (aHR=1.38, 95%CI 1.34-1.41). Among PLHIV, male sex, age 45-75 years, and having chronic cardiac disease or hypertension increased the odds of severe/critical COVID-19. Male sex, age>18 years, diabetes, hypertension, malignancy, TB, or chronic kidney disease increased the risk of in-hospital mortality. In an exploratory subgroup analysis in a subset of 9097 hospitalized individuals reporting ART information, PLHIV on ART were 17% less likely to die (p<0.048) and 40% less likely to be admitted with severe disease than those not on ART (p<0.001). However, both PLHIV on ART (aHR=1.48, 95%CI 1.39-1.57) and those not on ART (aHR=1.79, 95%CI 1.48-2.16) had a higher risk of death relative to HIV negative people.

A similar exploratory analyses on a sample of 5793 hospitalized individuals reporting viral load (VL) information showed that both people with VL<1000 c/ml (aHR=1.77, 95% CI 1.57-1.99) and those with VL>1000 c/ml (aHR=1.45, 95% CI 1.32-1.58) have an increased risk of death compared to HIV negative individuals.

Conclusions: In this sample of hospitalized people contributing data to the WHO Global Clinical Platform, HIV was an independent risk factor for both severe/critical COVID-19 at admission and in-hospital mortality. These findings have informed the WHO COVID-19 Clinical Management Guidelines and SAGE recommendations around COVID-19 vaccination prioritization.

OAB0405

HIV/HBV coinfection in pregnancy and response to antiretroviral therapy

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Background: Hepatitis B virus (HBV) affects 3-12% of pregnant women with HIV in Africa; however, the impact of HBV infection on HIV outcomes in pregnant women is unclear. We evaluated the association of HIV/HBV coinfection with HIV virologic response, CD4 cell count, and hepatotoxicity in pregnant women in secondary analyses of the IMPAACT PROMISE study.

Methods: The PROMISE study enrolled pregnant women living with HIV who were ART-naive and had not met criteria for initiating ART. Women at ≥14 weeks gestation were randomized to either: Arm A: ZDV alone, Arm B: 3TC+ZDV+LPV/r, or Arm C: FTC+TDF+LPV/r. HBV was defined as HBsAg(+). We compared women with HIV alone to HIV/HBV with outcomes of HIV viral load, CD4, and ALT elevation at delivery and through 74 weeks postpartum using Fisher's exact, t-tests. Time to ALT used the log-rank test. Analyses also compared women with HIV alone to HIV/HBV who were also HB**e**Ag(+).

Results: Among 3537 women analyzed, 138 had HBV. Median age, CD4, and HIV VL were 27 years, 505 cells/mm^3 and 4.0 Log_{10} copies/mL, respectively. Thirty-four women (26%) with HBV were HB**e**Ag(+). Median ALT at baseline was 15 and 12 IU/ml amongst HBV-infected and uninfected.

There was no statistically significant difference by HBV/HIV co-infection status in HIV VL suppression or CD4 at delivery, at one year postpartum (PP) (primary) or 74 weeks PP. Those with HIV/HBV had more frequent grade 3/4 ALT events (8% vs 3%) overall. Numerically more grade 3/4 ALT events occurred in HIV/HBV coinfected women in Arms B and C (10.4%, 10.4%) vs Arm A (2.4%) but this did not reach statistical significance.

Women with HIV/HBV also had earlier first grade 3/4 ALT elevation (hazard ratio (HR) 3.08, 95% CI: 1.56, 5.50). Compared to those with HIV alone, HBV infected women with HB**e**Ag(+) had earlier Grade 3/4 ALT elevation (HR 6.93, 95% CI: 2.70, 14.51).

Conclusions: In pregnant women with HIV initiating ART, HIV RNA suppression and CD4 cell response did not differ between HIV and HIV/HBV coinfection. However, grade 3 or 4 ALT elevations occurred at a higher rate in those with HBV, with HBeAg+ status conferring increased risk.

OAC01 Real-time HIV surveillance to achieve Fast-Track milestones

OAC0102

Progress in scaling up HIV recent infection surveillance in 13 countries: October 1, 2019 - June 30, 2021

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Background: In 2018, countries supported by the United States President's Emergency Plan for AIDS Relief (PEPFAR) began implementing recent HIV infection surveillance among newly diagnosed people living with HIV (PLHIV) to provide signals of ongoing HIV transmission. Recent infection surveillance uses results from rapid tests for recent infection (RTRIs) with viral load results to improve accuracy as part of a recent infection testing algorithm (RITA). We assessed global progress in recent infection surveillance in PEPFAR-supported countries.

Methods: We collected recency data for adults ≥15 years from October 1, 2019–June 30, 2021 and pooled results from 13 countries (Eswatini, Ethiopia, Guatemala, Malawi, Namibia, Nicaragua, Nigeria, Rwanda, Thailand, Uganda, Vietnam, Zambia, Zimbabwe). We described quarterly trends in RTRI site coverage (% of sites reporting ≥1 RTRI) and RTRI testing coverage (% of newly diagnosed PLHIV who had an RTRI). In a subset of seven countries (Eswatini, Nigeria, Rwanda, Thailand, Uganda, Vietnam, Zambia), we described trends in RITA site and testing coverage (% of sites and PLHIV reporting RITA results) for the October 1, 2019–June 30, 2021 study period.

Results: Among the 13 countries, RTRI site coverage increased from 10.3% (733/7,107) to 21.5% (1,900/8,818) during the study period, and RTRI testing coverage increased from 9.0% (13,864/153,268) to 18.0% (41,688/231,410).

During April 1–June 30, 2020, a quarter within the study period coinciding with the COVID-19 epidemic, RTRI site and testing coverage decreased 9.6% (22,437/234,164) to 3.2% (85,791/183,085). For the subset of seven countries, RITA site coverage decreased from 71.0% (88/124) to 48.1% (276/574) during the study period, and RITA testing coverage decreased from 70.2% (290/413) to 58.7% (1,651/2,814).

Conclusions: For the 13 countries, RTRI site and testing coverage increased during the study period but remained low. RTRI coverage decreased temporarily April 1–June 30, 2020. For the subset of seven countries, RITA site and testing coverage decreased during the study period.

These decreases may be due to COVID-19 mitigation efforts, disruptions in HIV and viral load testing, and PEPFAR guidance to temporarily pause recent infection testing. Expanding access to recent infection testing can provide data for public health action to prevent new HIV infections.

OAC0103

Use of a robust health information system to improve accuracy of recent HIV infection testing in Bangkok, Thailand, 2020-2021

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Background: Based on the Asia Epidemic Model, Bangkok has the highest number of estimated new HIV infections in Thailand. We integrated HIV recent infection testing into routine HIV testing services to monitor recent infection trends and accelerate efforts to ending AIDS in Bangkok.

Methods: HIV recency testing was integrated in 16 facilities in Bangkok. Blood from consenting newly diagnosed adults with HIV (PLHIV) collected during October 2020–November 2021 was tested with a rapid test for recent infection (RTRI). Because PLHIV who have suppressed viral load (VL) can produce false recent results, we tested RTRI-recent specimens with VL (recent infection testing algorithm [RITA]); specimens with VL≥1,000 copies/ml were defined as RITA-recent, <1,000 copies/ml as RITA-long term (LT). Cross-checking clinical history data with the national AIDS database (NAD) and electronic medical records was conducted for all RTRI-recent cases to enhance the validity and accuracy of results. Logistic regression was used to identify associations between recent infection and demographic variables (sex, age, population).

Demographic		% RITA recent infection (n/total)	OR	p-value
Age	15-19 years	16% (7/44)	2.5	0.04
	20-29 years	8% (23/302)	1.1	0.75
	≥30 years	7% (24/345)	1	Ref
Sex	Female	9% (14/164)	1	Ref
	Male	8% (40/532)	0.9	0.67
Population group	General	6% (23/356)	1	Ref
	MSM	10% (27/267)	1.6	0.10
	Other	4% (4/73)	0.8	0.75

Results: 694/1,291 (53.8%) newly diagnosed PLHIV provided consent and were tested for recent infection: 59 (8.5%) tested RTRI-recent and, after VL testing, 54 (7.8%) tested RITA-recent and 5 tested RITA-LT. After cross-checking with NAD, 4/5 RITA-LT cases were among 21-25 year old men who had a history of pre-exposure prophylaxis, antiretroviral treatment (ART) <28 days at the time of RTRI testing or no ART history, and no previous HIV diagnosis, suggesting potential misclassification. Young clients aged 15-19 were more likely to test RITA-recent than other age groups (OR=2.5, p<.05).

Conclusions: While 15-19 year-olds showed a high proportion of RITA positives, recent HIV infections were diagnosed in all age groups, sexes and populations, warranting continued surveillance of HIV-1 recent infections in Bangkok. Cross-checking the clinical history with other records through a robust national health information system can be used to improve the accuracy of tests for recent infection.

OAC0104

A rapid, integrated method to monitor HIV viral load, drug resistance, and transmission patterns from finger-prick blood samples

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Background: By applying sequencing and phylogenetics to tens-of-thousands of plasma samples from various cohorts of people living with HIV, we have characterised the dominant sources and flows of HIV transmission, tracked changing patterns of drug resistance, and discovered a highly infectious HIV lineage with faster disease progression. As global incidence of HIV/AIDS declines, we need broader individual access to viral load monitoring and more-efficient molecular surveillance to track population-level changes in drug resistance and transmission.

Our findings and modelled projections incentivised development of an integrated method that monitors HIV viral load, drug resistance and co-infections, while producing anonymised HIV-transmission data to inform adaptive public health strategies.

Methods: In this study, venepuncture-derived plasma from 61 epidemiologically-characterised transmission pairs from The Partners in Prevention Transmission Study, and plasma collected from HPTN-071 (PopART) by ve-

nepuncture and 'finger-prick' sampling, were deep-sequenced using bait-capture (veSEQ). Sample processing was optimised at key steps for long-read PacBio sequencing. Transmission pairs were identified using Phyloscanner software, and drug resistance was predicted using the Stanford algorithm (HIVdb). Viral loads measurements were validated against clinically-accredited assays.

Results: Our optimised protocol generated whole-genome sequences and drug resistance predictions from 200 µl of finger-prick derived plasma, with viral loads greater than 500 copies per ml. Viral loads were obtained after 5 hours of processing from the same 'finger-prick' specimens and the overall cost of the combined assay was kept below that of commercially available viral load tests. Whole hepatitis B genomes were sequenced concurrently by the same method in a subset of samples. PacBio sequencing correctly identified the direction of transmission in 85% (52/61) of pairs compared to 36% (22/61) using Illumina sequencing. The longer reads generated by PacBio (250bp-2.5kb; 95% CI) reduced the likelihood of misreporting transmission direction.

Conclusions: Our combined sequence-based assay accurately measures HIV VL and characterises drug resistance from 'finger-prick' derived blood and generates anonymised, high-resolution, molecular-epidemiological data for public health. This low-cost combined approach could be transformative to global health management of HIV and related blood born infections in resource-limited settings.

OAC0105

Phylogenetic surveillance of HIV epidemic control from 2014 to 2020 among MSM and heterosexual groups in Quebec

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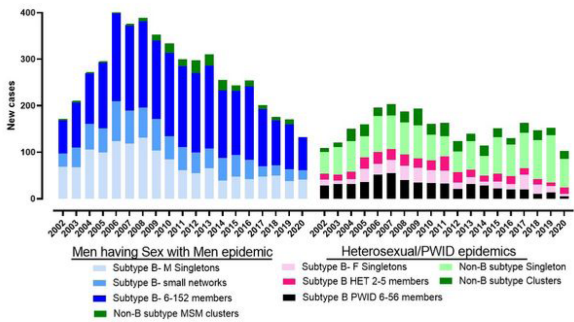
Background: The UNAIDS 90-90-90 initiative has led to 38% declines in heterosexual (HET) epidemics in Africa since 2014. In 2019, The Ending the HIV Epidemic for America added phylogenetics as fourth pillar for epidemic control by 2030. Here, phylogenetics was combined with available epidemiological data to track drivers of HIV-1 spread among Men having Sex with Men (MSM), People Who Inject Drugs (PWID) and recent migrants.

Methods: Phylogenetic analyses, using MEGA-10 and Microbe-TRACE methodologies, ascertained the linkage of sequences obtained from newly-diagnosed persons (2002-2020). Infections were stratified into groups according to HIV-1 subtype, sex, and cluster size, including i) the subtype B MSM epidemic (male singletons/male-male clusters); ii) the subtype B PWID epidemic (mixed gender large clusters); iii) subtype B HET infections originating from the Caribbean and Americas (female singletons, mixed gender clusters) and iv) non-B subtype epidemics originating outside Canada.

Results: Amongst MSM, there were 56%, 43% and 27% declines in singleton, small (1-5 members) and large cluster networks (6-152 members) from 2014-2020 compared to 2007-2013. Epidemic control among MSM was thwarted by 35 super-spreader, large cluster micro-epidemics, adding 8-96 infections/cluster from 2014-2020. Notably, 18 clusters gained 4-12 infections during the COVID 19 era (post-2019). The subtype B epidemic among PWID is controlled showing 54% declines in new infections from 2014-2020 compared to 2007-2013.

Recent migration has led to the steady growth in the subtype B and non-B subtype HET epidemics. To date, 65% and 20% of HET epidemics were singletons or small clusters (2-4 members). PHI cohort data revealed that 28% of infected MSM born outside Canada acquired large cluster provincial variants. Of note, isolated non-B subtype HET outbreaks occurred in Quebec City, Richelieu, and Northern Quebec.



Conclusions: Declines in HIV-1 infections are promising. Public health measures must address emerging needs of vulnerable migrants and younger MSM populations.

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OAC02 Colliding epidemics: HIV, NCDs, TB, STIs, COVID-19 and others

OAC0202

Collision of HIV and non-communicable disease epidemics: mapping chronic health needs among a HIV hyperendemic community in rural South Africa

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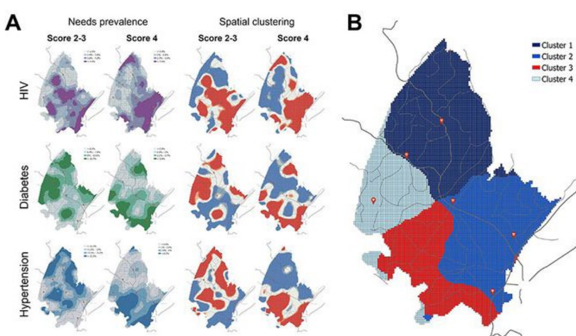
Background: With improvements in survival among people living with HIV (PLHIV), the co-occurrence of HIV and non-communicable diseases is emerging as a public health priority. Using a comprehensive population-based disease survey in rural South Africa (SA), we aimed to characterize the spatial structure of multimorbidity and unmet health system needs for HIV, diabetes, and hypertension.

Methods: Data for HIV, diabetes and hypertension were collected as part of the Vukuzazi study, a population-based health assessment conducted in uMkhanyakude district in KwaZulu-Natal, SA. Participants were categorized by a novel health needs scale including: healthy/absence of disease (needs score 0), diagnosed and well controlled (1), diagnosed and sub-optimally controlled (2), diagnosed and not engaged in care (3) and undiagnosed and uncontrolled (4). Scores 2-4 indicated individuals experiencing unmet needs. We explored the geospatial structure of unmet needs using different multivariate spatial clustering methods.

Results: The analytic sample included 18,041 individuals. HIV had a similar spatial structure for those with a combined needs score 2-3 (diagnosed but uncontrolled) and 4 (undiagnosed and uncontrolled), with most PLHV with unmet needs been clustered (red areas in maps Figure A) in the southern urban/peri-urban area.

Multivariate KMeans clustering analysis identified a significant overlap of all three diseases for individuals with undiagnosed and uncontrolled diseases (unmet needs score 4) in the southern part of the surveillance area (Cluster 3 in red in map Figure B).



Figures A & B

Conclusions: Areas where most PLHIV are experiencing the highest needs with undiagnosed and uncontrolled disease are also areas suffering the highest burden of unmet needs for other diseases like diabetes and hypertension in this rural community in SA. The identification and prioritization of high needs areas where health systems needs for both HIV and non-communicable diseases collide provides a rationale for policy and implementation strategies to improve health outcomes with optimal efficiency and impact.

OAC0203

The impact of COVID-19 non-pharmaceutical interventions on incidence and case-fatality ratios of sexually transmitted diseases in China

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Background: China implemented nationwide non-pharmaceutical interventions (NPIs) to contain COVID-19 at the early stage. We aimed to elucidate the impact of COVID-19 NPIs on incidence and case-fatality ratios of sexually transmitted diseases (STDs) in China.

Methods: Cases and deaths data for STDs by month were extracted from the notifiable disease reporting database of the official website of the National Health Commission of China between January 2015 and August 2021. We used descriptive statistics to summarize data on case and death of HIV, gonorrhea, syphilis, hepatitis B, and hepatitis C, and calculated incidence and case-fatality ratios before and after the implementation of massive NPIs (January 2020).

We used Poisson segmented regression models to estimate the immediate and long-term impacts of NPIs on these outcomes in January 2020 and August 2021, respectively.

Results: A total of 14,071,484 cases and 118,399 deaths of the five STDs were reported from January 2015 to August 2021, with an incidence of 149.10/100,000 before NPIs and 150.72/100,000 after, and a case-fatality ratio of 8.21/1000 before NPIs and 9.02/1000 after. In the Poisson model, accounting for seasonal fluctuations and long-term trends, there was a 19.2% (IRR 0.808, 95% CI 0.714-0.914) decline in overall incidence and a 20.9% (0.791, 0.680-0.921) decline in overall deaths of the five STDs in January 2020.

There was no significant change in incidence or case-fatality ratios of HIV in January 2020, but a 22.1% (0.779, 0.647-0.938) decline in deaths. Deaths and case-fatality ratios for both gonorrhea and syphilis showed an increase of 152.1%-897.6% compared with a small counterfactual in January 2020. Incidence of hepatitis B and C showed significant decreases in January 2020, but the changes in death and case-fatality ratio were not statis-

tically significant. By August 2021, the incidence, deaths, and case-fatality ratios for each of the five STDs returned to or were below expected levels.

Conclusions: During the COVID-19 pandemic, the implementation of massive NPIs had a positive impact on the overall incidence and deaths of STDs in China. However, under the current strategy of holistic NPIs in China, one should be alert to the increase in death and case-fatality ratio from gonorrhea and syphilis.

OAC0204

The effect of the COVID-19 pandemic on access to HIV Treatment and vertical transmission: results from the Canadian Perinatal HIV Surveillance Program

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Background: We describe demographics, antiretroviral treatment during pregnancy, and vertical transmission rates in the Canadian perinatal HIV surveillance cohort of births to women living with HIV (WLWH) and assess the effect of the COVID-19 pandemic on access to optimal therapy and perinatal transmission.

Methods: 22 Canadian pediatric and HIV centres update data including demographics, antiretroviral treatment during pregnancy, and perinatal transmission, on births in WLWH yearly each January. The results reported in this abstract reflect births up to the end of 2020 but will be updated to include 2021 results.

Results: The number of HIV exposed infants per year has increased over time in Canada, with 250 infants born in 2020; 32% came from Ontario, 24% from Quebec, 17% from Alberta, 14% from Saskatchewan, 7% from British Columbia and 4% from Manitoba; 60% were Black, 21% were Indigenous, and 13% were white. Overall, 63% of this population acquired HIV heterosexually, 13% through injection drug use and 4.4% perinatally. The proportion and number of pregnant women sub-optimally treated in May-December 2020 was 7.7% (12/155) compared to 6.6% (86/1297) in the period from 2015-2019.The corresponding transmission rates were 3.2% (5/155) versus 1.3% (17/1297), respectively. Among those who had acquired HIV through IDU, the sub-optimal treatment rate was 26.1% during the COVID-19 pandemic, versus 13.6% in the pre-COVID-19 period.

Conclusions: The perinatal transmission rate increased from 1.3% (2015-2019) to 3.2% during the pandemic, the highest reported rate in over 5 years. Pregnant women who acquired HIV through IDU may have been at highest risk of vertical transmission because of sub-optimal treatment.

These data signal disturbing problems in accessing care for addictions, prenatal care and HIV-specific care in the first waves of the pandemic. Additional attention to at-risk populations is needed as the pandemic continues to affect Canada.

OAC0205

Impact of COVID-19 on TB case findings and TB/HIV co-infection rates at a Princess Marina Hospital, Gaborone, Botswana, during the first year of COVID-19

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Background: Tuberculous incidence in HIV infected patients has steadily decreased in Botswana from 327/100,000 in 2010 to 115/100,000 in 2020. TB/HIV co-infection rates also declined from 65% to 48%.

However, it remains unclear how the COVID-19 pandemic affected this progress following two countrywide lockdowns in 2020.

We sought to determine the impact of COVID-19 on TB/HIV case finding and TB/HIV co-infection rates through retrospective analysis of 2019 and 2020 TB and TB/HIV indicators at Princess Marina Hospital (PMH) in Gaborone, the largest urban tertiary hospital in Botswana.

Methods: TB Case finding and TB/HIV co-infection rates from 2019 and 2020, were extracted from individual patient records in electronic Integrated Patient Management System (IPMS), TB/HIV laboratory registers and admission registers.

Data was disaggregated by gender, age, use of (Anti-Retroviral Therapy) ART and (Cotrimoxazole Prophylaxis Therapy) CPT at the time of TB diagnosis.

Results: During 2020 - the first year of COVID-19 - the number of TB diagnostic tests increased.

Overall the number of TB cases decreased from 228 (65.6% TB positivity) to 79 (21.1% TB positivity). The percentage of children (≤14 years) identified with TB were similar for both years.

TB/HIV co-infection rates increased from 64% to 77.2%. ART treatment for TB/HIV patients increased from 93.8% to 100% and 100% of TB/HIV patients received CPT in both years.

	2019			2020		
Total TB tests completed:	347			373		
TB cases confirmed	228 (65.6%)			79 (21.1%)		
	97 female (42.5%)	131 Male (57.5%)		27 female (34%)	52 Male (66%)	
TB Cases	≤14 years	≥15 years		≤14 years	≥15 years	
	36 (15.8%)	192 (84.2%)		13 (16.5%)	66 (83.5%)	
HIV Status	POS	NEG	UN-KNOWN	POS	NEG	UN-KNOWN
	146 (64 %) Female: 19.8%	79 (34.6%)	3 (1.3%)	61 (77.2%) Female: 24.6%	18 (22.8%)	0(%)
TBHIV on ART	137 (93.8%)			61 (100%)		

Conclusions: During 2020, the number of TB investigations by microscopy and GeneXpert at the PMH modestly increased. However, TB/HIV co-infection rates increased by 13.3%. While it appears that the COVID-19 pandemic had a significant effect on the number of TB cases identified - likely due to social distancing and the use of masks - further surveillance and analysis of TB/HIV indicators at PMH and across the country for 2021 is required.

OAC03 Optimizing the HIV care continuum

OAC0302

The 95-95-95 UNAIDS targets mask the underlying number of people with transmissible viral load: case study of England

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Background: In 2020, England met the 95-95-95 UNAIDS targets with 95% of the 97,740 (95% Crl 96,400-100,060) people with HIV diagnosed, 99% diagnosed on treatment and 97% treated being virally suppressed; we explore the number of people with transmissible virus, comparing the UNAIDs method with a new approach.

Methods: The HIV and AIDS Reporting System (HARS) is the comprehensive health surveillance system for adults (<15 years) in England diagnosed with HIV. Serial records

For the UNAIDS metrics, we calculated the number of people with transmissible virus by using the Multi-Parameter Evidence Synthesis (MPES) statistical model to estimate the number of people living with HIV and using HARS data to provide: the number of people diagnosed (in care in 2020), the number diagnosed and not treated (in care in 2020 but no treatment evidence); and the number treated with detectable virus (viral load >200 copies/mL adjusted for missing information).

The novel approach also incorporated those not linked to care (diagnosed in 2020 but not in care that year); not retained in care (in care in 2019 but not 2020); and treated without viral suppression evidence (on treatment with no viral load information).

Results: Using the UNAIDS method, an estimated 9% (8,800) of people with HIV had transmissible virus. Of these, 57% were estimated to be undiagnosed, 11% diagnosed and untreated and 32% treated but not virally suppressed.

With the new approach, up to 20% (19,800) people with HIV had transmissible virus levels. Of these, 24% were undiagnosed, 37% were diagnosed but not referred/retained in care, 6% untreated, 9% treated but not virally suppressed and 24% treated with no evidence of viral suppression.

Conclusions: The UNAIDS metric masks the absolute number of people living with transmissible virus, specifically excluding those not in care and those with missing information. Using the new approach, only a quarter of people living with transmissible HIV infection in England were estimated to be undiagnosed compared to over half using the UNAIDS approach. The focus on HIV prevention must be expanded from testing to include support for those with diagnosed HIV to remain in care, on treatment and virally suppressed.

OAC0303

Characteristics associated with viral suppression among transgender women with HIV in 7 U.S. cities, NHBS-Trans, 2019-2020

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Background: Sustained viral suppression can improve quality of life for transgender women with HIV. Understanding which transgender women with HIV may need additional support towards becoming virally suppressed can inform future interventions.

Methods: During 2019-2020, National HIV Behavioral Surveillance recruited transgender women via respondent-driven sampling in 7 U.S. cities (Atlanta, Los Angeles, New Orleans, New York City, Philadelphia, San Francisco, Seattle). Participants eligible for this analysis included those who were ≥18 years old, assigned male at birth or intersex, identified as a transgender woman or a woman, completed the survey, completed rapid HIV testing, had an HIV-positive result, and provided dried blood spots that were tested for HIV viral load. Viral suppression was defined as a viral load result <1000 copies/mL.

We assessed viral suppression prevalence and obtained adjusted prevalence ratios (aPR) and 95% confidence intervals (CI) for key associations using log-linked Poisson regression models with robust standard errors accounting for clustering by recruitment chain and adjusting for city and network size.

Results: Overall, 80.8% of HIV-positive participants were virally suppressed. Viral suppression was greater among participants who were Hispanic/Latina (vs. Black/African American; aPR=1.12, 95% CI: 1.02, 1.23) and had a college degree (vs. high school or less; aPR=1.13, 95% CI: 1.03, 1.24). Those who were younger (aPR[30-39 vs. ≥40 years]=0.87, 95% CI: 0.79, 0.95), experienced homelessness within the past 12 months (aPR=0.89, 95% CI: 0.83, 0.96), had not visited an HIV care provider recently (aPR=0.81, 95% CI: 0.72, 0.91), and had an unmet need for healthcare due to cost within the past 12 months (aPR=0.77, 95% CI: 0.67, 0.89) were less likely to be virally suppressed.

	Viral suppression[1]				
	n	%	aPR[2]	95% CI	P-value
Age (years)					
18 - 29	68	79.1	0.95	(0.83, 108)	0.43
30 - 39	107	73.3	0.87	(0.79, 0.95)	<0.01
≥40	226	85.6	Ref		
Race/ethnicity					
Black/African American	187	76.3	Ref		
Hispanic/Latina[3]	151	87.8	1.12	(1.02, 1.23)	0.02
White	22	78.6	0.99	(0.83, 1.20)	0.95
Other/Multiple	40	80.0	1.03	(0.88, 1.19)	0.74
Education					
≤High school degree	262	81.6	Ref		
Some college	112	76.7	0.94	(0.83, 1.07)	0.34
College degree or higher	27	93.1	1.13	(1.03, 0.96)	0.01
Homeless, past 12 months					
Yes	158	76.0	0.89	(0.83, 0.96)	<0.01
No	243	84.4	Ref		
HIV care visit, past 6 months					
Yes	346	83.0	Ref		
No	51	68.0	0.81	(0.72, 0.91)	<0.01
Unmet need for healthcare, past 12 months					
18 - 29	48	65.8	0.77	(0.67, 0.89)	<0.01
30 - 39	353	83.5	Ref		
Total	**401**	**80.8**			

Abbreviations: aPR, adjusted prevalence ratio; CI, confidence interval; Ref, referent
[1]Defined as <1000 copies/mL in dried blood spot HIV viral load testing.
[2]Log-linked Poisson models with robust standard errors adjusted for city and network size and accounted for clustering by recruitment chain.
[3]Hispanics/Latinas can be of any race.

Table. Characteristics associated with viral suppression among transgender women with HIV in 7 U.S. cities, NHBS-Trans, 2019-2020 (N=496)

Conclusions: About 1 in 5 transgender women with HIV were not virally suppressed. Programs to support higher education, regular HIV care visits, stable housing, and healthcare costs could assist transgender women with HIV in becoming virally suppressed.

OAC0304

Using two-stage inverse probability weights to correct mortality estimates for LTFU among children, adolescents and young adults living with HIV in Southern Africa: results from linkage and multi-country tracing studies

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Background: Our study examined the correction of mortality estimates based on additional mortality data among children, adolescents and young adults living with HIV (CAYHIV) who were lost in the International epidemiology Databases to Evaluate AIDS (IeDEA-SA) in six Southern Africa ART programs.

Methods: We estimated all-cause mortality from; five IeDEA-SA (Lesotho, Malawi, Mozambique, Zambia and Zimbabwe) and Western Cape, South Africa, IeDEA-SA ART programs. Additional mortality among patients LTFU was ascertained through tracing in the sites outside South Africa and linkage to the Western Cape Provincial Health Data Centre (WCPHDC) and the National Population Register (NPR) in South Africa. We included a total of 85,286 CAYHIV aged 0-24 years who initiated ART between 2004-2019.

We estimated mortality from ART start using:

i) Routine data without and with additional mortality ascertainment from tracing in sites outside South Africa and:

ii) Routine data in South Africa without and with additional ascertainment from linkage.

We used two-stage inverse probability weighting to correct estimates of mortality for LTFU.

Results: Tracing study: Out of a total of 79,867 CAYHIV, 46,375 were defined to be LTFU, of these 680 were randomly sampled for tracing. Of these, 462/680 were successfully traced and vital status ascertained. At two and eight years from ART start, uncorrected mortality was approximately 5% and 12% and after correction: 7% and 20% respectively (Figure 1).

Linkage study: There were a total of 5,410 children in routine Western Cape ART programs. Of these, 1,462 were LTFU and 1,048 were successfully linked to the WCPHDC and NPR. At two and eight years from ART start, uncorrected mortality was approximately 5% and 8% and after correction, it was 7% and 12%.

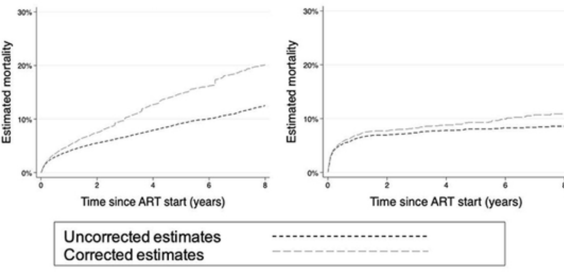

Figure 1. Corrected and uncorrected/weighted estimates of mortality: Panel 1) Rest of Southern Africa, Panel 2) South Africa

Conclusions: Mortality estimates increase when we account for unreported mortality among those LTFU. This is the first long term accurate mortality estimation in CAYHIV in Southern Africa.

OAC0305

Malawi's progress towards the UNAIDS 95-95-95 HIV testing and treatment targets: comparison of the 2015-16 and 2020-21 Malawi Population-based HIV Impact Assessments (MPHIA)

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Background: The 2015-16 Malawi Population-based HIV Impact Assessment showed notable coverage gaps in HIV diagnosis, antiretroviral therapy access and retention, and viral load suppression (VLS). Targeted interventions were implemented by the Government of Malawi, PEPFAR and other partners to close these gaps. The second MPHIA was conducted between January 2020 and April 2021 to measure progress towards the UNAIDS 90-90-90 goals.

Methods: MPHIA is a nationally representative survey, which enrolled over 23,000 participants. Participants were interviewed and a blood sample was tested for HIV infection using the national algorithm. Results were returned to participants. All HIV positive samples were tested for viral load (VL) and presence of antiretrovirals (ARV); a suppressed VL was defined as <1,000 viral copies per milliliter. All results were weighted and self-reported awareness and treatment status were adjusted to account for ARV detection results. This analysis was restricted to participants aged 15-64 years with HIV test results.

Results: HIV prevalence decreased significantly from 10.6 % [95% confidence interval (CI): 9.9%-11.2%] in MPHIA 2015-16 to 8.9% (95% CI: 8.4%-9.5%) in MPHIA 2020-21. Awareness of HIV status among all adults increased from 76.8% (95%CI: 74.7%-79.0%) to 88.4% (95% CI: 86.7%-90.1%), with females increasing from 80.2% (95%CI: 77.8%-82.5%) to 90.4% (95%CI: 88.5%-92.2%). Among 15-24-year-olds, awareness increased from 53.7% (95%CI: 45.3%-62.0%) to 76.2% (95%CI: 69.4%-83.1%). Among all adults aware of their HIV status, ART use increased from 91.4% (95%CI: 89.8%-93.0%) to 97.8% (95%CI: 97.1%-98.5%).

Viral suppression (VLS) among those on treatment increased from 91.3% (95% CI: 89.3%-93.3%) to 96.9% (95% CI: 96.0%-97.8%). Population VLS among all adults living with HIV increased from 68.3% (95%CI: 66.0%-70.7%) to 87.0% (95%CI: 85.4%-88.6%).

However, VLS remained lowest in the major urban centers of Lilongwe and Blantyre cities, and among participants aged 15–24 years.

Conclusions: Targeted investments by district and sub-population in HIV testing, ART linkage, adherence, and retention have resulted in significant progress towards achievement of the UNAIDS 90-90-90 targets. These results show that Malawi has exceeded the more recent UNAIDS 95-95-95 treatment and VLS targets. Continued targeted efforts and tailored interventions are needed to close remaining gaps, particularly among young people and in urban centers.

OAC04 Enlightenment through estimation: New insights in HIV epidemiology

OAC0402

Determinants of long-term survival in late HIV diagnosed individuals: the PISCIS Cohort study

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Background: Half of the people living with HIV (PLWH) in Western Countries are still diagnosed late, having a negative impact in their life expectancy and comorbidities. Neither the best determinants of their long-term mortality nor the potential impact of starting an integrase inhibitors (INSTI)-based antiretroviral treatment (ART) are completely understood.
We assessed the impact of immune recovery and INSTI-based ART in their long-term mortality.
Methods: From the PISCIS prospective cohort we included all adult treatment-naïve PLWH starting ART in 2005-2020 and surviving the first 2 years. We estimated mortality rates (MR) upon immune recovery 2 years after ART initiation and associated prognostic factors using Poisson regression. We also assessed risk-factors for incomplete immune recovery at 2 years (defined as CD4 counts ≤500cells/µL) in a nested case-control study using logistic regression with propensity score matching.
Results: We included 2719 persons (15566.8 person-years of follow-up); 1441 (53%) were late presenters, decreasing from 78.5% in 2005-2008 to 40.9% in 2015-2020 (p<0.01). Among late presenters, 44% achieved CD4 counts >500 cells/µL at 2 years. Overall, 113 patients (4.2%) died (crude all-cause MR 7.3/1000PY [95%CI:6.0-8.7]). MR were higher in late compared to non-late presenters, except for those achieving CD4 counts >500 cells/µL at 2 years (MRR 1.13 [95%CI:0.56-2.30], independent of nadir CD4 counts (test-interaction p=0.48).
In multivariate analysis, risk factors for death included: CD4 recovery <500cells/µL (<200cells/µL:aMRR 4.45 [95%CI:2.17-9.11]; 200-350cells/µL:aMRR 1.71 [95%CI:0.85-3.44]; >350-500cells/µL:aMRR 2.14, [95%CI:1.09-4.18]); viral load >200 c/ml at 2 years (aMRR 2.04 [95%CI:1.13-3.68]); Charlson comorbidity index ≥4 (aMRR 4.11 [95%CI:1.90-8.86]), heterosexual men (aMRR 1.97 [95%CI:1.12-3.46]) and injection drug use (aMRR 2.60 [95%CI:1.37-4.95]).
Overall, 979 PLWH initiated an INSTI-based regimen, which was associated with a trend towards decreased mortality compared to other regimens (aMRR 0.60 [95%CI:0.34-1.05]) and with favorable immune recovery (CD4 counts >500cells/µL, aOR 0.70 [95%CI:0.54-0.90]).
No significant changes in MR were observed over calendar time.
Conclusions: ART-associated immune recovery at 2 years was a better predictor of long-term mortality than nadir baseline CD4 counts in late ART initiators. Nearly half experienced a favorable immune recovery with a life expectancy similar to non-late presenters. INSTI-based regimens were associated with higher rates of successful immune recovery and survival.

OAC0403

High HIV incidence and mortality in a multi-site cohort of transgender women in the eastern and southern United States

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Background: Transgender women are a priority population in the US HIV strategy due to social vulnerabilities and HIV burden, yet epidemiologic monitoring of HIV, premature death, and other events to inform public health is almost non-existent.
Methods: We established a multi-site cohort for transgender women in eastern and southern US across two arms:

1) technology-enhanced site-based (Boston, New York City, Baltimore, Washington DC, Atlanta, Miami);
2) exclusively online (spanning 72 matched cities).
Eligibility criteria: transfeminine; ages>=18 years; negative baseline HIV test; not in a PrEP trial.
Participants were followed for >=24 months, completing surveys, rapid oral fluid HIV tests with confirmatory testing referrals and medical record reviews. Retention efforts (e.g., comprehensive locator, community outreach, events) permitted other event ascertainment, including death. HIV incidence and mortality rates were estimated as the number of observed events (HIV seroconversions or deaths) divided by the number of person-years(py) accumulated. We visualized Kaplan-Meier estimates of cumulative incidences (Figure) with a time-to-event approach that defines time-of-origin as study entry.

Results: Enrollment launched March 2018 in the site-based arm and January 2019 in the online arm. 1,313 participants were enrolled with 83% retention, 2,479 person-years accumulated, and 12 identified seroconversions as of December 2021. HIV incidence was 4.8/1,000py (95%CI:2.1-7.6) overall and by group: online IR:1.8/1,000py, site-based IR:7.3/1,000py, Black participants IR:15.9/1,000py, Latinx participants IR:8.6/1,000py, and residence in South IR:8.6/1,000py. Seven deaths were identified (attributed causes: homicide, suicide, overdose, unknown). Mortality rates were 2.8/1,000py overall (95%CI:1.1-5.8); site-based: 4.4/1,000py and online: 0.9/1,000py, 3.5/1,000py in Black and 8.6/1,000py in Latinx participants.

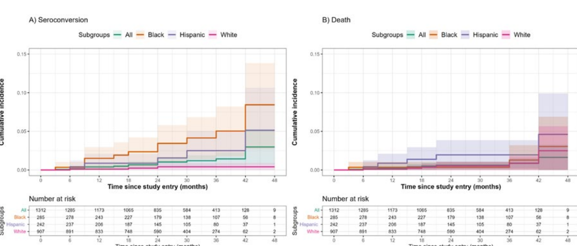

Figure.

Conclusions: HIV incidence and mortality are high in transgender women, disparate across race and ethnicity, and underscore community calls to for combination approaches that address structural and other health concerns alongside HIV.

Differences across cohort arms highlight the need for continued community and location-based efforts as HIV research and interventions are increasingly delivered online.

OAC0404

Prevalence and individual and community-level risk factors of late diagnosis among newly diagnosed people living with HIV from nine African countries

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Background: People living with HIV (PLWH) with late diagnosis (LD) (CD4 cell count <350 cells/mm^3 and no prior HIV diagnosis) are at higher risk of opportunistic infections, non-AIDS defining comorbidities, and death compared to stable patients due to delayed diagnosis.
We used Population-based HIV Impact Assessment (PHIA) survey data from Cameroon, Eswatini, Ethiopia, Lesotho, Malawi, Tanzania, Uganda, Zambia, and Zimbabwe to examine LD prevalence and identify individual and community-level correlates of LD.

Methods: The PHIAs are cross-sectional, household-based surveys that use two-stage sampling to collect nationally representative data from adults aged ≥15 years. Between 2015-2017, data from interviews, home-based HIV testing, and laboratory testing were collected.
Blood samples were analyzed for HIV RNA, detectable antiretrovirals, and CD4+ cell counts. Community-level variables were generated at each enumeration area-level using weighted data. Logistic regression using fixed-effects to account for cross-country variation was used to determine individual and community-level factors associated with LD in adults aged ≥15 years.

Results: Of 4,408 newly diagnosed PLWH, 42.8% (95% CI: 40.9-44.8) had LD. LD prevalence ranged from 29.6% (95% CI: 25.3%-34.3%) in Uganda to 53.3% (95% CI: 49.5%-57.1%) in Zimbabwe. Newly diagnosed PLWH who resided in higher LD prevalence countries such as Ethiopia, Lesotho, Malawi, Tanzania, Zambia, and Zimbabwe, were older, of male sex, and had never tested for HIV, had higher adjusted odds of LD (Figure 1).
PLWH in communities where gender norms supported a lack of health-related decision-making autonomy, had higher adjusted odds of LD.

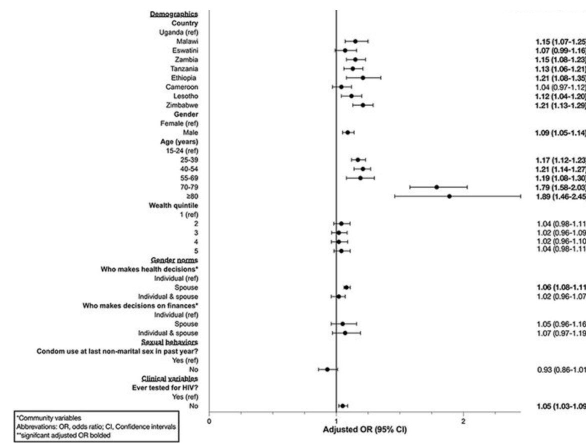

*Figure 1. Adjusted odds ratios of individual & community level correlates of late diagnosis among newly diagnosed PLWH. Adjusted OR [95% CI]***

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Conclusions: Late diagnosis of HIV remains a challenge despite increases in HIV testing services. Such services should highlight the importance of early diagnosis of HIV and for individuals, particularly older men in high LD prevalence countries, to get repeatedly tested. Gender norms that inhibit health agency should be addressed by providing community-based support for promotion of health autonomy to optimize testing services.

OAC0405

Prevalence of adverse birth outcomes and external birth defects among women living with HIV in Malawi

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Background: Routine surveillance for birth outcomes is essential to monitor safety of antiretroviral therapy (ART) during pregnancy among women living with HIV (WLHIV). We examined the prevalence of adverse birth outcomes and major external birth defects (BDs) by maternal HIV and ART status in Malawi.

Methods: Adverse birth outcomes (prematurity, low birthweight) and BDs were recorded for all live and still-births delivered at four Malawian hospitals from January 2016 to July 2020 and July 2021 to November 2021. BDs were confirmed by experts at the Centers for Disease Control and Prevention. Maternal characteristics were collected from interviews and health records. Pooled prevalence and crude prevalence ratios (cPRs) were calculated using maximum likelihood estimates for adverse outcomes and BDs.

Results: Among 165,402 women with informative births, the median age was 24.0 years (IQR: 20.0-30.0) and 10.1% were HIV-positive. The prevalence of prematurity and low birthweight, respectively, was significantly higher for the following populations: ART naïve WLHIV (28.3%, 18.4%), WLHIV on ART (21.4%, 14.6%) and women with unknown HIV status (27.2%, 19.2%) than HIV-negative women (19.2%, 11.9%). The most prevalent BDs (excluding syndromes) were talipes equinovarus (21.4 per 10,000 births, 95% CI: 19.3, 23.8), neural tube defects (NTDs) (9.3, 95% CI: 7.8, 10.8), and hypospadias (8.2, 95% CI: 6.9, 9.7); higher prevalence of these conditions was observed among WLHIV on ART than HIV-negative women. There was a slightly higher likelihood of WLHIV on ART delivering a baby with an NTD than HIV-negative women (cPR: 1.85, 95% CI: 1.07, 2.62).

Outcome	Women living with HIV on ART N = 16,349 (9.9%)	ART naïve women living with HIV N = 321 (0.2%)	HIV-negative women N = 147,399 (89.1%)	Women with unknown HIV status N = 1,333 (0.8%)	Total N = 165,402 (100.0%)
Premature delivery (<37 weeks) (prevalence per 100 births)	**21.4** (20.8, 22.1)	**28.3** (23.5, 33.6)	**19.2** (19.0, 19.4)	**27.2** (24.8, 29.6)	**19.5** (19.3, 19.7)
Low birthweight (<2500g) (prevalence per 100 births)	**14.6** (14.0, 15.1)	**18.4** (14.3, 23.1)	**11.9** (11.8, 12.1)	**19.2** (17.1, 21.4)	**12.3** (12.1, 12.4)
Selected external birth defects under surveillance (prevalence per 10,000 births)	**60.6** (49.2, 73.7)	**31.2** (0.8, 172.3)	**48.2** (44.8, 51.9)	**75.0** (36.0, 137.5)	**49.6** (46.3, 53.1)
--Neural tube defects (anencephaly, encephalocele, spina bifida)	**15.9** (10.4, 23.3)	0.0	**8.6** (7.2, 10.3)	0.0	**9.3** (7.8, 10.8)
--Orofacial clefts (cleft lip with and without cleft palate)	**0.6** (0.01, 3.4)*	0.0	**1.1** (0.6, 1.8)	0.0	**1.0** (0.6, 1.6)
--Hypospadias	**11.0** (6.5, 17.4)	0.0	**7.9** (6.6, 9.5)	**7.5** (0.2, 41.7)	**8.2** (6.9, 9.7)
--Talipes equinovarus (clubfoot)	**26.9** (19.6, 36.1)	**31.2** (0.8, 172.3)	**20.5** (18.2, 22.9)	**52.5** (21.1, 107.9)	**21.4** (19.3, 23.8)
--Limb reduction defects	**2.4** (0.7, 6.3)	0.0	**1.2** (0.7, 1.9)	0.0	**1.3** (0.8, 2.0)
--Gastroschisis and omphalocele	**3.1** (1.0, 7.1)	0.0	**2.5** (1.8, 3.5)	0.0	**2.5** (1.8, 3.4)

Conclusions: Higher prevalence of adverse birth outcomes and BDs was observed among HIV-positive women. Further analyses are needed to understand the impact of a COVID-related data collection pause between 2020 and 2021, and to explore risk factors of HIV and ART status by ART regimen and timing for adverse outcomes and BDs among WLHIV in Malawi.

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OAC05 Packaging HIV prevention for different populations

OAC0502

Association of prenatal PrEP exposure with neurodevelopmental and growth outcomes beyond 24 months among Kenyan children

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Background: Safety data of prenatal PrEP use are reassuring, yet studies to date have less than 1 year of follow-up and do not assess neurodevelopmental outcomes among PrEP-exposed infants.

Evaluating safety outcomes beyond infancy following maternal PrEP use could help complete the safety profile for PrEP use during pregnancy.

Methods: We utilized data from mother-child pairs enrolled in an ongoing evaluation of perinatal PrEP use in Western Kenya. In the parent study (NCT03070600), HIV-negative women were enrolled and offered PrEP during pregnancy at 20 public sector maternal child health (MCH) clinics and followed through 9 months postpartum regardless of PrEP status.

An extension cohort to evaluate safety outcomes enrolled mother-child pairs at 4 sites to be followed until the child's 5th birthday. Between October 2020 and January 2022, trained study nurses conducted anthropometric measurements on children and assessed neurodevelopment using the Ages and Stages Questionnaire (ASQ), an early developmental screener.

Using data from 24-30 months, we evaluated the association of prenatal PrEP exposure and growth and ASQ scores using linear regression models, clustered by facility, and adjusted for gestational age at birth.

Results: Among 472 mother-child pairs included in the analysis, median maternal age was 27.8 years (IQR: 24.6-33.0) and median child age was 25 months (IQR: 21-28) at enrollment into the extension cohort; 16.3% had any PrEP exposure during pregnancy for a median duration of 3.0 months (IQR: 2.0-4.3)**.**At 24-month visits, there was no difference in mean weight (mean difference -0.04 kg, 95% CI: -0.78, 0.70, p=0.886), mean height (mean difference -0.43 cm, 95% CI: -2.32, 1.46, p=0.520), frequency of underweight (5.6% vs. 4.0%, adjusted prevalence ratio[aPR]=1.49, 95% CI: 0.27-8.09, p=0.647) and frequency of stunting (22.2% vs. 21.4%, aPR=1.07, 95%CI: 0.64-1.78, p=0.805) between children with and without prenatal PrEP exposure.

Results were similar at 30-month visits. Prenatal PrEP exposure was not associated with overall ASQ scores at 24-months (p=0.243) or 30-months (p=0.664).

Conclusions: Among Kenyan mother-child pairs followed from pregnancy through early childhood, we found no differences in growth or neurodevelopmental outcomes between children with and without prenatal PrEP exposure. Our results support prior data indicating safety of prenatal PrEP use.

OAC0503

Introduction of gain-framed pre-exposure prophylaxis counseling increased uptake among transgender women at the Tangerine Clinic, Bangkok, Thailand

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Background: Transgender women continue to be disproportionally affected by HIV in Thailand. Pre-exposure prophylaxis (PrEP) remains underutilized by transgender women despite its efficacy and availability due to several barriers, including stigma related to sexual behaviors and to taking PrEP. Loss-framing counseling, in which risk behavior is emphasized, further exacerbates PrEP stigma and can impede PrEP uptake. In June 2020, Tangerine Clinic in Bangkok, Thailand, introduced gain-framed PrEP counseling to encourage clients to focus on protection and healthy behavior and ultimately increase PrEP uptake. Here we assess PrEP uptake before and after implementation of gain-framed PrEP counseling.

Methods: We analyzed data from transgender women visiting Tangerine Clinic from June 2020 through July 2021, including demographic and sexual behavioral characteristics from self-administered questionnaires, data related to HIV and sexually transmitted infections (STIs) (syphilis, gonorrhea, chlamydia). Although not the focus of counseling messages, HIV risk was determined by asking about self-perceived HIV risk and through self-reported behavioral risk factors. PrEP uptake during this period was compared to uptake before implementation of gain-framed counseling (June 2019–May 2020).

Results: From June 2020 to July 2021, 1,149 transgender women not on PrEP visited Tangerine, of whom 398 (34.6%) accepted PrEP after gain-framed counseling. Median age was 26.2 years. A total of 319 (80.2%) were new initiations, and 79 (19.8%) restarted PrEP after previous discontinuation.

Among the 398 transgender women accepting PrEP, 106 (26.6%) did not perceive themselves to be at risk for HIV, while 41/106 (38.7%) reported risk behaviors and 26/106 (24.5%) were diagnosed with an STI.

In the year before gain-framed counseling implementation, PrEP uptake was 161/1,191 transgender women (13.5%), with 13 transgender women having no self-perceived risk accounting for 8.1% of initiations, indicating an increase in PrEP uptake of 147% overall, and a 715% increase among transgender women without self-perceived HIV risk.

Conclusions: Replacing traditional risk-based counseling with empowering messages focusing on health improved PrEP uptake overall, particularly among transgender women without self-perceived risk, despite a discrepancy between self-perceived and actual HIV risk. Gain-framed messages should be integrated with PrEP counseling to optimize PrEP use and its impact on the HIV epidemic.

OAC0504

Evaluating adaptive HIV pre-exposure prophylaxis adherence interventions for young South African women: results from a sequential multiple assignment randomized trial

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Background: Pre-exposure prophylaxis (PrEP) is a highly effective HIV prevention strategy for adolescent girls and young women (AGYW). Widespread PrEP delivery will require identification of layered support strategies for AGYW with diverse needs. We conducted the first sequential multiple assignment randomized trial (SMART) to evaluate stepped PrEP adherence support interventions for AGYW in South Africa.

Methods: "PrEP SMART" was conducted in Johannesburg from 2019-2022. Sexually active, HIV-negative women ages 18-25 years were offered PrEP and randomized to receive standard PrEP counseling with either weekly two-way SMS or WhatsApp support. Those with low PrEP adherence through Month 2 ("non-responders") were re-randomized to quarterly visits with drug-level feedback (DLFB) or monthly visits with issue-focused counseling.

The primary outcome was high adherence (tenofovir diphosphate [TFV-DP] ≥700 fmol/punch) from dried blood spots (DBS) at Month 9. We assessed the effects of the initial interventions on TFV-DP at Month 9, the effects of the intensified interventions among non-responders, and the optimal intervention sequence.

Results: Of 360 AGYW, the median age was 21, 31.4% had sexually transmitted infections at enrollment, and 77.5% were retained through Month 9 despite COVID-19 disruptions. Of those with DBS, 58.6% (N=164) had TFV-DP ≥700 fmol/punch at Month 2 and 24.7% (N=66) at Month 9.

At Month 9, 34/133 (25.6%) AGYW in the two-way SMS arm and 32/134 (23.9%) in the WhatsApp arm had high PrEP adherence (relative risk [RR]=1.07; 95% confidence interval [95% CI]=0.70-1.63; p=0.75). Among non-responders, 4/49 (8.2%) in the DLFB arm and 3/51 (5.9%) in the monthly counseling arm had high adherence at Month 9 (RR=1.39; 95% CI=0.33-5.88; p=0.66). Across the four dynamic treatment strategies, the estimated probability of high adherence at Month 9 was 23-27% (p=0.94).

Conclusions: In this study, PrEP adherence was higher than in comparable cohorts, despite the COVID-19 pandemic. Re-engaging non-responders after two months was challenging; individual-level interventions may not overcome structural PrEP barriers suggesting that longer-acting PrEP formulations may benefit this population.

Our data show that individual tailored adherence approaches (SMS, WhatsApp) have similar impact on PrEP adherence and PrEP programs can adopt approaches based on likelihood of scalability.

OAC0505

Pragmatically approaching social network testing (SNT): using a peer-driven community outreach model to extend reach of HIV testing services (HTS) to networks of people who inject drugs (PWID) in Ukraine

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Background: The HIV prevalence among PWID in Ukraine is 20.3%, up to four times higher than other key population groups, reinforcing the need for focused HIV case-finding and linkage strategies that tap into PWID networks (2020 IBBS). The USAID/PATH Serving Life project introduced and scaled a peer-driven community outreach model, leveraging SNT principles to reach contacts of PWID peer case-finders with HTS in 12 oblasts.

Description: Project-supported non-governmental organizations (NGO) hired peer case-finders among former or soon-to-be released PWID prisoners as seed recruiters to mobilize social, sexual, and drug injecting contacts for HTS. Peer case-finders and NGO social workers provided HIV counseling, offered HIV self-testing (HIVST) services, followed up with recruited peers to confirm HIVST results, and provided referrals for treatment or prevention services. Newly identified HIV-positive peers (first outreach wave) offered index testing services to sexual/injecting partners and biological children (second outreach wave), and could be hired as peer case-finders themselves.

In 2021, to maximize reach among hidden PWID networks, NGOs prioritized hiring in underserved geographies and more frequently rotated case-finders to source new networks. We analyzed program data from October 2020 through September 2021 to understand the model's success in reaching HIV-positive PWID and their contacts.

Lessons learned: PWID peer case-finders mobilized 10,184 peers and their contacts for HTS, among whom 333 were confirmed HIV-positive (3.3% positivity) and 95% initiated on treatment. The second outreach wave was more efficient at reaching PWID contacts more likely to be HIV-positive (testing positivity: 10.6% [second wave] versus 1.3%

[first wave]; see table), given targeted outreach through index testing. There was also an increase in both volume of people tested and confirmed HIV-positive in 2021 (versus 2020) due to refinements to the SNT model.

	First wave (PWID peers)	Second wave (index testing)	Total
# tested	8,035	2,149	10,184
# confirmed HIV-positive	106	227	333
% testing positivity	1.3%	10.6%	3.3%

Conclusions/Next steps: These results highlight the promise of using a peer-driven, SNT-based outreach model to efficiently tap into networks of HIV-positive PWID and their contacts and link them to HIV services. Further expansion of this approach to reach PWID and their partners/contacts with HIV services is essential to achieving epidemic control in Ukraine.

OAD01 Through the lens of community: Addressing context within strategies and interventions

OAD0102

Turning the tide towards eliminating mother to child transmission: lessons from Murang'a County Government HIV program

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Background: According to the Kenya National Aids Control Council (NACC) 2017 HIV estimates, mother to child transmission rate for Murang'a county stood at 20.4% way above the national rate of 11.5%, in that same year 44 babies in the county were confirmed to be infected with HIV through mother to child transmission. With the help of our local implementing partners; Center for Health solutions (CHS) and Aids Health Foundation (AHF), the county HIV program embarked on a mission towards reducing the mother to child transmission rates to a rate equal or less than the national level.

Description: Health workers (HIV testing service providers, nurses and clinical officers) working in the identified 199 prevention of mother to child transmission (PMTCT) clinics were comprehensively trained on the national PMTCT guidelines with the emphasis made on the four prongs of PMTCT which are; keeping HIV negative women negative, prevention of unintended pregnancy for the already positive women, test and treat strategy for HIV positive pregnant women with issuance of prophylaxis for their HIV exposed infants and finally care and treatment for both the positive mother and the child. All pregnant women are tested for HIV at their first antenatal visit (ANC) and if they test negative, the HIV test is repeated at 3rd trimester, labor and delivery, at 6 weeks post natal clinic and after every six months during breastfeeding. Audits are done (including maternal) for all HIV exposed infants (HEI) who turn HIV positive to determine likely root for mother to child transmission.

Lessons learned: Through this strategy, the number of HIV exposed infants turning positive have been gradually declining as follows 44 in 2017, 27 in 2018, 18 in 2019, 16 in 2020 and 5 in 2021. The MTCT rate has also reduced to 9% according to the National Aids Control Council (NACC) 2020 estimates. Murang'a county has also been listed among the counties on the right gear towards elimination of mother to child transmission.

Conclusions/Next steps: Elimination of mother to child transmission can be achieved when all health care workers receive the right training and are supported to offer quality services as prescribed by national guidelines.

OAD0103

The protective association of social cohesion on sex workers' experiences of violence and access to tailored services: findings of a community-based cohort in Vancouver, Canada (2010-2019)

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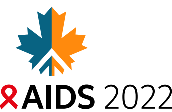
Background: While community mobilization and social cohesion have been identified as key drivers of HIV prevention and improved safety for sex workers in the global south, we know less about social cohesion's impacts on safety and access to community-driven HIV prevention services in North America and under partial-criminalization models. COVID-19, in addition, has highlighted the critical need and role of community supports. Our aim was to measure recent (in the last six months) social cohesion (perceptions of mutual aid, trust and support) and its association with:

1. Sexual/physical violence, and;
2. Engagement with sex work-specific services (e.g., drop-in spaces, HIV/harm reduction outreach) among women sex workers in Metro Vancouver, Canada.

Methods: Prospective data (January 2010-August 2019) were drawn from an open cohort, operated by experiential and community-based staff, of 900+ women sex workers across diverse work environments (An Evaluation of Sex Workers' Health Access).



We used multivariable logistic regression confounder models with generalized estimating equations (GEE) for repeated measures to examine the association between social cohesion and recent outcomes of:

1. Physical/sexual violence and;
2. Use of sex work-specific services, over a ten-year period.

Results: The study sample included 860 sex workers, of whom 315 (36.6%) were Indigenous and 283 (32.9%) Black/ Women of Colour.

Overall, 36.4% identified as a sexual minority and 8.0% as gender-diverse. At baseline, the median social cohesion score was 19 (IQR 15-22), out of a possible 36. In bivariable GEE analysis, increased social cohesion was associated with formal indoor work environments, good self-rated health, and working with other sex workers as a safety strategy, and was negatively associated with living with HIV. In separate multivariable GEE confounder models, social cohesion was independently associated with lower odds of recent physical/sexual violence (Adjusted Odds Ratio (aOR) 0.99 per point on scale, 95% Confidence Interval (CI) 0.97, 1.00) and increased odds of recently using sex work-specific services (aOR 1.02 per point on scale, 95% CI 1.00, 1.04).

Conclusions: The findings affirm community calls to fully decriminalize sex work to better promote sex workers' social cohesion, physical safety and access to tailored, sex work-specific sexual health and HIV services.

OAD0104

The efficiency of index contact testing approach in community HIV case identification

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Background: Approximately 1.2 million people in Zambia are living with HIV. It is estimated that 92% of PLHIV know their HIV status while there is still 8% unaware that they have HIV, thereby posing risk for further HIV transmission. To speedily mitigate transmission resulting from those unaware of their HIV positive status, a more efficient community-based HIV case finding approach is essential.

Description: DAPP in Zambia partners with the Ministry of Health to implement the Total Control of the Epidemic (TCE) project, which has been under implementation since 2006 and currently implemented in four provinces. The project employs two community-based HIV testing approaches, namely;

1. Venue/Hotspot HIV testing, which involves testing individuals in their work venues such as fishing camps, etc. and;
2. Index Testing Services (ITS). The latter involves:

- Identifying known HIV positives, offering them ITS, and eliciting their sexual partners and biological children otherwise known as "Contacts";
- Screening for intimate partner violence and tracing their named "Contacts";
- Screening the traced "Contacts" for HIV testing;
- Testing and linking newly HIV positive diagnosed contacts to treatment (ART);

Offering ITS to new positives and named known HIV positive "Contacts."

Lessons learned: Results in Lusaka Province, Oct 2020-Sept 2021.

*Venue/Hotspot HIV testing:*Under this approach, 5,854 were tested for HIV and 1,476 (25%) were diagnosed HIV positive. 98% of all HIV positives were successfully initiated on ART.

Index Testing Services: Using this approach, 22,332 PLHIV were offered ITS and 99% accepted the service. 53,974 contacts were named of which 24% had a known HIV positive status. 69% of the contacts named were eligible and tested for HIV. Of those tested, 11,899 (31%) were diagnosed HIV positive and 99.5% of the positives were successfully initiated on ART.

Conclusions/Next steps: ITS had a comparatively higher positivity rate of the two approaches, proving to be a more efficient community-based HIV case finding approach than Venue/Hot Spot testing. Successful implementation of the ITS approach was due in large part to the exceptional psychosocial counseling and contact elicitation skills of DAPP TCE's psychosocial counselors.

OAD0105

Working with cultural leaders to create demand for HIV services: lessons from an engagement with Buganda Kingdom in Uganda in April 2020

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Background: Data from routine surveillance and population surveys indicate that HIV prevalence amongst adults reduced from a peak of 18% in the 1990s to 6.2% in 2016. New HIV infections declined from 160,000 in 2010 to 52,000 in 2018. Vertical infections declined from 25,000 in 2010 to less than 4,000 in 2018. Furthermore, AIDS related mortality declined from approximately 50,000 to 25,000 in 2018. However, the central region continues to have a higher prevalence despite the combination of high impact evidence based behavioral, structural and biomedical interventions. Ministry of Health (MOH) engaged the Buganda Kingdom leadership to support in mobilising their communities to utilise available HIV services.

Description: MOH together with the Buganda kingdom leadership conducted an orientation of 180 cultural leaders/ gatekeepers, who include kingdom ministers, clan

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heads, county chiefs, and youth leaders. The orientation equipped these leaders/ gatekeepers with Key HIV information so that they can aide the scaling down of HIV messaging in the central region community.
Following this orientation, the leaders organized fireplace discussions (ebyooto) in 118 sub counties in Buganda kingdom reaching over 4,720 young people.The trained elders imparted knowledge of HIV Prevention, care and treatment services upon the selected youth.
There is evidence that the young people did not only listen to information from their elders, but they understood it, acted on it and it changed their behavior. For example, there were less teenage pregnancies and increased uptake of HIV testing services in the central region as compared to other regions.
Lessons learned: Cultural leaders can play a significant role in behavior change however; they need to be exemplary in their way of life to influence young people. The cultural leaders also reported that use of appropriate/ slang language while communicating about HIV, was more acceptable and relatable to the young people. Finally, the cultural leaders had significant respect and a big opportunity to continuously engage their subjects on wider health issues.
Conclusions/Next steps: If cultural leaders are supported to integrate HIV awareness activities in their regular programs the results can be immense and as custodians of norms and cultural practices, they can successfully influence behaviors.

OAD02 Pandemics: Living with HIV during COVID-19

OAD0202

"I feel that things are out oF my hands": the impact of the COVID-19 prevention measures on the lives of young people living with HIV (YPLHIV) in Uganda

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Background: With an estimated 1.4 million PLHIV In Uganda, youth account for 170,000 infections. These are expected to rise as the youth remain highly vulnerable to the infection. Analyses conducted by the Uganda Harm Reduction Network (UHRN) in July 2020 on the effects of the COVID-19 pandemic showed a decline in access to HIV prevention information, services and Psychosocial support.
This particular study was conducted among various groups of youth, and put emphasis on YPLHIV to examine how the COVID-19 prevention measures affected their access to HIV care information and services.
Methods: In October 2020, Rutgers coordinated a study among youth aged 18-30, using a mobile web survey to collect quantitative data from 640 respondents (326 males; 314 females), and Focus Group Discussions (FGDs) to collect qualitative data from 39 Youth (14 males, 22 females, 3 non-binary) in four districts of Eastern Uganda. Participants included YPLHIV, teen mothers, students, and LGBTQI.
Quantitative data were analyzed using descriptive statistics, while qualitative data were analyzed using a grounded theory approach which allowed for the identification of common patterns and salient themes
Results: COVID-19 interconnectedly, negatively affects YPLHIV, as responses revealed that they experienced worse outcomes than those living without HIV. Evidence shows that for YPLHIV, adherence to prevention measures was sometimes misinterpreted by others as being infected with COVID-19. Given the stigma associated with them, such accusations are difficult to bear. In vain, 65% of YPLHIV said they needed ART services, and 30% said they needed information regarding STDs/STIs.
Additional study findings indicate that the prolonged prevention measures have resulted in a reduction in HIV testing services and ART initiation.
Conclusions: Clearly, the pandemic negatively impacted YPLHIV, presenting concerns of double stigma if they test positive for COVID-19, and increased psychosocial afflictions caused by stress and isolation. Dealing with 2 pandemics resultantly affects their mental health, presenting another risk of additional barriers to care, potentially leading to further disenfranchisement.
Therefore, addressing such inequalities, challenges and barriers is critical to maintaining continuity of care and strong psychosocial support systems and YPLHIV recommended that mitigating the Pandemic's direct impact on access to HIV information and services is key.

OAD0203

Impact of COVID-19 on economic well-being, mental health and HIV risk among MSM: a mixed methods study in a north Indian city

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Background: Limited empirical data are available on the impact of the COVID-19 pandemic on the lives of sexual and gender minority communities in the global south. We

aimed to understand the pandemic's impact on economic well-being, mental health, health care access, and HIV risk among men who have sex with men (MSM) in India.

Methods: In March 2020, we conducted a concurrent mixed-methods study among MSM in Chandigarh, North India. A convenience sample was recruited through three non-governmental organizations implementing HIV prevention interventions among MSM. Maximum diversity sampling (identity, sex work status and HIV status) was used to identify MSM for in-depth interviews.

The survey assessed the impact of sexual minority stigma, internalized homonegativity and stress due to social distancing on depressive and anxiety symptoms. We used multivariable logistic regression to analyze survey data, and thematic analysis for qualitative data.

Results: Among survey participants (n=132), most (61%) identified as Kothi (feminine/receptive role), were single (79%) and college graduates (64%). Mean monthly income was INR 8375 (USD 120). 43% engaged in sex work, 34% were unemployed and 8% HIV positive.

Participants reported reduced access to condoms (19%), HIV testing (38%), and counseling services (74%) during COVID-19 lockdown. Social distancing stress was significantly associated with depressive (aOR=7.89, 95% CI 2.71–22.97, p<.001) and anxiety symptoms (aOR=5.69, 95% CI 2.73–11.86, p<.001).

Internalized homonegativity was significantly associated with both depressive (aOR = 1.31, 95% CI 1.04–1.65, p=.04) and anxiety symptoms (aOR = 1.52, 95% CI 1.09–1.62, p<.001). MSM in sex work had higher odds (aOR=8.06, 95% CI 1.49–43.57, p <.001) of reporting depressive symptoms compared to those not involved in sex work. Qualitative data (n=10) highlighted how economic distress due to job loss or income reduction and survival sex contributed to mental health distress and HIV risk.

Conclusions: The COVID-19 pandemic has significantly impacted the economic well-being and mental health of lower socioeconomic status MSM. Limited access to HIV preventive interventions among MSM involved in sex work exacerbates HIV risk due to economic hardship. Tele-counseling/prescription, low-interest loans, and better access to mental health and HIV services are needed to support MSM in India.

OAD0204

'COVID-19 should be learned through illustration': COVID-19 effects on HIV-affected youth in South Africa through participatory visual methodologies

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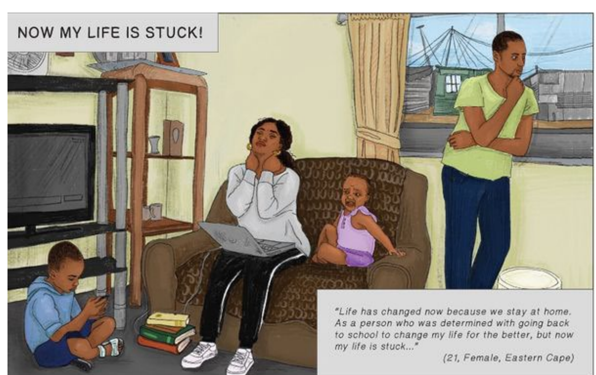
Background: Participatory visual methodologies have been used to take action against pressing social and health issues, challenge HIV-related stigma, and forefront the realities of marginalised populations. We engaged participatory visual methodologies to explore the COVID-19 experiences, challenges and coping of HIV-affected youth.

Methods: Two groups of HIV-affected adolescent advisors –recruited from studies of HIV-affected young people and adolescents living with HIV – shared their COVID-19 experiences in telephonic in-depth, semi-structured interviews (n=41), and over social media in closed Facebook groups (n= 27 activities) in 2020-2021.

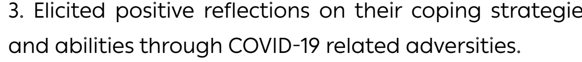
We conducted thematic analysis, identifying seven themes. Each theme was visually translated into a draft illustration by a local artist. Illustrations were verified with participant groups over Facebook, and on the telephone with a sub-set of adolescent advisors (n=14).

Results: Participants included 42 youth (aged 16-29) from the Eastern Cape (n=19) and Western Cape (n=23) provinces. Themes included: feeling anxious and 'stuck' about uncertain futures; lacking basic necessities; inadequate social services; fear of COVID-19; mental health challenges; non-biomedical COVID-19 beliefs; concerns over policing; and lack of protective equipment. We created illustrations to visually depict these themes, then sought feedback over Facebook (n=27 participants) and calls (n=14) with the same group.



Participants suggested that the illustrations:

1. Visibilised and documented their experiences, making them feel 'seen' during an isolating time;
2. Helped them feel connected to other youth, even if they had not seen each other physically;



3. Elicited positive reflections on their coping strategies and abilities through COVID-19 related adversities.
They suggested that the illustrations should be engaged as a tool to advocate for improved health and social services, and that they be accompanied by an exemplary quote to contextualise visual data.
Conclusions: Visual participatory methodologies with HIV-affected youth are possible remotely, and can be engaged via social media to promote psychosocial well-being, reflection and knowledge mobilisation.

OAD0205
Pandemic déjà vu: reflections of long-term AIDS survivors and activists on the first year of COVID-19

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Background: COVID-19 surfaced forty years after initial reports of the virus now known as HIV. The rapid spread of both viruses killing seemingly healthy people and early confusion about transmission has garnered attention on pandemic parallels. Current research examines similarities related to biology, disease management, social inequities, and government response. To compliment existing work, this paper explores pandemic similarities and differences from the perspectives of long-term AIDS survivors and early activists.
Methods: Using non-probability sampling methods, 52 semi-structured interviews were conducted in real time as the pandemic unfolded between April and November 2020. Fifteen follow-up interviews were completed in March and April 2021, during vaccine distribution. All interviews occurred over zoom, were recorded, and transcribed. Thematic analysis reveals insights on AIDS/COVID similarities and differences.
Results: The sample represents 8 countries, offering diverse perspectives on community response to COVID-19. Sixty-one percent identify as Male, 31% Female and 8% Transgender. Participants reflect upon several pandemic similarities to include stigma and 'othering'; health disparities; slow and inconsistent government response; and crushing fear and anxiety. Participants were quick to address a vital difference between the two pandemics specific to stigma surrounding disease transmission.
Since HIV/AIDS is spread through bodily fluids and COVID-19 through breathing, the social shaming associated with HIV is not evidenced with COVID-19. Some participants connect transmission differences with government response.
The role of media in information sharing and social isolation from support networks were also identified as chief differences in pandemic experiences. Traumatic memories from the 1980s and 1990s were triggered for all participants during COVID-19 shelter-in-place and many expressed anger over what lessons could and should have been learned from the past.
Conclusions: Alongside the physicians serving at the front lines of both pandemics are the AIDS activists and long-term survivors. These voices have received little attention despite the unique lens they offer into surviving two global pandemics. As COVID-19 continues to destabilize communities around the world, important lessons can be learned from these survivors as we navigate virus mutations and consider the long-term emotional trauma that can result from surviving a pandemic.

OAD03 What matters? Actual and perceived sexual risk for HIV acquisition

OAD0302
'Just like you would with an STI or HIV': sexual risk mitigation during COVID-19 among gay, bisexual, and other men who have sex with men (GBM) in Canada

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Background: The COVID-19 pandemic has impacted the sexual behaviours of gay, bisexual, and other men who have sex with men (GBM). Some GBM decreased their sexual behaviours, while others kept engaging in sex with people outside of their households or increased their number of sex partners. However, few studies have focused on how GBM who continued to engage in sexual behaviours assessed and managed risks.
We examined the strategies GBM have implemented to negotiate and mitigate sexual risks associated with COVID-19, HIV, and other sexually transmitted infections (STIs) during COVID-19 lockdowns.
Methods: We conducted semi-structured interviews with 93 GBM as part of Engage-COVID-19, a mixed-methods study examining the impacts of COVID-19 on GBM living in Vancouver, Toronto, and Montreal. Participants were recruited along four key dimensions: ethno-racial backgrounds, age, gender identity, and HIV status. Two rounds of online interviews took place between November 2020-January 2021 and June-October 2021. Interviews were transcribed verbatim and thematically coded using NVivo.

Results: Participants ranged in age from 24-76 years old. 73 participants self-identified as HIV-negative and 20 as living with HIV.

We identified four key preventive practices:

1. Asking about health status: participants who reported engaging in sexual behaviours mitigated sexual risks by inquiring about potential partners' HIV, STI, and COVID-19 status;
2. Reducing physical contact during sex: a few men implemented mask-wearing, avoided kissing, and engaged in voyeuristic masturbation to minimize physical contact;
3. Sex with regular partners: some engaged in sexual behaviours only with people they already knew and trusted; and;
4. Vaccine status sorting: most participants reported increased sexual activities after receiving COVID-19 vaccinations and used vaccine status sorting by only having sex with partners who have received COVID-19 vaccines.

Conclusions: Our results show that GBM who continued engaging in sexual behaviours during the COVID-19 pandemic implemented mitigation strategies to reduce risks associated with HIV, other STIs, and COVID-19.

Our findings shed light on how GBM are using knowledge gained from HIV prevention to inform their protective behaviours during the COVID-19 pandemic. Significant efforts are needed to provide resources acknowledging the multiple pandemics GBM are attempting to navigate at this time.

OAD0303

Syndemic factors and sexual risk behaviors among men who have sex with men in Guangzhou, China: a latent variable structural equation modeling approach

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Background: Men who have sex with men (MSM) were vulnerable to encounter syndemic factors, resulting in a higher risk of sexual risk behaviors. This study aimed to explore the interactions between the coexisting syndemic factors and condomless anal intercourse (CAI) and multiple sexual partners among MSM in Guangzhou, China.

Methods: A cross-sectional study was conducted to recruit MSM in Guangzhou from June 2017 to April 2018. Data on syndemic factors including childhood sexual abuse (CSA), intimate partner violence (IPV), depression, internalized homophobia (IH), higher level of Sexual sensation seeking (SSS), alcohol/rush popper use before sex were collected. Multi-order latent variable structural equation modeling (SEM) were performed to explore the syndemic effects of the coexisting psychosocial factors on sexual risk behaviors.

Results: A total of 500 MSM who had sex in the last 6 months were included. The proportions of CAI and multiple sexual partners in the last 6 months were 44.40% and 60.40%. The proportion of syndemic factors CSA, IPV, depression, higher level of SSS, IH, alcohol use and rush popper before sex in the last 6 months was 23.60%, 12.80%, 25.00%, 54.80%, 59.40%, 33.80% and 33.40%, respectively.

A larger number of syndemic factors was associated with higher risks of CAI (aOR=1.23, 95%CI:1.05~1.45) and multiple sexual partners (aOR=1.33, 95%CI:1.13~1.56). The second-order latent variable SEM was better than the first-order latent variable SEM with the ability to explain sexual risk behavior variation of $R^2_{\text{second order}}$=91% and $R^2_{\text{first order}}$=66%.

There was a strong linear relationship (Standard regression coefficient=0.96) between sexual risk behaviors and the syndemic burden which was formed by the potential interaction of violence (CSA and IPV), mental health (depression and SSS), and substance use (alcohol/rush popper use before sex). Mental health contributed the most to the syndemic burden ($R^2_{\text{mental health}}$=96%,$R^2_{\text{violence}}$=58%, $R^2_{\text{substance use}}$=34%).

Conclusions: MSM in Guangzhou were confronted with a high burden of multiple psychosocial problems. Multiple syndemic factors and their interactions should be fully taken into consideration when tailoring targeted interventions and health care policies to improve the effectiveness of the intervention. Mental health screening and psychological counseling should be prioritized under limited health resources.

OAD0304

Characterizing substance use typologies and their association with sexual risk behaviors: a latent class analysis among men who have sex with men in Mexico

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Background: Substance use behaviors are closely associated with increased risk for HIV and other STIs, but little has been reported about substance use among men who have sex with men (MSM) in Mexico. We characterized classes of substance use among a nationwide sample of MSM in Mexico and examined the associations between substance use classes, sexual behaviors and STI diagnosis.

Methods: The *Encuesta de Sexo Entre Hombres* study collected online survey data on substance use, sexual behavior and STI diagnosis in the past 12 months from 15,875 Mexican MSM between May-June 2017. Latent class analy-

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ses characterized substance use patterns and multiple multivariable regression models examined substance use class associations with sexual behaviors while controlling for age, education, sexuality, HIV status, and geographical region.

Results: We identified five distinct substance use classes: No Drug Use (75.4%), Marijuana Only (15.1%), Marijuana + Poppers (4.3%), Marijuana + Stimulants (4.2%), and Assorted Drug Use (e.g. Marijuana + Poppers + Stimulants + Other Substances) (1.0%). Demographic makeup of Classes were significantly different, where the Assorted Drug Use class was majority 25-39 years of age (71.4%; $p<0.001$), received a Bachelor's degree or more (73.6%; $p<0.001$), gay (89.0%; $p<0.001$), HIV negative/ unknown status (62.8%; $p<0.001$), and lived in the City/State of Mexico (50.0%; $p<0.001$)

We found that participants in substance use classes (e.g. Classes 2-5) were significantly more likely to engage in condomless anal intercourse (adjusted prevalence ratio [aPR]=1.14-1.39; all $p<0.001$), exchange sex for goods (aPR=1.37-4.99; all $p<0.001$), anonymous sex (aPR=1.22-2.01; all $p<0.001$), group sex (aPR=1.50-3.28; all $p<0.001$), and have an STI diagnosis (aPR=1.24-2.20; all $p<0.002$) in comparison to participants in the No Drug Use class, where the largest estimates were among the Assorted Drug Use class.

Conclusions: Understanding substance use groups and how group classification impacts sexual health in Mexico can better inform future interventions focused on reducing HIV incidence among MSM with varying substance use behaviors, particularly as policies begin to change following the Supreme Court ruling for the legalization of recreational marijuana in 2021 and methamphetamine use is growing exponentially.

OAD0305

Exploring the mental health experiences and perceived social and sexual risks among female sex workers in Nairobi, Kenya

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Background: Female sex workers in Kenya are at an increased risk of HIV infection, violence, poverty and harmful alcohol and other substance use, which are all linked to poor mental health and suicidal ideation/behaviours. Some of these distressful events may precipitate entry into sex work for some women. There has been limited qualitative research investigating the mental health experiences of female sex workers in Kenya. In this study we examine female sex workers' mental health experiences and perceived social and sexual risk factors over their life course.

Methods: We randomly selected 40 female sex workers enrolled in a longitudinal study in Nairobi, for baseline in-depth semi-structured interviews. Participants were asked to detail their life stories, including narrating specific events such as entry into sex work, HIV testing and diagnoses, experiences of violence, mental health, alcohol use etc. Interviews were recorded, transcribed and translated. Data were coded thematically using the Hierarchical Conceptual Framework to explore risk factors for mental health and suicidal ideation/behaviours.

Results: Based on the women's personal and second hand experiences, they related mental health to stress, depression and suicide. A few believed in the supernatural causes of mental health problems like witchcraft. Structural factors such as low levels of education, poor job opportunities, the lack of family support, harmful gender norms, intimate partner violence and subsequent relationship breakdowns, and family bereavement all contributed to poor mental health and subsequent entry into sex work. Their entry into sex work was despite the recognised risk of HIV, even though the majority were HIV negative when they started. The consequences of sex work such as sexual risks, concern about HIV acquisition, ongoing violence from police and clients, all exacerbated their poor mental health.

Conclusions: There is a need for both micro- and macro interventions to address poverty and gender-based violence among vulnerable women in Kenya, thereby reducing mental health problems, entry into sex work and risk of HIV acquisition. FSW programmes should include health promotion and screening for mental health problems to increase health seeking behaviour and access to services for FSWs.

OAD04 Innovations leading the way to HIV targets

OAD0402

Predictive modelling to determine defaulting from antiretroviral therapy (ART) services amongst adolescent girls and young women (AGYW)

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Background: Zimbabwe has made significant progress towards the 95%-95%-95% targets. However, outcomes are worse among adolescents and young people compared to other population groups. Only 49% of AGYW

aged 15-24 years on ART are virally suppressed compared to the national suppression rate of 90%. We therefore developed a supervised machine learning model to predict the risk of ART defaulting amongst AGYW.

Methods: Design science methodology was used to develop and assess the performance of algorithms to predict the risk of defaulting among AGYW initiated on ART between 2013 and 2016 at Mbare Polyclinic in Zimbabwe. The Cross Industry Standard Process for Data Mining (CRISP-DM) was applied to mine and analyse the data before modelling and evaluation. We used Decision Tree Classifier algorithms with neural networks to predict ART defaulting. A ten-fold cross-validated area under the receiver operating characteristic curve was used to assess the model's performance at identifying AGYW who defaulted ART. The best-performing algorithm was obtained with least absolute shrinkage and selection operator. The demographic and clinical characteristics of the 2055 patients who were filtered out were analysed.

Results: Data for 2,055 AGYW was analyzed of which 1,007 were AGYW, (median age 21 years), in the development cohort. The model was applied and successfully predicted defaulter outcomes for 606 AGYW with similar social characteristics to those who already had a defaulter outcome, and in-care outcomes for the remaining 442. Factors associated with defaulting ART included lack of disclosure and illegal cohabitation.

The predictive model yielded positive results, with the chosen algorithm's accuracy reaching 100 percent. The prediction model is likely to produce encouraging results when applied to other age groups of patients to evaluate their ART defaulting likelihood. Using factors associated with a higher risk of defaulting, the model can predict ART defaulters with accuracy and precision.

Conclusions: Automated algorithms efficiently identify patients at increased risk of ART defaulting. Integrating these models into Electronic Health Records to alert providers about patients who might default ART could improve adherence tracking.

OAD0403

Determining preferred attributes of a "virtual village" platform to halt isolation among people aging with HIV: a community-engaged project

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Background: COVID-19 exacerbated existing social isolation, depression, and anxiety among older people living with HIV (OPLWH). While the use of existing social networking platforms can help reduce social isolation, they lack specificity for addressing the needs of OPLWH. In response, we are developing a "virtual village" platform to reduce social isolation among OPLWH. As a first step, we investigated what OPLWH perceive to be the platform's most important attributes.

Methods: In collaboration with a community advisory board (CAB) of 24 OPLWH ≥50-years-old (from three sites: Palm Springs, CA, Los Angeles, CA, and Tampa Bay, FL), we constructed a list of 28 potential attributes for the virtual village.

Next, the CAB rank-ordered the attributes to identify the top-five most important and chose mutually exclusive levels (private chat [yes/no]; cost [free/paid]; sub-communities [yes/no]; social service directory [yes/no]; registration required [yes/no]) for each to create a choice-based conjoint experiment. English-speaking OPLWH ≥50-years-old who resided in a study city and had internet access were then recruited to participate in the experiment and received $50 for completion.

Participants compared eight groups of different combinations of four hypothetical virtual village "scenarios" comprised of the 5 attributes at differing levels, selecting the most acceptable scenario from each group. The relative importance of the attributes was calculated using Sawtooth Software's (2021) Hierarchical Bayesian Analysis.

Results: Participants (N=57) were 50-82 years-old (mean=59.8 years). Most (78.6%; n=45) identified as male. 64.1% (n=35) identified as White, 29.8% (n=17) as Black/African American, and 17.5% (n=10) as Hispanic/Latino/a/x. The preferred attributes for the virtual village in order of their relative preference, and their corresponding levels when compared to all other options (all p's < 0.05) were: cost (24.74%, free); chat function (22.91%, yes); communities (15.58%, yes); services (17.86%, yes); and registration (18.9%, required).

Conclusions: Participants identified the attributes/levels most important for inclusion in the Virtual Village. Continued development of our Virtual Village will prioritize these attributes during prototype development.

OAD0404

Interest of people living with HIV in injectable long-acting antiretroviral treatment: results from a flash AIDES survey

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Background: The end of 2021 in France was marked by the important therapeutic innovation of injectable long-acting antiretroviral (iARV) treatment for HIV. While healthcare professionals and pharmaceutical industries are hoping for better adherence and improved quality of life in people living with HIV (PLHIV), the latter's perceptions have not been explored.
To ensure good adherence to iARV, it is essential to identify PLHIV expectations of its benefits, their potential related fears, and obstacles they perceive to its implementation.
We aimed to identify factors associated with interest in iARV among PLHIV frequenting the French association AIDES.
Methods: From July to October 2021, an online and paper-based survey was distributed through the AIDES network via social networks and the association's newspaper *Remaides*. It comprised 16 questions collecting data on sociodemographics, interest in iARV, confidence in its efficacy, expected improvements in quality of life, and perceived potential obstacles to its implementation.
A multivariate logistic regression helped identify factors associated with a high level of interest in iARV ("very" versus "quite", "not really" and "not at all" interested).
Results: Among the 581 respondents, the majority were men (n=459; 79 %) and were born in France (n=477; 82 %). Median age was 52 years [42-59]. Approximately half (n=276, 47 %) were very interested in iARV.
Factors associated with a high level of interest were daily intake of non-ARV treatments (aOR=1.9[1.2-3.2]), cohabiting with persons unaware of the respondent's HIV status (aOR=2.3[1.3-4.1]), confidence in iARV efficacy (aOR=2.8[1.7-4.6]), expected improvements in quality of life (aOR=6.4[4.1-10.1]) and willingness to continue iARV despite potential side effects (aOR=4.4[2.6-7.6]).
In contrast, travelling to the hospital for iARV was seen as a constraint (aOR=0.6 [0.4-0.9]), while the ease of taking current (i.e., non-injectable) ARV (aOR=0.6[0.4-0.9]) was associated with a low level of interest in iARV.

Conclusions: PLHIV are interested in iARV, especially those whose current situation is complicated due to the confidentiality of their HIV status, or to difficulties following several treatments simultaneously. Having to go to hospital for iARV to ensure good adherence could constitute a barrier to uptake. One possible alternative is the use of ambulatory care providers.

OAD0405

DOTS PLUS: a promising approach to increasing adherence to tuberculosis, drug resistant tuberculosis and antiretroviral HIV treatment in Mozambique

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Background: According to World Health Organization Global Tuberculosis (TB) Report (2021), Mozambique is among the highest-burden countries for TB, TB/HIV co-infection and drug resistant TB (DR-TB), and is among 10 countries where over 75% of estimated DR-TB cases remain undetected. Currently, almost half (47%) of DR-TB cases are HIV+. Addressing barriers to treatment adherence must be a national priority to ensure people with TB are successful in completing their treatment regimens. Since 2019, ADPP Mozambique has been applying a holistic, patient centered approach through the enhanced Direct Observation Treatment Strategy (DOTS) PLUS, funded by USAID.
Description: ADPP, a local Mozambican civil society organization, leads the implementation of the Local TB Response project in four provinces of Mozambique, in partnership with FHI 360, Comusanas, Kupulumusana and DIMAGI. DOTS PLUS includes direct observation of treatment, **plus** psychosocial support, financial support (for nutrition, transport, and other costs), and provision of pill boxes to keep patients on track. It includes medication monitoring, regularly scheduled refills, home deliveries and accompanying patients to follow up appointments.
Lessons learned: During the first two years, the project identified 32,676 new TB cases (46% of all TB cases in the 50 target districts), and 86 DR-TB cases (16% of newly identified TB cases in targeted districts, and 7% at national level). From May 2020 to September 2021, 250 DR-TB patients received support from DOTS PLUS, with 99% adhering to TB and antiretroviral drug treatment (for those with HIV), and 65% achieving culture conversion upon treatment completion, with zero lost to follow up. These impressive results compare to a national average of only 60% for TB treatment completion, likely due to the added features of DOTS PLUS.
Conclusions/Next steps: Providing DOTS PLUS for TB, TB/HIV and DR-TB patients is crucial for ensuring treatment adherence as it provides more wrap around care and follow up support, improving treatment success and re-

ducing morbidity and mortality. ADPP will continue to promote DOTS PLUS for all TB and HIV response efforts, in a collaborative effort with the Ministry of Health and partners.

OAD05 Is violence a breaking point for HIV?

OAD0502
A behavior-based intervention investigating the effects of a gender-based violence (GBV) and sexual assault educational curriculum on improving male attitudes toward women in 4 sub districts in South Africa

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Background: The rights of women, girls and other vulnerable populations continue to be compromised by high levels of GBV in South Africa. The prevalence of the issue, compounded by the impact of the Covid-19 pandemic, has triggered a 'secondary pandemic' marred by rising GBV and femicide (GBVf). In 2021, No Means No Worldwide (NMNW) and NACOSA launched the IMPOWER Boys program, an evidence-based intervention, delivering an educational sexual and GBV prevention curriculum.

Description: Overall, 16 male instructors were trained to facilitate an 8-hour curricular (4 classes, 2 hours each) in 4 sub districts namely: Klipfontein, Mitchells Plain, Tshwane and Bojanala. The target population was n=1120 boys (280 per sub district) aged between 10-24 years, in 7 months (August 2021 – December 2021).

The program was designed to increase gender equitable attitudes, learn skills to defend equality, avoid violence, ask for consent, and intervene when witnessing or anticipating sexual assault.

The Intervention was delivered using 3 models: In school (within school hours), after school (extracurricular) and out of school (in community spaces). Data on attitudes toward women were collected anonymously at baseline by administering pre-questionnaires and post questionnaires, and compared with baseline

Lessons learned: Overall participants had significantly higher positive attitudes toward women at follow-up. Median age is 19 years. 65% participants > 19 years. The percentage of boys who successfully intervened when witnessing violence was 78% for verbal harassment, 75% for physical threat, and 74% for physical or sexual assault. Data shows noteworthy gains in knowledge towards consent, intervening during cases of violence and gender roles shift in gender equitable attitudes with 82% able to provide desired responses. An average of 42% change between the pre/post intervention data, a significant 85% were able to accurately recollect core knowledge topics in the post questionnaires.

Conclusions/Next steps: A multifaceted response is needed to enhance the country's fight against GBVf and HIV/AIDS in a COVID-19 pandemic. This standardized 4-week training program proved to be effective in improving attitudes toward women and increasing the likelihood of successful intervention when witnessing GBV.

OAD0503
Impacts of intimate partner violence and sexual violence on antiretroviral adherence among adolescents living with HIV in South Africa

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Background: We are failing to reach 95-95-95 for adolescents living with HIV (ALHIV). Adolescents in Sub-Saharan Africa are exposed to high rates of sexual violence and intimate partner violence (IPV). However, evidence on associations of sexual violence and ART adherence remains limited, with only three cross-sectional studies globally.

Methods: We conducted a longitudinal cohort, with interviews and clinical records from 1046 ALHIV aged 10-19 years, recruited from 53 government health facilities in South Africa's Eastern Cape (2014-2018; 57% female, 90% uptake, 94-97% retention, 3.4% mortality).Ethical approvals were given by the University of Cape Town, University of Oxford, provincial government and health facilities. We used a repeated-measures random effects model and marginal predicted probabilities to assess multivariable associations of self-reported sexual violence and IPV with ART adherence, validated against viral load suppression (<50 copies/ml). We fitted moderation models by gender.

Results: 51% of adolescents reported consistent ART adherence. ART adherence was associated with viral suppression (aOR 1.49, CI:1.03-2.14, p=0.033) controlling for age, sex, location, poverty, housing, and HIV acquisition mode. Exposure to IPV was associated with lower ART-adherence (aOR 0.39, CI:0.21-0.72, p=0.003), and so was sexual violence

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(aOR 0.54, CI:0.29-0.99, p=0.048). Marginal predicted probabilities showed that adolescents with no sexual violence or IPV exposure had a 72% (CI:0.70-0.74) probability of ART adherence compared to 38% (CI:0.20-0.56) for those exposed to both sexual violence and IPV. Moderation showed similar impacts of violence by gender.

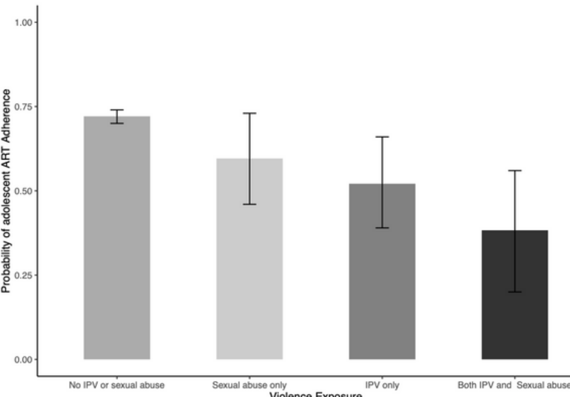

Figure 1: Adjusted predicted probabilities of past-week adherence

Conclusions: Effective sexual violence prevention and post-violence care are essential in supporting adolescent ART adherence. There is now increasing evidence of effective services across sectors, with systematic reviews identifying parenting programmes, classroom and community-based programmes in sub-Saharan Africa, and social protection such as government cash transfers in reducing sexual violence. There is an urgent need to link violence prevention and adolescent HIV services.

OAD0504

Targeted violence as a risk factor for posttraumatic stress disorder and HIV acquisition risks among cisgender gay, bisexual, and other men who have sex with men in the United States

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Background: Posttraumatic stress disorder (PTSD) has been linked to HIV transmission risk behaviors among cisgender gay, bisexual, and other men who have sex with men (MSM) in the United States (US), and interpersonal violence carries the highest conditional risk of developing PTSD. Among MSM who have experienced interpersonal violence, characterizing risk factors for PTSD is critical to inform preventive and therapeutic intervention strategies.

Methods: Using a 2020 nationwide cross-sectional survey of 2,886 MSM (21.5% of 13,433 MSM surveyed) who reported ever experiencing interpersonal violence, we performed multivariable modified Poisson regressions with robust variance estimators to examine differences in prevalence of current PTSD by how participants attributed the experience of violence (as occurring because of one's same-sex practices, as not occurring because of one's same-sex practices, or unsure of whether or not it occurred because of one's same-sex practices).

We also examined the relationship between PTSD and past-year serodiscordant condomless anal sex. Control variables included age, education, race/ethnicity, sexual identity, urbanicity, and HIV status. Model results are reported as adjusted prevalence ratios (aPR) and 95% confidence intervals (CI).

Results: Median age of participants who experienced interpersonal violence was 27 years (interquartile range: 22-43); 78.8% identified as gay (n=2,273), and 62.2% (n=1,794) were non-Hispanic white. Interpersonal violence was attributed to same-sex practices by 45.8% (n=1,321) of participants; 46.3% (n=1,335) did not make this attribution, and 7.0% (n=203) were unsure.

Overall, 23.0% (n=665) had PTSD, and PTSD prevalence was greater among participants who attributed the violence to their same-sex practices (25.9%[342/1,321]; aPR[CI]=1.54[1.33-1.78]) or who were unsure (33.5%[68/203]; aPR[CI]=1.80[1.44-2.25]) compared to those who did not make the attribution (18.1%[242/1,335]).

Those who met criteria for PTSD were more likely to report serodiscordant condomless anal sex (27.0%[237/879] versus 21.3%[428/2,007]; aPR[CI]=1.22[1.08-1.38]).

Conclusions: Findings reveal the potential role of attribution in PTSD risk for violence-exposed US MSM and suggest a likely pathway between violence exposure, PTSD, and serodiscordant condomless anal sex.

Future research with longitudinal designs will be needed to establish temporal ordering to test this pathway. Moreover, progress on ending the US HIV epidemic will require interventions that simultaneously address mental and sexual health among violence-exposed MSM.

OAD0505

Impact of intimate partner violence on women's risk of HIV acquisition and engagement in HIV care cascade in sub-Saharan Africa: a meta-analysis of population-based surveys

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Background: Achieving the 95-95-95 targets for HIV diagnosis, treatment, and viral load suppression (VLS) to end the AIDS epidemic hinges on eliminating manifestations of structural inequalities, including intimate partner violence (IPV). Sub-Saharan Africa (SSA) has among the world's highest prevalence of IPV and HIV but an examination of the impact of IPV on HIV incidence, and women's engagement in HIV care cascade is yet to be conducted.

Methods: We pooled individual-level data from all available nationally representative surveys with information on physical and/or sexual IPV in SSA (2000-2020; Figure). We used generalized estimating equations with robust standard errors to estimate adjusted prevalence ratios (aPR) of lifetime and past year experience of IPV on HIV incidence (measured cross-sectionally by recent infection testing algorithm), past-year HIV testing (self-reported), antiretroviral therapy (ART) uptake, and VLS among ever-partnered women.

Models were adjusted for age, age at first sex, residence type, women's marital status, women's education, and survey as a proxy of time and country.

Results: Fifty-nine surveys were available from 30 countries, encompassing over 273,000 (N_i) respondents. Most surveys were from East Africa (48%); median survey year was 2013. Overall, 32% of women reported lifetime physical and/or sexual IPV (N_i=255,564) and 22% experienced IPV in the past year (N_i=273,603). Women exposed to past year IPV were 2.75 times (95%CI:1.26-6.00;N_i=19,852) more likely to have a recent HIV infection, adjusting for potential confounders. Past year IPV was not associated with HIV testing (aPR=1.00, 95%CI:0.98-1.01;N_i=273,603), but women living with HIV experiencing IPV in the last year were 10% less likely to be on ART (aPR=0.90; 95%CI:0.82-0.99;N_i=5,205) and to achieve viral suppression (aPR=0.90; 95%CI:0.81-0.99;N_i=5,205).

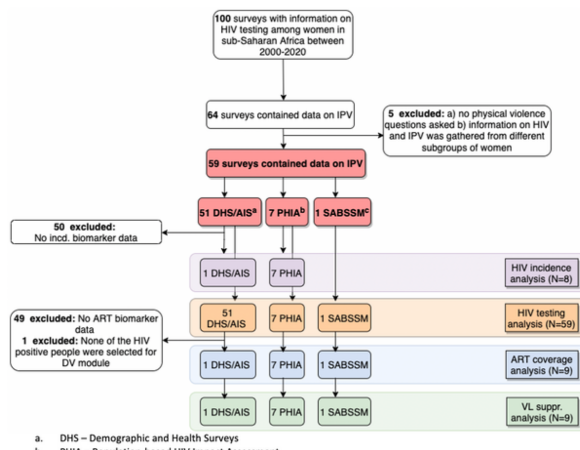

Figure.

Conclusions: IPV was associated with increased HIV incidence and, among women living with HIV, lower ART uptake and VLS. Preventing IPV is inherently imperative, and a crucial milestone in reducing population-level HIV incidence and burden.

OAD06 Building bridges to HIV prevention and care for children and young people: The role of the community and young people

OAD0602

Examining engagement in and initial efficacy of a structured peer health navigator intervention to improve HIV and related outcomes among YBMSM living with HIV

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Background: HIV health disparities among young black men who have sex with men (YBMSM) are often the result of a complex intersection of trauma, psychosocial cofactors, and low access to socioeconomic resources. To address these disparities and needs, the WITH U intervention employed peer health navigation that attended to behavioral health needs, linkage to services, and psychosocial support. This study reports on engagement and efficacy of the intervention.

Methods: This was a longitudinal mixed-methods single-arm study. Data were collected from enrollment and 6-month self-administered quantitative surveys with all

participants and semi-structured qualitative interviews with a sub-sample of 22 participants. Quantitative analyses included frequencies, means, and bivariate correlations. Deductive and inductive content analysis was used to analyze qualitative data.

Results: WITH U participants were 65 YBMSM, average age of 25-26 years (M=25.55,*SD*=2.51). Approximately one quarter of participants scored at or above the clinical cutoff for depression or anxiety symptoms, and over 40% reported being bothered by past traumatic stressors in the last month. More than half of participants reported food insecurity in the last three months, over a third were concerned about housing, and a quarter were unable to pay their utilities when needed.

Overall, participants reported high satisfaction with WITH U and attended an average of 5-6 of 12 possible sessions with health navigators (M=5.69, SD=3.05). Attending a greater number of sessions was significantly associated with being virally suppressed at enrollment ($rs(50)=.36$, $p<.05$) and six month-follow-up ($rs(38)=.34$, $p<.05$), as well as greater concern about housing ($rs(54)=.29$, $p<.05$) and experiencing unemployment for at least three months in the last year ($rs(54)=.29$, $p<.05$). This aligned with qualitative findings that navigator support around basic needs was critical to participants. Although participants identified mental health support from navigators as important, experiencing more depressive symptoms was significantly associated with attending fewer sessions ($rs(54)=-.32$, $p<.05$). A switch to virtual sessions due to the COVID19 pandemic was a barrier to engagement for some participants.

Conclusions: Engagement in WITH U was associated with improved health outcomes and social determinant health assistance needs. Novel methods for better engaging YBMSM virtually, especially those with depression, are needed.

OAD0603

Improving HIV outcomes amongst adolescents and young people living with HIV through adolescence and young people mentorship program

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Background: According to the 2020 UNAIDS report there were over 170,000 adolescents and young people living with HIV (AYPLHIV) in Uganda. Viral load suppression rates were below 50% for the under 24 years and there were over 2800 AIDS related deaths a figure that has stagnated since 2015. Research has shown that poor adherence to ART, amongst AYPLHIV can be attributed to several factors including small support networks, forgetfulness, individual resilience factors and stigma.

Alive Medical Services (AMS) implemented AYP mentorship program aimed at supporting AYP with non-suppressed viral loads improve adherence and treatment outcomes.

Description: Between July-December 2021, AMS Identified consenting AYP who have achieved viral load suppression (VLS) and those with nonviral load suppressed (NVLS) matching them in groups disaggregated by age no more than 20 members. The groups met monthly at the youth corner and would dialogue, share their experiences, play in door games and offer support. VLS AYP would follow up their partners in the community with the help of the community linkage facilitator both virtually and physically. The ministry of health treatment protocols for the two groups were adhered to including intense adherence counselling sessions for the NVLS AYP. Those who suppressed at the end of the 6 months were engaged to support new AYP with NVLS

Lessons learned: Out of the 28 young people who were none suppressed at the start 22 have achieved viral load suppression and are now being engaged to support another group of young people with newly none suppressed viral loads 2 have been switched to the second line and are being followed up.

Friendships have been established, attitudes and behaviours have changed, adherence and appointment keeping has greatly improved

Conclusions/Next steps: Social factors play a crucial role in ensuring adherence to ART medication by AYPLHIV.

AMS plans to Scale up the AYP adherence mentorship program to all AYP in other facilities while working with the AYP to reach more AYP.

Keywords: Mentorship, Adolescents, Adherence, Young people

OAD0604

Zambia on the rise: addressing the challenges of young key populations inclusion

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Background: The linking policy to programming project in Southern Africa aimed at reducing HIV risks and improving SRHR outcomes amongst young key populations (YKP), namely young gay men and men who have sex with men, sex workers of all genders, drug users, transgender and inmates aged from 10 to 24 years.

The programme's objectives were to:

1. Build capacity for YKPs to claim their rights; (
2. Support policymakers to understand YKP needs and deliver tailored HIV and SRHR services;
3. Strengthen regional mechanisms providing standards to countries to end AIDS and achieve SRHR outcomes;
4. Generate strategic information through research for programmes' improvement.

This abstract presents lessons from Zambia.

Description: The project used a people's centred approach: putting YKPs at the centre of implementation, ensuring that project's focal staff, trainees, research personnel and advocacy task force members were from and accountable to YKPs. A regional team with expertise in policy advocacy and movement building supported in-country safe-space retreats to identify priority issues; development of a multi-stakeholders' roadmap for policy change and its roll-out by an advocacy task team. The advocacy process involved, among others, a media training to shift the narrative around sexuality and drug use. Regional convenings allowed for further sharing, exposure and learning.

Lessons learned: The programme allowed for an emergence of amore resilient movement of YKP advocates despite the hostile political context. In addition to existing groups[1], the programme strengthened new vibrant groups - such as the Intersex Society of Zambia, Umoto and Decisive Minds - led by young leaders from the intersex and gay community as well as drug users. Their engagement led to a development of an intersex model law supported by health professionals despite a hostile environment. Their media engagement also resulted in nuanced positive reporting on YKP and SRHR in Zambia.

[1] Groups such as Transbantu Zambia and Friends of Rainka

Conclusions/Next steps: The model teaches us that despite growing homophobia, investing in YKP using youth and health as entry-points is key to ending AIDS. In an era of increased online presence, positive media discourse is important to shifting social norms and acceptance of YKPs.

OAD0605

Young key populations speak out! this is what we want

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Background: The Love Alliance is a five-year programme created to address the challenges in health and human rights that members of the Key Population group in all their diversities experience in their countries.In August 2021, Y+ Global alongside GNP+ convened a virtual global consultation with Young Key Populations (YKP) with the objective of understanding the advocacy visions and voices of young people within PWUD, LGBTQI, sex worker,s and PLHIV movements in the different regions to inspire Y+ Global, GNP+ and the Love Alliance in its work around young key populations living with or affected by HIV. The consultations were to provide a better understanding of the issues affecting the cohort, interventions needed and provide a focus on advocacy for the Love Alliance.

Description: The virtual consultation was attended by 31 participants, from more than 15 countries across the African continent and one country from Asia. The countries represented included; Zimbabwe, Lebanon, Kenya, Uganda, South Africa, Angola, Morocco, Nigeria, Zambia, Malawi, Burundi, Mozambique, Tanzania, Eswatini and Vietnam. The technicalities of the session including recordings and translations and identity sharing were shared with the participants. To promote inclusivity and active participation of the participants,the session had French and Portuguese translations as well as language based break out rooms.

Lessons learned: Gender inequality and criminalization, Stigma and discrimination, access to quality and YKP friendly HIV/SRH services and mental health issues are the major issues affecting YKP across the African continent hence they need revamped advocacy efforts, the main trends such as tokenistic and unethical engagement of YKP, criminalization and oppressive laws and policies such as age of consent within the spaces impact YKPLHIV advocacy and the disruptions of COVID-19.

Conclusions/Next steps: YKP need to participate in key spaces, activities and calendar moments that impact their lives. Y+ global under the love alliance continues to support the online and offline engagement of YKP and to strengthen youth-led advocacy with the recommendations that the participants provided.

OAD07 Integrated mental health approaches and care among people living with HIV

OAD0702

Social support attenuates the syndemic of poor HIV care and stigma on suicidal tendencies among South African young women living with HIV

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Background: Young women living with HIV (YWHIV) are at increased risk of developing suicidality. Yet little is known about the combined effects of living with HIV on suicidality among YWHIV.

Methods: We analysed data from 791 YWHIV who participated in two large prospective South African cohort studies, Mzantsi Wakho (2017-2018) and HEY BABY (2018-2019). Standardised questionnaires were used to measure the syndemic factors, mental health issues (mediator), social support (moderator) and suicidality (outcome). A moderated mediation analysis was used to investigate (1) the

direct (individual and syndemic) effects of poor HIV care retention and HIV-related stigma on suicidality, (2) the indirect effects as mediated through mental health issues, and (3) the moderating effects of social support on mental health issues, and suicidality, controlling for potential confounders (age, rural residence, informal housing, household poverty, and mode of HIV acquisition).

Results: Higher HIV-related stigma (AOR=2.19, *p=0.012*) and poor HIV care retention (AOR=3.47, $p < 0.001$) were directly associated with higher suicidality. The combined direct effects of poor HIV care retention and HIV-related stigma on suicidality (14% points increased risks of suicidality, $p<0.001$) are higher than their individual effects (12% points increased risks of suicidality,$p<0.001$). Furthermore, both HIV-related stigma and poor HIV care retention were indirectly associated with suicidality via mental health issues. Social support buffered the direct and indirect effects of poor HIV care retention and HIV-related stigma on suicidality.

Conclusions: Combined effects of poor HIV care retention and HIV-related stigma are associated with higher suicidality, indicating a syndemic interaction. Programmes that simultaneously address these factors and strengthen social support services may improve mental health and reduce suicidality among YWHIV.

OAD0703

Mental health services utilization among young Black gay, bisexual, and other men who have sex with men living with HIV

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Background: Mental health (MH)comorbidities are prevalent amongyoung Black gay, bisexual, and other men who have sex with men(YB-GBMSM) living with HIV. However, it remains unclear what factors are associated with utilization of MH services among YB-GBMSM engaged in HIV care.

Methods: We conducted a cross-sectional survey of YB-GBMSM from two HIV clinics. Utilization of MH services was defined as at least one self-reported MH visit in their lifetime. Psychological symptoms were assessed using the Generalized Anxiety Disorder assessment-7, Center for Epidemiologic Studies Depression scale, Primary Care Post-Traumatic Stress Disorder Screen, and self-reported substance use in the last six months. Multivariate logistic regression models were used to evaluate covariates of lifetime MH care utilization.

Results: Among 100 YB-GBMSM, over half (51%) reported utilizing MH services, and 40% had been referred to a MH provider in the past year. In multivariate logistic regression analyses, non-organizational religious activity (OR: 1.33, CI: 1.01-1.77), severe anxiety (OR: 5.23, CI: 1.08-25.26), and homelessness in the past three months (OR: 4.03, CI: 1.08-15.07) were associated with MH care utilization. HIV stigma, discrimination in medical settings, and other psychological symptoms (depression, trauma, substance misuse) were not associated with utilization of MH services.

Conclusions: Our findings that MH utilization was associated with homelessness, NORA, and severe anxiety suggest that service providers should consider promoting MH services to a wider range of YB-GBMSM clients, specifically to clients that do not present with psychological symptom complexes. Additionally, future research should explore the complex relationships between religiosity and MH.

OAD0704

Loneliness and ARV adherence: results from a cohort study of people living with HIV in Ontario, Canada

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Background: Social connectedness is important to human beings while loneliness can be detrimental to both mental and physical health. Our goal was to investigate the degree of loneliness experienced by people living with HIV (PLWH) and its impact on adherence to ARV medications using Ontario HIV Cohort Study (OCS).

Methods: OCS, a study of people Living with HIV (PLWH), collects clinical and socio-behavioral data from 15 HIV clinics in Ontario, Canada. In 2020, a 3-item short UCLA Loneliness Scale was added to the annual questionnaire. A loneliness score was categorized into 3 levels (low: 3-4, medium: 5-6, high: 7-9). Descriptive statistics and proportional odds models were used to identify factors correlated with loneliness. Impact of loneliness on ARV adherence was examined using logistic regression.

Results: Mean age (STD) of the 1,870 participants who completed loneliness scale was 52.2 (12.1), 22.8% were females, 57.6% gay men, 60% white, 21.7 % black, and 2.5% Indigenous. 19.6% of participants often felt lacking companionship, 13.2% felt left out, and 17.9% felt isolated.
Meanwhile, the majority hardly ever lacked companionship (49.6%), felt left out (60.7%) or isolated (53%). On the combined loneliness scale (range= 3-9, median (IQR) = 3(4-6)), 27.1% had medium level, and 20.7% had high level. Multivariable analysis reveals predictors of higher loneliness Score with OR (95%CI) are younger age 2.84 (1.80,4.48)

for <35, 3.18 (2.22,4.55) for 35-49, 2.18 (1,57,3.03) for 50-64 vs 65+ years old), being female 1.38 (1.06,1.79), single 4.04 (3.26,5.00), low income 1.51 (1.23,1.85) for <$20,000/year, and using alcohol 1.49 (1.08,2.07) and non-medicinal drugs 1.53 (1.13,2.07).

We found strong association between ARV non-adherence and higher loneliness scores [OR(95%CI) = 1.45 (1.14,1.84) for medium vs low, and 1.41 (1.08,1.85) for high vs low)], adjusted for age, sex, race, alcohol, and drug use.

Conclusions: PLWH with higher loneliness scores are more likely to skip their ARV medications. About 13% to 20% of OCS participants experienced at least one of the three aspects of loneliness, almost half have high scores on the combined loneliness scale.

More research is needed to identify relationship between loneliness and co-morbid conditions, such as substance use. Intervention strategies are need in communities of PLWH to combat loneliness, especially during current COVID-19 pandemic.

OAD0705

HIV and suicide risk across adolescence and young adulthood: an examination of sociodemographic, contextual, and psychosocial risk factors for attempted suicide in a longitudinal cohort of youth affected by HIV

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Background: Risk for attempting suicide increases dramatically as children become adolescents and young adults (AYA), with chronic health conditions being a risk factor. To date, no studies have examined correlates of suicidality across development in AYA living with perinatal HIV-infection (AYALPHIV) and those perinatally HIV-exposed but uninfected (AYAPHEU). Findings can inform much-needed interventions to support AYALPHIV and AYAPHEU as they age.

Methods: Data come from a longitudinal New York City-based study of health and psychosocial functioning in AYALPHIV and AYAPHEU (mean enrollment age = 12 years; current mean age = 27 years) interviewed every 12-18 months. Psychiatric disorders and first-reported suicide attempt were assessed with the DISC. Generalized estimating equations were used to examine associations between first-reported suicide attempt and sociodemographic, contextual, and psychosocial correlates measured concurrently across 6 time-points.

Results: At enrollment, 51% were female, 72% heterosexual, 57% Black, and 50% Latinx. Attempted suicide was significantly higher among AYALPHIV (27%) than AYAPHEU (16%) (OR = 1.74, p = 0.02). In the full and AYALPHIV samples, sexual minority identity, lower self-concept, negative life events, and past-year arrest were associated with increased odds of attempted suicide. For all groups, past-year anxiety, mood, or behavior disorders were associated with increased odds of attempted suicide. Among AYALPHIV, pregnancy and HIV stigma were associated with increased odds of attempted suicide. Interactions by HIV status and age group were found: substance use was more strongly associated with attempted suicide among AYAPHEU than AYALPHIV, while negative life events and higher religiosity were more strongly associated with increased odds of attempted suicide among AYA ages 19 and older than those 18 and younger.

Conclusions: Adolescence and young adulthood is a critical period when risk for attempted suicide rises precipitously. As our cohort aged into adulthood sociodemographic, contextual and psychosocial factors placed them at risk for suicidality and only higher self-concept was protective. Unique risks for attempted suicide were evident by PHIV-status with HIV stigma and pregnancy impacting AYALPHIV, and substance use a risk among AYAPHEU. Assessing for suicide risk and correlates with attention to aging can inform preventive interventions tailored to meet AYALPHIV and AYAPHEU needs.

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OAD08 Stigma interventions: Improving health and wellness for people living with HIV and key populations

OAD0802
Intersecting stigma experiences among refugee youth sexual violence survivors in a humanitarian context in Uganda: implications for HIV cascade engagement in conflict settings

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Background: Youth sexual violence survivors' experiences accessing HIV services in the aftermath of humanitarian crises are understudied. This is a notable gap as refugee youth disproportionately experience sexual violence. We explored experiences accessing HIV and post-rape care among refugee youth sexual violence survivors in Bidi Bidi refugee settlement in Uganda.
Methods: We conducted a community-based qualitative study in Bidi Bidi, the world's second largest refugee settlement, implementing purposive sampling to recruit young refugee survivors (aged 16-24), community elders (aged ≥50), and service providers working in Bidi Bidi. We conducted 6 focus groups and 12 in-depth individual interviews (IDI) with refugee youth, 8 IDI with elders, and 10 IDI with service providers. We applied thematic analysis informed by the Health Stigma and Discrimination Framework to explore deductive and inductive themes associated with HIV and post-rape care engagement following sexual violence.
Results: Participants included: 60 youth (n=30 men; n=30 women; mean age: 20.9, standard deviation [SD]: 2.17) from South Sudan (83.3%) and the Democratic Republic of Congo (DRC) (16.7%), and 10 elders (n=4 women, n=4 men; mean age: 58.3, SD: 3.88) from South Sudan (87.5%) and the DRC (12.5%).
Healthcare providers (n=5 men, n=5 women; mean age 31.5, SD: 4.88) included midwives (n=4), clinical officers (n=4), a nurse (n=1) and a lab technician (n=1). Participant narratives revealed profound experiences of sexual violence stigma, including blame, shame, and mistreatment. This stigma was gendered, particularly targeting young women. Sexual violence stigma often resulted in young women's forced/early marriage to violence perpetrators. HIV stigma contributed to further violence exposure following an HIV diagnosis. Fear of HIV and sexual violence stigma presented substantial barriers to accessing post-rape care. Stigma spanned social-ecological levels, including mistreatment and rejection from family, friends, health providers and community members, contributing to internalized stigma. Limited emergency contraception access following sexual violence resulted in unwanted and early pregnancy, further exacerbating social exclusion.
Conclusions: Findings signal the intersection of sexual violence stigma, HIV stigma, and inequitable gender norms reduces post-rape care engagement and harms wellbeing among refugee youth. Gender transformative, multilevel intersecting stigma reduction strategies can both increase HIV cascade engagement and advance sexual rights with refugee youth.

OAD0803
From homophobic and sexist attitudes to tolerance toward LGBTQ+ individuals: critical consciousness as a tool against stigma

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Background: Research shows that Critical Dialogues (CD) after viewing illustrations of personal and historic oppression can help people develop critical consciousness and address internalized prejudices. This NIH-funded study uses data from recorded critical dialogue sessions from a behavioral group intervention to reduce substance use and recidivism among men.
We focused on homophobia and sexist attitudes as these are public health issues that predict harmful behavior. Critical consciousness raising -- understanding of and action against structural roots of oppression -- takes place when an individual moves from internalized prejudice to acceptance of self and others.
Methods: We used qualitative data collected during 13 sessions where 28 men of color with histories of incarceration and substance misuse (2-4 per group) viewed illustrations concerning gay/lesbian relationships. Four coders used NVivo to code transcripts and develop codes in an iterative process. We open-coded independently, discussed preliminary codes, and came to a 100% agreement about codes. Saturation occurred after 10 transcripts. "Member check" involved a Collaborative Board who reviewed findings and contributed to data interpretation.
Results: We identified four key themes – *Critical Appraisal* and *Critical Reactions* toward the illustrations; and *Critical Reflections* and *Critical Consciousness* around 14 subthemes. The initial discussion revolved around homophobic and sexist attitudes involving pejorative and stigmatizing terms – e.g., "*I don't like men datin' men. That's fuckin' disgustin'.*"
Halfway through the sessions, participants slowly understood that stigmatization supported oppressive structures that impacted them – e.g., *"Oh, man, why do I think like that? Are there other things that I need to consider?"*
Participants realized that clinging to beliefs/morals used

to uphold homophobia and sexism was, in their words, "crazy" – e.g., "*...because your family is a certain way, now you hate this person. How could you hate somebody if you don't even know 'em?"*

Conclusions: By engaging in CD, participants progressed from homophobic and sexist attitudes to greater understanding toward LGBTQ+ individuals and women. CD inspired by illustrations can help individuals develop critical consciousness around myriad issues that may help abate other forms of oppression, such as racism and xenophobia.

OAD0804

Partner social support and sexual satisfaction is associated with lower anticipated HIV stigma in Malawian couples living with HIV

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Background: Fear of HIV stigma can lead to non-disclosure of HIV status to partners and negative impacts on couple relationships; at the same time, partner support has the potential to reduce the harms of HIV stigma on health. Little research has focused on couples who have disclosed their HIV status and whether a supportive relationship could protect against anticipated experiences of HIV stigma outside the partnership.

We investigated the association between HIV stigma and relationships dynamics in couples living with HIV to identify dyadic targets for intervention.

Methods: Married couples (N=211) with at least one partner on antiretroviral therapy were recruited from HIV clinic waiting rooms in Zomba, Malawi. Partners completed separate surveys on anticipated HIV stigma outside of the relationship and relationship dynamics (e.g., intimacy, trust, sexual satisfaction, general social support from the partner, and couple communication patterns). Linear mixed models tested for associations between relationship dynamics and anticipated stigma, and whether this association varied by gender, after controlling for sociodemographics and relationship characteristics.

Results: Couples were together for 12.5 years, on average, and two-thirds were sero-concordant positive. In multivariable models, higher sexual satisfaction (b=-0.22, 95%CI= -0.41; -0.03, p=0.020) and partner social support (b=-0.02, 95%CI=-0.04; -0.01, p=0.006) were associated with less stigma, while negative communication styles such as withdrawal (b=0.13, 95%CI=0.04; 0.21, p=0.003), demanding (b=0.17, 95%CI=0.09; 0.24, p<0.001), and avoidant communication (b=0.26, 95%CI=0.13; 0.39, p<0.001) were associated with higher stigma. Associations did not vary by gender.

Conclusions: Couple-based interventions that promote constructive forms of couple communication, strengthen emotional and practical support within couples, and improve sexual satisfaction could reduce extra-dyadic HIV stigma and its negative impacts on the health of couples living with HIV in sub-Saharan Africa. Relationship dynamics such as sexual satisfaction and social support may be of equal importance for both men and women in efforts to reduce anticipated HIV stigma.

OAD0805

Social support, food insecurity and HIV stigma among men living with HIV in rural southwestern Uganda

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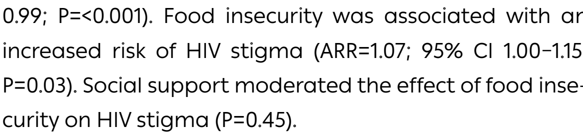
Background: HIV stigma is a significant factor in HIV/AIDS care, influencing uptake of HIV care services including HIV testing, initiation on antiretroviral therapy (ART) and retention in care. This is due to the fear of status disclosure and social discrimination. Internalized HIV stigma has been documented to be more common in men and it has the most impact on treatment adherence among people living with HIV. Information about HIV stigma and its associated factors among men living with HIV (MLWHIV) in rural Uganda is limited.

This study determined the burden of HIV stigma and its associated factors among men accessing HIV/AIDS care at a rural health facility in southwestern Uganda.

Methods: This was a clinic-based cross sectional study. We consecutively enrolled 252 adult men accessing HIV/AIDS care at a rural health centre in southwestern Uganda during the Corona virus pandemic. We collected information on sociodemographic information, HIV stigma using the Berger stigma scale, social support using the Multidimensional Scale of Perceived Social Support and food insecurity using the Household food insecurity Access Scale. We fitted modified Poisson regression models to determine the associations between social support, food insecurity and HIV stigma.

Results: The mean HIV stigma score of the study participants was 70.08 (SD 19.34) and almost half (48%) had high level HIV stigma. Most participants (75%) reported food insecurity, 5% of whom had severe food insecurity.

The risk of HIV stigma was lower among those aged 35 years and above (adjusted risk ratio [ARR]=0.89; 95% CI 0.83–0.96; P=0.003, those who had been on ART for more than 5 years (ARR=0.92; 95% CI=0.84–0.99; P=0.04), and those who had social support (ARR=0.99; 95% CI=0.98–



0.99; P=<0.001). Food insecurity was associated with an increased risk of HIV stigma (ARR=1.07; 95% CI 1.00–1.15; P=0.03). Social support moderated the effect of food insecurity on HIV stigma (P=0.45).

Conclusions: HIV stigma is common among MLWHIV in rural Uganda and is significantly associated with food insecurity. Social support moderated the effect of food insecurity on HIV stigma. We thus recommend social support interventions and economic empowerment of MLWHIV to improve their HIV treatment outcomes.

OAE01 Innovative differentiation: How best to deliver HIV testing, treatment and prevention services

OAE0102

Medical drones to support HIV differentiated service delivery in an island population in Uganda

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Background: Kalangala district, Uganda is comprised of 84 islands in Lake Victoria. These island-dwelling communities have the highest HIV prevalence (27%) and lost to follow up from HIV care (50%) in Uganda. Delivery of antiretroviral therapy (ART) is a challenge due to the geography and the nomadic nature of the community.

Description: Between July – September 2019 we undertook a survey of medical supply chain gaps for HIV care at health facilities in two sub-counties Bufumira and Mazinga) in Kalangala district. At baseline 5.3% of PLHIV were accessing care from differentiated service delivery (DSD). Most ART refills were managed through outreach visits to remote boat landing sites. Between 50-90% health care worker time outreaches is spent on ART refills; the remaining spent on maternal and child health and non-communicable diseases. Annual cost of outreach activities by these facilities boat is approximately $90,000. Data were used to design a quasi-experimental pilot to evaluate the feasibility and acceptability of using medical drones for ART delivery to peer support groups.

Lessons learned: Since September 2021 two DJI Matrice 300 drones have flown from Bufumira health centre to five remote landing sites previously receiving ART through boat outreaches. In September 2021 the medical drone delivered three months of ART to 43 PLHIV in seven DSD groups on three landing sites. In December 2021 drones replaced boat deliveries to 64 PLHIV in 11 DSD groups across five landing sites. Average flight time was 9.3 minutes for medical drone compared to 35 minutes per boat trip. Average distance from Bufumira to landing site was 6.6km (max 10km). Six peer support workers have been sensitised on how to prepare the drone landing pad, secure the area, safely unload ART from the drone and load documentation for return to Bufumira.

Conclusions/Next steps: The pilot will continue until June 2022, aiming to deliver to 100 PLHIV. The pilot will be evaluating:

i. PLHIV: ART stock outs, lost to follow up, viral load and:

ii. Impact on health facility: number of DSD groups, number of outreaches and impact on outreach costs.

Mazinga health centre and associated landing sites will be used as control comparison.

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OAE0103

How efficient are HIV self-testing models? A comparison of community, facility, one-stop-shop and pharmacy retail distribution models in Nigeria

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Background: In many Nigerian states, more than 95% of persons living with HIV now know their status. Nigeria is scaling up HIV self-testing (HIVST) to close testing gaps among populations not reached with conventional testing. Jhpiego, in close partnership with the National AIDS and STDs Control Program within the Federal Ministry of Health and National Agency for the Control of AIDS, has been providing catalytic support to enable the scale up of HIVST in Nigeria under the Unitaid-funded Self-Testing Africa (STAR) initiative since 2020.

Methods: We compared HIVST outcomes across 4 distribution models implemented by non-governmental and community-based organizations in Nigeria between October-December 2021, with technical and commodity support from STAR. A community-based distribution model targeted men, key populations (KP), adolescents, young people, and orphans and vulnerable children in hotspots within high burden Nigerian states; a facility-based model offered primary and secondary distribution via various healthcare services; KP one-stop shops (OSS) integrated HIVST distribution within their services, and a pharmacy model provided HIVST at reduced cost equivalent to USD 2.00.

Results: HIVST cascade data were collected, documented in relevant HIVST tools and descriptively analyzed as shown in table 1.

	Distributed	Results returned %	Reactive %	Linked to testing %	Concordant test %	Linked to ART
Community	33023	33023(100%)	192(0.6%)	156(81%)	124 (79%)	116 (94%)
Facility	15225	15100 (99%)	263 (1.7%)	250 (95%)	240 (96%)	235 (98%)
KP OSS	10301	10149 (99%)	340 (3.4%)	340 (100%)	338 (99%)	338 (100%)
Pharmacy	245	238(97%)	1(0.4%)	0	N/A	N/A

Table 1:

Conclusions: HIV testing yield and performance across the cascade was optimized through KP OSS. Trends warranting examination include:

1. Low yield in community and pharmacy settings suggest need for better targeting;
2. The absence of confirmatory testing following reactive tests from pharmacy distribution suggests a need for linkage support;
3. Low test concordance in community-based distribution suggests possible test or data quality issues; and,
4. High linkage to ART across models, with potential to improve following community-based HIVST.

More research is needed to understand the potential of each model as the Nigerian program advances.

OAE0104

How soon should patients be eligible for differentiated service delivery models for antiretroviral treatment?

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Background: Attrition from HIV treatment (ART) is highest during patients' first 6 months after initiation. Although ≥6 months on ART is an eligibility criterion for most differentiated service delivery (DSD) model guidelines, some patients enroll earlier. We used routinely-collected data on DSD models in Zambia to evaluate loss to follow-up (LTFU) comparing patients enrolling in DSD models early vs those who did so later (>6 months).

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Methods: We extracted data from electronic medical records for adults (≥15 years) initiated on ART between 01/01/2019 and 31/12/2019 and evaluated LTFU (>90 days late for last scheduled medication pickup) at 18 months for "early enrollers" (DSD enrolment within <6 months on ART) and "established enrollers" (DSD enrolment with >6 months on ART). We used a log-binomial model to compare LTFU risk between groups, adjusting for age, sex, urban/rural status, ART refill intervals and DSD model.

Results: For 6,340 early enrollers and 25,857 established enrollers, there were no important differences between the groups by sex (61% female), age (median 37 years), or setting (65% urban). ART refill intervals were longer for established vs early enrollers (72% vs 55% were given 4-6 month refills). LTFU at 18 months was 3% (192/6,340) for early enrollers and 5% (24,646/25,857) for established enrollers. Early enrollers were 41% less likely to be LTFU than established patients (adjusted risk ratio [95% confidence interval] 0.59[0.50-0.68]).

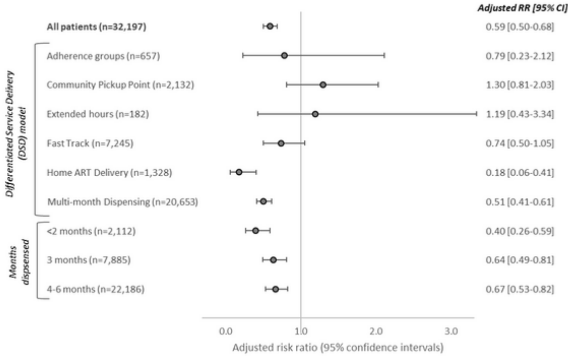

Figure 1. Relative risk of loss to follow-up within 18 months of DSD enrollment for Early Enrollers of DSD models compared to Established Enrollers, stratified by DSD model and ART months dispensed.

Conclusions: Patients enrolled early after ART initiation in DSD models in Zambia were more likely to be retained in care than patients referred after they were established on ART. A limitation of the analysis is that early enrollers may have been selected for DSD participation due to providers' and patients' expectations about future retention. Offering DSD model entry to at least some ART patients <6 months after ART initiation may help address high attrition during the early treatment period.

OAE0105

The effect of six-month PrEP dispensing supported with interim HIV self-testing on PrEP continuation at 12 months in Kenya: a randomized implementation trial

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Background: In Kenya, HIV pre-exposure prophylaxis (PrEP) is primarily delivered at HIV clinics where client barriers to continuation include privacy concerns, long wait times, and setting-associated stigma. Six-month PrEP dispensing supported with interim HIV self-testing (HIVST) would reduce the number of clinic visits and potentially address some of these continuation barriers.

Methods: We conducted a non-inferiority trial to test this model of PrEP delivery in Thika, Kenya. Eligible participants were PrEP clients ≥18 years who returned for their first one-month follow-up visit. We randomized participants 2:1 to: 1) six-month PrEP dispensing with semiannual clinic visits and interim HIVST at three months, or 2) standard-of-care (SOC) PrEP delivery with quarterly clinic visits and clinic-based HIV testing. Pre-specified outcomes at 12 months included HIV testing (any in past six months and ≥2 times since enrollment) and PrEP refilling (at 12 months and both six and 12 months). We used binomial regression models, adjusted for sex and serodifferent partnership status, to estimate risk differences (RDs) and interpreted one-sided 95% confidence interval (CI) lower bounds (LB) ≥-10% as non-inferior.

Results: From May 2018 to February 2020, we enrolled and followed 495 participants. At 12 months, 73.3% (241/329) in the intervention and 72.3% (120/166) in the SOC arm returned to clinic. In the intervention arm, 69.9% (230/329) tested for HIV in the past six months and 72.3% (238/329) tested ≥2 times since enrollment, compared to 69.9% (116/166, RD -0.3%, 95% CI LB -7.4%) and 71.7% (119/166, RD 0.2%, 95% CI LB -6.8%) in the SOC arm, respectively. Additionally, 59.6% (196/329) in the intervention arm refilled PrEP at 12 months compared to 62.7% (104/166) in the SOC arm (RD -3.3%, 95% CI LB -10.8%, thus failing to demonstrate non-inferiority). However, 56.5% (186/329) in the intervention and 56.6% (94/166) in the SOC arm (RD -0.2%, 95% CI LB -7.9%) refilled PrEP at both at six and 12 months.

Conclusions: Six-month PrEP dispensing with interim HIVST resulted in high PrEP continuation at one year. HIV testing and PrEP refilling were generally comparable to SOC PrEP dispensing. This novel model has the potential to optimize PrEP delivery in Kenya and similar settings.

OAE02 Resilience: The new normal?

OAE0202

Responding to the challenges of a dual pandemic: how outreach mobile health clinics maintained HIV testing and linkage services in the face of COVID-19

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Background: In September 2021, The Global Fund declared COVID-19 a major setback in the fight against HIV/AIDS, reporting that HIV testing services (HTS) dropped 22% over the previous year globally. In Malawi, the COVID-19 pandemic threatens the dramatic progress made in recent years to achieve UNAIDS 95-95-95 targets, particularly in hard to reach communities.

Description: GAIA operates outreach mobile clinics, improving access to integrated HIV and primary health care services for communities far off the healthcare grid. In a public-private partnership with Malawi District Health Offices, seven clinics serve 35 sites weekly across three districts, where adult HIV prevalence is 16%, providing 250,000 client visits per year. In these remote regions, GAIA's HTS and linkage to care are critical to sustain epidemic control.

During the pandemic, GAIA mobile clinics maintained access to these essential health services for our vulnerable, rural clients through smart pivots. GAIA added staff to reduce client visit length and promote distancing; protected staff, clients and government partners with PPE; altered clinic workflow and care protocols to enhance safety; and improved hand-washing protocols and ventilation.

Lessons learned: In stark contrast to the global trend, HIV testing at GAIA mobile clinics increased by 22%, averaging 1272 tests per clinic between April 2020-December 2021 compared with 1042 during the 21 months prior. Of the 7,736 people tested, 86% were female and 3% tested positive (3% of females, 5% of males), of whom 90% were successfully reached for follow-up and 88% initiated ART.

During this period, the clinics operated 98% of the time, missing only 58 of 2715 clinic working days (83% COVID-related closures), providing HIV and COVID-19 related health talks to 54,761 and 242,358 attendees respectively, and facilitating vaccinations by government community health workers at mobile clinic sites.

Conclusions/Next steps: COVID-19 challenged many health providers' ability to provide HIV testing services, threatening progress in the fight against HIV/AIDS. Leveraging community trust and local government partnership, GAIA's mobile clinics maintained and increased access to high quality, easily accessible HTS throughout the pandemic. This flexible, community-based outreach approach to care provision is an effective model for rural health system strengthening and rapid crisis response.

OAE0203

Expanding role of village health workers in Lesotho: from supporting HIV patients to COVID-19 contact tracing

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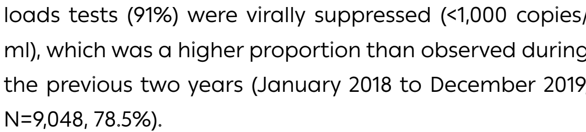
Background: The COVID-19 globally has strained health systems, particularly in developing countries like Lesotho, which have experienced a shortage of health workers during the pandemic. Since 2006, Partners In Health Lesotho (PIHL) has been supporting comprehensive HIV services at seven health centers in hard-to-reach areas of Lesotho. Prior to the pandemic, PIH had engaged and trained two village health workers (VHW) in each village, one who is dedicated to providing services to HIV patients and the second who is dedicated to maternal and child health.

Description: PIHL collaborated with the Ministry of Health of Lesotho to expand the scope of the work of the VHWs who support HIV patients to include COVID-19 screening and contact tracing. Through this intervention, 938 VHWs were trained on COVID-19 symptoms, infection prevention and control measures, contact tracing and case reporting. The VHWs received three day in-person training and personal protective equipment (PPE), including face masks, face shields and hand sanitizers. The VHW coordinator and health facility staff supervised and coached the VHWs to undertake COVID-19 related activities in addition to HIV patients' care at the community level.

Lessons learned: From May 2020 to December 2021, 87,634 people were screened for COVID-19, 430 clients were diagnosed with COVID-19, and 444 were contacts traced and isolated with the help of VHWs. During this time, VHWs continued to support 5,279 HIV patients, which was comparable to a pre-pandemic patient load (N=5168).

Between January 2020-December 2021, we completed 10,684 viral load tests, which was only a 7% reduction from the 11,533 tests performed during the two previous years (Jan 2018-December 2019).

However, average testing coverage during the pandemic remained greater than one test per patient per year. From January 2020 to December 2021, 9,737 viral



loads tests (91%) were virally suppressed (<1,000 copies/ml), which was a higher proportion than observed during the previous two years (January 2018 to December 2019, N=9,048, 78.5%).

Conclusions/Next steps: Providing VHWs with PPE and training to integrate COVID-19 infection services into their routine HIV prevention and care activities was an effective strategy to staff COVID-19 prevention and control programs without sacrificing high-quality HIV care.

OAE0204

MPOWER yourself: an online HIV self-test service to increase testing among gbMSM during COVID-19 restrictions

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Background: Opportunities to test for HIV in Ireland have increased in recent years, however, the COVID-19 crisis resulted in complete closure or significantly restricted access to HIV testing services across the country. In November 2020, the MPOWER Programme at HIV Ireland devised a free online HIV self-test ordering service to bridge the gap created by COVID-19 restrictions and increase HIV testing among gbMSM.

Description: An online portal was developed that allows gbMSM to order a free HIV self-test and have it delivered to their home address. MPOWER staff is available via helpline, WhatsApp, email, and on Zoom to assist in the use of the kit, and to offer support and referrals if needed. Demographic and behavioral data is collected during the ordering process and is stored separately from personal data. Service users receive an SMS two weeks after dispatch with a link to an evaluation survey.

Lessons learned: Such was demand, the total project supply of 2,000 HIV self-test kits were ordered within 13 days of launching the service. With the support of a mix of funding partners, the service resumed with limited weekly availability from April 2021 to the end of that year. 3,572 people in total received a self-test, 78% identified as gbMSM. 58% of users were aged 17-29. Across all users, 23% had never tested for HIV before. Notably, 95% of gbMSM were not using PrEP, of these men 32% had condomless anal sex in the 3 months prior to testing. 13 gbMSM received a reactive result, 5 reported their result through our support team, and 8 through the evaluation form. The evaluation received a response rate of 33%. Inability to access a sexual health service (20%), prefer not to attend a clinic or GP (20%), and having never tested before (28%) were cited as reasons for using the service.

Conclusions/Next steps: Online HIV self-testing services offer a unique opportunity to increase access to testing, engage first-time testers and key populations who experience barriers, including those created by COVID-19 restrictions. The development of a bespoke online portal allowed a seamless connection between data collection, analysis, kit dispatch, support, and referrals.

OAE0205

'Endeavor to reach the furthest behind first': promoting HIV prevention services using social media intervention in the era of COVID 19 among FSW in Benue State

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Background: Sex workers in Nigeria are affected by the COVID-19 pandemic . Also, lockdown and other measures by government to reduce the spread of COVID 19 limit access to HIV prevention services among sex workers. It is against this backdrop that CWIDI with support from Restless development fund uses social media to promote HIV prevention service among FSW.

Description: 20 FSW were trained as social media mobilizers to engage FSW through social networking platforms such as Facebook, WhatsApp, and Instagram. IEC materials were developed in local dialects and posted on selected social media platforms to raise awareness regarding HIV prevention strategies as well as COVID 19 prevention messages for FSW. The trained social media mobilizers engaged FSW that access these platforms through one–on-one interpersonal communication and provided HIV testing and refereed FSW for COVID-19 test.

Lessons learned: Data from August to December 2020 shows that social media is a safe space for communication among FSW and an effective tool to reach more FSW. 400 FSW were recruited through social media. 320 (80%) had not been tested for HIV within the last six months. Physical outreach reached 112 FSW; 52(46.4%) had not been tested within the last six months. Out of 320 recruited through social media who has not been tested for HIV within the last six month. 300 (93.8%) got tested for HIV, 56(18.7%) tested positive while 244(81.3%) tested Negative. Out of 52(46.4%) FSW reached through physical outreach who has not been tested for HIV within the last six months 40 (76.9%) tested negative while 12(23.1%) were positive. 20% of FSW recruited through social media engaged in inconsistent use of condoms compared to 60% identified through physical out reach. HIV positivity rate was higher among those reached through social media outreach compared to those reached through physical outreach. 100% of FSW reached through social media outreach got tested for COVID 19

Conclusions/Next steps: Linking FSW to services through social media has shown to deliver higher HIV prevention result among FSW. Hence, implementing partners should use social media as an effective tool for sharing HIV behavior change messages alongside COVID 19 messages for FSW.

OAE03 Optimizing investments for health: Cash, cost and prices

OAE0302

The effect of a conditional cash transfer program on AIDS morbidity and mortality among the poorest: a quasi-experimental study of a cohort of 22.7 million Brazilians

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Background: Poverty is a risk factor for HIV/AIDS but previous studies on the impact of conditional cash transfer programs (CCT) have shown inconsistent results. We evaluated the effects of one of the world's largest CCTs, the *Programa Bolsa Família* (PBF), on all sequential AIDS outcomes, using data from a nationwide cohort of the poorest Brazilian people on the Unified Registry for Social Programs (*Cadastro Único*).

Methods: We analyzed a cohort of 22.7 million low-income Brazilian people for the period between 2007 and 2015, comparing PBF beneficiaries and non-beneficiaries, using a quasi-experimental impact evaluation design. We used inverse probability of treatment weighting (IPTW) to adjust for selection into receipt of BFP benefits and then fitted multivariable Poisson regressions, adjusted for all relevant socioeconomic and demographic confounding variables, to estimate the effect of PBF on AIDS incidence, mortality, and case-fatality rates. We also performed subgroup analyses.

Results: Exposure to PBF was associated with a lower incidence of AIDS (RR: 0.59; 95% CI: 0.57-0.61), mortality (RR: 0.61; 95% CI: 0.57-0.64) and case-fatality rates (RR: 0.75; 95% CI: 0.66-0.85). PBF associations were significantly stronger among individuals living in extreme poverty, in comparison with those experiencing poverty (RR0.53 versus RR0.84 for incidence; RR0.54 versus RR0.90 for mortality, and RR0.72 versus RR1.00 for case-fatality). PBF impact was also stronger among females and adolescents.

Conclusions: Conditional cash transfers could significantly reduce AIDS morbidity and mortality, especially in extremely poor populations. During the current dramatic rise in global poverty, due to the COVID-19 pandemic, CCT investments could protect against potential increases in the HIV/AIDS burden, and contribute towards achieving AIDS-related Sustainable Development Goals (SDGs).

OAE0303

Cost-effectiveness of broadly neutralizing antibodies for HIV prophylaxis for all infants born in high-burden settings

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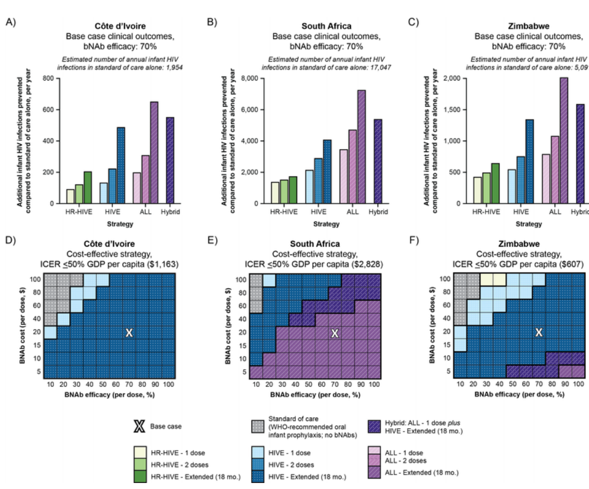
Background: Approximately 150,000 infants acquire HIV annually despite maternal antiretroviral therapy scale-up. We evaluated the potential clinical impact, cost, and cost-effectiveness of offering anti-HIV broadly neutralizing antibody (bNAb) prophylaxis, once clinically approved, to infants in various high-burden settings.

Methods: We simulated birth cohorts in Côte d'Ivoire, South Africa, and Zimbabwe using the Cost-Effectiveness of Preventing AIDS Complications (CEPAC) model. We modeled strategies offering a three-bNAb combination–

in addition to standard-of-care prophylaxis, where WHO-recommended–to infants: a) with known, WHO-defined high-risk HIV exposure at birth (*HR-HIVE*), b) with known HIV exposure at birth (*HIVE*), or c) regardless of known HIV exposure (*ALL*). Infants received one, two, or extended (every 3 months through 18 months) bNAb doses. We also modeled a strategy offering one birth bNAb dose to all infants plus extended dosing to infants with known exposure. Base-case model inputs, varied in sensitivity analyses, included bNAb efficacy (70%), efficacy duration/dosing interval (3 months), and cost ($20/dose).

Outcomes included infant HIV infections, life expectancy, lifetime HIV-related costs, and incremental cost-effectiveness ratios (ICERs, in US$/year-of-life-saved, assuming a ≤50% GDP per capita cost-effectiveness threshold).

Results: Under base-case assumptions, *HIVE* and *ALL* strategies would prevent 6-42% of infant HIV infections across settings (Figure 1A-C). Extended bNAbs for at least all known HIV-exposed infants would be cost-effective in all settings (Figure 1D-F). *HR-HIVE* strategies would result in greater lifetime costs and smaller life expectancy gains than *HIVE* strategies. At various bNAb costs and efficacies, *HIVE* strategies would be cost-effective in Côte d'Ivoire and Zimbabwe, and *ALL* strategies would be cost-effective in South Africa, partially driven by relatively higher maternal HIV prevalence (Figure 1D-F).



Conclusions: Adding long-acting bNAbs to current maternal-infant prophylaxis would be cost-effective over plausible cost and efficacy ranges, with the cost-effective target population varying by setting. Infant bNAb prophylaxis development and implementation should be prioritized in high-burden settings.

OAE0304

The relative cost-effectiveness of long-acting injectable cabotegravir versus oral pre-exposure prophylaxis: a modelled economic evaluation and threshold analysis in South Africa based on the HPTN 083 and 084 trials

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Background: Long-acting cabotegravir (CAB-LA), administered 2-monthly, is more effective at preventing HIV infection than daily oral tenofovir (TDF)/emtricitabine (FTC), but its cost-effectiveness in a high-prevalence setting is not known. We estimated the cost-effectiveness of CAB-LA compared to TDF/FTC in South Africa and determined the threshold price at which CAB-LA is as cost-effective as TDF/FTC.

Methods: We used deterministic HIV transmission modelling, evaluating the impact of CAB-LA provision compared to scaling up standard-of-care, TDF/FTC, to adolescent girls, young women, female sex workers, adolescent boys, young men, and men who have sex with men. We estimated the average cost by population using ingredients-based costing (costs in 2021 USD). We model the cost-effectiveness over 2022-2041, assuming two coverage scenarios (medium, high), assuming higher uptake of CAB-LA compared to TDF/FTC throughout based on preference studies. Under CAB-LA we modelled two scenarios defined by average duration of use (minimum: same duration as TDF/FTC of 5-11 months; maximum: longer duration than TDF/FTC, 12-24 months). We compare scenarios to the current baseline of low TDF/FTC roll-out.

Results: Across CAB-LA scenarios, 15%-28% of new HIV infections were averted over baseline compared to 5%-8% in oral TDF/FTC scale-up scenarios (Table 1). Assuming equivalent drug costs between CAB-LA and TDF/FTC, the incremental cost of CAB-LA to the HIV programme was higher than TDF/FTC (5%-14% vs 2%-4%) due to higher assumed uptake of CAB-LA. The cost per infection averted was $4,553-$6,803 (CAB-LA) and $6,053-$6,610 (TDF/FTC). The cost per CAB-LA injection needed to be less than twice that of a 2-month supply of TDF/FTC to remain as cost-effective, with threshold prices ranging between $8.99/injection (high coverage; maximum duration) and $14.21/injection (medium coverage; minimum duration).

Scenario	New HIV infections		Life years lost due to AIDS		CAB-LA drug cost relative to TDF/FTC drug	Total cost of the HIV programme (2021 USD)		Incremental cost effectiveness (2021 USD)	
	Number [millions]	*% averted over BL*	*Number [millions]*	*% saved over BL*		*Cost [billions]*	*Incremental cost over BL*	*Cost/ infection averted*	*Cost/ life year saved*
Baseline (BL)	3.02		37.34			41.29			
Medium PrEP coverage[1]									
TDF/FTC	2.89	4%	37.00	1%	N/A	42.08	2%	6,053	2,309
CAB-LA minimum duration[3]	2.58	15%	36.19	3%	1x	43.29	5%	4,553	1,737
					2x	44.49	8%	7,293	2,782
					3x	45.70	11%	10,034	3,827
					4x	46.90	14%	12,774	4,873
					5x	48.10	16%	15,514	5,918
CAB-LA maximum duration[4]	2.44	19%	35.81	4%	1x	44.32	7%	5,172	1,983
					2x	46.25	12%	8,462	3,245
					3x	48.17	17%	11,752	4,507
					4x	50.10	21%	15,042	5,769
					5x	52.03	26%	18,332	7,030
High PrEP coverage[2]									
TDF/FTC	2.78	8%	36.68	2%	N/A	42.92	4%	6,610	2,498
CAB-LA minimum duration[3]	2.31	24%	35.41	5%	1x	45.49	10%	5,880	2,182
					2x	47.90	16%	9,247	3,432
					3x	50.31	22%	12,615	4,681
					4x	52.71	28%	15,983	5,931
					5x	55.12	33%	19,350	7,181
CAB-LA maximum duration[4]	2.17	28%	35.03	6%	1x	47.11	14%	6,803	2,517
					2x	50.65	23%	10,933	4,045
					3x	54.18	31%	15,063	5,573
					4x	57.71	40%	19,193	7,100
					5x	61.25	48%	23,323	8,628

Abbreviations: HIV=human immunodeficiency virus, AIDS=acquired immunodeficiency syndrome, CAB-LA =long-acting injectable cabotegravir, USD=United States dollars, BL=Baseline, PrEP=pre-exposure prophylaxis, TDF=tenofovir, FTC= emtricitabine

1. Medium PrEP coverage: TDF/FTC- 15% (female sex workers, FSW, and men who have sex with men, MSM), 5% (adolescent girls and young women, AGYW and adolescent boys and young men, ABYM); CAB-LA minimum duration- 25% (FSW, MSM), 20% (AGYW), 10% (ABYM); CAB-LA maximum duration- 40% (FSW, MSM), 35% (AGYW), 20% (ABYM)
2. High PrEP coverage: TDF/FTC- 30% (FSW, MSM), 10% (AGYW, ABYM); CAB-LA minimum duration- 50% (FSW, MSM), 40% (AGYW), 20% (ABYM); CAB-LA maximum duration- 67% (FSW, MSM), 60% (AGYW), 35% (ABYM)
3. CAB-LA minimum duration: average duration on CAB-LA to equal to that of TDF/FTC; 5 months (AGYW, FSW, ABYM) and 11 months (MSM)
4. CAB-LA maximum duration: average duration on CAB-LA assumed to be longer than that of TDF/FTC as a result of a higher preference for injectable; 12months (AGYW, FSW, ABYM) and 24 months (MSM)

Table 1. Impact and cost-effectiveness of CAB-LA and oral TDF/FT over a 20-year time horizon (2022-41)

Conclusions: CAB-LA is potentially game-changing for HIV prevention. However, for its implementation to be financially feasible across low- and middle-income countries with high HIV incidence, CAB-LA must be reasonably priced.

OAE0305

Variation in average unit prices (2020) of antiretroviral drugs in generic accessible low- and middle-income countries

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Background: By end 2020, 37.7 million people were living with HIV and 27.5 million people were accessing antiretroviral therapy (ART). Price transparency of anti-retroviral drugs (ARVs) will be key to optimize procurement and support in sustainable financing of HIV commodities.

Methods: Data on average ARV unit prices were extracted from reports to UNAIDS (Global AIDS Monitoring) and government customs to estimate the price trends in 2020 across 1st line and 2nd line ARV regimens & variations for ARVs in generic accessible low-and-middle-income countries (LMICs).

Estimates for person-years on treatment and unit price per person-year (ppy) were calculated from the volumes, expected dosage frequency for each regimen and price of ARV exports in LMICs. Analyses were stratified by year, regimen, income group and region.

Results: In 2020, the average unit price ppy of 1st line ARVs in LMICs was US$ 95. It was US$ 77 in low-income countries, US$ 92 in lower middle-income countries and US$ 117 in upper middle-income countries. The 1st line ART regimen was estimated to be most expensive in Eastern Europe and Central Asia with an average price of US$116 ppy. The West and Central Africa region, with an average price for 1st line ART of US$ 76 was the least expensive followed by US$82 in East and Southern Africa and US$83 in the Caribbean.

Overall, average unit price ppy of the second line ARV regimen in LMICs was US$256, 2.7 times more expensive than the 1st line ARV regimens.

The most expensive 2nd line ART regimen was Abacavir+Lamivudine+Raltegravir (US$ 747). The least expensive 2nd line ARV regimen was Zidovudine+Lamivudine+Dolutegravir with an average unit cost ppy of US$102.

Conclusions: There are large variations in average procurement prices across regions and income groups of countries. In the current environment of flat lined international resources for HIV, countries must look for options to optimize their procurement cost and thereby reallocate the resources saved through supply chain optimization to other programme needs.

OAE04 Achieving sustainability in the HIV response: Thinking differently!

OAE0402

Is local production of HIV commodities a feasible strategy for improving domestic ownership and financial sustainability of HIV epidemiological control in low- and middle-income settings?

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Background: Nigeria has about 1.9 million people living with HIV, with 1,228,100 on antiretroviral therapy in June 2020. Approximately US$126 million was invested in HIV commodity expenditure in 2018 with more than 81% from donors, while public and private funds accounted for 18% and 1%, respectively. Recently, HIV donor funding has decreased—from 92.3% in 2008 to 82.8% in 2018. Given this decline, the government is making efforts toward a more sustainable HIV financing approach. Local manufacture of HIV drugs was proposed as one of the sustainable strategies for mobilizing domestic resources for HIV in Nigeria's National Domestic Resource Mobilization and Sustainability Strategy for HIV (2021–2025).

Methods: A two-pronged approach was adopted to explore the feasibility of this strategy: (1) key informant interviews with multiple stakeholders, including national and state governments, pharmaceutical manufacturers and associations, biomedical companies, donors, and partner organizations, and (2) a desk review of available national reports, peer-reviewed and gray literature. This obtained understanding of the requirements, risks, and benefits of local production of ARVs in Nigeria.

Results: Local production of HIV commodities is a viable and sustainable strategy that can increase ARV access, improve efficiency, contribute to economic growth, and reduce dependence on external sources, however some challenges must be overcome. These include difficulty with obtaining prequalification approvals from the World Health Organization (WHO) and U.S. Food and Drug Administration (FDA); lack of guaranteed market for products, high import duties and taxes, financial constraints, and insufficient government commitment.
Recommendations to overcome barriers include enabling policies like direct fiscal and non-fiscal incentives by the government to local manufacturers, review of heavy tax burden, advance purchase commitment by the government, supporting pharmaceutical industries to attain prequalification, strategic joint venture with international pharmaceutical companies and multisectoral collaboration.
Conclusions: Local production of HIV commodities can be a viable and sustainable strategy for enhancing country ownership of HIV response. Local manufacturing companies are willing to take on this venture, if needed support and commitment are obtained. HIV actors in low- and middle-income settings can explore mechanisms of creating an enabling regulatory and policy environment with guaranteed buyer commitments through multisectoral partnerships.

OAE0403
Quantifying the health and economic impact of voluntary licensing of HIV medicines in low- and middle-income countries: putting numbers on additional uptake, deaths averted, and money saved by MPP licences

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Background: Public-health licences enable the development, manufacturing, and uptake of generic versions of patented medicines in low- and middle-income countries (LMICs) before patent expiry. Generic competition reduces prices and supports accelerated uptake of optimal treatment regimens, leading to positive health outcomes.
However, quantifying this impact has seldom been done. Here, we build on previous work and present a thorough modelling study quantifying the health and economic impact in LMICs of Medicines Patent Pool (MPP) voluntary licences for multiple HIV medicines.
Methods: Building on a rigorous, evidence-based methodology previously applied to MPP licences for dolutegravir (DTG) and daclatasvir (Morin et al., The Lancet Public Health, 2021), we present an adaptation of the model, now applied to other MPP licences for HIV medicines and with updated results on DTG reflecting the most recent uptake data. Results for atazanavir (ATV), DTG (now also for paediatric use), lopinavir/ritonavir (LPV/r), and tenofovir disoproxil fumarate (TDF), together representing > 95% of MPP impact so far, are presented.
Results: By the end of 2020, MPP licences for HIV medicines ATV, DTG, LPV/r, and TDF are modelled to have led to an additional uptake of 1.0 [0.86 – 1.7] million patient-years treated, 830 [470 – 1,500] million USD saved, 7,500 [1,800 – 16,000] deaths averted, 63,000 [15,000 – 150,000] DALYs averted and 79,000 [17,000 – 190,000] virological failures averted. Results for each licence, including projections until 2030, are presented in Table 1.

	Additional uptake (patient-years treated)	Costs saved (million USD)	Deaths averted	DALYs averted	Virological failures averted
ATV	* 240,000 by 2020 * 330,000 by 2030	* 67 by 2020 * 76 by 2030	* 300 by 2020 * 410 by 2030	* 7,900 by 2020 * 11,000 by 2030	* 9,600 by 2020 * 13,000 by 2030
DTG (adult use)	* 710,000 by 2020 * 16,000,000 by 2030	* 280 by 2020 * 2,800 by 2030	* 7,000 by 2020 * 160,000 by 2030	* 50,000 by 2020 * 1,100,000 by 2030	* 64,000 by 2020 * 1,500,000 by 2030
DTG (paediatrics)	**No uptake as of 2020* * 42,000 by 2030	**No uptake as of 2020* * 61 by 2030	**No uptake as of 2020* * 180 by 2030	* *No uptake as of 2020* * 4,700 by 2030	**No uptake as of 2020* * 5,700 by 2030
LPV/r (adult use)	* 0 by 2020 * 0 by 2030	* 89 by 2020 * 89 by 2030	**Not applicable* * *Not applicable*	* *Not applicable* * *Not applicable*	**Not applicable* * *Not applicable*
LPV/r (paediatrics)	* 36,000 by 2020 * 36,000 by 2030	* 7 by 2020 * 7 by 2030	* 92 by 2020 * 92 by 2030	* 2,400 by 2020 * 2,400 by 2030	* 2,900 by 2020 * 2,900 by 2030
TDF	* 49,000 by 2020 * 49,000 by 2030	* 380 by 2020 * 380 by 2030	* 87 by 2020 * 87 by 2030	* 2,300 by 2020 * 2,300 by 2030	* 2,800 by 2020 * 2,800 by 2030
Total for MPP licences for HIV medicines	***1,000,000 by 2020** *** 17,000,000 by 2030**	***830 by 2020** *** 3,400 by 2030**	***7,500 by 2020** *** 160,000 by 2030**	***63,000 by 2020** *** 1,200,000 by 2030**	***79,000 by 2020** *** 1,500,000 by 2030**

Table 1. Disaggregated impact results – achieved by 2020 and projected until 2030 – for MPP licences for ATV, DTG, LPV/r, and TDF

Conclusions: Modelling the impact of MPP licences for HIV medicines offers visibility on the overall contribution to the global HIV response of the MPP model of public-health oriented voluntary licensing and a means to assess the investment (additional expenditure) that would be needed for the same level of optimal drug uptake without MPP licences: 22 billion USD in cumulative theoretical expenditures avoided by 2030.

OAE0404
Estimated costs to address unmet financial needs for HIV pre-exposure prophylaxis, United States, 2018

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Background: An estimated 1.2 million persons in the United States (US) had indications for pre-exposure prophylaxis (PrEP) in 2018. The cost of PrEP medications and care

are frequently cited as barriers to increased PrEP uptake. We sought to understand the burden of financial needs for PrEP care and the cost to address them.

Methods: Using population-based surveys and published information, we modeled the number of persons who had unmet financial needs for PrEP care among US adults with PrEP indications, stratified by transmission risk group (men who have sex with men [MSM], heterosexual males [HET males] and females [HET females], and persons who inject drugs [PWID]), insurance status, and income level. We estimated the annual cost to address unmet financial needs for PrEP medication, clinical visits, and lab testing based on the 2021 PrEP clinical practice guideline.

Results: Of 1.2 million US adults with PrEP indications, we estimated that 64% had private insurance, 21% had public insurance, and 15% were uninsured. In total, 49,860 (4%) persons required PrEP financial assistance, including 32,350 MSM, 7,600 HET females, 5,070 HET males, and 4,840 PWID (Table).

	MSM	HET Females	HET Males	PWID	Total
Persons needing financial assistance for medication, clinical visits, labs[1](n)	2,020	460	680	0	3,160
PrEP medication, cost per person[2]	$5,324	$5,324	$5,324	$5,324	$16,822,660
Clinical visits, cost per person[3]	$671	$671	$671	$671	$2,120,390
Lab testing, cost per person[3]	$1,458	$478	$478	$506	$3,490,150
Total, cost per person	$7,453	$6,472	$6,472	$6,501	$22,433,200
Persons needing financial assistance for clinical visits and labs only[4](n)	30,330	7,140	4,390	4,840	46,700
Clinical visits, cost per person[3]	$671	$671	$671	$671	$31,336,170
Lab testing, cost per person[3]	$1,458	$478	$478	$506	$52,185,520
Total, cost per person	$2,129	$1,149	$1,149	$1,177	$83,521,690
Grand Total					$105,954,890

Table. Estimated cost for PrEP medication, clinical visits, and labs for adults with unmet financial needs, by HIV transmission risk group — United States, 2018

Abbreviations: HET, heterosexual; MSM, men who have sex with men; PrEP, pre-exposure prophylaxis; PWID, persons who inject drugs

[1]Persons with income ≥500% of the federal poverty line (FPL) were ineligible for medication assistance programs and needed assistance for PrEP medication, clinical visits, and lab testing

[2]Medication costs calculated as weighted average of 340B price for Truvada, Descovy, and generic tenofovir disoproxil fumarate/emtricitabine

[3]Costs obtained from Centers for Medicare & Medicaid Services

[4]Persons with income <500% FPL were eligible for medication assistance programs and needed assistance for PrEP clinical visits and lab testing only

Of those, 3,160 required assistance for PrEP medications ($16.8 million), clinical visits ($2.1 million), and lab testing ($3.5 million) at a cost of $22.4 million (Table); 46,700 required assistance only for clinical visits ($31.3 million) and lab testing ($52.2 million) at a cost of $83.5 million. The total annual cost to address unmet financial needs for adults with PrEP indications was $106.0 million.

Conclusions: The number of persons with unmet financial needs for PrEP is <5% among adults with PrEP indications, but costs to meet those needs are significant. Population size estimates and costs to address unmet needs can inform policy makers about resources needed to overcome financial barriers for PrEP.

OAE0405

Thailand national PrEP program: moving towards sustainability

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Background: In Thailand, PrEP drugs are provided free of charge through government health care providers and key population-led health services (KPLHS) with external donor funding from The Global Fund, Thai Red Cross, and research projects. Thailand aims to gradually increase government funding and integrate PrEP service in the universal health coverage (UHC) benefit package, provided by the National Health Security Office (NHSO).

Description: To address PrEP service sustainability through government funds, the country worked on key systems health requirements including sharing evidence-based advocacy with policy makers, building capacity for health care staff, identifying and replicating best practice model to deliver PrEP, establishing a national PrEP monitoring system and PrEP targets, and developing PrEP implementation guidelines.

Lessons learned: By December 2021, current PrEP users in Thailand was 15,546; corresponding to a 7.3-fold increase from 1,865 in 2017. Starting in 2020, NHSO fund was allocated to pilot free PrEP as part of UHC; the fund accounted for 15% of PrEP users that year. In 2021, 44% of current PrEP users were from NHSO funding; almost three-fold increase from when NHSO program was first introduced in 2020, and three times more than the 5,000 PrEP user target set by NHSO.

Capacity building based on PrEP national guidelines was provided to 154 hospitals; 91 (59%) of these successfully set up PrEP service. 82% of current PrEP users in 2021 (n= 15,546) received PrEP services at KPLHS sites.

To increase sustainability and replicate the KPLHS best practice model, government is working on a KPLHS certification process to enable KPLHS sites to establish a formal partnership with government facilities to accelerate uptake of PrEP service. Despite these enabling policies and excellent health care infrastructure, Thailand current PrEP users only reached 35% of its 44,697 PrEP 2022 implementation goal.

Conclusions/Next steps: Thailand has built the foundations for PrEP program through evidence-based policy advocacy and guidelines, showing commitment through government financing of PrEP. Accelerating and promoting PrEP access and uptake through speeding PrEP service at KPLHS sites and government facilities will be key to support the scale up of PrEP in the country.

OAE0406

The economic returns of achieving the 2021-2030 AIDS targets to end the AIDS epidemic by 2030

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Background: In 2019, several countries have achieved or were on track to end AIDS. Despite progress towards that goal, AIDS remains a global crisis. The gains achieved are still fragile in many countries. In June 2021, the General Assembly of the United Nations adopted the Political Declaration on HIV and AIDS: Ending Inequalities and Getting on Track to End AIDS by 2030. We estimated the benefits and costs of this ambitious commitment.

Methods: We estimated the incremental costs benefits and economic returns of a scenario which fulfils the AIDS targets stated in the Political Declaration, compared to a counterfactual scenario defined as maintaining coverage of HIV-related services at 2020 levels. The benefits are calculated using the full-income approach, which values both the change in income and in mortality. We value both the health gain and the intervention cost to each HIV-affected country from the perspective of that country, converting national benefits and costs to purchasing-parity-equivalent (PPP) 2019 US dollars.

We estimated the value of the projected reduction in the mortality rate of the HIV programmes as the amount an average person would pay to reduce their risk of death by one in 10,000 for one year. From the literature, this amount varies between 1.0 and 1.6% of GDP per capita. We allowed the income-elasticity of the willingness to pay for mortality risk reduction to decline at either 1% or 1.5% for every percentage decline of the country's income.

Results: Using the full-income approach, we found that each additional dollar invested between 2021 and 2030 generates US$ 7.37 [4.52-11.79] in economic returns. Returns on investment vary substantially between countries, regions, and income categories. Returns are higher in countries with higher purchasing power as measured by their GDP per capita. The benefits of investment are also highly correlated with the total number of adults living with HIV.

Conclusions: Using the latest scientific evidence in terms of benefit-cost analysis, it appears that investing to achieve the 2025 targets in the UNAIDS Strategy and the 2030 target in the Agenda for Sustainable Development provides significant returns from both human and economic perspectives.

OAE05 Client-centred care: Seamless service integration

OAE0502

Screening and treatment of common mental disorders at HIV clinics within the International epidemiology Databases to Evaluate AIDS (IeDEA) consortium

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Background: Common mental disorders (CMDs), including depression, anxiety, and post-traumatic stress disorder (PTSD) are highly prevalent among people living with HIV and associated with poor HIV treatment outcomes.

Integrating screening and treatment of CMDs into HIV care can improve mental health, HIV treatment outcomes, and quality of life. Data regarding the availability of mental health screening and treatment at HIV clinics remain scarce.

Methods: We describe the reported availability of mental health screening and treatment from a survey of HIV treatment sites in Africa, the Asia-Pacific, the Caribbean, Central and South America, and North America regions participating in the International epidemiology Databases to Evaluate AIDS (IeDEA) consortium. The survey captured information on site characteristics and reported availability of screening and treatment for depression, anxiety, and PTSD in 2020.

Results: Among the 223 HIV treatment sites that completed the mental heath portion of the survey, 67% were located in urban settings, 50% served adult and pediatric populations, and 38% served only adults. Most sites (78%) were located in low- or middle-income countries (LMIC). Overall, 50%, 14%, and 12% of sites reported using a validated instrument to screen for depression, anxiety, and PTSD, respectively. Screening and counseling/psychotherapy were available for treatment of depression, anxiety, and PTSD at 46%, 13%, and 11% of sites, respectively. Screening and psychiatric medication was available for the treatment of depression, anxiety, and PTSD at 36%, 11%, and 8% of clinics, respectively. Screening and treatment for all disorders assessed was more commonly reported at urban compared to rural sites and at sites in high-income countries compared to sites in LMIC.

	All n=223 n (%)	Low-income countries n=51 n (%)	Middle-income countries n=121 n (%)	High-income countries n=51 n (%)
Depression Screening	112 (50)	27 (53)	48 (40)	37 (73)
Screening and counseling	102 (46)	24 (47)	44 (36)	34 (67)
Screening and psychiatric medication	80 (36)	18 (36)	27 (22)	35 (69)
PTSD Screening	27 (12)	3 (6)	14 (12)	10 (20)
Screening and counseling	24 (11)	3 (6)	12 (10)	9 (18)
Screening and psychiatric medication	17 (8)	2 (4)	6 (5)	9 (18)
Anxiety Screening	32 (14)	2 (4)	17 (14)	13 (25)
Screening and counseling	29 (13)	2 (4)	16 (13)	11 (22)
Screening and psychiatric medication	24 (11)	2 (4)	10 (8)	12 (24)

Conclusions: Substantial gaps exist in the availability of mental health services at HIV treatment sites, particularly in rural and LMIC settings. Identification of barriers and implementation of feasible and sustainable strategies to integrate mental health services into HIV care is needed.

OAE0503
Using the RE-AIM framework to evaluate the implementation and effectiveness of a WHO HEARTS based implementation strategy to integrate the management of hypertension into HIV care in Uganda

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Background: World Health Organization (WHO) HEARTS packages are increasingly used to control hypertension. However, their feasibility for hypertension control in persons living with HIV (PLHIV) is unknown. We studied the effectiveness and implementation of a WHO HEARTS based implementation strategy to integrate the management of hypertension into HIV care.

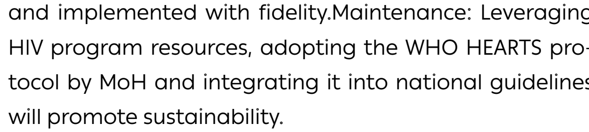
Methods: This was a mixed methods study at Uganda's largest HIV clinic. Components of the implementation strategy were: lifestyle counseling, free hypertension medications, hypertension treatment protocol, task shifting and monitoring tools. We used a pre-post study to determine effectiveness of the implementation strategy on hypertension and HIV outcomes among PLHIV over 21 months. The RE-AIM framework evaluated implementation of the strategy from stakeholders' perspectives. We conducted four focus group discussions with PLHIV (n=42), in-depth interviews with PLHIV (n=9), health care providers (n=15) and Ministry of Health (MoH) policy makers (n=2).

Results: Reach: WHO HEARTS based integrated hypertension-HIV care was acceptable as all 48 (100%) healthcare providers in the clinic were trained. All 15,953 (100%) adult PLHIV were screened and 3,892 (24.4%) diagnosed with hypertension. Of these, 1,084 (28%) initiated HTN treatment compared to 39 (1%) at baseline. Among enrolled patients, mean age was 51.5±9.7 years and 679 (62.6%) were female.

Effectiveness: Among patients treated, controlled hypertension improved from 5% to 75% ($p<0.0001$), mean systolic BP 152.9 ± 0.7 to 130.2 ± 0.9 mmHg ($p<0.0001$) and mean diastolic BP 96.7 ± 0.5 to 83.7 ± 0.6mmHg ($p<0.0001$).

Overall, 1098 (95.6%) of patients were retained by month 21. HIV viral suppression remained high, 97% to 100% ($p=0.063$). Patients who received integrated hypertension-HIV care felt healthy and saved more money.

Adoption: Training healthcare providers on WHO HEARTS, task shifting, synchronizing clinic appointments for hypertension and HIV and relative advantage promoted adoption. Implementation:WHO HEARTS strategy was feasible



and implemented with fidelity.Maintenance: Leveraging HIV program resources, adopting the WHO HEARTS protocol by MoH and integrating it into national guidelines will promote sustainability.

Conclusions: WHO HEARTS implementation strategy promoted integration of hypertension management into HIV care. It was acceptable, feasible and effective in controlling hypertension and maintaining optimal viral suppression among PLHIV. Integrating this strategy into national guidelines will sustain the implementation.

OAE0504

Successful transition to tenofovir/lamivudine/dolutegravir (TLD) in PEPFAR-supported countries

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Background: PEPFAR begun supporting the transition to tenofovir/lamivudine/dolutegravir (TLD) for people living with HIV (PLHIV) in 2017. In 2018, the possible association of maternal DTG use and offspring neural tube defects delayed uptake of TLD. In 2019, based on reassuring additional data, PEPFAR renewed efforts to transition several million supported clients to TLD. We describe the lessons learned and the results of a massive multisectoral effort to provide optimized treatment to all PLHIV.

Description: From 2017 to 2021, PEPFAR promoted policies and programmatic interventions among its 35 supported countries to increase the uptake of TLD. Key elements were the removal of programmatic barriers such as pre-transition viral load (VL) test and the streamlining of technical guidance by recommending TLD as preferred regimen for naïve, suppressed, non-suppressed and individuals with unknown VL status, and to male and female adults, adolescents and eligible children, thus simplifying supply chain and implementation at site level.

Lessons learned: Based on routine PEPFAR programmatic data on antiretroviral dispensation, TLD made up 41% of drugs dispensed to adults in PEPFAR-supported countries in April 2020, this proportion doubled to 81% by October 2021. For all but one PEPFAR-supported country with >1 million PLHIV, TLD accounted for at least 80% of antiretrovirals dispensed. Viral suppression has increased in all age bands since TLD rollout begun, but remains lowest among children.

Conclusions/Next steps: Roll out of DTG-based regimens to children should be prioritized with the recent pediatric formulations approval. Strategies to improve adherence among PLHIV non-suppressed on TLD may be needed to achieve the 3rd 95 UNAIDS target.

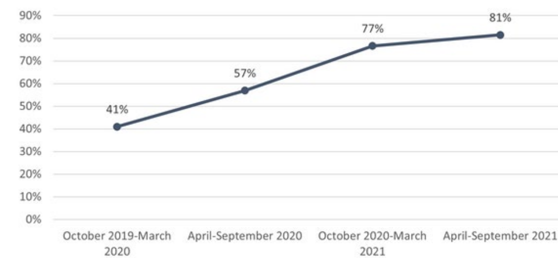

Figure. Proportion of TLD among all antiretrovirals dispensed to adults in PEPFAR-supported countries.

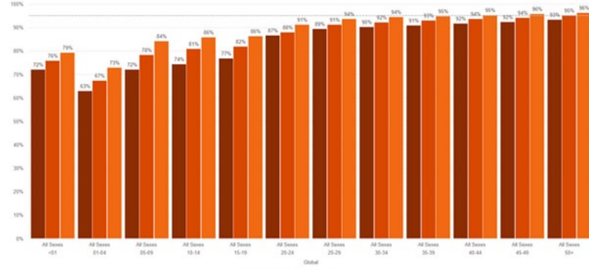

Figure.

OAE0505

Integration of hepatitis B and C testing into HIV services: an opportunity to achieve dual elimination of viral hepatitis and HIV in Vietnam

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Background: Testing is the gateway for access to hepatitis prevention and treatment services, but there remains a large burden of undiagnosed hepatitis B (HBV) and C (HCV) infection in Vietnam. We implemented HepLINK initiative to demonstrate integration of HBV/HCV testing into HIV services to accelerate access to viral hepatitis treatment among key populations (KPs) in Hanoi and Ho Chi Minh City.

Description: We engaged 9 KP-led community-based organizations (CBOs) and 18 clinics (12 public; 6 private) in providing community-based testing (CBT) and facility-based testing (FBT) and linkage to HBV/HCV care and treatment. Clients seeking HIV testing, pre-exposure prophylaxis (PrEP), antiretroviral therapy (ART), and methadone maintenance treatment (MMT) were offered HBV/HCV screening using a single blood-based rapid diagnostic test. Those with a reactive result were linked to confirmatory testing and treatment.

Lessons learned: From April-October 2021, we reached 8,840 KP, of which 86.9% accepted HBsAg testing, yielding 689 (9%) positive cases. CBT yielded a higher HBsAg posi-

tivity rate than FBT (11.5% and 4.9%, respectively), whereas FBT had a higher rate of enrollment on treatment than CBT (90% and 62.1%, respectively). HBsAg+ infection rate was highest in female sex workers-FSW (20.8%), followed by people injecting drugs-PWID (11.1%), drug users-DU (9.5%), men having sex with men-MSM (5.9%) and transgender women-TGW (2.6%).
HBV-HIV co-infection rate was 9.6%. Of 689 people with HBsAg+, 45.4% received evaluation for treatment eligibility, and 69.9% of those eligible enrolled on HBV treatment or TDF containing ART or PrEP.
Of 8,840 KP offered testing, 94% accepted anti-HCV testing, yielding 941 (11.3%) positive cases. CBT reached and tested more people, but unlike with HBV, yielded lower positivity rate than FBT (6.7% and 18.4%, respectively).
Anti-HCV positivity rate was highest in PWID (20.9%), followed by DU (6.8%), FSW (3.9%), TGW (2.6%), and MSM (1.9%). HCV-HIV co-infection rate was exceptionally high (28.4%). Of 941 people with anti-HCV+, 55.3% received confirmatory testing, and 38.1% of those confirmed initiated HCV treatment.
Conclusions/Next steps: Community-based and HIV integrated HBV/HCV testing is a promising approach to accelerate HBV/HCV case finding and treatment access among KPs. Further work is needed to improve access to and affordability of HBV/HCV confirmatory testing and treatment.

OAF01 Improving access for all

OAF0102
Ensuring HIV treatment continuity for Haitian migrants to the Dominican Republic during the COVID-19 pandemic

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Background: Nearly 75% of People Living with HIV/AIDS (PLHIV) in the Caribbean live either in Haiti or the Dominican Republic (DR). Individuals of Haitian descent represent 36.8% of all PLHIV in DR, the largest priority group. Historically, migration flows from Haiti to DR, except during the deportation campaigns. During the covid-19 pandemic, the flow was inverted. From 17 March 2020 to 31 July 2021, 711,736 movements were observed from Haiti to DR compared to 921,103 from DR to Haiti - including 337,147 voluntary returns. With an HIV prevalence of 3-5% among Haitian migrants, these population movements represent a potential challenge for epidemic control in both countries.
Description: With USAID funding, BRIDGE project was implemented to increase access to comprehensive HIV services for mobile populations while strengthening program collaboration between Haiti and DR. In collaboration with the Ministry of Health, ISPD implemented two HIV service delivery points at the main entry points (Malpasse, Ouanaminthe) and a coordination committee comprised of organizations intervening on the border. Comprehensive HIV services are provided to deportees, migrants, drivers, police officers, FSW, and their clients working in the border area.
Lessons learned: During FY21, 944 individuals were reached (284 deportees and 235 other migrants) of which 434 received assisted HIV Self-testing and 414 received standard HIV-testing. Twenty individuals who were newly identified as HIV-positive (9 males-11 females) and two who interrupted treatment were enrolled in care. Clinical management is challenging as many patients returned symptomatic (AIDS stage 4) or had no documentation of their treatment history. Haiti and DR have different ART first-line regimens.
Additionally, migrants do not stay near the border, they move to other parts of the country and the deportees plan their returning back to DR right away. Follow-up and proper tracking of those who received HIV services are further complicated.
Conclusions/Next steps: In order to accelerate the process towards the UNAIDS 95-95-95 goal, there is a need to build a partnership between Haiti and the Dominican Republic to provide better options to the Haitians crossing the border through improved referrals and establishing accessible ART dispensing points.

OAF0103
The use of community paralegals to improve the HIV and TB treatment cascade: comparing approaches in Mozambique, Senegal, Ghana, Indonesia, and Kyrgyzstan

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Background: The Global Fund's *Breaking Down Barriers* (BDB) initiative provides support in 20 countries to scale-up to comprehensive levels programs to remove human rights-related barriers to HIV and tuberculosis (TB) services.
Description: A mid-term evaluation was conducted from 2020-21. One of the program areas assessed was increasing access to legal services. Within this area, the Global Fund provides support to a range of access to justice activities, including the use of community paralegals.

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Lessons learned: Community paralegals are community members trained to advocate for the rights of individuals and to liaise with legal professionals when necessary. With the support of the BDB initiative, community paralegals in many countries work to address rights violations that impede access to HIV and TB services.
We compared approaches used in five BDB countries during the assessment period (from 2017-2021).
In Mozambique, with Global Fund support, community paralegal programs had expanded significantly during the period assessed, with NGOs training and deploying paralegals in 11 provinces.
In Senegal, NGOs have trained 118 sex workers as paralegals.
In Ghana, paralegal trainings had been conducted for 88 persons living with HIV, sex workers, MSM and former TB patients.
In Indonesia, the 4 Pillars program used paralegals in outreach teams to support key populations.
In Kyrgyzstan, "street lawyers", most of whom are from key populations themselves or have extensive experience working directly with them, expanded, amidst the COVID-19 pandemic, to provide online services to HIV NGOs.
Paralegals in these programs were able to advocate for treatment access, negotiate with police for the release of key population members, conduct anti-stigma programs with communities, address discrimination in schools and workplaces, and ensure access to medicines in closed settings.
Conclusions/Next steps: Community paralegals can address a diverse range of barriers to HIV and TB services, strengthen trust and build relationships between communities and the health system.

OAF0104
Differentiated service delivery for people with HIV and non-communicable diseases: South African policy enabler for integration

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Background: Non-communicable diseases (NCDs), are undoubtedly leading cause of mortality and disabilities in the world accounting for about half of global disease burden. NCDs are increasingly causing health threats for people living with HIV. Whilst South Africa has the largest ART programme worldwide with over 5.5 Million people on ART. The rising burden of NCDs is placing considerable strain and presenting challenges of maintaining high-quality public health care services. The overall prevalence of hypertension was 14.3% in 2017, while the overall prevalence of diabetes was 3.2% in 2017. As South Africa scale-up differentiated service delivery (DSD), this optimization presents an opportunity to integrate HIV and management of NCDs into DSD models.
Description: DSD is the framework of the Adherence Guidelines (AGL) for HIV, TB and NCDs adopted in March 2020. It aims to strengthen linkage, adherence, and retention in care using a patient-centered approach throughout the treatment cascade for both HIV, TB, and NCDs patients. It makes provision for the three DMoCs (Facility Pick Up Points (FAC PuP), External Pick-Up Points (EX-PuP), and Adherence Clubs (AC) both at facility and community based) for those who are established in ART care and living with hypertension and/or diabetes.
Lessons learned: FAC-PuP model allows for direct and quick access to the pharmacy for healthy and stable clients on treatment. AC is facility and community-based and allows stable patients to be grouped, voluntarily for routine check-ups. EX-PuP model takes various forms, but all involve the patient collecting their treatment supply individually outside of the facility or from an automated system; thus, including from private pharmacies, lockers, etc.
As of the end of October 2021, data by DSD and type of patient showed a significant number of clients decanted (2 901 452). EX-PuP showed a high proportion of 60% (1 486 684) followed by FAC-PuP 25% (658 671) and lastly, the AC at 15% (500 590).
Conclusions/Next steps: DSD policy on HIV and NCDs provides the opportunity to optimize 90% of people on ART including the Integration of NCDs, TB/HIV services into less-intensive. Conduct the comprehensive review of AGL Policy to inform on options to strengthen the HIV and NCDs integration.

OAF0105
Legal self-defense and access to justice for people who use drugs

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Background: In Russia, the equality of all citizens before the law is legally enshrined. However, people who use drugs (PWUD), due to their marginal status, do not have access to high-quality legal assistance. As a result, in most cases they are deprived of access to a fair trial, replenish the prison population and contribute to the increase in the incidence of HIV in the penitentiary system.
In 2021, there were 509 thousand prisoners in Russia. 165 thousand of them were convicted under anti-drug articles. 53 thousand prisoners live with HIV, which is more than 10% of the total prison population.
Description: RuNPUD (Russian-language Network of People Who Use Drugs) is a regional network that protects PWUD rights, including in Russia. In the current situation RuNPUD directs its efforts to reduce prosecution and

protect the rights of PWUD in the country. RuNPUD trains PWUD to be defenders of their rights and interests along with lawyers. RuNPUD teaches these people the basics of legal self-defense, provides basic knowledge on the current anti-drug legislation, provides mentoring support in protecting their rights, the rights of their loved ones, the rights of those people who do not yet have the resource to protect themselves on their own.

In addition, RuNPUD members themselves act as public defenders in drug-related criminal cases, which is allowed by Russian law, and are engaged in strategic support of court cases to the European Court of Human Rights (ECHR).

Lessons learned: As part of this work, 349 consultations on drug-related cases and more than 100 representations in courts were held in 2021. This efficiency is due to the fact that Runpad members have stable connections and a high level of trust on the part of PWUD. All members of RuNPUD are successfully socialized people with similar life experiences (imprisonment, criminal prosecution, including for drug use).

Conclusions/Next steps: RuNPUD is changing discriminatory practices towards democratic positive changes not through political decisions and changes in the current legislation from above, but through grassroots democracy - the practice of applying this legislation on the ground, by ensuring access to justice for detainees, suspects and accused under anti-drug articles.

OAF02 Nothing about us without us: Community-led responses and research

OAF0202

Trained community peers enhance access to justice, response to violence, discrimination and structural inequities for LGTBiq+ communities in India

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Background: LGBTIQ+ communities in India face multiple human rights violations including violence, discrimination, and exclusion (VDE) due to prevailing cis-binary-heteropatriarchal norms across families, institutions, and service providers. Despite the existence of protective laws and policies, low community awareness concerning rights and VDE redressal mechanisms, compounded by the limited sensitivity of law-enforcement and legal service authorities, collectively impede access to justice.

Description: The SAATHII-led consortium implemented project Sangraha with support from the EU, to reduce VDE and promote access to justice and social protection among LGBTIQ+ communities in 11 districts of Manipur, Odisha, and Telangana states, between 2018 - 2021. The project served 3,679 LGBTQI+ individuals including 53% trans women, 37% cis gay, bi, and other queer men, 7% trans men, 2% cis lesbian, bi, and other queer women, and 1% Intersex individuals and gender non-conforming children.

The project interventions included;

a) peer-led capacity building of community members on current laws on decriminalisation, transgender rights, and domestic violence,

b) sensitisation of and advocacy with 5,911 stakeholders on promoting access to LGBTIQ+ inclusive justice, social protection, education, and gender-affirmation services,

c) crisis redressal, and d) facilitating access to social protection, legal and law enforcement services.

Lessons learned: Trained LGBTIQ+ peers (one per district) were instrumental in increasing community awareness and successfully advocating with the stakeholders, which

helped report 542 incidents of VDE and redressal of 468 of these crises. They facilitated 968 LGBTIQ+ members access social protection services and 628 transgender persons change their name and gender legally.

A large proportion (37%) of VDE was found to be perpetrated by the general community, followed by natal family (17%), community peers (17%), and intimate partners (15%). Most crises (78%) were resolved through counseling and mediation by the peer teams and community leaders and 22% through the police and legal service authorities.

Key social protection services facilitated included obtaining government identity, voter, labor and food security cards, domicile certificates, housing schemes, insurance and bank loans to individuals and self-help groups, admission to colleges, and access to vocational training and livelihood opportunities.

Conclusions/Next steps: Scaling-up, financing, and mainstreaming of community-led interventions are critical for reducing VDE and promoting LGBTIQ+ Inclusive services.

OAF0203

Sex worker led campaigns to decriminalise sex work in Australia

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Background: Decriminalisation of sex work has been recognised as definitively linked to the reduction of HIV risk and rates yet progress has been slow. NSW, Australia was the first jurisdiction in the world to decriminalise sex work and recently there has been growing momentum throughout Australia towards positive sex work law reform. Strong partnerships between sex workers and government and supported by allied organisations and unions has led to the decriminalisation of sex work in NT in 2020 and a commitment to decriminalise in VIC and QLD.

This paper outlines the sex worker led campaigns to decriminalise sex work, how it has impacted on sex workers lives and why it is essential for the rights, health and safety of sex workers.

Description: Scarlet Alliance, Australian Sex Workers Association is the national peak organisation representing sex workers and sex worker organisations throughout Australia. Scarlet Alliance and our member orgs throughout the country have been leading the push to fully decriminalise sex work.

This has involved public awareness campaigns, lobbying and briefing of politicians, government departments and allies, involvement in submissions processes, motions and bills and most importantly ensuring that local sex workers lead, inform and guide in all stages and levels of the law reform process.

Lessons learned: There are a number of misconceptions of what decriminalisation of sex work is, what it does and does not mean and how it works in practice. Through lessons learnt in all stages of the decriminalisation process, from initiation of campaigns to the implementation of decriminalisation, we will share our experiences and demonstrate why decriminalisation of sex work is the best practice model of sex work regulation.

Conclusions/Next steps: It is widely recognised that decriminalisation is the optimal model for sex work legislation. A decriminalised framework removes police as regulators of the sex industry, repeals criminal laws specific to the sex industry, regulates sex industry businesses through standard business, planning and industrial codes, and does not single out sex workers for specific legislation. In doing so, a decriminalised system removes barriers to HIV prevention, amplifies opportunities for health promotion and magnifies capacities for peer education.

OAF0204

Integration of a peer-led depression screening and linkage-to-care intervention among transgender women living with and at risk for HIV at a transgender-led health clinic in Bangkok, Thailand

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Background: We aimed to demonstrate the feasibility of mental health service integration by implementing a peer-led depression screening and linkage-to-care intervention at the Tangerine Clinic in Bangkok, Thailand, which provides transgender-led and gender-affirming health services for HIV prevention and treatment and sexual health for transgender women (TGW) living with and at risk for HIV.

Description: We used the Consolidated Framework for Implementation Research (CFIR) to develop strategies to integrate depression screening, diagnosis, and linkage-to-treatment services into routine clinical practice. Implementation strategies were developed in consultation with transgender clinic staff and peer counselors, includ-

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ing 1) identifying early adopters; 2) collaborating with a psychiatrist to strengthen the capacity of clinic staff; 3) developing a formal implementation blueprint; 4) providing access to ongoing psychiatric consultation.

We piloted an intervention to conduct these activities with four transgender counselors and two nurses, trained by a psychiatrist. Screening tools included the Patient Health Questionnaire (PHQ2/PHQ9).

Participants with PHQ-9 score ≤4 received psychosocial support counseling; those with more severe symptoms were referred to a psychiatrist. Safety planning for mental health emergencies and referral systems for diagnosis and treatment were established. Implementation outcomes included the numbers and proportions of TGW screened, identified with depressive symptoms, and referred for specialist care.

Lessons learned: From 10/2021-1/2022, clinic staff recruited 205 TGW; 177 (86%) agreed to depression screening, of whom 2.3% were living with HIV and 47% were taking HIV pre-exposure prophylaxis (PrEP).

Overall, 51% met clinical cut points on PHQ-2 requiring PHQ9 administration; 80% reported none-to-minimal symptoms (PHQ-9 score ≤4), 10% mild symptoms (score=5-9), and 6.7% moderate to moderately severe symptoms (score ≥10). Those with none-to-minimal symptoms received psychosocial support counseling by trained transgender counselors or nurses. Those with more severe symptoms were all successfully linked to psychiatric evaluation and treatment.

The high rates of acceptance of screening and linkage-to-care showed that integration of peer-led mental health services into our transgender clinic was feasible and acceptable.

Conclusions/Next steps: Development of mental health care implementation strategies that are adapted to local cultural contexts and available resources can expand available health resources. Qualitative data are needed to guide further development of mental health service integration strategies.

OAF0205

Human rights violations faced by women from key populations in Ukraine: evidence collected through the community-based monitoring approach

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Background: Women who belong to vulnerable communities such as injecting drug users, people living with HIV, sex workers, opioid substitution therapy (OST) patients and other are widely experiencing multiple stigma and discrimination in Ukraine. Human rights related barriers influence actual availability of HIV and other health services, as well as has an overall impact on HIV-related national outcomes.

Methods: Data was collected using the Rights - Evidence - ACTion (REAct) system that allows to document barriers and rights violations of the key groups in their access to HIV and other health care services, as well as to respond to those barriers identified. REAct is implementing in 18 regions out of 24 in Ukraine by 70 community-based organizations.

Results: More than 2000 cases of violations were registered in total in the REAct system in 2021, among them 818 cases were registered among women who belong to key populations. Disaggregation by key population is presented in the Table.

Key populations	% of all registered cases in REAct among women (N=818) in 2021
People living with HIV	37%
OST patient	23%
People who inject drugs	17%
Sex worker	13%
People living with TB	6%
Homeless person	1%
Ex-Prisoner	1%

Table.

Key types of human rights violations identified are: verbal abuse, denial in health services, in particular general primary and secondary outpatient health care, OST provision, denial in social services, denial of police to investigate a case of human rights violation, extortion and blackmail from the partner, sex client or police worker.

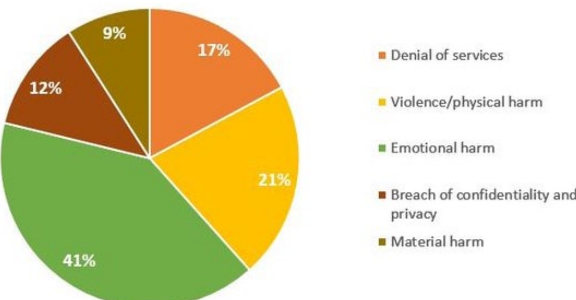

Figure. Types of human rights violations among women from key communities in Ukraine (REAct, 2021)

Conclusions: Understanding of human rights violations among women from key populations enable to identify their actual needs in health and legal services, ensure access to HIV-related, sexual and reproductive health services, facilitate women empowerment and gender equality in the context of HIV, as well as to produce evidence-informed recommendations to promote effective HIV response.

OAF03 Doing it right: Inclusion, diversity and policy development

OAF0302
Missing: meaningful trans inclusion in HIV national strategic plans in Eastern and Southern Africa

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Background: Trans people are disproportionately impacted by HIV, but rarely prioritized in HIV programming. The inclusion of trans people in policy and planning documents, including HIV National Strategic Plans (NSPs), is a crucial step towards increasing the national prioritization of trans people and guiding international investments.
We investigate the current state of trans inclusion in NSPs in Eastern and Southern Africa through a mixed methods approach to highlight gaps and opportunities for meaningful trans inclusion.
Methods: NSPs from 16 high HIV prevalence countries in Eastern and Southern Africa (current as of January 2021) were reviewed for trans-inclusion in five sections: NSP narratives, epidemiological data, monitoring and evaluation (M&E) indicators and targets, activities, and budgets. In-depth interviews with government officials (n=2) and trans organizations (n=3) in Kenya and Uganda were conducted. Key informants were community-selected experts and interviews focused on challenges and successes in trans engagement during strategic planning. Virtual interviews were recorded, transcribed, and reviewed for key themes.
Results: The majority (68%, 11/16) of NSPs mentioned trans people in at least one of the five key sections, however no NSPs mentioned them in all key sections. Trans people were most often included in the narrative (63%, 10/16), followed by indicators/targets (19%, 3/16) and activity (19%, 3/16) sections of NSPs. No NSPs included trans-specific epidemiological data or provided budgets for trans programming. In-depth interviews revealed stakeholders were hesitant to elevate the needs of trans people where they did not have epidemiological data to demonstrate need. Barriers to community engagement with government included the under-funding and under-capacitation of trans organizations. Successes occurred when trans groups built within-country coalitions, when governments explicitly involved trans people in working groups, and when international stakeholders helped push governments on critical advocacy points.
Conclusions: Inclusion of trans people in NSPs in Eastern and Southern Africa is low, with critical gaps in epidemiological data and budgeting for trans programming. In addition to moving towards inclusion of trans people in all key sections of NSPs, government and international funders have roles to play in funding trans epidemiological data studies and creating accessible opportunities for trans engagement in strategic planning.

OAF0303
Disability inclusion in the national response to HIV/AIDS in Nigeria: an analysis of the national strategic plan and framework

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Background: National Strategic Plans (NSP) and National Strategic Frameworks (NSF) provide the tools and blueprints for ensuring a comprehensive national response to HIV/AIDS. Often, people with disabilities (PWDs) have been overlooked in the context of HIV risk, prevention, and services due to the common assumption that they are not at risk for HIV. Research indicates that people with disabilities (PWDs) are at an equal, if not greater, risk of HIV compared to their non-disabled peers. As such, this paper analyzes the extent to which disability is included in the national response to HIV in Nigeria while suggesting good examples to follow.
Methods: A review of the most recent Nigeria National Strategic Plans (2017-2021) and National Strategic Framework (2019-2021) was conducted to determine the extent to which disability is included. The six principles employed in an earlier study, which was based on relevant rights in the UN Convention on the Rights of Persons with Disabilities, the UNAIDS International Guidelines on HIV and Human Rights, and the UNAIDS Disability and HIV Policy Briefs, were used in the analysis process as key focus areas.
Results: The most recent National Strategic Plan and Framework failed to integrate the needs of people with disabilities into the national response to HIV/AIDS. While provisions and plans were put in place for other vulnerable and special groups, there is little to no provision for treatment, care, and support services for persons with disability in the context of HIV and AIDS. PWDs were not recognized in the documents, not as key populations or even vulnerable groups.
Conclusions: Disability inclusion in the Nigeria NSP and NSF is extremely poor, particularly when compared with some other African countries like Niger or Ghana, and is indicative of the need for a review. As they are truly due for a review, it provides an opportunity to implement disability-focused approaches, inclusive policies and strategies in the national response toward HIV/AIDS in the country as could be seen in the NSPs of Niger and Ghana. Achieving this requires utilizing a rights-based approach, involvement of disability-focused organizations and individuals, and the allocation of financial resources.

OAF0304

Meaningful inclusion and effective participation of people who use drugs in shaping access to HIV/AIDS services: implications of a donor funding policies in 11 Latin American countries

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Background: The Global Fund to Fight AIDS, Tuberculosis and Malaria (the GF) has long influenced the programming of funding on HIV/AIDS in Latin America. The GF recognises people who use (but do not inject) drugs (PUD) are a key population for HIV. Within a GF Community, Rights and Gender (CRG) short-term technical assistance, Harm Reduction International, at the request of Lanpud – the Latin American Network of PUD, sought to understand why PUD are not included as key populations in any of the 11 GF Country Coordination Mechanisms (CCMs) analysed in Latin America.

Description: There are 5.5 million people who use non-injected drugs in Latin America and the Caribbean; the number of people who inject drugs is low compared to other regions. CCMs, GF staff and civil society report that PUDs face barriers to accessing health services and are more vulnerable to HIV: they are a key population.

The GF recognises key population representation as essential within CCMs. Qualitative multi-stakeholder consultation evidenced the absence of PUD within the 11 CCMs. CCMs reported insufficient evidence for a link between people who do not inject and vulnerability to HIV/AIDS: they currently emphasize people who inject drugs based on historical data. PUD are considered ineligible for representation. Civil society, CCMs and representatives of PUD also agreed there is a grave lack of data on the link between HIV and non-injecting drug use.

Lessons learned: Evidence on HIV and tuberculosis among people who use but do not inject drugs is needed, on prevalence but also on accessibility of HIV prevention, treatment and care due to stigma, discrimination and criminalisation and the lack of harm reduction. Greater co-ordination among networks of PUD is needed and with other key populations for their voices to be heard.

Conclusions/Next steps: The GF and the CCMs can play an important role in ensuring PUD are represented in relevant fora through active engagement, supporting evidence gathering and capacity building.

OAF0305

Towards more inclusive and feminist approaches in HIV programming evaluations: transforming principles into practice

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Background: In 2020, UNAIDS contracted SDDirect to conduct aGlobal Evaluation of the Joint Programme's work addressing linkages between HIV and VAWG. Data was collected in nine countries. Its strategic recommendations on integrating VAWG and HIV were accepted by the Co-Sponsors'Management Response.

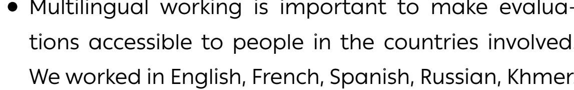
To achieve lasting change in the HIV response, our approach aimed to address structural inequalities inherent in standard evaluation practice, be guided by priorities of women and girls living with and affected by HIV, and be accountable to them and their networks.

Description: 'Nothing about us without us' is vital to HIV programming, research and evaluation, following principles ofGreater Involvement of People living with HIV/AIDS(GIPA), and Meaningful Involvement ofWomen living with HIV/AIDS (MIWA).

To embed these principles, SDDirect worked with ICW and ATHENA Network to establish the accountability and advisory group (TAAG), a group of 13 women living with / affected by HIV, from the 9 case study countries. They supported the evaluation process, interviewed members of networks and CSOs, and reviewed findings and recommendations.

Lessons learned:

- All evaluations should be guided by members of communities. TAAG ensured community members' priorities were addressed and broadened the scope of who was consulted.



- Multilingual working is important to make evaluations accessible to people in the countries involved. We worked in English, French, Spanish, Russian, Khmer.
- Proper compensation for women's and girls' (and their networks/organisations) contributions is essential. This recognises the value of their expertise, time and commitment, and can help remove barriers to participation when paid in advance.
- Flexible internal systems facilitate involvement. Drawing on feminist practice, SDDirect adapted contracts, Conflict of Interest statements, and payment modes, funded data bundles, and translated critical elements.
- Promoting transformative change: This approach aids accountability to women and girls in the implementation of evaluation recommendations.

Conclusions/Next steps: To meaningfully promote anti-racist approaches, community and feminist leadership, and embrace GIPA/MIWA, concepts of 'independent evaluation' should be revisited. Women and girls who are active in their communities have commitment to lasting change and a wealth of expertise. They can play a vital role in evaluations as evaluators & experts. This needs to be properly facilitated, compensated and recognised.

OAF04 Not just law: Legal obstacles to an effective HIV response

OAF0402
Bad blood: why blood donations by people living with HIV should not be a crime

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Background: At least 23 countries have laws that criminalise blood donations by people living with HIV, despite the removal of blood donation bans for gay men due to scientific advances in screening for HIV. Although these laws are invariably implemented with the legitimate objective of protecting public health, we seek to demonstrate that they fail to meet this objective and are discriminatory.

Methods: The HIV Justice Network's Global HIV Criminalisation Database contains case reports of HIV-related criminal cases and criminal laws that target people living with HIV.

Following recent reports of blood donation-related prosecutions in Russia, Singapore, and the United States, we undertook desk-based research between September to November 2021, collating and categorising all known country and jurisdictional laws that specifically criminalise blood donations by people living with HIV, and known prosecutions under these laws. We analysed these laws and cases using a global policy guidance and human rights law framework, informed by international and state-level scientific data assessing risks of transmission via blood transfusion.

Results: The Global Commission on HIV and the Law, UNAIDS and UNDP all state that the use of criminal law in relation to HIV can only be legitimate where harm is intentionally caused, there is actual risk of harm, and harm actually occurs. Although some prosecutions involved people aware they were living with HIV, others - notably in Singapore - involved gay men who *ought to have known* their HIV status. In addition, due to advances in blood screening capabilities allowing for the removal of blood donation bans for gay men in a growing number of countries, there is now an extremely low risk of transmission through blood donations, especially in countries with advanced health systems.

Conclusions: These laws and prosecutions fail the proportionality test due to the low risk of transmission and the fact that they single out people with HIV. Ultimately these laws and prosecutions fail to achieve their stated aim of protecting public health, cause harm through their stigmatising effect, and violate international human rights law as they discriminate based on a characteristic protected under international law. These laws should be repealed.

OAF0403
Measuring potential impacts of parental consent laws on adolescent HIV testing globally: multinational insights from 51 population-based surveys

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Background: HIV testing remains imperative to close gaps in both the prevention and treatment cascades, but pervasive social and structural barriers—including national policies—inhibit HIV testing uptake among priority populations, including adolescents. We assessed the relationship between age-of-consent laws for HIV testing and adolescent HIV testing prevalence in 51 low- and middle-income countries.

Methods: We pooled 51 nationally representative household surveys (Demographic and Health Surveys, AIDS Indicator Surveys, and Population-Based HIV Impact Assessments) from 2010 to 2020. We estimated the weighted country-level prevalence of lifetime HIV testing separately for adolescent girls and boys (ages 15-19). We then abstracted age-of-consent laws for HIV testing across countries. Using multivariable linear regression, we estimated the average difference in national HIV testing coverage estimates for adolescent girls and boys by age-of-consent restrictions for HIV testing.

Results: National HIV testing coverage estimates were substantially heterogeneous, ranging from 0.7% to 72.5% among girls and 0% to 73.2% among boys in Pakistan and Lesotho, respectively. Median national HIV testing prevalence estimates were 18.0% among girls and 7.5% among boys.

Adjusting for region, World Bank income classification, and per-capita health expenditure, HIV testing coverage in countries requiring parental consent for HIV testing in individuals younger than 18 years was, on average, 7.8% lower (95%CI: −14.6% to −1.0%) among girls and 8.2% lower (95%CI: −14.6% to −1.9%) among boys.

Comparing countries with more restrictive (age-of-consent: 18 years) to less restrictive (age-of-consent: 14 years or younger) HIV testing laws, HIV testing prevalence was significantly lower among girls (β = −7.7%, 95%CI: −15.1% to −0.3%) and boys (β = −8.3%, 95%CI: −15.2% to −1.3%) in countries with more restrictive parental consent policies.

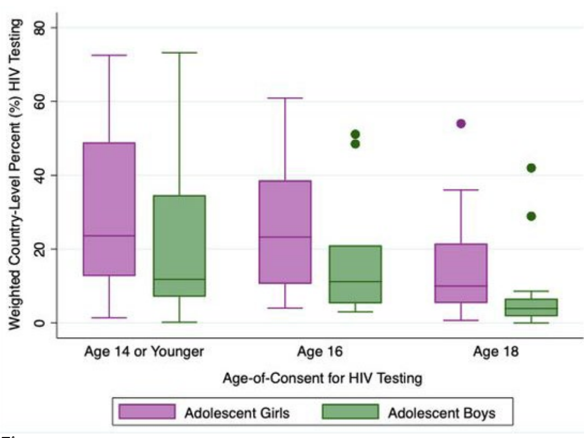

Figure.

Conclusions: Age-of-consent laws are persistent obstacles to adolescent HIV testing. Revoking parental consent requirements for HIV testing is needed to expand coverage and ensure equity.

OAF0404

Ending inequalities in access to justice: scaling up and sustaining judicial sensitization across sub-Saharan Africa

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Background: In 2019, the African Regional Judges' Forum initiated and developed a Judicial Training Manual, the first of its kind in Africa, to expand sustainable judicial sensitization on HIV, law and human rights affecting key and vulnerable populations across sub-Saharan Africa, and to promote rights-focused jurisprudence that challenges laws discriminating against women and young people, and criminalizing HIV transmission, drug use, sex work, same-sex sex and transgender people.

Description: The Forum, initiated by prominent African judiciary and supported by UNDP, arose out of the Global Commission on HIV and the Law's recommendations. It allows for sharing expertise, sensitizing judiciary and promoting judicial excellence. It has contributed to progressive jurisprudence repealing punitive laws or practices, and strengthened enabling environments, human rights and access to justice for populations in Africa, consistent with national bills of rights, regional and global commitments.

In 2019, noting the limited resources available and wishing to draw on successes and scale up efforts, the Forum worked with national judicial training institutes(JTIs) to develop the innovative Manual. The consultative process drew on the expertise and networks of the Forum and its partners, and included a Judicial Roundtable with JTIs,a needs assessment and ongoing feedback.

Lessons learned: The regular engagement and judicial sensitization by and amongst judges over the years has yielded rich pro-rights jurisprudence in the region. This engagement also enriched and informed the format, methodological approach and content of rights-based training materials including e.g. (i) the focus on criminalization of HIV and key populations as well as gender-based violence; (ii) the inclusion of scientific and medical evidence; (iii) the importance of involving affected populations in methodologies; and (iv) materials capable of updating and adaptation to national contexts and differing jurisprudential systems within Francophone, Anglophone and Lusophone Africa.

Conclusions/Next steps: Critical next steps include working with JTIs to create awareness and disseminate the Manual, including on online platforms, and to identify technical support needs for its adaptation, integration and use within national judicial training, to expand judicial sensitization and mitigate the impact of stigma, discrimination and violence on key and vulnerable populations in the African justice sector.

OAF0405

The race to end AIDS: Ghana's prospects in light of a proposed anti-LGBTQ bill

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Background: UNAIDS has identified inequality as a foremost factor for many countries' inability to reach the 90-90-90-targets by 2020. Discriminatory laws and policies drive inequality which hinders the achievement of health goals especially relating to HIV. Ghana's Parliament is currently considering a bill to among others "proscribe LGBTQ+ and related activities; proscribe the promotion, propagation of, advocacy for, support of or funding" of LGBTQ+ activities."

In this study, we explored Ghana's prospects at ending AIDS from the perspectives of key stakeholders in light of the proposed bill. Relevant data were analysed for context.

Methods: This was a qualitative cross-sectional study. Data collection done virtually (via zoom and phone call/ WhatsApp); respondents selected by convenience and snow-balling. There was focus-group discussions with peer-educators(n=19); semi-structured interviews with service-providers(n=15) and independent experts (n=2). Transcripts were coded, themes identified and analysed.

Results: Ghana's HIV prevalence as at 2020 was 1.68% with an estimated 346,120 PLHIV; total new infections was 18,928; ART(15+) and PMTCT coverage stood at 63% and 72% respectively. Regarding the 90-90-90, by 2020, 63.20% of all PLHIV knew their status, 95.46% and 72.97% of which were on ART, and had achieved viral-suppression respectively. Ghana has an estimated MSM-population of 54,759; 52% being bisexual (bridging-population) with a very high HIV prevalence (18%) among same. Against this background, key stakeholders contend that the ensuing law will exacerbate Ghana's difficulties at attaining the 95-95-95 targets by 2025 and ending AIDS by 2030. Peer-educators and service-providers have noted a spike in violence-and-stigma against KPs since the bill was introduced. HIV service-providers contend that the ensuing law will undermine their mandate, drive KPs underground and stifle external funding. Independent experts and other opponents contend that it will "establish a system of state-sponsored discrimination and violence" against sexual-minorities.

Conclusions: There's unanimity among respondents that the ensuing law (whose passage they deem 'very likely') will pose a structural-barrier and deepen inequality against KPs thereby posing a considerable obstruction to Ghana's prospects at ending AIDS by 2030. Stakeholders should advance necessary amendments to assuage its impact and commission a study to determine the actual impact if passed into law.

HIV biology (entry, replicative cycle, transcriptional expression and regulation)

PESAA01
PICH115: a new potential target to control HIV latency

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Background: Latency is the main obstacle toward Human Immunodeficiency Virus (HIV) eradication. Current approaches to fight latency, Shock and Kill and Block and Lock, both focus on modulating HIV gene expression.
Our laboratory recently identified a cellular protein complex, the *Pre-Initiation Complex of HIV* (PICH), that binds the HIV promoter. Mass spectrometry was then used to identify PICH proteins, and depletion of PICH proteins by siRNA demonstrated their positive impact on HIV gene expression. PICH are potential drug targets and understanding their role on HIV transcription could help develop molecules to control latency.
Here, we present new data on PICH115, a protein known to interact with Tat.
Methods: First, we mapped the interaction site between Tat and PICH115. We designed plasmids coding for the different domains of GST-Tat and His-PICH115 to produce recombinant proteins for GST-Pulldowns.
In cellulo experiments have also been performed, by overexpressing the different domains of PICH115-HA and a Tat-Flag protein in HEK293T to perform a Co-ImmunoPrecipitation with the protein extracts.
Then, we studied the impact of PICH115 on the interaction between Tat and the viral TAR RNA, which is essential for HIV transcription. To determine if PICH115 influence this interaction, we performed ElectroMobility Shift Assays using a fluorescent TAR RNA probe incubated with recombinant Tat and PICH115.
Results: *In vitro*, a direct interaction happens between the core domain of Tat and both the N-acetyltransferase and the tRNA-Binding domains of PICH115. *In cellulo*, the N-acetyltransferase and the tRNA-Binding domains of PICH115 are required for the interaction with Tat.
Our data further show that the presence of PICH115 increases the binding of Tat to TAR *in vitro*.
Conclusions: In conclusion, we identified the interaction site between Tat and PICH115 and demonstrated its enhancement of the Tat-TAR interaction.
In the future, we will investigate the potential role of PICH115 on viral mRNA post-transcriptional modification and its impact on HIV gene expression.
This could lead to a better understanding of the role of this cellular protein on HIV replication and could allow the development of new Shock and Kill or Block and Lock strategies. Indeed, an inhibitor of PICH115 have been identified recently.

PESAA02
Novel roles for PSGL-1 in HIV infection: virions with incorporated PSGL-1 can be captured by selectins and transferred to permissive cells

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Background: P-selectin glycoprotein ligand-1 (PSGL-1/CD162) was recently identified as a restriction factor present within the HIV envelope. While it strongly inhibits infection in viruses generated through transfection to over-express PSGL-1, viruses produced through infection with endogenous levels of PSGL-1 remain infectious. To date, no studies have shown whether PSGL-1 is present on a range of viral isolates or on viruses circulating *in vivo*.Similarly,it is unknown whether virion-incorporated PSGL-1 can bind its natural receptors (selectins), which may have implications on the ability of HIV to traffic *in vivo*.
Methods: Using transfection and infection, we generated viruses that express differential levels of PSGL-1. With these viruses we compared the antiviral effect of PSGL-1 and quantified levels of PSGL-1 on virions using virion capture assays and flow virometry. Finally, we assessed the capacity of virion-incorporated PSGL-1 to facilitate binding to selectins, and whether selectin-captured viruses could be transferred to nearby cells for infection.
Results: PSGL-1 was far more abundant on our viruses produced through transfection compared to viruses produced through infection of primary cells. Infectivity assays confirmed the dose-dependent antiviral activity of PSGL-1 in viruses engineered to express varying levels of PSGL-1, while viruses produced through infection of T cells remained infectious. Notably, virion-incorporated PSGL-1 was present in viruses of all clades tested, including a range of clinical isolates. Most importantly, we found that PSGL-1 on virions could be captured by selectins, and that captured virus could be transferred to nearby permissive bystander cells.
Conclusions: PSGL-1 is a potent antiviral when expressed at high levels in the HIV envelope, however, it is less efficacious at endogenous levels on virions. These results caution interpretations of the effects of PSGL-1 on HIV

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infection when using viruses produced through transfection. The presence of PSGL-1 on a broad range of viral isolates and patient samples demonstrates the importance for further studies of how PSGL-1 can impact HIV biology. Strikingly, our finding that virion-associated PSGL-1 can facilitate capture by its cognate receptors and subsequent transfer to bystander permissive cells, suggests that PSGL-1 may have additional roles in facilitating HIV infection, in addition to its antiviral activity.

PESAA03

The HCV infection in HIV patients drives chromosome 14 microRNA cluster (C14MC) dysregulation

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Background: Around 2.75 million of HIV individuals worldwide are co-infected with hepatitis C virus (HCV), showing higher rate of cirrhosis, liver failure, and hepatocellular carcinoma among others. miRNAs have a key role in post-ranscripcionally regulating these biological processes. The chromosome 14 miRNA cluster (C14MC) in the 14q32 region is one of the largest miRNA cluster of the genome, harbouring more than 50 maternally imprinted miRNAs-encoded genes. Dysregulation of this cluster have a key role in cancer prognosis, and pathogenesis of non-alcoholic liver diseases, but the impact of viral infections in the C14MC remains unknown.
We aim to analyse the C14MC in HIV patients with different exposure to HCV, to explore their possible association with risk of cancer development and sex bias.
Methods: SmallRNA sequencing analysis was performed in PBMCs from 117 HIV+ infected patients: 45 HIV+ patients chronically infected with HCV (HIV/HCV+), 36 HIV+ that spontaneously clarified HCV after an acute infection (HIV/HCV-) and 36 HIV+ patients without previous HCV infection (HIV+). Thirty-two healthy patients were used as controls (HC). Significantly differentially expressed (SDE) miRNAs were calculated (fold-change > 1.5 and p-value < 0.05 adjusted by Benjamin-Hochberg correction). Only those SDE miRNAs located at the C14MC were considered.
Results: Significant clinical differences were observed between HIV patients for the HIV transmission route (p < 0.001). There were no differences in CD4+ or CD8+ T-cell parameters between any HIV+ patients. We identified SDE miRNAs of the C14MC with respect to healthy controls in HIV (n=22), HIV/HCV+ (n=25) and HIV/HCV- (n=32). After analyzing each group of patients by gender, we found that the dysregulation of C14MC was mainly limited to a strong upregulation in males rather than females.
The highest differences were observed for HIV/HCV- male patients, where 41 out of 54 miRNAs of the C14MC were dysregulated (37 up and 4 down-regulated).
Conclusions: Our findings indicate that HCV exposure strongly disrupts C14MC expression. Furthermore, we found a sexual bias in the dysregulation of miRNAs at the C14MC especially in male HCV spontaneous clarifiers. Additional studies should be performed to decipher the role of C14MC in infectious diseases and HCV-cancer related development.

PESAA04

The host factor p32 facilitates HIV infection by stabilizing the HIV-1 transcriptionaltrans-activatorTat protein

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Background: Following HIV integration into the host genome, viral expression is modulated by the combinatorial activity of the HIV transcriptional activator Tat, host transcription factors and chromatin remodeling complexes. To expand our knowledge of the mechanisms regulating HIV transcription, we sought to identify novel proteins associating with the HIV promoter.
Methods: We used a chromatin affinity purification approach that takes advantage of specific single guide RNAs (sgRNAs) and endonuclease deficient Cas9 (dCAS9) to enrichonintegrated HIV promotersfollowed by mass spectrometry (ChAP-MS).
Results: We identified a total of 161 proteins that were ranked based on their enrichment in active versus transcriptionally silenced promoters with theTat inhibitor, didehydro-Cortistatin A (dCA). Among the top 30 hits enriched in active promoters we identified several Tat interacting proteins and subunits of RNAPII holoenzyme, while in latent promoters we identified several histones (H1, H2, H4), an expected outcome since dCA promotesheterochromatinization of theHIV promoter. Genes chosen for follow-up were prioritized based on novelty in HIV transcriptional regulation, reproducibility and biological insight as to potential function(s). p32, also called ASF/SF2 splicing factor-associated protein, wasenriched inactively transcribing HIV promoters and absent in silenced ones. Chromatin immunoprecipitation analysis confirmed the presence of p32 on active HIV promoters and its recruitment enhanced by Tat. The RNA interference of p32 sig-

nificantly reduced HIV transcription in primary CD4+T cells as well as in HIV chronically infected cells, independently of either HIV splicing or p32 splicing activity.

Conversely, overexpression of p32 specifically increased Tat-dependent HIV transcription. In effect, p32 was found to directly interact with Tat's basic domain enhancing Tat stability and half-life. The stabilization of Tat by p32 converged in an increased Tat association with the HIV LTR and RNAPII.

Conclusions: Using a novel chromatin affinity purification strategy, we identified p32 as a novel host factor that physically interacts and stabilizes Tat protein enhancing Tat-dependent HIV transcription. These results highlight p32 as a potential novel target for HIV transcriptional modulation and furthered our understanding of the mechanisms regulating Tat mediated transcription.

HIV transmission and dissemination

PESAA05
Activation of anti-viral innate immunity in epithelial cells as a potential cellular mechanism for preferential R5 transmission at genital mucosa

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Background: Women make up approximately half the population living with HIV/AIDS. Majority of HIV-1 transmission in women occurs through heterosexual intercourse via the female reproductive tract (FRT). Although both CCR5-tropic (R5) and CXCR4-tropic (X4) HIV-1 strains are present in semen, primary infection in FRT occurs almost exclusively through R5 HIV-1. The mechanism underlying this preferential selection of HIV-1 R5 during mucosal transmission is not completely understood.

We examined the interactions between X4 and R5 HIV-1 and genital epithelial cells (GECs) to gain a better understanding of the preferential selection of R5 strains.

Methods: This study was conducted on primary GECs isolated from tissues obtained from women undergoing hysterectomy in McMaster Hospital, following informed consent. Fluorescently labelled X4 and R5 HIV-1 was added to primary GECs and virus coming through cells on basolateral side was titrated on TZMb-I cell line. HIV-1 was measured by P24 ELISA. Intracellular trafficking of HIV-1 was studied by immunofluorescence microscopy. Expression of interferon stimulated genes (ISGs) was measured by quantitative PCR. Interferon-β production was measured by ELISA.

Results: GECs showed significantly higher interferon-β production, IFNAR1 and ISG expression in response to X4 HIV-1, compared to R5 strains. The IFN-β response against X4 HIV-1 was mediated through TLR2 signaling in the endosomal compartment. TLR2 pathway activation resulted in upregulation of BST-2 and ISG-15, resulting in sequestration of the virus in the endosomal compartment for more than 96 hours. Blocking endosomal pathway blocked the anti-viral response and sequestration of X4 virus. Blocking BST2 and ISG15 by siRNA inhibited sequestration of X4 HIV-1. In contrast, R5 virus was rapidly transcytosed through the cells to the basolateral side, avoiding recognition through TLR2, and with minimal activation of IFN-β and ISGs.

Further examination showed that X4 and R5 viruses were directed into different cellular compartment through differential binding to CXCR4 and CCR5 co-receptors, respectively.

Conclusions: Our results indicate thatX4 HIV-1 induces a robust anti-viral immune response, resulting in entrapment of virus within GECs, while R5 HIV-1 evades the innate immunity resulting in preferential selection of R5 HIV-1 for mucosal transmission. Understanding the mechanism of transmission will help develop prevention strategies.

PESAA06
Dual role of HIV-1 Envelope Signal Peptide in immune evasion

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Background: The HIV-1 Env signal peptide (SP) initiates Env biogenesis and is an important contributor to Env glycosylation and functions. HIV-1 Env is generated from Vpu/Env encoded bicistronic mRNA such that the 5`end of Env N-terminus, that encodes for Env SP overlaps with the 3` end of Vpu. Env SP displays high sequence diversity, which also translates into high variability in Vpu sequence.

This study was aimed to understand the effect of sequence polymorphism in the Vpu-Env overlapping region (VEOR) on the functions of two vital viral proteins i.e., Vpu, and Env.

Methods: We used infectious molecular clone (IMC) pNL4.3-CMU06 (WT) and swapped its SP (i.e., VEOR) with that from other HIV-1 isolates (MW, 398F1, CH119 and 271.1). We examined the effects of VEOR on Env (as SP) and Vpu functions.

Results: Swapping VEOR did not affect virus production in the absence of tetherin however, presence of tetherin significantly altered the release of virus progeny compared to the WT. Notably, MW VEOR abrogated Vpu's ability to augment the release of progeny virions from infected cells. When MW VEOR was tested in context of two other HIV-1 isolates (SF162 and REJO) similar reduction in virus release was observed. Swapping VEOR also changed Vpu's ability to down-modulate surface expression of human CD4.

We next tested the effect of these swaps on Env properties and functions. Analyzing the binding of monoclonal antibodies to membrane-embedded HIV-1 Env revealed changes in the antigenic landscape of swapped Envs vs

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the WT and also altered the virus sensitivity to antibody-mediated neutralization. These swaps affected the oligosaccharide composition of N-glycans as shown by changes in DC-SIGN-mediated virus transmission. Importantly, all IMCs differ only in their VEOR and otherwise have identical sequences.

Conclusions: Collectively, this study shows that polymorphisms in the VEOR has direct implications on HIV-1 infection. This overlapping region

1. Regulate Vpu functions and Vpu-host interactions, facilitating virus replication and infection establishment,
2. Impact Env glycosylation altering Env interaction with antibodies as Env-SP; facilitating immune escape and virus transmission via DC-SIGN.

Thus, by incorporating changes in this region the virus uses it as another mechanism for immune evasion.

PESAA08

Estradiol inhibits HIV-1_{BaL} infection and induces CFL1 expression in peripheral blood mononuclear cells and endocervical mucosa

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Background: Although several reports suggested an inhibitory effect of estradiol (E2) on HIV infection, the mechanism of this effect remains understudied. Analysis of endocervical transcriptome in proliferative and secretory phases of the menstrual cycle demonstrated upregulated gene expression of actin-binding protein CFL1 in the E2-dominated proliferative phase. Actin cytoskeleton plays an integral role in the regulation of HIV infection.

This study was designed to explore the role of CFL1 in E2-mediated effects on HIV infection in PBMCs and endocervical mucosa.

Methods: PBMCs were isolated from anonymous healthy HIV uninfected blood donors. Human endocervical tissues without gross pathological changes from 32-50 years old subjects were obtained from routine hysterectomies through the National Disease Research Interchange. PBMCs and endocervical tissue explants were incubated with E2 (100-10000 pg/ml) for 48h and then challenged with HIV-1_{BaL} (1000 $TCID_{50}/10^6$ PBMCs and 500 $TCID_{50}$/explant), washed and cultured for 14 days in the presence of E2 (vs. untreated control).

Select experiments included 3TC, Raloxifene (selective estrogen receptor modulator), and LIMKi3 (LIMK1/2 inhibitor blocking CFL1 phosphorylation). The infection was monitored by HIV *gag* one-step qRT-PCR. CFL1 expression was analyzed by qRT-PCR, Immunofluorescence microscopy (IF) and Western Blot (WB). p24 expression was monitored by IF. Cytokines and chemokines in infected tissue supernatants were measured using 25-plex Luminex kit.

Results: E2 dose-dependently inhibited HIV-1_{BaL} infection in PBMCs and endocervix ($p<0.01$). Raloxifene blocked E2-mediated HIV-1_{BaL} inhibition. No consistent significant increase in CFL1 mRNA expression was induced by E2. At the protein level, E2 augmented total CFL1 and phosphorylated CFL1 (pCFL1) and increased the pCFL1/CFL1 ratio in uninfected and infected PBMCs and endocervix. LIMKi3 reverted the phenotype and restored infection levels; blocked E2-induced increase in total CFL1 and pCFL1; and decreased the pCFL1/CFL1 ratios in PBMCs and endocervix.

Additionally, Luminex analysis revealed decrease in pro-inflammatory chemokines CXCL10 and CCL5 in endocervix incubated with E2 ($p<0.05$).

Conclusions: Our data propose a link between E2-mediated anti-HIV activity and CFL1 expression in PBMCs and endocervical mucosa. The data support exploration of cytoskeletal pathway targets for development of prevention strategies against HIV.

Systemic immune activation and inflammation

PESAA07

Overt IL-32 isoform expression at intestinal level during HIV-1 Infection is negatively regulated by IL-17A *via* PPAR gamma and retinoic acid-dependent mechanisms

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Background: The interplay between intestinal epithelial cells (IEC) and Th17 cells is key for mucosal immunity homeostasis. HIV infection is associated with impaired intestinal barrier functions leading to chronic immune activation, a process not normalized by antiretroviral therapy (ART). Such alterations coincide with the overexpression of interleukin (IL)-32, a cytokine family composed of multiple isoforms. IL-32 overexpression was associated with the loss of HIV control in elite controllers and linked to non-AIDS co-morbidities, such as cardiovascular disease (CVD). The involvement of specific IL-32 isoforms in HIV gut pathogenesis remains poorly investigated.

Methods: Sigmoid colon biopsies (SCB) and blood were collected from ART-treated PLWH (HIV+ART; n=17; median age: 55 years; CD4 counts: 679 cells/ml; ART: 72 months) and age-matched HIV-uninfected controls (HIVneg; n=5). Cells were isolated by enzymatic digestion/gradient centrifugation. The IEC HT-29 line was exposed to TNF-α, IL-17A, and HIV, in the presence/absence of T0070907 (PPARγ antagonist) and/or *all-trans* retinoic acid (ATRA). IL-32α/β/γ/d/ε/θ and IL-17A mRNA were quantified by real-

time RT-PCR. IL-32 protein was quantified by ELISA. The IEC HIV*trans*-infection capacity was assessed upon co-culture with CD3/CD28-activated CD4+ T-cells.

Results: Among all isoforms tested, IL-32β was the predominant one, with expression levels upregulated in SCB of HIV+ART compared to HIVneg. IL-17A mRNA levels negatively correlated with IL-32β levels. IL-32β/γ/ε isoforms were also detected in HT-29 exposed to TNF-α and HIV. IL-17A significantly decreased IL-32 β/γ/ε mRNA and cell-associated IL-32 protein expression induced by TNF-α. IL-17A increased HIV *trans*-infection. ATRA boosted the IL-17A effects and further increased HIV *trans*-infection with coincidental reduction of IL-32 expression; T0070907 exhibited opposite effects.

Conclusions: Our results provide a cartography of IL-32 isoform expression in the colon and blood of ART-treated PLWH. They also reveal the capacity of the Th17 hallmark cytokine IL-17A to attenuate overt IL-32 expression in inflamed IEC, while promoting HIV dissemination *via*PPARγ and RA-dependent mechanisms. This is consistent with the documented antiviral properties of IL-32.

Our results support a model in which inflamed IEC are an important source of IL-32, especially upon HIV-mediated Th17 depletion, and reveal the opposite role of IL-17A in reducing overt IL-32 expression and favoring HIV dissemination at intestinal level.

PESAA09

Excess BAFF alters the Breg potential of human marginal zone B-cells in the context of HIV-1 infection

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Background: We have previously reported that excessive levels of B-cell activating factor (BAFF) are concomitant with increased frequencies of precursor-like marginal zone (MZp) B-cells in the blood of HIV-infected progressors, despite antiretroviral therapy (ART).

Recently, we have shown that MZp from healthy individuals possess strong Breg capacities, which are characterized by high expression levels of NR4A1, NR4A2, NR4A3 and CD83 among others, as well as Breg function involving CD83 signals. Our objective was to better understand the impact of HIV-infection and excess BAFF on the Breg potential of MZp.

Methods: We have performed transcriptomic analyses by RNA-seq of MZp sorted from the blood of HIV-infected progressors from the Montreal Primary HIV Infection (PHI) cohort. Furthermore, the Breg profile and function of blood MZp B-cells from HIV infected progressors, with or without HAART, were also assessed by flow-cytometry and high content screening (HCS) analyses, respectively.

In addition, the effects of high amounts of soluble recombinant BAFF on the Breg profile of MZp B-cells from healthy donors was investigated *in vitro*.

Results: We report highly significant downregulation of NR4A1, NR4A2, NR4A3 and CD83 gene transcripts in blood MZp B-cells from HIV-infected progressors when compared to elite controllers (EC) and healthy individuals. Accordingly, NR4A1, NR4A3 and CD83 protein expression levels and Breg function are also downregulated in blood MZp B-cells from HIV-infected progressors and not restored by HAART.

Importantly, we observe decreased expression levels of NR4A1, NR4A3, CD83 and IL-10 by MZp B-cells following treatment with excess BAFF, which significantly diminished their regulatory function.

Conclusions: Our data thus suggest that excess BAFF contributes to the reduced immune surveillance that precipitates the development of co-morbidities such as atherosclerosis in the context of HIV and is likely to do so in other chronic inflammatory diseases where BAFF is found in excess.

PESAA10

Cerebrospinal fluid cellular inflammatory gene expression profile in people with acute HIV-1 infection

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Background: Despite effective antiretroviral therapy, neurocognitive dysfunction associated with HIV-1 infection remains a significant source of morbidity.The mechanisms underlying the impairment are unclear, though likely involve widespread inflammation and early HIV-1 replication within the central nervous system (CNS).

We aimed to identify sources of CNS inflammation through transcriptional analysis of cerebrospinal fluid (CSF) cells from people living with HIV-1 (PLWH) in acute infection.

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Methods: PBMC and CSF were obtained from PLWH in the RV254 acute HIV-1 cohort (Thailand), during untreated Fiebig stages III-IV (n = 9, male, median age 23 ± 2.8) and from age and sex matched Thais without HIV-1 (PWOH) (n = 2 (PBMC) and 5 (CSF)). CD4+ T cells and monocytes were FACS sorted in replicate (n = 4-8) for targeted 96-gene expression profiling by multiplexed RT-qPCR. Gene expression differences were assessed using Welch test on the means.

Results: Median HIV-1 RNA values in PLWH were 6.1E6 copies/mL in plasma and 1.4E4 copies/mL in CSF. Median peripheral blood CD4+ T cell counts were 310 cells/uL, with a median CD4:CD8 ratio of 0.33. Multiple host genes involved in type I interferon regulation were upregulated in monocytes and CD4+ T cells in the CSF during acute HIV-1 infection compared to PWOH, including *IFI44, IFIT1, RSAD2, STAT1, USP18* and *OAS* family members ($P < 0.05$).

These genes were upregulated 2-8-fold in CD4+ T cells and 5-40,000-fold in monocytes. Cell cycle regulatory genes were also increased. Cytokines and chemokines involved in cellular recruitment and inflammation, *CCL2, CXCL9* and *TNF,* were only upregulated in monocytes (30-100,000-fold).

Similar results were observed in PBMC, though interestingly, the magnitude of the response in monocytes was more limited than that in CSF. These results indicate a robust antiviral inflammatory response in both CSF and peripheral blood.

Conclusions: Our findings provide unique insight into the cellular signaling pathways initiated within the CNS during the earliest stages of HIV-1 infection. Greater understanding of these early events will inform therapeutic strategies designed to limit HIV-1-associated neurologic inflammation and disease.

PESAA11

A longitudinal assessment of the impact of antiretroviral therapy and HIV-1 associated inflammation on neurocognitive outcomes in perinatally infected (PHIV) children in South Africa

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Background: Early diagnosis and improved treatment options in paediatric HIV-1 infections necessitates comprehensive characterisation of the neuropathology of HIV-associated neurocognitive disorders (HAND) during viral suppression. Longitudinal studies on clinical and immunological biomarker associations with neurological outcomes in PHIV children are limited.

Methods: A dual longitudinal and cross-sectional study design was implemented to investigate the impact of clinical, immunological, and virological parameters on neurodevelopmental outcomes in PHIV children from the Children with HIV Early antiRetroviral (CHER) randomised trial. Longitudinal neurocognitive assessments included the Griffiths Mental Development Scales (GMDS) administered at 11, 18, 30, 42 and 60 months of age and included assessments of locomotor, personal-social, hearing, language and eye-hand co-ordination. The Beery-Buktenica Development Test for Visual-Motor Integration (Beery-VMI) was implemented at 5, 7 and 9 years of age. Forty immunological plasma biomarkers were measured by Luminex®Multiplex Assays and ELISA. A sensitive qPCR adapted for HIV-1 subtype C targeting the integrase gene was implemented for the measurement of total HIV-1-cell-associated DNA (CAD).

Results: A total of 139 participants were assessed. We observed significant positive associations between pro-inflammatory biomarkers including IL-1β (*r*=0.39;p=0.01), sCD14 (*r*=0.34;p=0.03), sCD163 (*r*=0.45;p<0.01), IL-18 (*r*=0.36;p=0.02) and LBP (*r*=0.32;p=0.04) and early Locomotor and General Griffiths scores. These biomarkers indicate innate immune activity of monocyte/macrophage activation and PAMP stimulation and may depict a neurological protective response.

Negative associations with neurodevelopmental outcomes were observed for IL-1RA (*r*=-0.50;p<0.01), IL-6 (*r*=-0.42;p<0.01), MCP-1 (*r*=-0.35;p=0.02), MIP-1α (*r*=-0.36;p=0.02) and IFN-α (*r*=-0.37;p=0.02). Interleukin-17F (*r*=-0.20;p=0.02), IL-12 (*r*=-0.19;p=0.04), IL-13 (*r*=-0.19;p=0.03), MIP-1α (*r*=-0.20;p=0.02) and TNFβ (*r*=-0.18;p=0.04) may serve as early predictors of late neurodevelopmental outcomes whereas IL-13, IFN-α, IL-6 and TGF-β_2 can predict both early and late neurodevelopmental parameters.

Early measures of HIV-1-CAD were significantly associated with Locomotor and General Griffiths scores. Early clinical parameters showed significant associations with both early and late neurodevelopmental outcomes. These include time-to-viral suppression (*r*=0.34;p=0.03), gestation (*r*=0.33;p=0.03), %CD8 at birth (*r*=0.41;p=0.03), CD8 count at birth (*r*=0.40;p=0.02), time-to-therapy initiation (*r*= -0.41;p<0.01) and %CD4 at birth (*r*= 0.36;p=0.02).

Conclusions: Neurocognitive outcomes can be predicted by early immunological, virological and clinical parameters. Early initiation of and continuous cART is important for mitigating excess inflammation and immune activation which significantly impacts the neuro-immune relationship.

PESAA12

No evidence that ongoing HIV-specific immune responses contribute to persistent inflammation and immune activation in persons on long-term suppressive ART

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Background: People with HIV (PWH) have persistently elevated levels of inflammation and immune activation despite suppressive antiretroviral therapy (ART), with specific biomarkers showing associations with AIDS- and non-AIDS-defining morbidities and mortality. Because adaptive immune responses against HIV also persist in PWH on ART, and show evidence of ongoing antigenic stimulation, we hypothesized that they contribute to this clinically-relevant inflammatory profile. We therefore investigated potential associations between HIV-specific T-cell and antibody responses with on-ART inflammation and immune activation.

Methods: T-cell responses (IFN-γ ELISPOT) to each HIV gene product as well as to CMV-pp65, along with HIV-specific antibody concentrations, were measured in n=101 virally suppressed participants from the AIDS Clinical Trials Group A5321 cohort at study entry (median 7 years on ART). HIV persistence measures including cell-associated (CA)-DNA, CA-RNA, plasma HIV RNA by integrase single-copy assay (iSCA), and intact proviral DNA assay (IPDA, in a subset of n=33 participants) were also assessed at study entry. Plasma inflammatory biomarkers and T-cell activation and cycling biomarkers were measured at a pre-ART time point and at study entry.

Results: Magnitudes of HIV-specific T-cell responses, CMV-pp65-specific responses, and HIV antibody levels were not correlated with levels of inflammatory or immune activation biomarkers, including hs-CRP, IL-6, neopterin, sCD14, sCD163, or %$CD38^+HLA\text{-}DR^+$ or %$Ki67^+$ $CD8^+$ and $CD4^+$ cells – including after adjustment for pre-ART biomarker level (all Spearman $|r| < 0.20$, $p > 0.05$). Magnitudes of T-cell responses to HIV-Pol were correlated with TNF-α levels, but this was confounded by several factors including pre-ART plasma viral load, $CD4^+$ T-cell count, and years on ART at A5321 entry. iSCA levels were correlated with $CD8^+$ T-cell activation (Spearman $r = 0.25$, $p = 0.027$), and defective (but not intact) HIV DNA levels with $CD4^+$ T-cell cycling (%$Ki67^+$; $r = 0.51$, $p = 0.003$), but other HIV persistence parameters were not associated with these biomarkers.

In statistical mediation analysis, relationships between HIV persistence parameters and inflammatory biomarkers were not influenced by HIV-specific T-cell responses or antibody levels.

Conclusions: HIV-specific immune responses do not appear to contribute to the elevated inflammatory and immune activation profile associated with morbidity and mortality in PWH on long-term suppressive ART.

Innate immunity (including NK cells)

PESAA13

Soluble interferon receptor (sIFNAR2) inhibits HIV-1 infection in macrophages through IFN-β-independent pathways

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Background: The soluble IFN-β receptor (sIFNAR2) plays an immunomodulatory role in autoimmune diseases by reducing inflammation and tissue damage at the same levels as IFN-β. Besides IFN-β interferes with HIV replication mainly in monocyte-derived macrophages (MDM).
This study aims to evaluate the impact of sIFNAR2 on HIV-1 infection in MDM and to compare the biochemical pathways induced by sIFNAR2 and IFN-β.

Methods: MDM were infected with the YU2 HIV-1 strain for 72h and infection was assessed by p24 levels in infection supernatants in the presence of IFNAR (30µgr/ml) or IFN-β (20U). Soluble IFN binding protein B18 was used to exclude IFN-β activation by SIFNAR2. Differential gene expression was measured by RNAseq of cells treated with IFNAR2 and IFN-β (Illumina).
Changes in protein expression were analyzed by quantitative phosphoproteome analysis (LC-MS/MS and isobaric labeling with TMT)

Results: sIFNAR2 does not affect cell viability in culture. HIV-1 infection of macrophages and PBLs was inhibited by at least 85% when sIFNAR was added to cultures at similar levels as IFN-β. sIFNAR2 reduced the production of inflammatory cytokines (CXCL9,10,11) in MDM. sIFNAR2 effects were independent of IFN-β activation since its action was not affected by treatment with the IFN inhibitor B18
Differential gene expression measured by transcriptome sequencing shows that sIFNAR2 generates a functional pattern totally different from the profile shown by IFN-β (Image) and remarkably, the Jak-STAT pathway was not induced by sIFNAR2.

Phosphoproteome analysis demonstrates activation of the IL37 pathway while classical IFNα/β signaling pathways, ISG15 antiviral mechanism or OAS antiviral response were not altered.

Conclusions: sIFNAR2 interferes with HIV-1 replication in MDM and decreases the production of proinflammatory cytokines. Transcriptomic and proteomic analysis confirmed that the sIFNAR2 mechanism of action is different from the pathways elicited by INF-β. The use of sIFNAR2 in the treatment of HIV-1 infection deserves further consideration.

Acute and early infection

PESAB01

Successful recruitment of Youth with untreated HIV infection in Adolescent Trials Network 147: early treatment of acute HIV infection

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Background: Gay, bisexual, transgender, and African-American adolescents are at elevated risk of acquiring HIV infection but diagnosis is often delayed. Early antiretroviral treatment (ART) of acute HIV infection can reduce viremia and viral reservoir burden, promoting long-term HIV control. Adolescent Trials Network (ATN) 147 aimed to identify and recruit youth with acute/recent HIV infection for early ART. Baseline demographic and clinical data for the cohort are reviewed.

Methods: Treatment-naïve, recently identified HIV+ youth, aged 12 to 24 years, from Los Angeles and New Orleans were recruited from community centers, clinics, social media, and a high-risk seronegative cohort (n=1727, ATN 149) using point-of-care assays. Acute HIV infection was determined by Fiebig staging. HIV RNA viral load (VL) and CD4 cell counts were assessed at enrollment.

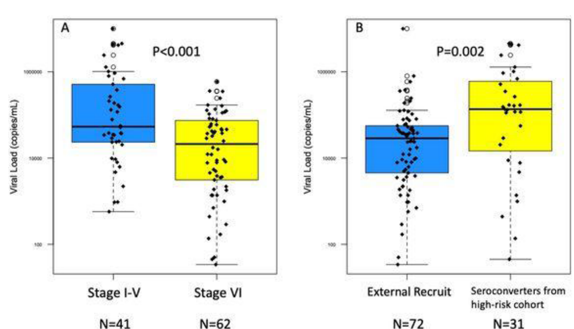

Figure. Viral Log at baseline by Fiebig Stage (A) and Recruitment (B)

Results: Between July 2017-July 2021, 103 newly diagnosed youth were enrolled and started ART within a week. Mean age was 20.8 years (sd:2.4); 90.3 % of youth identified as cis-male, 83.5% were single or in casual relationships, 71.8% were gay, bisexual, and other MSM, and 60.2% were Black. One-fourth (24.3%) reported homelessness ever; 10.7% within the last 4 months.

At enrollment, median VL was 37,313 copies/ml (IQR:5849-126162) and median CD4 count 445.5 cells/mm3 (IQR:357-613). 40% of youth reported acute retroviral symptoms

prior to or at enrollment. Median VL differed significantly by Fiebig stage and recruitment source (Figure). Acutely-infected, seroconverting youth had higher VL. STI co-infections were present at enrollment in 63%, with syphilis most frequent (39%).

Conclusions: Despite challenges in identification and recruitment of youth with HIV infection to clinical studies, ATN 147 successfully enrolled youth at the time of HIV diagnosis. A high STI burden was present in recently HIV-infected youth, likely facilitating HIV acquisition. Acute retroviral symptoms were reported by only 40%, demonstrating that broad universal HIV screening is needed for better identification of recent infection in youth.

Morbidity, mortality and life expectancy in clinical research

PESAB02

In-hospital mortality among persons with HIV (PWH) in the US and Canada, 2005-2018

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Background: In-hospital mortality can reflect incidence of severe events, quality of inpatient and outpatient disease management, and delayed presentation to care for acute or chronic illness. Examining in-hospital mortality among PWH can help identify potential areas for improvement in preventing disease progression in the context of increasing age and comorbidity burden.

Methods: For hospitalizations in 2005-2018 among PLWH in care in six cohorts of the NA-ACCORD, we categorized ICD codes for the primary discharge diagnosis using modified Clinical Classifications Software (CCS). Using Modified Poisson regression, we estimated calendar time trends in the probability of in-hospital death overall and by diagnostic category, adjusting for age, gender, race/ethnicity, HIV risk factor, CD4 count, HIV viral load (VL), and NA-ACCORD cohort, all measured at hospitalization.

Results: We examined 26,600 hospitalizations among 9,076 PLWH who were 73% cisgender men, 38% White, 37% Black, and 19% with IDU risk factor. PLWH hospitalized in 2018 vs. 2005 were older (median 54 vs. 44 years), likelier to have VL<400 copies/mL (83% vs. 48%), and had higher CD4 counts (median 469 vs. 267 cells/µL).

Over the study period, unadjusted in-hospital mortality was 1.9% (95% CI 1.7%-2.1%) for all-cause hospitalizations and ranged from 0.3% (0.1%-0.6%) for psychiatric to 3.7% (2.9%-4.8%) for non-AIDS-defining cancer hospitalizations (Fig. 1).

For all-cause hospitalizations, unadjusted in-hospital mortality decreased from 2.3% (1.7%-3.2%) in 2005 to 1.6% (1.1%-2.4%) in 2018. The age-adjusted relative change in in-hospital mortality was -4.5% (-6.7% to -2.2%) per year for all-cause hospitalizations.

In fully adjusted analyses, the relative change per year was -3.3% (-5.5% to -1.0%) for all-cause, -3.9% (-7.3% to -0.4%) for non-AIDS infection, and -13.8% (-23.0% to -3.4%) for AIDS-defining illness hospitalizations.

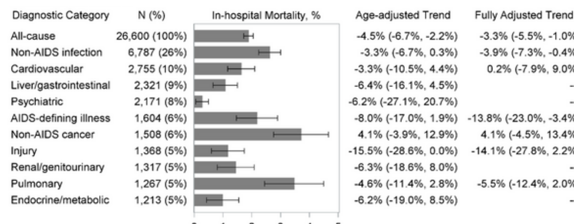

Fig. 1. Unadjusted in-hospital mortality and calendar time trends (relative change per year). Numbers not shown could be estimated.

Conclusions: Among PLWH in care, in-hospital mortality decreased over 2005-2018. Further research should investigate risk factors and potential prevention strategies for hospitalizations with higher mortality, e.g. for pulmonary conditions.

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Adherence testing

PESAB03

High accuracy of an enzyme-linked immunoasssay for detection of tenofovir alafenamide: implications for point-of-care antiretroviral adherence monitoring

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Background: We previously developed a urine point-of-care (POC) immunoassay to measure urine tenofovir (TFV) levels for patients on tenofovir disoproxil fumarate (TDF) as an objective adherence metric. Tenofovir alafenamide (TAF), a prodrug of TFV, is metabolized intracellularly and gives ~80% lower urine TFV levels than TDF. Previous modelling demonstrated that 300 ng/mL of TFV is an optimal cut-off for detecting non-daily adherence to TAF.

The goal of this study was to demonstrate accuracy of the enzyme-linked immunoassay (ELISA) for TFV from TAF compared to liquid chromatography tandem mass spectrometry (LC-MS/MS) at this cut-off.

Methods: The TAF-DBS study recruited HIV-negative participants to take TAF/emtricitabine using directly-observed-therapy. The Point-of-Care Urine Monitoring of Adherence (PUMA) Study collected urine from people with HIV using TAF-based ART. Ten urine samples were included as negative controls from healthy participants on no medications. A previously validated ELISA using the anti-TFV antibody was recalibrated for concentration ranges appropriate for individuals taking TAF and levels compared to those from LC-MS/MS.

Results: Overall, 131 samples from 94 participants were included. TAF-DBS included 36 participants (17 cisgender women) providing 2 samples, median age 29 (range 18-41); PUMA included 48 participants providing one sample (6 cisgender women, 2 transgender women, 1 transgender man), median age 56 (range 26-73); Controls included 10 participants not on TAF (5 cisgender women), median age 32 (range 25-45).

Of the 109 samples with TFV levels above the 300 ng/mL cut-off by LC-MS/MS, 107 were above 300 ng/mL via ELISA, with 98.2% sensitivity (95% confidence interval (CI): 93.5-99.8%). Of 21 samples with TFV levels below the cut-off by LC/MS/MS, 20 were below via ELISA, with 95.2% specificity (95% CI: 76.2-99.9%). ELISA was 97.7% (95% CI: 93.4-99.5%) accurate compared to LC-MS/MS (**Fig.**). The log-transformed correlation coefficient between the two methods was 0.86 (p<0.001).

Conclusions: As TAF uses expands for PrEP and ART, a POC urine assay for TAF adherence is needed. We demonstrate that an immunoassay can accurately measure TFV in urine above and below an appropriate cut-off for TAF with high accuracy compared to LC-MS/MS. The assay is now optimized to support development of a lateral flow POC adherence test for TAF.

Viral load and CD4 monitoring

PESAB04

Comparison of Advanced HIV Disease identification using CD4 results from a semi-quantitative CD4 point of care test and CD4 flow cytometry in Nigeria

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Background: CD4 testing is critical in identifying people living with HIV with Advanced HIV Disease (AHD) and is conducted at enrollment/re-enrollment into care. Nigeria introduced VISITECT CD4 Advanced Disease rapid test (VISITECT), a semi-quantitative point of care test prequalified by WHO, to address gaps in CD4 coverage. Conducting VISITECT test requires time-sensitive procedural steps and visual acuity for interpretation, and there was no experience with its use in Nigeria. To allay concerns of the impact of operational differences on the quality of VISITECT results in the Nigerian context, we compared results from VISITECT to CD4 flow cytometry, the current gold standard in-country.

Methods: We recruited patients >10years old enrolling into HIV care across 4 states (Akwa-Ibom, Anambra, Lagos, Rivers) implementing the AHD package of care between February and June 2021. Venous or capillary blood samples were collected at enrollment, and parallel CD4 tests were conducted via VISITECT and CD4 flow cytometry platforms (BD FACSPresto and Partec Cyflow).

We determined how many results reported by healthcare workers (HCWs) as <200cells/mm^3 (AHD), or ≥200cells/mm^3 by CD4+ cell flow cytometry was correctly identified by VISITECT. The paired tests were tested for agreement using Cohen's Kappa test.STATA version 16 was used for analysis.

Results: 603 patients were recruited from 10 ART facilities. The prevalence of CD4 <200cells/mm³ was 47.6%, (95% CI: 43.6% - 51.6%, 287/603) and 50.9% (95% CI: 46.9% - 54.9%, 307/603) on the flow cytometry and VISITECT respectively. In all, 268 of 307 VISITECT results that were <200cells/mm³ were identified as correct by the gold standard, giving a positive predictive value of 87.3%. 277 of 296 VISITECT results ≥200cells/mm³ were identified as correct by the gold standard, with giving a negative predictive value of 93.6% (Kappa = 0.81, Agreement =90.38%, P= <0.001).

Conclusions: The observed high agreement between VISITECT and flow cytometry results demonstrates that VISITECT can correctly identify patients with AHD and has the potential to improve access to CD4+ testing and linkage to care.

The findings show that operational differences have minimal effect on the accuracy of VISITECT results at facilities and Nigeria can deploy the test across the country with minimal concerns.

Diagnostics of co-infections and co-morbidities

PESAB05

Circulating mir21 and mir125b in women living with human immunodeficiency virus: utility of biomarkers for monitoring cervical carcinogenesis

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Background: As of 2018, the prevalence of Human immunodeficiency virus (HIV), and cervical cancer (Ca) attributable to HIV was higher in Africa than in other continents. Identifying individuals at a high risk of developing Ca among immunocompromised persons, using less invasive techniques, remains a major challenge.

The study evaluated HIV infection-associated dysregulation of Ca-linked oncomirs (miR-21, miR-146a, miR-155, miR-182, and miR-200c) and tumor suppressors (miR-let-7b, miR-125b, miR-143, miR-145, and p53 gene), in a bid to identify early indicators of genetic instability, and biomarkers for monitoring of high-risk individuals.

Methods: This case-control study included 173 women without abnormal Pap smear; confirmed HIV seropositive women (HIV+ = 103) and HIV seronegative women (HIV- = 70). Relative expressions of miRNAs and p53 gene in blood and cervical cells) were determined following RNA extraction, reverse transcriptase Polymerase Chain Reaction (PCR), and gel electrophoresis. T-test was used to compare the data from HIV+ and HIV- women. Significance was set atp≤ 0.05.

Results: Similar pattern of miR-21, miR-146a, miR-182, miR-200c, miR-125b, and miR-145 expression was observed in both samples. Higher expressions of miR-155 and p53 gene were observed in cervical cells of HIV+ women compared with HIV- women (p= 0.046, and 0.033, respectively) whereas lower expressions of miR-155 and p53 gene were observed in the blood of HIV+ women compared with HIV- women (p= 0.539 and 0.049, respectively). In both blood and cervical cells, higher miR-21 expression (p= 0.032 and 0.198, respectively) and lower miR-125b expression (p= 0.050 and 0.004, respectively) were observed in HIV+ women compared with HIV-women. In blood, a lower expression of miR-146a was observed in HIV+ women compared with HIV- women (p= 0.036) whereas in cervical cells, lower expressions of miR-182 and miR-200c were observed in HIV+ women compared with HIV- women (p= 0.035 and 0.045, respectively). The higher expression of miR-21, and lower expression of miR-125b and p53 could be early indicators of genetic instability prior to epithelial transformation.

Conclusions: This study suggests that circulating high expression of miR-21 and low expression of miR-125b and p53 gene could be used in identifying individuals at risk of developing Cervical cancer, especially among immunocompromised patients.

PESAB06

Cryptococcus qPCR assays: the future for routine mycology labs and clinical trials dealing with HIV-associated cryptococcosis

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Background: Routine laboratory testing for cryptococcal meningitis currently consists of Cryptococcal antigen (CrAg) testing in blood and cerebrospinal fluid (CSF), CSF India ink, and CSF fungal culture. Quantitative cryptococcal culture (QCC) is labor intensive and not feasible in most settings. We evaluated quantitative (qPCR) and reverse transcriptase qPCR (RT-qPCR) assays to quantify

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cryptococcal load in CSF, plasma, and blood. We investigated the dynamics of fungal DNA and RNA detection during antifungal treatment.

Methods: We developed a qPCR assay that can differentiate serotypes A, D and B/C of*Cryptococcus neoformans*and*Cryptococcus gattii*based on the amplification of a unique nuclear Quorum sensing protein 1 (QSP1) and a multicopy 28S rRNA gene and evaluated the assays on 205 patients samples from the AMBITION-cm trial in Botswana and Malawi (2018-2021). CSF, plasma and whole blood samples were stored per patient and were sampled at day 0 (baseline), day 7 and 14 for CSF and at day 1, 3 and 7 for plasma and whole blood post antifungal treatment initiation. A Roche LightCycler480 and Graph pad prism were used for data analysis.

Results: Using the *QSP1* qPCR, 138 (81.7%) were serotype A, 28 (16.6%) were serotype B/C and 3 (1.8%) were a mixed infection of serotype A and B/C. There was no amplification with 36 (17.6%) samples. QCC showed a good correlation with *QSP1* qPCR (slope=0.797, R^2=0.73) and with 28S rRNA qPCR (Slope=0.771, R^2=0.778) assays.

The fungal load at D0 was significantly higher in patients who died at week 10 (w10) as compared to patients who survived post week 10 (p<0.01). Detection of *Cryptococcus* DNA (28S rRNA qPCR) in plasma or whole blood within the first 24 hours of treatment was significantly associated with early mortality at w10 (p<0.01). *QSP1* RT-qPCR showed that detection of DNA was due to viable fungal cells as the quantification of*QSP1* whole nucleic acids was systematically higher (2 to 5-fold) than that of DNA.

Conclusions: Quantification of *C. neoformans*and*C. gattii* load in CSF and plasma at D0 is useful in identifying patients at risk of death and may be a promising tool for monitoring treatment response in the future.

Biomarkers for the prediction of morbidity and mortality

PESAB07

Antenatal systemic inflammation and mortality of children born to mothers with HIV in rural Zimbabwe

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Background: Despite increasing availability of antiretroviral therapy (ART) and falling vertical transmission rates, children born to mothers living with HIV have higher mortality than children born to mothers without HIV. We tested the hypothesis that maternal systemic inflammation during pregnancy is associated with mortality of children born to mothers with HIV.

Methods: Women from the SHINE trial in rural Zimbabwe were recruited during pregnancy and infants were followed for 18 months. C-reactive protein (CRP) and soluble CD14 (sCD14) were measured in plasma by ELISA at a median of 16 gestational weeks. Cox regression models were used to estimate hazard ratios (HR) for infant mortality. Covariates for adjusted models included maternal HIV viral load, CD4 count, cytomegalovirus co-infection, antiretroviral therapy exposure, gestational age at blood sampling and randomised trial arm.

Results: Among 636 children born to mothers with HIV, 82% had ART exposure antenatally. The median maternal CRP was 4.72mg/L (interquartile range (IQR) 1.54, 11.85), and was higher in mothers of children who died by 18 months (9.18mg/L, IQR 5.28, 18.02) compared to mothers of children who survived (4.35mg/L, 1.50, 10.99).

After adjusting for plausible confounders, risk of child mortality doubled for each log rise in maternal CRP (adjusted HR (aHR) 2.12, 95%CI 1.33, 3.40; *P*=0.002). By contrast, maternal CRP was lower among 1744 mothers without HIV (2.67mg/L, IQR 1.04, 6.02) and was not associated with the risk of infant mortality (aHR 1.05, 95%CI 0.76, 1.46; *P*=0.763). Maternal sCD14 was not associated with the risk of mortality in children born to mothers with HIV (aHR1.65, 95%CI 0.25, 10.80; *P*=0.600) or without HIV (aHR1.62, 95%CI 0.26, 10.19; *P*=0.606).

Conclusions: We show for the first time that that maternal systemic inflammation measured by CRP is independently associated with infant mortality in HIV-affected mother-child pairs.

This finding has two major public health implications.

First, CRP is cheap and simple to measure, meaning antenatal point-of-care CRP could be utilised to identify those most at risk of child mortality.

Second, antenatal anti-inflammatory interventions may be required to improve clinical outcomes of children born to mothers with HIV.

Tuberculosis: Prevention, diagnosis, treatment

PESAB08

Viral suppression among adults with HIV receiving dolutegravir-based antiretroviral therapy and 3HP in Kampala, Uganda

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Background: A Phase I/II study evaluating the pharmacokinetics of TB preventive therapy with 3HP (3 months weekly rifapentine/isoniazid) co-administered with dolutegravir (DTG)-based antiretroviral therapy (ART) found 3HP to be well-tolerated and that 3HP could be given without dose adjustment of DTG, although DTG clearance was increased. We assessed

1. Safety of DTG-based ART and 3HP and
2. 6-month viral suppression, in a routine setting.

Methods: TB SCRIPT is an ongoing Phase 3 randomized trial comparing TB screening with point-of-care C-reactive protein versus symptoms among adults with CD4≤350 cells/µL initiating routine ART in Kampala, Uganda. TB screen-negative participants without contraindications are referred for self-administered 3HP two weeks following ART initiation. HIV viral load (VL) is measured at 6-month follow-up. Here, we evaluated 3HP discontinuation due to drug toxicity and 6-month viral suppression among participants without prevalent TB at baseline who initiated once-daily DTG-based ART.

Results: From 11/2020-10/2021, 381 participants without TB initiated TDF/3TC/DTG (TLD), of whom 143 (37.5%) initiated 3HP. Median pre-ART CD4 and BMI were higher for participants who initiated 3HP (Table). To date, 129/143 (90.2%) TLD+3HP participants completed 3HP; reasons for discontinuation included drug toxicity (rash, n=1), pregnancy (n=1), and active TB diagnosis (n=3). Six-month VL testing was completed by 164/381 (43.0%) participants, including 62/143 (43.4%) TLD+3HP participants and 102/238 (42.9%) TLD only participants. TLD+3HP participants had higher median VL than TLD only participants (p=0.03). Furthermore, compared to TLD only participants, a higher proportion of TLD+3HP participants were viremic at >200 (21.0% [13/62] vs. 9.8% [10/102], p=0.06) and >1000 copies/mL (9.7% [6/62] vs. 5.9% [6/102], p=0.37), although the differences were not statistically significant.

A. Baseline characteristics	TLD+3HP N=143	TLD N=238	p-value
Female sex	86 (60.1%)	159 (66.7%)	0.27
Median age, years (IQR)	31 (25-38)	30 (26-37)	0.86
Median pre_ART CD4 count (IQR)	216 (117-287)	168 (73-249)	0.002
Median BMI (IQR)	23.0 (21.3-26.1)	22.3 (20.3-24.7)	0.01
B. 6-month follow-up	**TLD+3HP N=62**	**TLD N=102**	**p-value**
Female sex	34 (54.8%)	76 (74.5%)	0.01
Median age, years (IQR)	30 (25-39)	28 (25-36)	0.55
Median pre_ART CD4 count (IQR)	233 (132-301)	193 (80-271)	0.06
Median BMI (IQR)	22.9 (21.2-25.4)	22.2 (20.1-25.1)	0.13
Median $\log_{10}$ viral load (IQR)	1.70 (1.70-2.17)	1.70 (1.70-1.70)	0.03
Viral suppression ≤200 copies/mL	49 (79.0%)	92 (90.2%)	0.06
Viral suppression ≤1000 copies/mL	56 (90.3%)	96 (94.1%)	0.37

ART: antiretroviral therapy, TLD: TDF/3TC/DTG or tenofovir/lamivudine/dolutegravir, 3HP: 3 months of weekly isoniazid and rifapentine, IQR: interquartile range, BMI: body mass index

Table. Baseline characteristics (A) and 6-month viral suppression (B) among patients receiving dolutegravir-based ART (TDF/3TC/DTG [TLD])

Conclusions: Co-administration of 3HP with DTG-based ART was well-tolerated. Viral suppression was high overall, but early evidence suggests that receipt of 3HP with once-daily DTG-based ART may be associated with a lower probability of achieving viral suppression within 6-months.

PESAB09

Pharmacokinetic and 48 week efficacy of once-daily vs twice-daily dolutegravir among patients with human immunodeficiency virus/tuberculosis coinfection receiving rifampicin based tuberculosis therapy: a randomized control trial

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Background: Concurrent use of Rifampicin (RIF) and dolutegravir (DTG) reduces DTG exposure, thus, DTG 50 mg twice-daily is currently recommended. Food increases

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DTG concentrations in healthy volunteers by 33 – 66%. We investigated the effect of RIF on DTG exposure when dosed at 50 mg once daily with food. DTG 50mg once daily could be more convenient than 50 mg twice daily and generic FDC of TDF/3TC/DTG (TLD) could be easily used without extra 50 mg DTG.

Methods: Forty ARV-naïve HIV-positive participants with newly diagnosed TB receiving stable RIF-based anti-TB therapy in Bangkok, Thailand were randomized to initiate 50 mg once-daily with food (study arm; TLD 1 pill/day) or DTG 50 mg twice-daily (control arm; TLD 1 pill plus additional DTG). Intensive PK was scheduled at week 4. Blood samples were collected pre-dose, 1, 2, 4, 6, 8, 12, and 24-hour post-dose (by study arm). HIV-1 RNA, liver and renal function tests were monitored. DTG concentrations were determined by validated LC-MS/MS. PK parameters were estimated by WinNonLin.

Results: The majority of the participants were male (87.5%); with median age of 32 years; and median body weight was 60.4 kg. Median baseline CD4 was 194 (IQR 46-238) cells/µL. Median baseline HIV-1 RNA was 4.9 (IQR 3.6-5.6) log_{10}copies/mL; 43% had HIV-1 RNA >100,000 copies/mL. Table 1 shows that GMR (90%CI) trough concentration (C_{trough}), maximal concentration (C_{max}) and area under curve ($AUC_{0-\tau}$) were not within the bioequivalence range of 0.8-1.25: [0.19 (0.1-0.35), 0.72 (0.49-1.06) and 0.42 (0.28-0.64)] respectively. In addition, 70% and 95% of study and control arm participants had DTG C_{trough}>0.064 µg/mL. At week 48, 90% of the participants in the study arm (18/20) and control arm (18/20) had HIV-RNA <40 copies/mL using ITT analysis. Premature study discontinuation occurred in 2 cases (1 in study arm: RIF-induced cholestasis; 1 control arm: hypersensitivity reaction).

Conclusions: Although there was substantial reduction in DTG concentration when co-administered with RIF, DTG once-daily regimen with food had robust virological suppression at week 48. Larger study of once-daily and twice-daily DTG is underway to confirm this finding.

STIs (including HPV)

PESAB10

Sitafloxacin therapy for mycoplasma genitalium in men who have sex with men

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Background: *Mycoplasma genitalium* infection has been recognized as an alarming STI in recent years. Reportedly, 89.6% and 68.3% of the strains detected in Japan carried mutations associated with macrolide and quinolone respectively. Due to these high rates of macrolide-resistance strains, sitafloxacin monotherapy is used as the first choice for treating *M. genitalium* infections in Japan. In this study, we aimed to assess the efficacy of sitafloxacin monotherapy for rectal and urogenital *M. genitalium* infection.

Methods: Patients diagnosed with *M. genitalium* infections in National Center for Global Health and Medicine between 2019 and 2021 were treated with sitafloxacin 200 mg for 7 days. A rectal swabs and/or urine sample were collected for assessing quinolone- and macrolide-resistance associated mutations(*parC*, *gyrA* and *23S-rRNA*) before treatment. Test of cure was recommended at approximately four weeks post-treatment.

Results: Among 114 patients included in this study, the mean age was 34 year-old, all were MSM, and 49.0% were HIV-positive. *M. genitalium* was detected in 91 rectal samples and 24 urine samples were observed. Among the strains diagnosed with *M. genitalium*, 70.3% (78/111) were successfully analyzed for *parC* mutations, 59.5% (66/111) for *gyrA* mutations and 78.4% (87/111) for *23S-rRNA* mutations. Microbiological cure rate of whole strains was 88.6% (101/114). That of the strains carrying *S83I* was 80.0% (44/55). Among them, the rate of the strains carrying *S83I*-without*gyrA* mutations was 90.3% (28/31). The cure rate of the wild type strains was 100% (15/15). There was no significant difference in cure rate by anatomical site.

ParC mutation (AAA)	Cure rate for each *parC* mutated MG infection	*GyrA* mutation (AAA)	Cure rate for combined parC and *gyrA* mutated MG infection	Cure rate for rectal MG infections	Cure rate for urogenital infections	Cure rate for concurrent rectal and urogenital
G248T (S83I)	80% (35/44, 95CI 64.7-90.2)	**G285T (M95I)**	77.8% (7/9, 95CI 40.0-97.2)	71.4% (5/7, 95CI 29.0-96.3)	100% (2/2, 95CI 15.8-100)	
		G277T (G93C)	0% (0/2, 95CI 0-84.2)	0% (0/2, 95CI 0-84.2)		
		G295A (D99N)	0% (0/1, 95CI 0-97.5)		0% (0/1, 95CI 0-97.5)	
		G285C (M95I) & G295A (D99N)	0% (0/1, 95CI 0-97.5)	0% (0/1, 95CI 0-97.5)		
		Wild type	90.3% (28/31, 95CI 74.2-98.0)	87.5% (21/24, 95CI 67.6-97.3)	100% (6/6, 95CI 54.1-100)	100% (1/1, 95CI 2.5-100)
Wild type	100% (15/15, 95CI 78.2-100)	**Wild type**	100% (15/15, 95CI 78.2-100)	100% (14/14, 95CI 76.8-100)	100% (1/1, 95CI 2.5-100)	
Others	95% (51/55, 95CI 83.1-99.4)	**Others**	95% (51/55, 95CI 83.1-99.4)	96.6% (39/42, 95CI 82.2-99.9)	90.9% (12/13 95CI 58.7-99.8)	
Total	88.6% (101/114, 95CI 81.3-93.8)		88.6% (101/114, 95CI 81.3-93.8)	87.8% (79/90, 95CI 79.2-93.7)	91.3% (21/23, 95CI 72.0-98.9)	100% (1/1, 95CI 2.5-100)

AAA: amino acid substitution, MG:Mycoplasma genitalium

Table.

Conclusions: The efficacy of sitafloxacin therapy for wild type *M. genitalium* infections was very high. However, the cure rate for the strains carrying both *parC* and *gyrA* mutations was limited. Resistance profile of both*parC* and *gyrA* is important to predict clinical course. According to the result of this study, we can treat rectal MG infections in the same way as urogenital infections.

PESAB12

Efficacy of cefixime for the treatment of *Neisseria gonorrhoeae* infection at three anatomic sites: a systematic review and meta-analysis

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Background: *Neisseria gonorrhoeae* infection is the most common co-infection among patients with HIV. Additionally, rectal gonorrhea increases the risk of HIV infection acquisition. *Neisseria gonorrhoeae* is also highly prone to developing antibiotic resistance; thus, identification of effective antibiotics for treatment is important.
We conducted a systematic review and meta-analysis to describe the efficacy of the cephalosporin cefixime in treating gonorrhea at different anatomic sites.
Methods: We searched PubMed using the query "("Gonorrhea") AND ("Cefixime")." Reports published between January 1, 1980, and December 7, 2022, were included. We excluded studies that were not in English, not accessible, non-human, did not specify the cefixime dose/frequency, or case reports/series.
Of the included reports, we abstracted treatment success rates and cefixime dosage/frequency. One investigator reviewed each article. The relevance and assessment of bias and cohort characteristics for each article was determined by two investigators.
We performed a meta-analysis on a minimum of 3 studies to determine the overall success of cefixime in treating urogenital, rectal, and pharyngeal gonorrhea. Via OpenMeta[Analyst] software (Brown University, Rhode Island), we then calculated 95% confidence intervals using a binary random effects model.
Results: Of the 347 studies returned by PubMed, 15 met our inclusion criteria.
Of patients who received a 400 mg single dose of cefixime, 756 of 777 patients with urogenital infections (estimate: 98.0%; CI: 97.0%-99.0%), 107 of 112 patients with rectal infections (estimate: 95.9%; CI: 92.3%-99.4%), and 183 of 218 patients with pharyngeal infections (estimate: 86.0%; CI: 76.9%-95.0%) were cured.
Of patients who received a 800 mg single dose of cefixime, 224 of 228 patients with urogenital infections (estimate: 98.7%; CI: 97.3%-100%) and 21 of 26 patients with pharyngeal infections (estimate: 81.3%; CI: 66.3%-96.2%) were cured. There were fewer than 3 studies of rectal infections treated with 800 mg.
Conclusions: Cefixime was found to be an effective treatment for gonorrhea. At both single 400 mg and 800 mg doses, cefixime is most effective at treating urogenital infections and least effective at treating pharyngeal infections.

Opportunistic infections (excluding TB): Bacterial, non-TB mycobacterial, viral and parasitic infections

PESAB11

The acceptability of the AMBITION treatment regimen for HIV-associated cryptococcal meningitis: findings from a qualitative study of patients and providers in Botswana and Uganda

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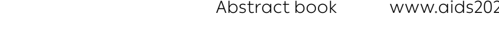
Background: HIV-associated cryptococcal meningitis remains a significant contributor to AIDS-related mortality. The AMBITION trial found a single, high-dose of intravenous liposomal amphotericin (AmBisome) given alongside 14-days of oral flucytosine and fluconazole non-inferior in terms of all-cause mortality when compared to 7-days of intravenous amphotericin B deoxycholate and flucytosine followed by 7-days of fluconazole. The AmBisome regimen was associated with significantly fewer adverse events. We explored the acceptability of the AmBisome regimen.
Methods: We embedded a qualitative study within the AMBITION sites in Gaborone, Botswana and Kampala, Uganda. We conducted in-depth interviews with trial participants, surrogate decision makers, and researchers and combined these with direct observations. Interviews were transcribed and translated and data underwent thematic analysis.
Results: We interviewed 38 trial participants, 20 surrogate decision makers and 31 researchers. Participant understanding of the intricacies of the treatment regimens was limited however there was a broad preference for the AmBisome regimen due to the single intravenous doses and fewer side effects, with some in the control arm stating that they would have preferred the single dose.
The single AmBisome dose took roughly 30 minutes to reconstitute compared to 5-10 minutes for each daily amphotericin B deoxycholate dose. The AmBisome regimen was associated with fewer episodes of amphotericin related rigors, a reduced need for intravenous hydration, fewer cases of thrombophlebitis and a reduction in the



number of intravenous cannulae required. The reduced toxicity profile resulted in less intensive monitoring and management of participants in the AmBisome arm.
A particular challenge was accessing blood transfusions which were needed more often in control arm participants who has significantly higher rates of anaemia. A challenge of the AmBisome arm was the extended duration of oral flucytosine which was given six hourly and involved participants taking a dose in the night.
Conclusions: Participants, surrogate decision makers and researchers found the AmBisome arm to be highly acceptable, being simpler to administer despite the initial time investment required. The single dose was well tolerated and associated with less toxicity and resultant management and monitoring. Widespread implementation of this regimen would reduce the clinical workload of caring for patients with HIV-associated cryptococcal meningitis.

Cardiovascular disease

PESAB13
Cumulative HIV-1 viremia is associated with multimorbidity among U.S. women with HIV

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Background: Ongoing HIV-1 replication despite antiretroviral therapy (ART) use may contribute to higher burden of aging-related non-AIDS comorbidities (NACM) among women living with HIV (WLWH) versus women without HIV. We evaluated effects of cumulative HIV-1 viremia copy-years (VCY) on NACM among WLWH.
Methods: We included WLWH in the Women's Interagency HIV Study through 9/13/2019 with ≥2 HIV-1 RNA viral loads (VL) <200 copies/mL within a two-year-period (baseline) following self-reported ART use.
Primary outcome was multimorbidity (≥2 NACM accrued of 5 assessed: hypertension, dyslipidemia, diabetes, cardiovascular disease, kidney disease); presence of any NACM at baseline was exclusionary. VCY measures were calculated using the trapezoidal rule as area-under-the-VL-curve. A Cox proportional hazard model with time-dependent covariates was fit to estimate the association of time-updated cumulative VCY and multimorbidity, after

adjusting for age, race/ethnicity, body mass index ≥30 kg/m^2, income, smoking, alcohol, and cocaine use, CD4 count, CD4 nadir, enrollment site, yearly number of viral copies.

Results: 806 WLWH contributed 6,892 women-years, with median 12 (Q1-Q3 7-23) VL measured per participant on a median interval of 182 (Q1-Q3 167-197) days. Baseline characteristics were median age 39 years, 56% Black, 36% reported smoking, and median CD4 count of 534 cells/mm^3. Median time-updated cumulative VCY was 5.4 (Q1-Q3 4.7-6.9) log_{10} copy-years/mL. Of 211 (26%) WLWH who developed multimorbidity, 324 (40%) had hypertension, 193 (24%) dyslipidemia, 69 (9%) diabetes, 66 (8%) cardiovascular and 44 (5%) chronic kidney disease.

Compared with WLWH who had time-updated cumulative VCY <5 log_{10}, multimorbidity was associated with an adjusted hazard ratio of 2.03 (95% CI 1.29-3.20) and 3.63 (95% CI 2.04-6.44) for those with VCY 5-6.9 and ≥7 log_{10} copy-years/mL, respectively (overall *p*<0.0001) (Figure).

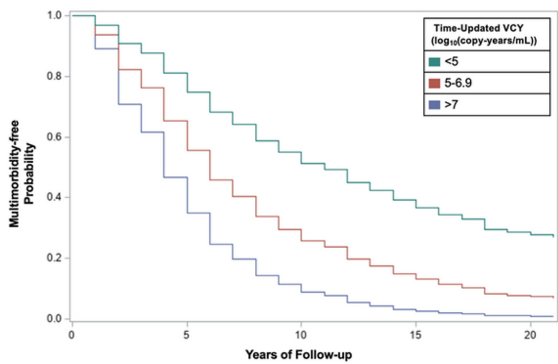

Figure. Cox proportional hazard model of multimorbidity (≥2 NACM accrued after baseline of 5 total assessed: hypertension, dyslipedemia, cardiovascular disease, chronic kidney disease) among 806 women living with HIV on antiretroviral therapy stratified by category of time-updated viremia copy-years (VCY). The survival curve was adjusted for age, race/ethnicity, body mass index ≥30 kg/m^2, income, smoking, alcohol and cocaine use, CD4 nadir, enrollment site, and yearly number of viral copies; and weighted for prior VCY and study visit non-attendance.

Conclusions: Among women on ART, time-updated cumulative VCY was associated with multimorbidity and hence may be a prognostically useful biomarker to assess risk for aging-related NACM in this population.

PESUB15

Incidence of and risk factors for heart failure subtypes in women and men living with HIV

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Background: People living with HIV (PLWH) have increased heart failure (HF) risk, but HF subtypes among PLWH remain less well-characterized, especially among women. We estimated incidence of HF with preserved ejection fraction (HFpEF) and reduced ejection fraction (HFrEF) among PLWH receiving care in a large urban U.S. health system, and determined factors associated with each subtype.

Methods: We followed adult PLWH in outpatient care, defined as 2+ visits in 2011-2015, from the Einstein-Rockefeller-CUNY CFAR Clinical Cohort Database of PLWH in the Montefiore Health System (Bronx, NY). Incident HF cases were identified for review using diagnosis codes and NT-proBNP levels, and confirmed independently by two cardiologists using MESA criteria (k=0.70). HF was categorized as HFpEF or HFrEF based on left ventricular EF (≥50% vs. <50%).

We estimated the age-standardized incidence of HFpEF and HFrEF, and determined factors associated with each using Poisson regression, adjusting for time-varying demographic, behavioral, and cardiometabolic characteristics.

Results: Among 8,199 PLWH (44% women, 44% Black, 41% Hispanic, 67% with suppressed viremia <200 copies/mL) contributing 31,612 person-years, 123 incident HF cases were confirmed (53% HFrEF, 37% HFpEF, 10% EF unavailable).

Age-standardized HF incidence rates per 10,000 person-years (95% CI) were 27.3 (21.6-32.9) overall, 14.2 (10.2-18.2) for HFrEF and 9.3 (6.1-12.5) for HFpEF. Men had higher HFrEF incidence than women (16.8 vs 11.1/10,000), whereas HFpEF incidence was more similar by sex (8.0 vs. 11.3/10,000).

At HF diagnosis, median age was 56 for both subtypes; median BMI was 25.1 for HFrEF and 24.7 for HFpEF. NT-proBNP, a marker of HF prognosis, was lower in HFpEF vs. HFrEF (median 2,686 vs. 4,075 pg/mL, p=0.26).

After adjustment, time-varying hypertension history and diabetes were associated with HFpEF (incidence rate ratio, IRR 2.92, 95% CI 1.31-6.53 and 2.03, 95% CI 1.07-3.88), whereas male sex and unsuppressed viremia were asso-

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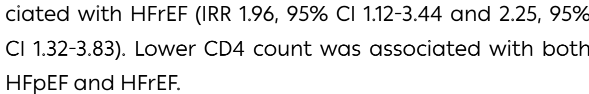

ciated with HFrEF (IRR 1.96, 95% CI 1.12-3.44 and 2.25, 95% CI 1.32-3.83). Lower CD4 count was associated with both HFpEF and HFrEF.

Conclusions: We identified differential risk factors associated with incident HFpEF and HFrEF among PLWH. Given the aging HIV population, HF prevention through virologic suppression and hypertension and diabetes control should be prioritized.

Epidemiology of HIV in the general population

PESAC01

Prevalence and individual and community-level risk factors of advanced HIV disease among people living with HIV from nine African countries

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Background: People living with HIV (PLWH) with advanced HIV disease (AHD) (CD4 cell count <200 cells/mm³) are at higher risk of opportunistic infections, non-AIDS defining comorbidities, and death. We used Population-based HIV Impact Assessment (PHIA) survey data from a random sample of the population in Cameroon, Eswatini, Ethiopia, Lesotho, Malawi, Tanzania, Uganda, Zambia, and Zimbabwe to examine prevalence of AHD and identify individual and community-level correlates of AHD among PLWH aware of their status (PLWHA).

Methods: Between 2015-2017, data from interviews and home-based HIV testing were collected. Blood samples were analyzed for HIV RNA, detectable antiretrovirals, and CD4+ cell counts. PLWH were considered aware of their status based on self-report or if antiretrovirals were detectable. Community-level variables were created at each enumeration area (EA)-level.

Logistic regression using weighted data and clustered analysis to account for cross-country and EA variation was used to determine individual and community-level factors associated with AHD among PLWHA aged 15-59 years.

Results: Of 14,329 PLWHA, 11.6% (95% CI: 10.9%-12.4%) had AHD. AHD prevalence ranged from 6.59% (95% CI: 5.59%-7.76%) in Eswatini to 15.3% (95% CI: 13.7%-17.0%) in Zimbabwe. By sex, 17.4% (95% CI: 15.8%-19.0%) of men and 8.63% of women (95% CI:7.91%-9.41%) had AHD.

In multivariable analysis, higher odds of AHD was associated with male PLWHA, those aged 25-54 years, reporting individual-level stigmatizing behavior, not having sexual intercourse in the last year, not being on antiretroviral therapy (ART), and residing in communities where there was denial of health services due to HIV status (Figure 1).

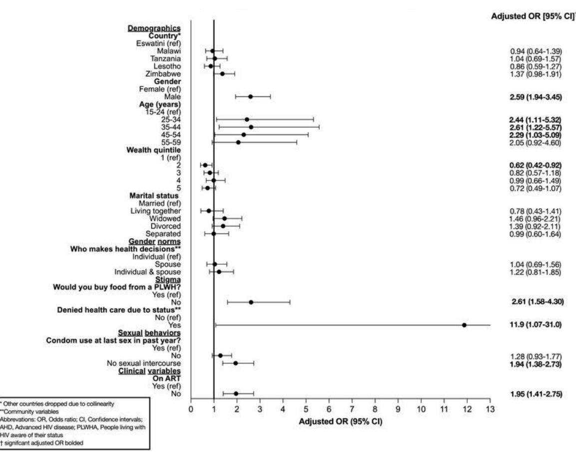

Figure 1. Adjusted odds ratios of individual & community level correlates of AHD among PLWHA

Conclusions: AHD among PLWHA remains a common challenge despite increased access to ART. Interventions are needed to enhance early diagnosis and sustained care, particularly among older men. Stigma at the community and health facility-level hinders access and engagement in care, suggesting the need to implement and scale-up community and health-systems focused HIV stigma interventions.

PESAC02

High transmitted drug resistance in Brazil: unprecedented levels of INSTI resistance

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Background: As of September 2021, 775.805 individuals were on antiretroviral therapy (ART) in Brazil. Until January 2017, the only Integrase Strand Transfer Inhibitor (INSTI) available in Brazil was Raltegravir, mainly used for salvage therapy when resistance to protease inhibitors (PIs) was detected. In January 2017, dolutegravir was introduced for first-line treatment. We evaluate the national prevalence of transmitted drug resistance (TDR) mutations in treatment-naïve patients initiating ART.

Methods: The HIV Threshold Survey methodology was utilized. From September 2020 to February 2022, subjects were selected from seven highly populated cities representative of all Brazilian macro-regions: Belem (North),

Salvador (Northeast), Brasilia (Central), Rio de Janeiro and Santos (Southeast), and Itajai and Porto Alegre (South). Dried Blood Spots were collected on SS903 cards and transported to a central laboratory for genotyping of the reverse transcriptase, protease, and integrase of the *pol* gene.

Results: Of 244 individuals analyzed, 56 (22.95%) harbored TDR mutations. The mean CD4+T-cell count was 425 cells/µL, and the mean viral load was 312.923 copies/mL. The regional TDR prevalence was 16.66% in the Northeast, 22.05% in the Southeast, 14.89% in the Central region, 35.71% in the North, and 24% in the South.

Overall, TDR prevalence was 4.09% for nucleoside reverse transcriptase inhibitors, 11.47% for non-nucleoside reverse transcriptase inhibitors, 2.87% for PIs, and. 2.05% for INSTI (Table). TDR to two and three antiretroviral classes was 0,82% and 0.41%, respectively. The prevalence of Non-B subtypes was 32.79%, being 20.49% of C, 4.92% of F, and 7.38% of recombinants.

NRTI (%)		NNRTI (%)		PI (%)		INSTI* (%)	
M184V, I	2.70	K103N	6,48	V82A	0.53	T97A	1.79
V75I	0.54	V106I	2,70	M46I	0.53	E138K	0.90
K219Q	0.54	V179D, M203I	4,86	V32I	0.53	G140S	0.45
A62V	1.08	V108I	1.08	V43T	0.53	G140R	0.45
L210W	0.54	M230I	1.08	N88D	0.53		
		A98G	0.54	L10F	0.53		
		E138A, K, G, Q	7,02	L33F	0.53		
		G190A	0.54				
		Y181C	0.54				

*Substitution N155K detected in one patient infected with clade B virus

Table. Prevalence of resistant associated mutations in percentages for each antiretroviral class.

Conclusions: Discussion: We identified variable TDR prevalence, ranging from intermediate to more frequently high levels. Previous use of Raltegravir in salvage therapy may have contributed to this unprecedented level of INSTI TDR.

Epidemiology of HIV in women

PESAC03

"MENTORS MOTHERS"! The Link between community and health facilities for PMTCT Programs in Tanzania

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Background: In the implementation of GF 2020-2023, the target is to eliminate new HIV infection among HIV exposed infants from 8% in 2018 to below 5% in 2023 and to increase access to ART among HIV infected children from 60% in 2016 to 95% by 2023. The use of the community approach through mentor mothers is a new strategy to ensure early identification and linkage, retention throughout the cascade of care. The intervention is implemented in a total of 10 regions, 57 councils, and 330 health facilities.

Description: Selection of MM was done with program team in collaboration with facility PMTCT supervisors. Criteria's for selection were developed including having good adherence to clinics, willingness to disclose or have disclosed status and influential who can perform the task. MM were responsible for giving one-on-one support to HIV-infected pregnant/postpartum women; encourage enrollment, adherence and retention in HIV care, perform tracing for women who miss clinic visits; and educate on PMTCT and health-related topics. Sites positivity rates of more than 5% with HIV pregnant or breastfeeding attending PMTCT were identified. Each facility selected a total of 4 MM and one facility supervisor who attended a special 10 days training using National curriculum.

Lessons learned: Findings indicated that majority of participants, their male partners, and health care providers accepted the intervention. Our community-based mentor mothers have contributed to filling the critical gap in the quality and continuum of care for mothers living with HIV. One year of implementation indicated an increase for early ANC booking, couple counseling and HIV testing as well as early infant diagnosis. We reached 49,171 women who tested for HIV. 540 were HIV+ which is 1.1%, their male partners reached were 30,845 and 395 were HIV positive which is 1.3% yield.

Conclusions/Next steps: We learnt that there was high acceptance of use of mentor mother intervention as strategy for linkage between facility and community. This is in agreement with previous studies which have found that task shifting to lay health workers who are also HIV patients is acceptable and results in increased early identification, linkage, adherence and retention to HIV care.

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Epidemiology of HIV in infants and children

PESAC04

HIV incidence and death among orphaned and non-orphaned children and adolescents living in family-based settings in Western Kenya

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Background: In Kenya, most of the 1.8 million orphaned children live with members of their extended family. These households can face severe poverty and have difficulty meeting the needs of all the children in their care. While children have reported experiencing discrimination at home and in their communities based on their status as orphans, little is known about the health outcomes of orphans compared to non-orphaned children.

The objective of this analysis was to compare HIV incidence and death among orphaned children to non-orphaned children.

Methods: A random sample was taken of 300 households caring for at least one orphaned child in Uasin Gishu County, Kenya. From each household, all orphaned and non-orphaned children were enrolled in a prospective cohort study between May 2010 and April 2013. Annual follow-up visits, including HIV testing, were conducted until 2019. Mixed-effects survival analyses with a random slope to account for clustering within households were used to estimate the association between orphan status, defined by the number of parents the child had lost (none, 1, or 2), and HIV incidence, death, and combined HIV incidence or death.

Results: The study enrolled 1488 children, including 487 double orphans, 743 single orphans, and 258 non-orphans. At enrollment, 52% of participants were female, the median age was 10.4 years old, and 23 participants were HIV-positive (0 non-orphans, 15 single orphans, 8 double orphans). Over the course of the study, 16 participants died (0 non-orphans, 8 single orphans, 8 double orphans) and 11 acquired HIV (0 non-orphans, 6 single orphans, 5 double orphans). Among participants who were HIV-negative at enrollment, having one more deceased or missing parent was strongly associated with incident HIV or death (AHR 2.34 per parent, 95% CI: 1.17-4.71) after accounting for gender and age at enrollment.

Conclusions: Within similar households, orphans experience a higher risk of HIV and death than non-orphans. This indicates that both orphans themselves and the families caring for them need additional support to prevent serious health outcomes.

Epidemiology of HIV in adolescents

PESAC05

Stigma in youth with HIV is associated with depression, school dropout and adult clinic attendance

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Background: Few studies have looked at the risk factors and outcomes of HIV stigma among youth with HIV (YWHIV) in sub-Saharan Africa.

Methods: YWHIV in nine Western Kenya facilities were enrolled in an observational cohort in 2019-2020. Participants completed an enrollment survey assessing their sociodemographics, HIV history, adherence, depression (PHQ-9), exposure to physical, emotional and sexual violence and HIV stigma (10-item scale by Wright 2007). Correlates of overall HIV stigma (overall score: 10-50) were assessed using generalized linear models. We report mean differences (MD) adjusted for age and gender, and bootstrapped 95% confidence intervals (95%CI) and p values accounting for clustering by facility.

Results: Of 1,011 YWHIV (aged 15-24), 59% were 15-19 years old, 69% were female, 22% had dropped out of school, and 59% received care in adolescent/youth clinics. Twenty-one percent had missed ≥2 days' medication, and 64% reported ever having sex. Eighteen percent had mild depressive symptoms, while 3% had moderate/severe symptoms; 28% experienced physical violence, 18% emotional violence and 7% sexual violence. The median (interquartile range) overall stigma score was 25 (21-29).

Compared to YWHIV receiving care in adolescent/youth clinics, those in general/adult HIV clinics had higher stigma scores (MD: 1.58 [95%CI: 0.13-3.04], p=0.042). YWHIV who had dropped out of school had higher stigma scores compared to those in school (2.56 [0.81-4.31], p=0.016), as was those ever in a sexual relationship (2.59 [1.43-3.73], p=0.004). YWHIV who had missed ≥2 days' medication had higher stigma scores compared to those fully adherent (2.16 [0.92-3.41], p=0.011). Those with mild, and moderate/severe depression had higher stigma scores (3.37 [2.57-4.17], p<0.001 and 7.08 [1.32-12.84], p=0.028) compared to those with no depression. YWHIV who experienced any violence before the last 6 months, and within the last 6 months had higher stigma scores compared to those with no experience of violence (2.51 [-0.12-5.13], p=0.058 and 2.91 [1.38-4.44], p=0.002).

Conclusions: This study identified intrapersonal, interpersonal and structural factors to consider when developing HIV stigma interventions for YWHIV. This includes expo-

sure to violence, sexual relationships, and service points in facilities. Possible outcomes targeted by these interventions may include depression, adherence and keeping YWHIV in school.

Epidemiology of HIV in key populations (e.g., gay men and other men who have sex with men, sex workers, transgender people, people who inject rugs and prisoners and other incarcerated people)

PESAC06

Alcohol use among people who inject drugs living with HIV in Kenya is associated with needle sharing, more sex partners, and poor engagement in care

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Background: People who inject drugs living with HIV (PWID-LWH) are a high-risk population in the HIV epidemic in Kenya. It is essential to elucidate factors contributing to risk behavior and suboptimal care among PWID-LWH to decrease HIV transmission. Within an assisted partner services implementation science study, we evaluated the association between alcohol use and HIV risk behaviors and care outcomes among a cohort of PWID-LWH in Kenya.

Methods: Participants were recruited through 8 sites in Nairobi and coastal Kenya with the following eligibility criteria: age ≥18 years, injected drugs within the past 30 days, HIV-positive, and willing to provide partner contact information. Participants reported type and frequency of alcoholic beverages consumed in the past 30 days and use was stratified into heavy (>14 drinks/week for men, >7 for women), moderate (any lesser amount), or none based on CDC/NIAAA definitions. Logistic regression was used to calculate odds ratios for factors associated with alcohol use.

Results: Of 870 PWID-LWH, 527 (60.6%) reported no alcohol use, 210 (24.1%) moderate use and 133 (15.3%) heavy use. 49.8% were female, 7.8% reported needle sharing within the past 30 days, 18.6% had more than 3 new sex partners in the past 3 months, 13.7% were not enrolled in HIV care, and 18.5% were not on ART. Of 510 PWID-LWH on ART from whom viral load was obtained, 28.2% were virologically unsuppressed. In bivariate analysis, heavy alcohol use was associated with needle sharing (OR=3.87, 95%CI:2.13-7.01).

In multivariate analysis (table), heavy alcohol use was independently associated with more new sex partners. Moderate and heavy alcohol use were independently associated with not being on ART and non-enrollment in care. Among those on ART, there was no association between alcohol use and viral non-suppression.

Variable	>3 new sex partners in past 3 months	Needle sharing	Not enrolled in HIV care	Not on ART	Unsuppressed Viral load‡
	Adjusted odds ratio (95% confidence interval) *				
No alcohol use	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Moderate alcohol use	1.47 (0.89, 2.43)	0.98 (0.47, 2.00)	**2.23 (1.33, 3.72)**	**1.88 (1.18, 2.97)**	0.82 (0.48, 1.37)
Heavy alcohol use	**1.76 (1.01, 3.07)**	1.89 (0.91, 3.89)	**2.04 (1.10, 3.76)**	**1.99 (1.15, 3.43)**	0.63 (0.30-1.27)

*Adjusted odds ratios from logistic regression models controlling for age, sex, region, history of sex work, khat use (associated with alcohol use), and number of substances used in the past 30 days. Needle sharing, non-enrollment in care, ART, and viral load aORs also control for enrollment in a methadone clinic.

‡Among participants on ART

Conclusions: Alcohol use is prevalent among PWID-LWH in Kenya and a potential risk factor for suboptimal care and HIV risk behavior. Our findings reinforce the importance of addressing alcohol use among this group through expanded clinical and public health interventions.

PESAC07

A quantitative intersectionality analysis of HIV/STI testing, positivity and current PrEP use among transgender people in Washington State, USA

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Background: Transgender people, especially transgender women of color, are disproportionately impacted by HIV/STIs. We applied quantitative intersectional methods to identify HIV/STI-related disparities among multiply marginalized transgender populations.

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Methods: We pooled data from five 2019-2021 cross-sectional data sources in Washington State. We considered three self-reported outcomes: past year HIV/STI testing, current PrEP use, and a composite measure of HIV/STI positivity (past year bacterial STI diagnosis and/or HIV positive). We defined groups by gender and race/ethnicity and calculated the risk difference (RD) for each outcome (reference=White transgender men).

For transgender women and non-binary participants of color, we used Poisson regression to estimate two surrogate measures of additive interaction--the attributable proportion (AP) and ratio of the observed to expected relative joint effects (RJE)--that measure the excess risk attributable to the intersection of gender and race/ethnicity.

Results: Our analysis included 1648 transgender participants (70.4% White, 10.7% Latinx, 5.8% Black). HIV/STI positivity was statistically significantly higher among transgender women and non-binary people assigned male at birth (AMAB) compared to White transgender men (RD, Table).

From the AP, we estimated that 50% and 67% of the excess HIV/STI prevalence among Black and Latinx transgender women, respectively, was attributable to the intersection of gender and race/ethnicity.

Although the RJE was not statistically significant for any outcomes/groups, it suggests that, compared to White transgender men, HIV/STI prevalence is 101% and 206% higher among Black and Latinx transgender women, respectively, than what would be expected if gender and race/ethnicity alone were sufficient to explain it. Similar patterns were observed for HIV/STI testing and PrEP use.

Gender Identity	Race / Ethnicity	N	HIV/STI Positive (%)	Risk Difference RD (95% CI)	Attributable Proportion AP (95% CI)	Ratio of observed to expected relative joint effects RJE (95% CI)
Trans Men	White [ref]	242	4.1	ref	ref	ref
Trans Women	White	212	7.5	-0.06 (-0.16, 0.03)	NA	NA
Trans Women	Black	37	5.4	**0.43 (0.25, 0.60)**	**0.50 (0.07, 0.93)**	2.01 (0.27, 3.76)
Trans Women	Latinx	32	46.9	**0.21 (0.10, 0.33)**	**0.67 (0.27, 1.08)**	3.06 (-0.70, 6.83)
Non-binary People Assigned Male at Birth	White	165	21.2	**0.39 (0.11, 0.67)**	NA	NA
Non-binary People Assigned Male at Birth	Black	22	31.8	**0.27 (0.02, 0.52)**	-0.18 (-2.68, 2.31)	0.84 (0.27, 1.42)
Non-binary People Assigned Male at Birth	Latinx	12	30.8	**0.29 (0.15, 0.43)**	0.29 (-0.83, 1.40)	1.40 (0.13, 2.68)
The null value for RD and AP is 0, and the null value for RJE is 1.						

Table. Quantitative Intersectionality Analysis for Self-reported HIV/STI Positivity among Transgender and Non-binary People in Washington State, 2019-2021

Conclusions: Our findings highlight the heterogeneity in HIV/STI positivity, testing, and PrEP use within the transgender population.

We observed that a large proportion of the increased HIV/STI risk among transgender women of color is explained by intersection of gender and race/ethnicity.

PESAC08

Sexual behavior and HIV prevalence among Venezuelans immigrants in Peru: a study among men who have sex with men (MSM) and transgender women (TGW) screened for pre-exposure prophylaxis (PrEP)

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Background: The Venezuelan economic crisis has generated an unprecedented migratory wave. According to World Bank estimates, Peru is now home to 1.2 million Venezuelan immigrants.

However, little is known about the epidemiological profile of MSM and TGW Venezuelan immigrants, who may be at risk of acquiring or transmitting HIV due in part to challenging social and economic circumstances.

Methods: Between May 2018 and February 2021, participants answered a structured questionnaire on sexual behaviors and were tested for STI/HIV to determine eligibility for PrEP services as part of ImPrEP, a demonstration project implemented in six Peruvian cities. All participants were MSM/TGW, 18+ years-old, and provided informed consent.

We compared social and behavioral characteristics among participants who screened HIV-positive and were therefore ineligible for PrEP enrolment. Differences were assessed using Chi-square tests.

Results: Among the 2526 participants screened for ImPrEP, we identified 623 (24.7%) immigrants, of whom 590 (94.7%) were Venezuelan. Among all immigrants, 74 (11.9%) were HIV positive, of which all (74/74, 100%) were Venezuelan.

Comparing the HIV prevalence among participants screened for ImPrEP, Venezuelans (12.5%, 95%CI 10.1-15.5) had twice the HIV prevalence of Peruvians (6.8%, 95%CI 5.7-7.9).

Comparing Peruvian and Venezuelans, among all HIV positive participants (N=205), Venezuelans were older and more educated (p=0.001), reported more insertive condomless anal sex ($p<0.001$), condomless sex with HIV+ partners (p=0.016), and more MSM who engaged in sex work (23.0% vs 15.3%, p=0.021), which may increase their risk for HIV transmission.

Characteristics of the n=205 participants who tested HIV positive during PrEP screening		Peruvians (N=131) N (column %)	Venezuelans (N=74) N (column %)	Chi-2 p-value
Age (years)	▪<25 ▪25 or more	70 (53.4%) 61 (46.6%)	21 (28.4%) 53 (71.6%)	0.001
Schooling	▪<= Complete secondary ▪Completed tertiary	16 (12.2%) 38 (29.0%)	1 (1.4%) 38 (51.4%)	0.001
Sex w/o condom	▪Insertive condomless anal sex	75 (57.3%)	63 (85.1%)	<0.001
Sex with HIV+ partner w/o condom	▪None ▪Yes, with partner of unknown HIV status ▪Yes, with HIV+ partner	16 (12.2%) 106 (80.9%) 9 (6.9%)	12 (16.2%) 48 (64.9%) 14 (18.9%)	0.016
Sex work	▪Non sex workers ▪MSM sex workers ▪TGW sex workers	100 (76.3%) 20 (15.3%) 11 (8.4%)	57 (77.0%) 17 (23.0%) 0 (0.0%)	0.021

Table.

Conclusions: The Venezuelan migrant crisis demands adequate health policies and services in host countries. Our findings suggest that HIV prevalence among Venezuelan MSM/TGW is high, and engagement in sex work and HIV-associated risk behaviors are common in this vulnerable group. Free and easily accessible HIV testing and treatment must be made available. Likewise, HIV prevention opportunities, including PrEP, should be made available within the public health program.

Epidemiology of AIDS events (e.g., AIDS-related opportunistic infections and cancers)

PESAC09

Cervical cancer screening among women living with HIV: a systematic analysis of population-based surveys in sub-Saharan Africa

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Background: Cervical cancer (CC) is the leading cause of cancer death in women in sub-Saharan Africa (SSA) where 1 in 5 CC cases can be attributable to HIV. Screening for CC is highly effective in reducing disease burden and is essential to the global CC elimination strategy, but estimates of screening uptake in SSA are limited. We aim to estimate CC screening coverage for women in SSA by HIV status.

Methods: We collected all publicly available nationally representative surveys with CC screening information from SSA. We estimated screening coverage using a Bayesian multilevel model (levels: survey, country, region), accounting for the recall period, age groups, and time trends (nested within regions). The effect of living with HIV on screening was modeled using country-level random slopes.
For surveys without HIV biomarkers, standardization with the UNAIDS HIV prevalence estimates was used. Post-stratification was used to aggregate estimates among women aged 25-49y for countries with HIV biomarker data.

Results: We pooled 46 surveys across 25 countries (253,285 respondents) between 2000-2019, of which 12 countries (132,629 respondents) had HIV biomarker data. In 2019, the proportion of women ever screened for CC varied by region and was higher for WLHIV than women without HIV in Central/Western Africa (WLHIV=7% [95% Credible Intervals (CrI): 3-15%] vs. 4% [95%CrI: 2-8%]) and Eastern Africa (WLHIV=21% [95%CrI: 15-27%] vs. 9% [95%CrI: 6-12%]), but similar in Southern Africa (WLHIV=48% [95%CrI: 33-65%] vs. 50% [95%CrI: 34-65%]). Odds ratios (age-adjusted) for CC screening among WLHIV compared to women without HIV ranged from 0.93 (95%CrI: 0.84-1.05) in South Africa to 2.80 (95%CrI: 2.28-3.50) in Tanzania.

Conclusions: WLHIV have equal or greater odds of being screened for CC in comparison to those not living with HIV. However, overall coverage remains low in SSA. These findings are aligned with current practises as many CC screening initiatives have been introduced alongside existing HIV care structures. As funding and priorities shift away from HIV, these screening rates among WLHIV may not be sustained. Greater investment and improved approaches to screening are essential, particularly for WLHIV, to improve coverage, and reduce disparities in CC burden between women living and not living with HIV.

PESAC10

National and regional rates of hospitalizations and in-hospital mortality for opportunistic infections for people with HIV in the United States, 2012-2018

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Background: Contemporary rates of hospitalizations for Human Immunodeficiency Virus (HIV)-related Opportunistic Infections (OIs) in the United States (US) are unknown. We aimed to quantify the national and regional OI hospitalization rate and OI hospitalizations' in-hospital mortality rate for people with HIV (PWH) in the US for 2012-2018.

Methods: All hospitalizations in the Agency for Healthcare Research and Quality's National Inpatient Sample that included an HIV diagnosis and an OI diagnosis (as defined

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by the Centers for Disease Control and Prevention's (CDC) Stage-3-Defining OIs) during 2012-2018 were included. For the hospitalizations, we analyzed demographics (age, sex, race) and the in-hospital mortality rate. Using the number of PWH from CDC data, we estimated national and regional OI hospitalization rates per 100,000 PWH-years with 95% Poisson confidence intervals.

Results: There were 145,710 total weighted hospitalizations for PWH with an OI diagnosis. PWH with OI hospitalizations were predominately male (68.7%), 45-55 years-old (31.7%) and Black (52.6%). The national rate of OI hospitalization per 100,000 PWH-years declined from 2,664.0 (95% CI, 2,664.3-2,665.6) in 2012 to 1,784.5 (95% CI, 1,783.9-1,785.1) in 2018 (Figure 1). Regionally, the South had the highest rate every year which declined from 3,074.4 (95% CI, 3,073.4-3,075.4) in 2012 to 2,125.4 (95% CI, 2,124.5-2,126.3) in 2018. The percentage of OI hospitalizations in the US resulting in in-hospital mortality was 6.4% in 2012 and 6.0% in 2018.

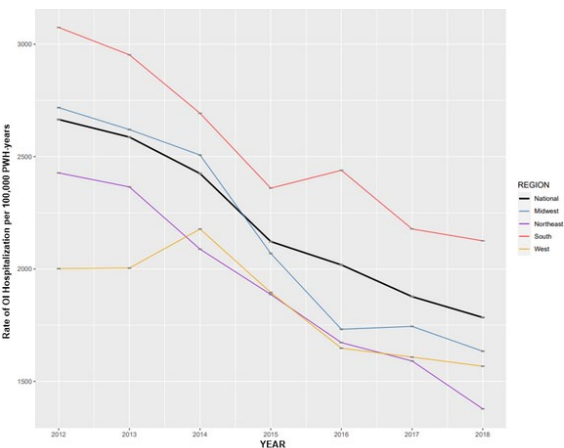

Figure 1. National and regional rates of hospitalizations for opportunistic infections for people with HIV in the United States, 2012-2018

Conclusions: OI hospitalization rates for PWH in the US declined from 2012-2018, but there are regional disparities with PWH in the South experiencing the highest burden of OI hospitalizations. Studies should examine what gaps in services are contributing to these OI hospitalizations. Communities and clinics may need region-specific interventions. Additionally hospitalizations due to specific OIs may also contribute to these regional disparities and should be investigated.

Epidemiology of non-AIDS infections and communicable diseases (e.g., viral hepatitis, STIs, TB, COVID-19)

PESAC11

Declining incidence of chlamydia and gonorrhea, but not mycoplasma in a high-risk population eligible for PrEP experiencing a test-and-treat-setting

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Background: Pre-exposure prophylaxis(PrEP) can prevent HIV, but could lead to behavioral changes increasing risk of other sexually transmitted infections (STIs). We evaluated changes in STI incidence and associated risk factors in men eligible for PrEP.

Methods: The prospective, multicenter BRAHMS study enrolled participants without HIV, 18-55 years, who reported recent STI or condomless anal intercourse with ≥2 male partners with HIV or unknown status. Every three months, participants were offered PrEP, completed behavioral questionnaires, and were screened and treated for STIs including syphilis as well as *Chlamydia trachomatis* (CT), *Mycoplasma genitalium* (MG), and *Neisseria gonorrhoeae* (NG) at the rectal, urethral and pharyngeal sites. We calculated three-months-incidence rates and used multi-level mixed effects logistic regression to calculate odds ratios (ORs) and 95%-confidence intervals (CIs) for factors associated with any STI.

Results: From 6/2018-3/2021, 1,017 participants were followed with mean age 33 years, 99.1% cisgender men, and 96.8% gay/bisexual. PrEP was used at enrollment 54.0%, 82.2% at any point during follow-up.

Between 3-month and 12-month visits, MG incidence was higher than other STIs and relatively stable (figure). CT incidence decreased by 27.2% among PrEP users and 49.2% for non-PrEP users, NG incidence by 28.1% and 21.7%. Syphilis incidence was lowest and decreased by 2.2% and 15.4%. Incidence was higher in PrEP-users only for anorectal localizations.

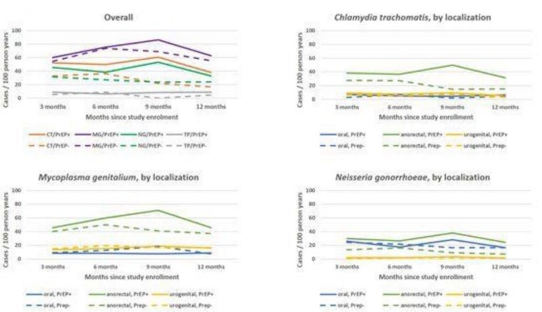

Figure. 3-month sexually transmitted infection incidence rates, by pre-exposure prophylaxis status

STI incidence was independently associated with PrEP use (OR=1.3;CI:1.1-1.6), condomless anal sex with >5 casual partners (OR=1.8;CI:1.5-2.2), STI-related symptoms (OR=1.8;CI:1.4-2.3), recreational drug use (OR=1.7;CI:1.4-2.0), born outside of Germany (OR=1.5;CI:1.2-1.9), and moderately or largely increased self-perceived risk of HIV (OR=1.3;CI:1.1-1.6 and OR=1.4;CI:1.1-1.8).

Conclusions: A structured test-and-treat setting appears to have reduced CT and NG incidence in men with sexual risk behavior. Besides other behavioral factors, PrEP use increased STI risk in our cohort slightly, and services providing PrEP may be an effective setting for intensive STI-related risk reduction counselling considering the risk factors identified.

PESAC12

Incidence of HCV reinfection among people with HIV prior to and during periods of limited and broad access to direct-acting antiviral therapies for HCV in five countries

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Background: Direct-acting antivirals (DAA) may reduce HCV incidence through a treatment-as-prevention effect. Reinfection incidence after successful treatment has been a major concern for HCV elimination, particularly among people with HIV (PHIV). We aim to assess changes in HCV reinfection incidence following limited and broad DAA introduction among PHIV.

Methods: We used data from six cohorts from the International Collaboration on Hepatitis C Elimination in HIV-coinfection (InCHEHC), including data from the Netherlands, Switzerland, Australia, Spain, and France (2010-2019). Participants were considered at risk of reinfection if they had a HCV positive test followed by spontaneous or treatment clearance.

We measured the incidence of first reinfection per participant. Time zero was the first negative HCV RNA test indicating treatment or spontaneous clearance. Data were censored at the last negative HCV RNA test or infection date, which was estimated as the midpoint between the last negative and first positive test dates.

The rate of reinfection was compared between three periods: prior to DAA access, and during limited access, and broad access to DAA in each jurisdiction using a piecewise exponential survival model, with a fixed effect for risk group (men who have sex with men [MSM], people who inject drugs [PWID] vs. other/unknown) and a random intercept at the cohort level.

Results: Overall, 2,818 (57%) MSM, 1237 (25%) PWID, and 880 other participants were included. The median (IQR) age at spontaneous or treatment clearance was 47 (40-53). During 13,527 person-years (py), we observed 790 reinfections (5.8 per 100py, 95%CI 5.4-6.3). Relative to the pre-DAA period, reinfection incidence was 25% lower in the limited DAA access period (IRR: 0.75, 95%CI 0.62-0.91), and 44% low-

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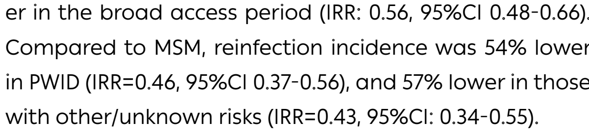

er in the broad access period (IRR: 0.56, 95%CI 0.48-0.66). Compared to MSM, reinfection incidence was 54% lower in PWID (IRR=0.46, 95%CI 0.37-0.56), and 57% lower in those with other/unknown risks (IRR=0.43, 95%CI: 0.34-0.55).

Conclusions: HCV reinfection rates among PHIV were high prior to DAA introduction, particularly among MSM. Our data suggests that DAA introduction was associated with declines in HCV reinfection incidence rates among PHIV. With HCV treatment uptake resulting in a growing pool of individuals at risk of reinfection, continued monitoring is warranted.

PESAC13

Pooled estimates of hepatitis C incidence among gay and bisexual men using PrEP by country-level availability of hepatitis C DAA treatment: a systematic review and meta-analysis

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Background: Sexual transmission of hepatitis C virus (HCV) among gay and bisexual men (GBM) has been historically concentrated among people living with HIV, but concerns exist that the widespread scale-up of PrEP may increase HCV incidence among HIV-negative GBM. Given community-level HCV viremia at the time of PrEP scale-up is likely to moderate risk among PrEP users, we examined the impact of broad DAA availability on HCV incidence in studies of GBM using PrEP.

Methods: We searched PubMed, Medline, EMBASE and relevant conference databases to 9th August 2021 for studies reporting HCV incidence among GBM using PrEP (daily or event-driven). Cohort studies and open-label clinical trials were included. Pooled estimates of HCV incidence were calculated using random-effects meta-analysis.

Using a literature and policy review of the timing of broad/universal HCV DAA availability in included countries, we conducted a subgroup analysis of PrEP studies that commenced participant follow-up before or after country-level DAA availability.

Results: Seventeen studies published between 2015-2021 reported on HCV incidence among GBM using PrEP and were included; all were from high-income countries. One study reported HCV incidence among daily and event-driven PrEP users separately and was included as two observations in the meta-analysis.

Overall 18,363 participants were included; 145 incident HCV infections were captured over 24,023 person-years. The pooled estimate of HCV infection across studies was 0.91 per 100 person-years (range, 0.00 to 2.93/100py). Heterogeneity was high across studies (I^2=84.0%, χ^2 p<0.001).

Twelve studies (5,186 individuals) commenced follow-up before broad-access to DAAs, with a pooled incidence of 1.27/100py (95% CI, 0.69-1.86; I^2=81.8%, χ^2p=0.187) and five studies (13,177 individuals) started follow-up after broad-access to DAAs, with a pooled incidence of 0.30/100py (95% CI, 0.11-0.50; I^2=33.2%, χ^2p=0.187).

Conclusions: Our pooled estimates of HCV incidence among PrEP users were lower than reported in a previous meta-analysis (1.48/00py), and lower in settings where broad access to DAAs had occurred prior to study initiation.

Findings suggest that reductions in community-level HCV viremia driven by DAA uptake among respective GBM populations, which occurred prior to changes in sexual networks and behaviours associated with PrEP uptake, may have contributed to lower HCV transmission among PrEP users.

Modelling the impact of service models on the HIV epidemic

PESAC14

Decision analytic model estimates of the predicted benefits and anticipated costs associated with HIV self-testing versus standard provider-administered testing modalities if implemented in Kenya

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Background: To reach the UNITAIDS 95-95-95 goals by 2030, countries need information about the potential benefits and costs associated with various HIV testing modalities to make informed policies.

We used decision-analytic modeling to estimate the benefit and cost of HIV self-testing (HIVST) relative to the standard provider-delivered HIV testing (HTC).

Methods: We developed a decision-analytic model to estimate the predicted number of HIV-diagnosed infected individuals and on treatment and the estimated cost associated with the following scenarios if implemented in Kenya:

1. Provider-supervised HIVST,
2. Un-supervised HIVST, and;
3. HTC.

The model focused on the 2020 Kenyan population aged 15-64 (n=31,671,946), who were assumed to be sexually active. We conducted a literature review to determine costs for all points in the HIV care continuum (testing, treatment for those who test positive, PrEP for those at high risk who test negative) from the provider perspective in US dollars and probabilities of accessing each stage in the HIV care continuum (i.e., probability that someone will test, probability that someone who tests positive will access treatment and that someone who is high risk and tests negative will access PrEP).

Results: Among the three scenarios, unsupervised HIVST resulted in correctly diagnosing and initiating treatment for more than twice the number of people living with HIV (PLWH) (n= 102,389 PLWH on treatment) than for supervised HIVST (n= 42185) and HTC (n= 38470).

However, the estimated cost for both provider-supervised and unsupervised HIVST was higher ($60,117,771 and $57,597,242, respectively) than HTC ($20,203,585). Offering unsupervised HIVST over provider-supervised HIVST resulted in a cost-saving of $0.27 per additional person tested.

All these costs were sensitive to changes in the cost of testing, the number who test under each scenario and the linkage to care and treatment initiation rates.

Conclusions: Unsupervised HIVST had a cost advantage over provider-supervised HIVST and led to a higher number of PLWH on treatment than supervised HIVST and HTC.

Countries should consider the benefits of making unsupervised HIVST easily available for free but take into consideration preferences for supervised vs. non-supervised testing among different population groups and the relatively higher cost of getting more people into care.

PESUC21

Life years gained with improved HIV care among non-Hispanic Black and White people who have ever injected drugs (PWID) with HIV: a modeling study

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Background: HIV remains a major health burden among people who have ever injected drugs (PWID). We projected life expectancy among non-Hispanic Black and White PWID with HIV (PWID-HIV) and assessed the impact of improving the HIV care cascade on life expectancy.

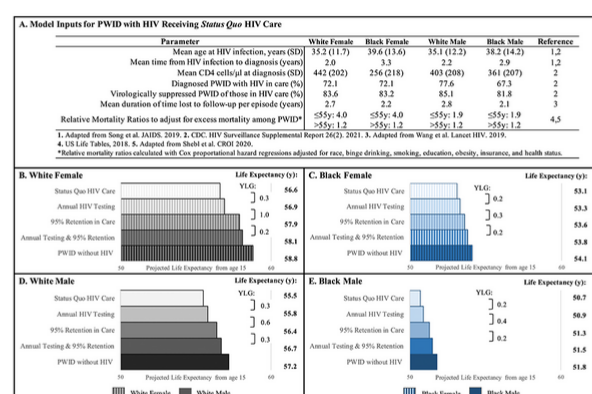
Methods: We applied race- and sex-stratified data for US PWID to the validated CEPAC microsimulation model (Figure 1A).

Race- and sex-specific life tables for non-HIV-related mortality were adjusted for excess all-cause mortality among PWID. We projected life expectancy from age 15 years among PWID-HIV under four scenarios:

1) *status quo* HIV care,
2) annual HIV testing,
3) 95% retention in HIV care, and
4) annual testing and 95% retention in care.

We also compared life expectancy of PWID-HIV to PWID without HIV.

Results: Among PWID-HIV who receive *status quo* care, we projected life expectancy from age 15 to be highest among White females (56.6y) and lowest among Black males (50.7y) (Figure 1B-E). With annual HIV testing, years of life gained (YLG) were higher among White PWID (females: 0.3y, males: 0.3y) than Black PWID (females: 0.2y, males: 0.2y). Increased retention in care (to 95%) would also result in additional YLG for White PWID (females: 1.0y, males: 0.6y) than Black PWID (females: 0.3y, males: 0.4y) compared with annual testing. When combining annual testing and 95% retention, YLG ranged from 0.2y to 0.3y. Comparing PWID-HIV receiving *status quo* care to PWID without HIV, White PWID had a greater difference in LE (female: 2.2y, male: 1.7y) than Black PWID (female: 1.0y, male: 1.1y).



A. Model Inputs for PWID with HIV Receiving *Status Quo* HIV Care

Parameter	White Female	Black Female	White Male	Black Male	Reference
Mean age at HIV infection, years (SD)	35.2 (11.7)	39.6 (13.6)	35.1 (12.2)	38.2 (14.2)	1,2
Mean time from HIV infection to diagnosis (years)	2.0	3.3	2.2	2.9	1,2
Mean CD4 cells/µl at diagnosis (SD)	442 (202)	256 (218)	403 (208)	361 (207)	2
Diagnosed PWID with HIV in care (%)	72.1	72.1	77.6	67.3	2
Virologically suppressed PWID of those in HIV care (%)	83.6	83.2	85.1	81.8	2
Mean duration of time lost to follow-up per episode (years)	2.7	2.2	2.8	2.1	3
Relative Mortality Ratios to adjust for excess mortality among PWID*	≤55y: 4.0 >55y: 1.2	≤55y: 4.0 >55y: 1.2	≤55y: 1.9 >55y: 1.2	≤55y: 1.9 >55y: 1.2	4,5

1. Adapted from Song et al. JAIDS. 2019. 2. CDC. HIV Surveillance Supplemental Report 26(2). 2021. 3. Adapted from Wang et al. Lancet HIV. 2019. 4. US Life Tables, 2018. 5. Adapted from Shebl et al. CROI 2020.
*Relative mortality ratios calculated with Cox proportional hazard regressions adjusted for race, binge drinking, smoking, education, obesity, insurance, and health status.

Figure 1 A-E: CEPAC model inputs (A) and projected life expectancy (B-E) from age 15 years among non-Hispanic Black and White people who have ever injected drugs (PWID) stratified by HIV care scenario.

Conclusions: Among most PWID-HIV, improving retention in care would gain more life-years than increased testing, yet disparities in life expectancy between Black and White PWID-HIV would persist. Attaining equivalent HIV testing and retention rates across Black and White PWID would be insufficient to address disparities in life expectancy.

PESUC22
Is Thailand on track to achieve 95-95-95 targets by 2025?

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Background: Thailand made progress in expanding coverage of antiretroviral treatment (ART) for people living with HIV (PLHIV). We developed a model to predict national HIV cascade trends and estimate effort needed to achieve 95-95-95 targets in 2025.

Methods: We developed a Markov model on disease progression to project national HIV cascade trends from 2022 to 2025 using current epidemic (Model A) and accelerated response trends (Model B). The cycle of the Markov model was 1 year. We used 2021 National AIDS Program (NAP) data to classify PLHIV into six states:
1. Diagnosed but not initiated ART,
2. Initiated ART but not on ART,
3. On ART but not tested for VL,
4. Tested for VL but not suppressed(VL>1,000),
5. Virally suppressed, and
6. Death.

We calculated the probability of moving from one state to another or remaining in the same state by analyzing patient data from 23 health facilities. We applied a linear trend using NAP data from 2014 to 2021 to estimate the number of new and undiagnosed HIV-infections from 2022 to 2025 and added them to the model.

While we used the probability matrix from 2021 to develop Model A, we applied the exponential growth of the annual transition probability from current state to state 3 and state 5 by 1% to 10% to develop Model B.

Results: Of 503,459 PLHIV who knew their HIV status in 2021, 81% (405,634) were on ART and, of these, 81% (327,577) were virally suppressed. Under Model A, we projected ART coverage and VLS to increase to 86% and 84% in 2025, respectively. Under Model B, we achieved 2nd and 3rd 95 targets after intensifying treatment and viral suppression efforts by 5% each year.

Year	Model B: Increase 5% annually					Model A	
	PLHIV Alive Diagnosed	On ART	Virally Suppressed	Second 95	Third 95	Second 95	Third 95
2022	509,263	431,472	367,259	85%	84%	83%	83%
2023	514,395	457,112	406,412	89%	89%	85%	83%
2024	518,395	478,936	443,798	92%	93%	86%	84%
2025	521,086	492,929	466,684	95%	95%	86%	84%

Table.

Conclusions: Current efforts will increase ART coverage and viral suppression but are insufficient to achieve 95-95-95 targets. Defining which populations, geographic areas, and interventions to intensify efforts are needed to optimize resource allocation and control the HIV epidemic.

PESUC23
Characterising the HIV care cascade in Saskatoon, Saskatchewan, 2018 - 2021

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Background: Saskatchewan has experienced a unique HIV epidemic in Canada, driven largely by injection drug use and disproportionately affecting younger women through heterosexual transmission. HIV care in Saskatoon is primarily accessed at two clinical sites: the Royal University Hospital (RUH) and the Westside Community Clinic (WSCC). While the clinic at RUH is a specialized Infectious Diseases clinic, WSCC provides community-based access to primary care and addictions support. These clinics serve over 1200 active patients living with HIV. Offering different, yet complementary clinical care, the HIV care cascades of these two sites offer insights into the HIV epidemic over time, specifically, the characteristics of each of the care models; patient populations; intersectional considerations; and the impact of the COVID-19 pandemic on patient outcomes.

Description: With demographic and clinical data for diagnosed Persons With HIV (PWH) across the two clinic sites over a four-year period, from 2018 – 2021, care continuum data is compared across the two sites during the four-year time periods, characterizing the HIV care cascade for Saskatoon, SK. The data demonstrates where the gaps in care exist between the two models.

Lessons learned: The community-based care model has seen a progressive advancement in cascade outcomes, while being relatively undisrupted during the COVID-19 period, with a consistent 79% PWH engaged in care.

However, the pandemic period adversely impacted cascade outcomes for the hospital-based clinic, reflected by a drop from 67% to 56% of patients on ART, and an overall trend of moderate cascade outcomes over the four-year period of analysis. The rates of virologic suppression are noted to be lowest during the peak period of the pandemic lockdown in May 2020 for both clinic sites, (65% and 46% respectively) indicating a clear impact of the pandemic lockdown mandate. A marked shift in patient demographics over the analysis period includes an increase of younger females with new infections.

Conclusions/Next steps: Gaps in the care continuum offer insights to advocate for adaptation of the community-based delivery model to develop targeted solutions to expand outreach, supporting the petition for more resources for access and engagement in care for a large cohort of PWH seeking care in Saskatoon.

Risk factors for acquisition, infectivity and transmission of HIV

PESAC15

Recent HIV acquisition and age-disparate relationships predict rapid repeated pregnancies among adolescent mothers in a large South African cohort

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Background: Pregnant/breastfeeding adolescent girls and young women are at greater risk of HIV infection, poor retention in care, and higher rates of secondary transmission. Understanding the timing and predictors of rapid repeated pregnancies is critical to ensuring HIV service provision aligns with their HIV prevention and reproductive needs.

Methods: We analysed data from 1,045 young mothers who had their first child before <20 years old, 30% of whom were living with HIV (88% recently infected). Participants were recruited in the HEY BABY cohort through a six-prong sampling approach including health facilities, schools, community organizations and referrals, to minimise selection bias (>95% enrolment for each recruitment channel). Self-reported HIV status was verified through medical records where available. Ethical approvals were given by the Universities of Cape Town and Oxford, local government, and participating facilities.

We explore factors experienced during and post first childbearing associated with rapid repeated childbearing, using multivariate regression models in STATA16.

Results: 99% of first-child pregnancies were unintended. 8.8% of participants had multiple children, with 18.5% among adolescent mothers living with HIV experiencing multiple pregnancies. Rapid repeated pregnancies, occurring when first child is <=2, were 5.3% in the overall study, 9.9% among participants living with HIV.

A quarter of first children were born while the mother was an in age-disparate relationship (5+ years older partner), this rose to 50% among adolescent mothers living with HIV. In multivariate analyses, adolescent mothers with children <=2 years (aOR=4.71 95%CI2.76-8.05, p<0.001), who recently acquired HIV (aOR=2.54 95%CI1.41-4.57, p=0.002), and who had their first child in an age-disparate relationship (aOR=1.83 95%CI1.10-3.04, p=0.02) had higher odds of rapid repeated pregnancies. These risks were cumulative: 14.1% of participants who recently acquired HIV and had their first child in an age-disparate relationship were at risk of rapid repeated childbearing, compared to 3.9% among adolescent mothers who were HIV-free and did not have their first child with a significantly older partner.

Conclusions: Adolescent mothers, especially those living with HIV need access to consistent family planning and dual protection urgently. Young mothers with recently-acquired HIV need additional support to time future childbearing, remain retained in care and attain positive HIV outcomes.

PESAC16

FCGR3Agene duplication, FcγRIIb-232TT and FcγRIIIb-HNA1a associate with an increased risk of vertical acquisition of HIV-1

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Background: Different mother-to-child transmission (MTCT) studies suggest that allelic variations of Fc gamma receptors (FcγR) play a role in infant HIV-1 acquisition, but findings are inconsistent. To address potential confounding of small samples sizes, the present study investigates the association between perinatal HIV-1 transmission and FcγR variability (*FCGR* point mutations and gene copy number variation) in a large cohort of South African infants born to women living with HIV-1.

Methods: This retrospective, nested case-control study combines *FCGR* genotypic data from three perinatal cohorts at two hospitals in Johannesburg, South Africa. Children with perinatally-acquired HIV-1 (cases, n=395) were compared to HIV-1-exposed uninfected children (controls, n=312). All study participants were black South

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Africans and received nevirapine for prevention of MTCT. Functional variants were genotyped using a multiplex ligation-dependent probe amplification assay and Sanger sequencing, and their representation compared between groups using logistic regression analyses.

Results: *FCGR3A* gene duplication independently associated with HIV-1 acquisition (OR=3.70; 95% CI 1.05-12.99; *P*=0.041). The FcγRIIb-232TT genotype significantly associated with increased odds of HIV-1 acquisition in a multivariate model, which controlled for *FCGR3A* copy number and *FCGR3B* genotype (AOR=1.72; 95% CI 1.07-2.76; *P*=0.024). When adjusted separately for *FCGR2C* c.134-96C>T that associated with infant HIV-1 acquisition in a different South African cohort, the strength of association increased (AOR=2.28; 95% CI 1.11-4.69; *P*=0.024).

Homozygosity for FcγRIIIb-HNA1a did not significantly associate with HIV-1 acquisition in a univariate model (OR=1.42; 95% CI 0.94-2.16; *P*=0.098); however, it attained significance after adjustment for *FCGR3A* copy number and *FCGR2B* genotype (AOR=1.55; 95% CI 1.01-2.38; *P*=0.044). Both FcγRIIb-232TT (AOR=1.84; 95% CI 1.11-3.03; *P*=0.017) and homozygous FcγRIIIb-HNA1a (AOR=1.67; 95% CI 1.06-2.62; *P*=0.028) retained significance when birthweight and breastfeeding were added to the model. We did not observe an association between the common *FCGR2A* and *FCGR3A* polymorphisms and HIV-1 acquisition.

Conclusions: Collectively, our findings suggest that the FcγRIIb-232TT genotype exerts a controlling influence on infant susceptibility to HIV-1 infection. We also show a role for less studied variants – *FCGR3A* duplication and homozygous HNA1a. These findings provide additional insight into a role for FcγRs in HIV-1 infection in children.

Describing the spread of HIV through molecular epidemiology

PESAC17

The association of HIV-1 subtypes and transmission clustering with late diagnosis: the first nationwide study in Japan

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Background: Late HIV diagnosis is a major concern worldwide. While previous studies in some countries have reported association of late diagnosis with qualitative and/or demographic factors, clinical and phylogenetic factors remain unclear.

In the present study, we conducted a large-scale analysis to explore the demographic, clinical, and phylogenetic factors associated with late HIV diagnosis in Japan.

Methods: Japanese Drug Resistance HIV-1 Surveillance Network collects anonymized demographic, clinical, and sequences data for about 40% of newly diagnosed HIV cases in Japan from collaborating hospitals nationwide.

Of the 9,866 newly diagnosed cases enrolled in the surveillance network between 2003-2019, 7,853 cases with available CD4 count at diagnosis were included. Late diagnosis was defined as HIV diagnosis with a CD4 count below 350 cells/μL. Factors associated with late diagnosis were determined using Logistic regression. Molecular transmission clusters were identified by HIV-TRACE with genetic distance threshold 1.5%.

Results: The study population was predominantly male (95.0%) and Japanese (90.8%). Median age at diagnosis was 37 (IQR: 30-45) years, and 5,594 (71.2%) and 3,636 (46.3%) were diagnosed with CD4<350 cells/μL and with CD4<200 cells/μL, respectively. Demographic and clinical factors independently associated with late diagnosis were period of diagnosis (2009-2014: aOR 1.16, p<0.05, versus 2015-2019), transmission risk (Heterosexual: aOR 1.37, p<0.01, Other risk and Unreported: aOR 2.15, p<0.0001, versus MSM), older age (≧45 years: aOR 2.13, p<0.0001, 30 to 44: aOR 1.43, p<0.0001, versus ≦29), geographical area

(other than Tokyo: aOR 1.20, p<0.01, versus Tokyo), and HCV co-infection (aOR 1.42, p<0.05). Individuals in molecular transmission clusters were less likely to be diagnosed with CD4<350 cells/µL than those not in clusters (aOR 0.80, p<0.01). HIV-1 CRF07_BC was negatively associated with late diagnosis (aOR 0.24, p<0.001, versus subtype B). Country of origin, gender, or HBV co-infection was not associated with late diagnosis.

Conclusions: It was revealed that over 70% of newly diagnosed HIV cases in Japan were diagnosed with CD4<350 cells/µL. This study indicates for the first time the association of late HIV diagnosis with HCV co-infection, HIV-1 subtypes, and transmission clustering. Consideration of these factors would contribute to efficient enhancement of early diagnosis of HIV.

Prisoners and other incarcerated people

PESAD01

Improving HIV knowledge and gender-based attitudes amongst male inmates through football in correctional facilities in Zambia, Malawi and Zimbabwe

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Background: In Southern Africa, incarcerated people experience higher HIV prevalence than the general population and have been identified as a critical group for HIV programming in order to achieve the "95-95-95" goals. However, preliminary data collected from VSO and TackleAfrica, in a pilot program across 11 correctional facilities in Malawi, Zimbabwe and Zambia in 2019, suggested that both HIV knowledge and positive attitudes towards women was low.

We report the results of an inmate led, football-based intervention designed to improve HIV and SRHR knowledge and positive attitudes towards women amongst male inmates.

Methods: The program was implemented over two years in ten-week blocks. Baseline and end-line surveys were collected before and after each block by youth volunteers working with inmate coaches. HIV knowledge was measured using the UNAIDS Comprehensive HIV Knowledge indicator. Questions around SRHR and attitudes to women were based on similar DHS & WHO indicator questions.

Results: Over 2 years, 126 inmates were trained as peer football coaches to reach 2920 male inmates with 1047 football sessions integrated with sexual health messaging. 1,109 male inmates completed baseline surveys, of which 562 (51%) completed end-line surveys. The primary reason for leaving the program was release or transfers. Comprehensive HIV knowledge improved from 35% at baseline (n=1109) to 51% at end-line (n=562). Knowledge of STIs improved from 52% (n=1109) at baseline to 65% at end-line (n=491).

The question, "Should a girl be able to refuse unwanted sex from her husband or boyfriend?" saw an increase from 76% to 88% at end-line in Zambia (n=531/n=230), while in Malawi and Zimbabwe the question "having sex with many women is a sign of man-hood" saw a correct answer increase from 64% at baseline (n=656) to 76% at end-line (n=278).

Conclusions: Football based interventions are an effective mechanism to engage with male inmates in Southern Africa around sensitive issues related to HIV, SRHR and attitudes towards women.

While issues associated with inmate transfer and release may disrupt program completion, inmate-led sports-based interventions represent a sustainable and valuable mechanism to engage with a highly disenfranchised and alienate group that are critical to reaching UNAIDS targets.

Young key populations

PESAD02

Survey measurements of community norms on Adolescent Girls and Young Women's (AGYW) sexual behaviour and use of condoms for HIV prevention in Manicaland, East Zimbabwe

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Background: Qualitative data suggest pre-marital sex stigma presents a major obstacle to AGYW's use of HIV prevention methods. Lack of social acceptability therefore is included as a barrier to motivation to use condoms in HIV prevention cascades. Representative survey data on community norms are rare but necessary to test the validity of this assumption and measure their contributions to gaps in prevention cascades.

Methods: General-population survey participants in Manicaland (ages ≥15, N=9803) were asked if they agreed/disagreed with statements on social norms. AGYW were asked whether community views are an obstacle to their using condoms. Proportions agreeing/disagreeing with these statements were calculated, variations in community members' views were investigated in multivariable

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logistic-regression models, and the association between AGYW's perceiving negative community norms and condom use was measured.

Results: 93.5% (95%CI,93%-94%) of respondents agreed that 'Many young women have sex before marriage these days'. 57% (56%-59%) of men and 70% (69%-71%) of women disagreed that 'If I have a teenage daughter and she has sex before marriage, I would be ok with this'; and 41% (40%-43%) of men and 57% (56%-59%) of women disagreed that 'If I have a teenage daughter, I would tell her about condoms'. Fathers but not mothers were more likely to disagree with their daughters having sex before marriage (Figure).

Similar proportions of parents and other community members were against telling daughters about condoms. 68% (61%-75%) of sexually-active unmarried AGYW said negative community views were unimportant in decisions to use condoms. Condom use didn't differ between those who agreed/disagreed that negative community views are important (46.9% vs. 50.0%; AOR=0.88, 95% CI,0.48-1.62; N=202).

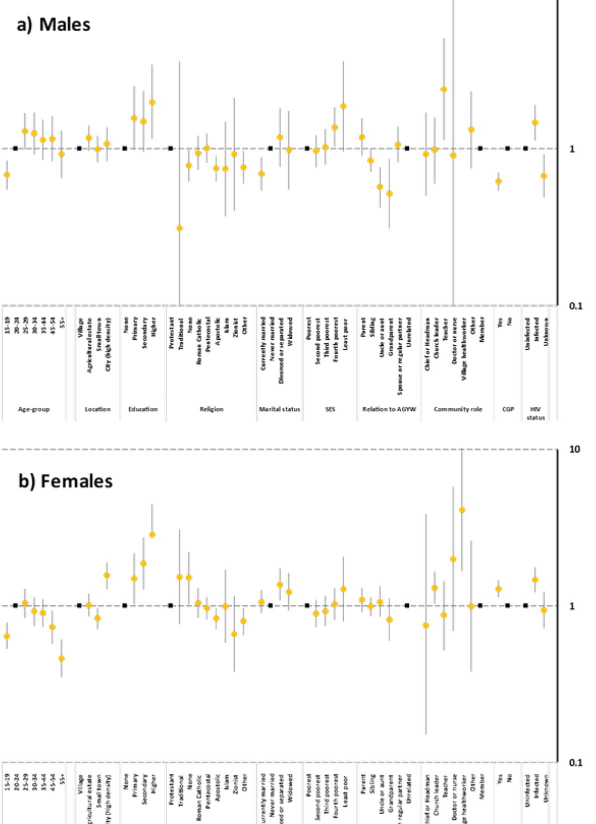

Figure. Variation in community members agreement on telling teenage daughters about condoms by relationship to an AGYW, community role and participation, and socio-demographic characteristic: adjusted odds ratios from multivariable logistic regression. Yellow points above / below the central line indicated higher / lower odds of agreement. Whiskers indicate 95% confidence intervals.

Conclusions: Community resistance to condom promotion based on pre-marital sex stigma may be weakening as a barrier to AGYW's motivation to use condoms in Manicaland. Community-led interventions to accelerate this dynamic in social norms and support AGYW's agency could reduce HIV incidence.

PESAD03

From mobile phone to health center: WhatsApp as persuasive tools towards HIV testing among college students of the remote district of Pakistan

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Background: HIV testing targets in remote areas of Pakistan remain low. Due to this issue, many people were unable to know about their status and cannot be linked to HIV care. The objective of this study was to check the effectiveness of interventions using WhatsApp as a platform to improve HIV testing among college students in the Larkana district of Pakistan.

Methods: We used a randomized controlled trial approach, and recruited, HIV-negative, 18 years or older college students, who did not get HIV testing in the last 6 months. These were recruited online and randomly were assigned to two groups i.e. an intervention or control group. Participants were recruited using google forms. After being recruited online, participants completed a short baseline survey. Later, a trained health worker used the mobile application WhatsApp to follow each participant for 8 weeks. They shared different topics of interest with an emphasis on HIV prevention in the second half of the period of follow-up. Participants in control groups received standard of care. The main outcome was the number of participants who got an HIV test at one of the health centers of the research project.

Results: Participants were recruited between Jan and March 2021. 500 participants were randomly assigned to the intervention group (n=250) or the control group (n=250). 91 participants (36.4%) in the intervention group and 19 (7.6%) in the control group went to the health center to receive an HIV test (adjusted odds ratio: 7.54; 95% CI: 4.1 -13.4).

Conclusions: This strategy where trained health workers using a mobile application for follow-up, was good to divert traffic towards health centers for HIV testing. It is important to use WhatsApp through mobile to get traffic for HIV testing, mobile applications are already been widely used in remote parts of Pakistan as well.

PESAD04

Structural level factors and PrEP stigma influence on PrEP use among Black MSM (18 to 29) in the US

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Background: Albeit the proven efficacy of PrEP to prevent HIV transmission and reduce spread among HIV key populations such as Black men who have sex with men (MSM), uptake may remain slow among such populations due to structural and individual-level factors in the United States (US). As such, we examined the relationships between structural factors (food insecurity, homelessness, employment), PrEP stigma on PrEP use among a national sample of Black MSM between the ages 18 to 29.

Methods: The survey was programmed for two sampling and social media sites (Twitter, Facebook) with Qualtrics software, targeting 400 Black MSM between 18 and 29 years. The survey was completed directly on the Qualtrics portal for the Qualtrics sampling site, and a link was provided for M-Turk sampling site. The research team distributed an anonymous link to the survey embedded on the flyer posted on social media. Respondents were recruited for all three locations from December 1, 2021, to January 31, 2022. We used a logistic regression analysis to examine whether structural factors and PrEP stigma correlate with the outcome variable PrEP use.

Results: Our results from our logistic regression indicated that Black MSM who scored higher on the PrEP stigma scale were less likely to use PrEP (OR:0.73; 95%CI:0.52,0.99). Black males who stated that they lost their job due to Covid 19 were 2.9 times more likely to use PrEP than those who did not (OR: 2.93; 95%CI:1.36,6.29).

Individuals who reported reducing the number of meals at least once or twice were more likely to use PrEP (OR:4.28, 95CI:2.17,8.42). Lastly, those who reported being homeless in the past 12 months were more likely to use PrEP than those who never reported being homeless (OR: 1.00; 95%CI: 1.00,1.00).

Conclusions: Our results suggest reduced uptake of PrEP among BLMSM who experience PrEP stigma but show an increased uptake among those who are food insecure or homeless. Thus, highlighting that despite possible available resources that link low-income BMSM to PrEP, stigma remains a key issue that would continue to impede use, hence, the need for innovative interventions to address PrEP stigma among BMSM in the US.

PESAD05

Young Heroes Initiative – High Five (YHI-HF): Creative Contributory Contest (CCC) and social innovation hackathon as an entry point in engaging adolescents for HIV and AIDS

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Background: In December 2020, the HIV and AIDS and Art Registry of the Philippines recorded 273 (25%) cases among the youth 15-24 years old. The Integrated HIV and Behavioral and Serologic Surveillance presented that HIV knowledge is lowest among 15-20 years old. Both evidence shows adolescents' risky sexual behaviors start when they have insufficient knowledge on HIV and AIDS and less access to ASRH services. In December 2020, with funding from the Council for the Welfare of Children (CWC), Unicef, and UNAIDS, YHI-HF was launched.

Description: The intervention has 3 phases. Phase 1 is the Creative-Contributory-Contest, where teams (4 adolescents, one adult mentor) are asked to submit their 2030 Vision of Young People and HIV and AIDS using creative outputs. Thirty-two (32) teams joined this phase with outputs varying from dances to paintings.

Phase 2 is the social innovation hackathon where they build on their creative outputs to pitch for concrete solutions. Mentors and experts were tapped to help them fine-tune their ideas utilizing the Human-Centered Design. Six teams proceed on the final phase, the project implementation. They are given 2,000 USD to implement their social innovation for a year with the local CWC office. The projects include traveling play, magazine publication, audience-led performing arts, and a musical designed for and by adolescents.

Lessons learned: There were 451,428 directly engaged adolescents in the project. An increase of 54% from baseline in basic knowledge and awareness about HIV and AIDS was observed among participants. 48% showed increased health-seeking behavior, as indicated by their willingness to be tested, and an increase of 72% in the level of knowledge and awareness in condom use, PREP, and combination methods was also observed.

Psychological safety (32%), fun and creative environment (63%), and peer-to-peer approach (55%) were among the top 3 identified reasons why adolescents joined the project.

Conclusions/Next steps: CCC and Hackathon are effective approaches to attract adolescents to HIV-related activities. Children can implement effective HIV interventions if given the proper support and resources.

The next phase of the project is to design a training module for duty-bearers working on HIV on how they can effectively engage adolescents in their area.

PESAD06

Perspectives and Preferences for multi-purpose prevention technologies (MPTs) to address sexual and reproductive health (SRH) needs among adolescent girls and young women (AGYW) in Kenya and Uganda

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Background: Adolescent girls and young women in Sub Saharan Africa are disproportionately affected by high rates of HIV, sexually transmitted infections (STIs) and unintended pregnancies. To inform development of MPTs and delivery of SRH services, an innovative behavioral science research project (UPTAKE) seeks to determine factors that facilitate future acceptability and uptake of long-acting (LA) technologies to prevent HIV and unintended pregnancy among AGYW in Nairobi, Kenya and Kampala, Uganda.

Methods: We conducted in-depth interviews with 30 AGYW aged 15-24 years in Nairobi and Kampala. We explored participants' perceptions of future MPTs, building on their experiences and views of existing family planning (FP) and HIV prevention products. Interviews were audio recorded, transcribed, and translated. Data were analyzed thematically in NVivo and reconciled iteratively during reflective sessions with the research teams.

Results: An interim analysis shows that AGYW generally have a limited understanding of the FP and HIV prevention options available to them. Most of them report early sexual debut, premature school dropout, a lack of family and social support, and engaging in age-disparate sexual relationships, transactional sex or sex work. Participants reported unintended pregnancies and initiated FP only after childbirth.

There were misconceptions and a lack of trust in modern HIV prevention methods, with some viewing PrEP as a drug for HIV positive individuals. Only AGYW engaging in sex work were aware of PrEP. In terms of future MPTs, most participants preferred long-acting injectable, for >1-year, inserted in the arm, providing HIV and pregnancy prevention.

Participants expressed limited interest in prevention for other STIs, which they considered treatable. Government facilities were the preferred choice for future delivery of MPTs due to affordability. AGYW described themselves as decision-makers in relation to their SRH, while acknowledging the need for new products citing women's' limited ability to negotiate HIV testing and condom use with male partners.

Conclusions: Long-acting MPTs offer considerable potential for reducing HIV infection and unintended pregnancies among AGYW. Product developers should consider MPTs during manufacturing. Policy makers and programme planners need to make these products and their information readily available and accessible to AGYW using youth friendly health services and other approaches.

PESAD07

Body image dissatisfaction is positively associated with poorer mental health outcomes but not linked to HIV risk behaviours among young gay, bisexual, transgender and queer men in Singapore

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Background: No prior study has been published on the impact of body image dissatisfaction in the Gay, Bisexual, Transgender and Queer (GBTQ) community in Singapore. Furthermore, while many studies have found a positive link between poor mental health outcomes and HIV risk behaviours, few have explored the role of body dissatisfaction in driving such risks.

This study aims to explore associations between varying measures of body image dissatisfaction with measures of mental and sexual health risks, including depression severity, suicidal ideation and attempts, as well as recent condom-less anal intercourse.

Methods: Data were derived from a cross-sectional follow-up survey of the Pink Carpet Y Cohort Study, Singapore's first prospective cohort study among young GBTQ men. Participants comprised HIV-negative, young GBTQ men aged 18-25 years old. Body image dissatisfaction was measured through the Male Body Attitudes Scale (MBAS-R), Drive for Muscularity Scale (DMS), and two measures of distance between perceived and ideal body types: Body Fat Difference (BFD) and Muscularity Difference (MD). Higher scores indicate greater dissatisfaction. Multivariable logistic and linear regression were employed.

Results: The study recruited a total of 396 participants. Multivariable analyses revealed that MBAS-R (Coeff. = 0.08, 95% CI 0.04, 0.12) and BFD (Coeff. = 0.04, 95% CI 0.01, 0.08) were positively correlated with depression severity. MD (aOR = 1.02, 95% CI 1.00, 1.03) was positively associated with ever having suicidal ideation, whereas DMS (aOR = 0.97, 95% CI 0.96, 1.00) was negatively associated with suicidal ideation. Analyses also revealed that MBAS-R (aOR = 1.03, 95% CI 1.01, 1.05) and BFD (aOR = 1.02, 95% CI 1.00, 1.03)

were positively associated with ever having attempted suicide. No measures of body dissatisfaction were significantly associated with recent condom-less anal intercourse.

Conclusions: Body image dissatisfaction in young GBTQ men was positively associated with negative mental health outcomes. Future health promotion interventions should be targeted at developing a positive body image in young GBTQ men, in hopes of achieving better mental health outcomes.

Given that poor mental health outcomes may drive syndemics of HIV acquisition, further research into the lasting impact of body image dissatisfaction on sexual risk in young MSM is warranted.

PESAD08

Integrating human-centered design, public health, and behavioral science to improve access to HIV services among young men who have sex with men in Kenya

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Background: The criminalization and stigmatization of same-sex sexual activity contribute to social, community, and healthcare-related barriers that prevent young men who have sex with men (YMSM) from accessing high-quality HIV services. Using a human-centered design (HCD) approach, research and design firm YLabs partnered with community YMSM-serving organizations Maaygo and Hoymas to develop an HIV self-testing (HIVST) campaign and service delivery model.

The pilot aimed to expand programmatic reach to YMSM ages 15-24 in Nairobi and Kisumu counties, Kenya, not currently engaged in services to increase access to HIV prevention and care.

Description: The program consisted of a behavior change-informed digital and physical demand generation campaign co-designed with YMSM. This included YMSM-focused messaging to address common fears about HIV testing; an automated SMS messaging platform to connect YMSM to peer educators for delivery of HIVST kits and incentives at convenient pick-up points; and streamlined, confidential access to sensitized clinicians to encourage reporting of HIVST results and facilitate linkage to follow-up care.

Lessons learned: Compared to 2019 data, the pilot demonstrated a 265% increase in testing of new YMSM clients to participating clinics, an 834% increase in YMSM who had never tested for HIV, and a 123% increase in YMSM who had not tested within 12 months. Successful engagement strategies included paid advertisements with YMSM-specific language across multiple social media platforms promoted by LGBTQ influencers. Distinct differences in engagement by YMSM by geography, social media channel, campaign subscription channels, and preferred incentives illustrated the need to tailor programming to subpopulations of YMSM. Barriers to HIVST kit use included supply chain shortages of tests, emotional preparedness to accept a positive result, and low willingness to report results to clinic personnel.

Conclusions/Next steps: The success of this pilot indicates the value of using HCD to create customized programming that engages key populations such as YMSM in the development of interventions intended to serve them. The tailored demand generation approaches and messaging addressed key fears and barriers to testing, enabling the program to test harder-to-reach youth.

Preferred awareness channels and testing incentives differed between YMSM geographically, emphasizing the need to tailor future programs' contextual nuances to maximize reach and effectiveness.

PESAD09

Factors associated with initiation of selling sex as a minor among adult female sex workers in Eswatini

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Background: Eswatini has a population of 1.16 million; 26.8% of all adults and 61% of female sex workers (FSW) are living with HIV. There have been recent reports of underage girls selling sex due to economic hardships during COVID-19 and while schools were closed.

Moreover, an estimated 800+ children in Eswatini have lost a parent due to COVID-19, and in a 2014 study, adult FSW in Eswatini who were orphaned before the age of 18 were more likely to have started selling sex as minors. Here, we aimed to describe associations of initiation of selling sex as a minor in Eswatini.

Methods: In 2011, FSW aged 18+ who exchanged sex for money, favors, or goods in the past 12 months were recruited through respondent-driven sampling in Eswatini, completed a questionnaire, and were tested for HIV and syphilis.

Unadjusted multivariable logistic regression analysis was conducted to compare participants who reported their age of initiation of selling sex was <18 years old to those whose age of initiation was 18+.

	Age at the time of the study [mean]	Education [completed primary school or higher]	Has any living children	Sold sex in multiple geographic regions in the past 12 months	Must share earnings with a person who arranges clients or provides protection	Ever beaten up as a result of selling sex	Can count on sex worker colleagues to help deal with a violent or difficult client	Tested positive for syphilis in the study or reported a previous diagnosis with syphilis in the past 12 months	Tested positive for HIV in the study	Was forced to have sex after age 18
Adjusted odds ratio (95% CI)	0.82 (0.76, 0.88)	0.66 (0.52, 0.87)	0.39 (0.20, 0.79)	1.51 (1.14, 1.99)	2.82 (1.07, 7.41)	1.89 (1.01, 3.54)	0.69 (0.50, 0.96)	3.31 (1.26, 8.71)	N/A	N/A
Started 18+ 74% (237/320)	28	80% (189/237)	84% (199/236)	38% (90/236)	7% (15/229)	35% (81/234)	86% (199/231)	8% (20/236)	74% (171/233)	38% (89/232)
Started <18 26% (83/320)	22	69% (57/83)	52% (43/83)	51% (42/83)	17% (14/82)	48% (40/83)	77% (64/83)	16% (13/83)	60% (48/80)	44% (32/72)
Note: Multivariable logistic regression analysis controlled for all variables listed above except HIV status and experience of forced sex										

PESAD09 Table.

Results: 60% of FSW who started selling sex <18 tested positive for HIV, and this did not significantly differ from those who started as adults after controlling for current age(p=0.953). Participants who started selling sex <18 were younger at the time of the study, less educated, and more likely to be mobile. They had higher odds of testing positive for syphilis or reporting a recent syphilis diagnosis, being forced to share earnings with someone who arranges clients or provides protection, and being beaten up due to selling sex and lower odds of counting on other sex workers to help deal with violent clients.

Conclusions: Selling sex as a minor has potentially lasting effects on social determinants of adverse sexual health outcomes. Strengthening education, economic support and child protective services is necessary to prevent sexual exploitation of children in Eswatini, and health services are needed address the vulnerabilities of those who are selling or previously sold sex as minors.

PESAD10

Challenges to HIV prevention and sexual health promotion among impoverished youth living in slums/favelas of São Paulo, Brazil in the first two years of the COVID-19 pandemic

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Background: The emergence of the COVID-19 pandemic and its concomitant socio-economic and humanitarian crises magnified youth's vulnerability to HIV/AIDS, which was already high in impoverished suburban territories. Community-based peer education projects had to innovate to guarantee young people's right to health.

Description: The H.I.V-Project (Heliópolis Investindo na Vida) promotes sexual health among young people in Heliópolis, the largest slum in the metropolitan area of São Paulo. Starting in January 2020, the primary local CBO selected a group of 9 young leaders (age 15-19) to be peer-educators in HIV/STI and pregnancy prevention through a Human Rights and Vulnerability perspective and Freire's pedagogy framework. Seventeen of the twenty months of the project were mostly online, respecting COVID prevention measures and included weekly supervision workshops, interventions using livestreams and social media posts, activities focused on afterschool programs aimed at 13-17 yr-olds, and mask+condom distribution to young people at Street-Funk parties and public gatherings.

Lessons learned: A lack of housing infrastructure and internet access hampered participants' engagement during online activities. Participants kept quiet when trying to discuss sexuality, HIV/STI prevention, and especially "sex during a pandemic." In small houses without privacy, participants had little space to talk about their sexual experiences or explore their thinking and feelings about these themes. Furthermore, in times of COVID, as parents became unemployed, nurseries and daycares closed for long periods, and the domestic workload increased, girls had less time to work on the project. Two girls also had unexpected pregnancies. Boys, on the other hand, had to work long hours to support their family income. Black boys in particular experienced increased police violence and were also more absent from the project. Working COVID and mental health into the program was inescapable while inventing methodologies and producing content, mixing online with in-person encounters.

Conclusions/Next steps:
It remains crucial to consider the coalescence of the ongoing COVID-19 pandemic with the HIV/AIDS and mental health epidemics. In order to innovate HIV/STI prevention peer-education, social, structural, psychosocial, interpersonal, and intrapersonal barriers should be considered. The integrality of human rights and the notion of "comprehensive prevention" needs to encompass "combination prevention".

PESAD12

Resilient & empowered, adolescents and young PLHIV (READY++)-a pilot initiative working with adolescent and young PLHIV in India

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Background: Adolescents and young people contribute 40% of the Indian population. The evidence suggested that adolescents and young people engage in sexual experimentation and sexual risk taking, the accessibility of this group to accurate information on SRH and sexuality related services is poor. Such situations expose to adverse SHR outcomes. Nearly 10% of PLHIV in India are adolescents and young people in the age group. AYPLHIVs face unique challenges related to their HIV status and related to their SRH needs such as growing up changes, developing relationships, sexuality, marriage, and love.

Description: a pilot peer lead initiative namely READY++ was rolled out in five states of India by Alliance India, to address the specific unmet SRHR and mental health needs of AYPLHIVs to build a cadre of informed and empowered AYPLHIVs with information and skills on SRHR and HIV, who in turn reached their fellow AYPLHIVs with comprehensive knowledge on a range of SRHR issues, following activities carried out

1. Identification peer champions pre-training assessment.
2. Capacity building through state level consultations and national level training.
3. One2one session with AYPLHIVs by peer champions.
4. Support group meetings by peer champions.
5. Peer champions engaging parents and families.
6. Advocacy meetings by peer champions with prominent state level officials and.
7. Engaging AYPLHIVs and youth affected by HIV through social media.

Lessons learned: The READY++ program employed an intensive process to create powerful, positive and sustainable changes at the level of peer champions. For the first time, they found a platform to discuss issues of guilt about their HIV status and relationship with an HIV negative person, love, sex, marriage, myths, and misconceptions associated with their bodies.

Over time, peer champions reached thousands of their peers (both online and offline) with knowledge on HIV and SRHR and facilitated their linkages to HIV services, social schemes and vocational skills building programs.

Conclusions/Next steps: The peer champion is playing an active role in the states linking young people with HIV related services, the empowered peer are taking lead to ensure the rights, policy development and active as pressure group and raising issues of the unmet needs of AYPLHIV community.

PESAD22

"Delivery of clinical HIV prevention care and treatment services for Key Populations through safe spaces in Harare"

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Background: Key Populations (KPs) bear the burden of HIV yet have poorer access to HIV services. Pangaea Zimbabwe AIDS Trust (PZAT) is building the capacity of public health facilities to provide KP-friendly services to improve uptake of HIV prevention, care, and treatment services. KPs experience barriers to care due to stigma, discrimination, criminalization, and socio-economic challenges. COVID-19 worsened access to comprehensive HIV services. PZAT conducted differentiated service delivery services at safe spaces to ensure access for KPs in areas around 18 high-burden public health facilities in Harare.

Description: From October 2020 to September 2021, PZAT supported the delivery of comprehensive HIV services for KPs at safe spaces, including secluded outdoor spots. KPs identified safe spaces based on privacy, convenience, safety, and accessibility to many KPs.

Thirty Community Facilitators (female and male sex workers, men who have sex with men, transgender and people who use drugs) identify and mobilize KPs ahead of the visit, link them to services, and follow-up.

A multidisciplinary team provides services including HIV testing, Pre-Exposure Prophylaxis, Antiretroviral Therapy, condoms and lubricants, intimate partner violence screening and referral, sexually transmitted infections (STI) screening, and management.

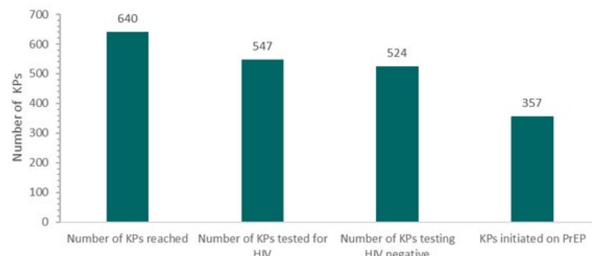
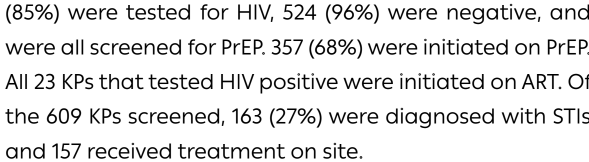


Figure. Number of KPs reached and accessing HTS and PrEP at safe spaces Oct 20 - Sep 21

Lessons learned: KPs prefer accessing services where they feel safe and comfortable. A total of 640 KPs were reached with HIV services through safe spaces, among these 547



(85%) were tested for HIV, 524 (96%) were negative, and were all screened for PrEP. 357 (68%) were initiated on PrEP. All 23 KPs that tested HIV positive were initiated on ART. Of the 609 KPs screened, 163 (27%) were diagnosed with STIs and 157 received treatment on site.

Conclusions/Next steps: The involvement of KPs in designing, planning, implementation, and monitoring of HIV services provision is important and can improve uptake and utilization of services. Peer-to-peer support is essential for identifying eligible clients, mobilizing for services, and supporting adherence and retention.

Sex workers

PESAD11

Effectiveness of a multifaceted intervention *(KUJA-KUJA)* to reduce violence and increase condom use in intimate partnerships among female sex workers: a randomized controlled trial in Nakivale Refugee settlement in Uganda

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Background: Intimate Partner Violence (IPV) is among the prevalent problems among sex workers in Nakivale settlement. Evidence suggests that about 41% of sex workers have experienced IPV during Covid-19 lockdown. The high rate of participation in sex work in the settlement is associated with poverty, alcoholism, explore for better shelter and misuse of drugs.

However, the effectiveness of the present interventions to reduce IPV among sex workers isn't well streamlined. "Kuja-kuja" a multifaceted intervention, working with sex workers, their intimate partners (IPs) and communities could help reduce IPV and increase condom use among sex workers and refugees in Nakivale settlement.

Methods: A total of 36 villages (most sex workers) and 2 towns were visited in a two arm cluster randomized control study in Nakivale refugee settlement. 15 villages and 1 town were randomized to Kuja-kuja intervention while the remaining on a wait-list control. Female sex workers above 20 years with IPs in the last 4 months were interviewed and participated in both surveys from Dec 2019 to August 2021. A baseline survey was given 6 months after which an end line surveys was conducted in all villages and towns to assess the effectiveness of "Kuja-kuja" intervention.

Results: With a baseline (n=410) imbalance was observed with reference to age (32.8 vs 34.1) and IPV (32.6% vs 46.1%), study results indicate no differences in physical/sexual IPV (7.1% vs 8.2%), severe physical/sexual IPV (5.8% vs 7.4%) and consistent condom use with IPs (62.5% vs 57.3%) by trial arm at end line (n=257).

Kuja-kuja was connected with reduced acceptance of IPV (adjusted OR (AOR)=0.62, 95% CI 0.40 to 0.94, p=0.025) and solidarity of sex workers around issues of IPV (AOR=1.69, 95% CI=1.02–2.82, p=0.042).

We observed a rise in IPV between baseline (25.9%) and midline (63.5%) among women in Kuja-kuja villages but lower in parallel villages (41.8%–44.3%) and a sharp decrease at end line in both arms (~8%).

Conclusions: The kuja-kuja had a significant effect on both increasing awareness of self-protection strategies and solidarity around IPV among sex workers within the kuja-kuja villages. However, we found insignificant evidence that the proposed intervention increased condom use.

Other populations vulnerable in specific contexts

PESAD13

What are the practices of people attending erotica shows in terms of psychoactive substance use, sexual behavior and HIV testing?

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Background: Our action-research aimed to achieve a specific key-population estimated vulnerable to HIV-risk transmission, as people attending Erotic industry shows (ES).

While ES seem appropriate events to raise awareness and survey people potentially with an interest for sex, there is little recent data on screening practices, risk perception and lifestyle behaviors in this population.

Methods: A cross-sectional study was conducted in ES in Dec. 2017 to document substance uses, sexual behaviours, and HIV-screening practices. The intervention was designed as a detached outreach one, with a stand provided information and guidance materials, and an anonymous questionnaire wich investigated knowledge about HIV, HCV and STIs screening history, substance use, sexual behavior and attraction.

Results: Overall,781 respondents, 58% male, mean age 34 years, completed the survey. 18% reported substance use in the last 3 months, 51% with alcohol. Among them, 26% reported sexual purposes to substance use: disinhibition (14%), conditioning (13%) and feeling better (11%).

Main sexual partners were: spouse (68%), regular (21%), unknown (18%) and multi-partners (17%).The 3 main sexual practices were: libertinism (22%), partner-swapping (15%) and threesome (15%). 27% of respondents reported

contactless sexual behaviors: BDSM (13%), voyeurism (10%) and exhibitionism (10%). At last 18% of the respondents reported no previous HIV-test.
In univariate analysis the lack of previous HIV-test was significantly associated ($p<0.05$) with gender, alcohol use, number of drugs, same-sex attraction, sexual partnership with spouse and multiple partner practice. On logistic regression analysis, the independent predictors of the lack of previous HIV-test in men were: alcohol (OR: 1.79), same-sex attraction (OR: 0.13), sexual partnership with spouse (OR: 0.47), and multiple partners practice (OR: 0.60);in women: same-sex attraction (OR: 8.74), sexual context of drug use (OR: 3.07), number of drugs (OR: 0.66).
Conclusions: This innovative intervention explored testing practices, sexual behaviors, substance use and sexual motives for substance use in an audience that was interested in sex but far from perceiving HIV risks.
It highlighted the usefulness of HIV education and testing interventions in fun events context such as ES, and the receptivity of participants to reflect on their risk behaviors. This intervention model is intended to complement existing HIV-testing services.

PESAD14
Perspectives of migrant people living with HIV on multidisciplinary HIV care: a call for greater patient-empowerment and formalized community-engagement

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Background: Multidisciplinary models can facilitate care and treatment engagement for migrants living with HIV (MLWH). However, the perspectives of MLWH around such models have rarely been explored. Our objective was to understand how MLWH experience multidisciplinary HIV care models and their suggestions for improving care.
Methods: In January 2020, we initiated a 96-week prospective longitudinal cohort study with a convergent mixed-method design at a hospital-based clinic serving the largest proportion of MLWH in Montreal, Quebec. Currently, 26 patients have been enrolled. All patients received bictegravir/emtricitabine/tenofovir alafenamide for free and were provided care by a multidisciplinary team composed of physicians, nurses, social workers, and pharmacists. Preliminary qualitative data are presented here. Eighteen interviews were conducted with 10 MLWH at two time-points (10 after 1 week of starting treatment and 8 after 24 weeks) and were analyzed via thematic analysis.
Results: Three themes were identified:
1. *Multidisciplinary care enables holistic, humanizing, and personalized care* – MLWH expressed that their needs extend beyond HIV treatment dispensation and that the different clinicians, together, were able to address their complex bio-psycho-social needs;
2. *Multidisciplinary models need to optimize communication, coordination, and empowerment* – MLWH suggested that multidisciplinary teams are only useful when
a. Consistent and regular contact is maintained between patients and clinicians,
b. All team members are aware of each other's responsibilities, and
c. Clinicians seek to educate MLWH about their HIV and engage them in decision-making; and
3. *HIV care extends beyond multidisciplinary teams and requires a transition to community-engaged models to better address patient needs*– MLWH explained that they navigate various clinics and services across their HIV care trajectory for various reasons (e.g., free and anonymous blood tests from certain clinics and social support from community groups), and that these services should be better integrated to ensure efficient care coordination.
Conclusions: Multidisciplinary care settings can address the needs of MLWH, particularly through the availability of complimentary care. Improved multidisciplinary care for MLWH could result through optimizing communication, coordination, and empowerment. Furthermore, such care models must evolve to incorporate communities and allied services to better meet the needs of this growing and often vulnerable population.

PESAD15
Perceptions of healthcare accessibility and medical mistrust among African American women living with HIV in the United States

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Background: African American women living with HIV frequently endure structural racism, racial biases, and discrimination in healthcare systems that affect their access to care. The present study sought to explore the lived experiences of these women in healthcare settings as it relates to HIV-treatment accessibility and medical mistrust.
Methods: Four focus groups were conducted with seropositive African American women *(N =20)* residing in a large urban region. Participants were asked about their experiences with healthcare providers including:

a. Their relationship with healthcare providers;
b. Accessibility of community-based medical and mental health services; and
c. Experiences while attending HIV-treatment appointments.
Utilizing Dedoose software, interviews were transcribed and coded for themes using analytic induction techniques.
Results: Analyses revealed four interrelated themes:
1. Multilevel stigma and discrimination;
2. Mmedical mistrust of multiple providers;
3. Mixed responses to stigma, discrimination, and medical mistrust; and
4. Preferences for patient-provider relationship.
Participants expressed that medical providers and staff perpetuated negative treatment that included multiple forms of discrimination and stigmatization based on their HIV/AIDS status and social identities. In particular, our participants perceived that their negative experiences were connected to their HIV/AIDS diagnosis, race, class, and gender. Participants described ways their mistrust moved beyond their primary doctors to include nurses, medical staff, and pharmaceutical staff. The stigma, discrimination and resulting mistrust that they experienced often resulted in hurt feelings and decisions to disengage from treatment or remain with providers while feeling unwelcome. Participants described their desire to feel seen, supported and validated by their entire team of care providers.
Conclusions: This study provides insight about the myriad of challenges Black women living with HIV/AIDS face when navigating the healthcare system. Narratives reveal that feelings of being discriminated against or minimized can cultivate mistrust not only towards primary physicians, but across various healthcare providers and staff.
Findings from this study can inform care models for low-income African American women living with HIV/AIDS. Specifically, medical education and healthcare trainings should include the stories and perspectives of marginalized communities, including seropositive African American women, in an effort to actively work against negative effects due to stigma and discrimination.

PESAD16
Villains to superheroes: supporting adolescents and young people living with HIV through a social media-based psychosocial support intervention

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Background: Sexually transmitted diseases cause shame. Therefore, having HIV is shameful and results in a spoiled identity, vilification, self- loathing and stigma. Although shame can be experienced by all people with HIV, its impact is greater on adolescents, young people and key populations.
For these sub groups, shame and HIV infection are developmental traumas that affect mental health, identity formation, self-esteem, worth and confidence. They cause hiding, isolation, secrecy, poor health seeking behaviour and adherence which is slow suicide.
Description: Positive Konnections (PK) is a mobile application with a mental health intervention for young people with HIV, designed to counter the effects of shame and help them access services privately and anonymously. From October 2020 to December 2021, 100 young people with HIV, 18 -28 years of age, (60% females) signed up to use the intervention. They engaged with 10 chapters of stories designed to help them discover their true identity, value and self -worth. In each chapter, a short video clip was taken from a movie where a super hero was facing a situation.
The video was accompanied by a short story that demonstrated how the situations the super heroes were facing were similar to experiences of having HIV. After watching the videos and reading the stories, participants were asked to reflect on how the stories relate to their lives. This was done in the PK Work Book, a personal reflective space were participants expressed their thoughts or feelings which they discussed with a counsellor. Participants also interacted with others in weekly group sessions.
https://play.google.com/store/apps/details?id=com.health.positive_konnections&hl=nl&gl=US
Lessons learned: Process evaluation suggests that showing young people that their experiences of living with HIV are similar to those of superheroes helped them to reframe negative self or social perceptions and see themselves in a positive light, increasing self-worth, love and acceptance.
Reframing helped them see their true identity, re-write the narrative of their lives mentally shifting from villains to superheroes. A reduction in shame increased openness to disclose, health seeking behaviour, mental health and adherence to medication.
Conclusions/Next steps: Various packages of the intervention are being developed or strengthened to scale up to more people including key populations

Community mobilization and demand creation

PESAD17

Intensifying community testing strategies to achieve improved case identification in the context of COVID-19: lessons from Eastern Uganda

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Background: UNAIDS' Fast-Track strategy focuses on enhanced HIV case finding toward accelerating the end of AIDS by 2030. WHO echoes that without deliberate follow-up interventions, less than 90% of identified positives get linked into care, while retention decreases among those linked to less than 70% in the first six months of care.

In Kapchorwa district in Eastern Uganda, where HIV prevalence is 4.8%, myths and misconceptions surrounding COVID-19, as well as fear of acquiring COVID-19, directly impacted access to and uptake of health services, including HIV testing and treatment. DHIS2 data in March 2021, at the height of the pandemic, indicated that HIV case identification and linkage to care had fallen off significantly compared to pre-pandemic outcomes.

Description: To improve HIV case identification using a community model, the USAID RHITES-E Activity, led by IntraHealth International, engaged HIV ART clinic staff to intensively search for positive clients via targeted testing and linkage to ART.

Approaches included active follow-up of enlisted clients from assisted partner notification/index line lists and targeted community/home testing in known high HIV burden villages. In addition, home-based counseling was provided to address COVID-19 myths/misconceptions that hindered accessibility and utilization of health facility services. Virtual tools were adapted to improve reporting.

Lessons learned: The team quickly adapted to the COVID-19 pandemic to safely deliver quality services using personal protective equipment and virtual tools. DHIS2 data comparison on entry point of all new positives (see figure) shows a steady increase from 56% in the last quarter of 2020 to 88% by September 2021.

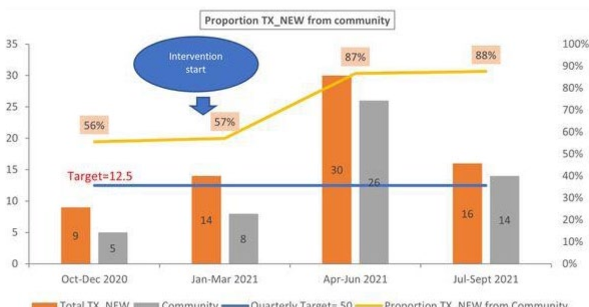

Figure.

Conclusions/Next steps: Deliberate integrated community engagement during the pandemic improved continuity of health services in this setting and can be duplicated in similar settings.

PESAD18

Engaging PrEP Champions to improve uptake and continuation on PrEP among AGYW in the DREAMS Program in Matabeleland North Province, Zimbabwe

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Background: Oral pre-exposure prophylaxis (PrEP) implemented as part of combination prevention reduces the risk of HIV infection by 99%. The level of protection provided by PrEP depends on adherence. Pangaea Zimbabwe AIDS Trust (PZAT) supports the delivery of PrEP as part of the Determined, Resilient, Empowered, AIDS-Free, Mentored and Safe (DREAMS) program aiming to reduce new HIV infections among adolescent girls and young women (AGYW) aged 15-24 years. PrEP interventions for AGYW include monitoring PrEP uptake, continuation, and psychosocial support.

Description: Starting January 2021, PZAT engaged 16 AGYW (mean age 23 years) as PrEP Champions (PCs) in Matabeleland North province and trained them on effective engagement of AGYW using a standard Ambassador Toolkit developed by the Optimizing Prevention Technology Introduction on Schedule project to provide peer-to-peer support, mobilization, education, and linkage to PrEP. PCs supported effective use and continuation on PrEP through telephone calls, text messages and in-person follow up. Community dialogues with AGYW were conducted around catchment areas of the 16 supported health facilities and PrEP support groups were formed. Feedback from AGYW was used to address gaps and improve programming. Data were captured and reported using DHIS2 through supported facilities.

Lessons learned: The proportion of newly initiated AGYW continuing on PrEP at month 1 increased from 40% in November 2020 to a peak of 91% in July 2021. A temporary PrEP stock-out affected performance in August 2021.

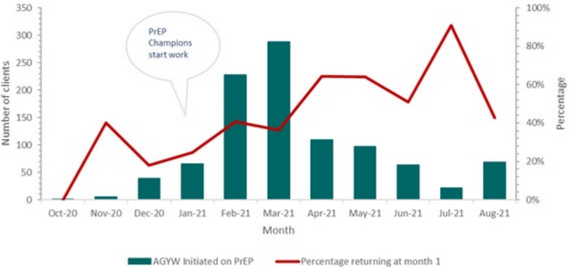

Figure. PrEP initiations and continuation at month 1

Conclusions/Next steps: PCs were cited in community dialogues as sources of accurate information that led to an increase in knowledge and linkage to PrEP services for AGYW. Coordination between the health care workers and PrEP Champions resulted in joint defaulter tracking. Peer-to-peer support through interpersonal and mobile platforms leads to successful awareness raising, improved uptake and continuation on PrEP. Collection of long-term continuation data in future promotes further analysis of the impact of PCs.

PESAD19

The race to end AIDS and COVID-19: how edutainment and a rallying call to run for a cause boosted HIV prevention and COVID-19 vaccination uptake in Zambia

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Background: In Zambia, Adolescent Girls and Young Women AGYW (15-24 years) and men (20-34 years) are among the most vulnerable groups to HIV infection (ZAMPHIA 2019). In addition, COVID-19 has negatively affected access to HIV testing and treatment services (MOH COVID-19 Media Briefing, Jan 2022).

In response to this, the USAID ZAM-Health and USAID DISCOVER-Health Projects, in collaboration with the Ministry of Health (MOH) and National AIDS Council (NAC), designed a #Run2EndAIDS#Run4COVIDVaccination event to promote COVID-19 and HIV service uptake, primarily targeting these groups.

Description: Over a 14-day period between October and November 2021, the #Run2EndAIDS#Run4COVIDVaccination event attracted 7,457 runners from Zambia and 5 other countries, who collectively covered 74,410 kilometers.

The event far surpassed the target of 2,000 runners. Runners took photos on their routes of health facilities that provide HIV and COVID-19 vaccination services to raise awareness about their location and submitted them with their run data.

During the event, healthcare providers distributed 22,027 condoms, vaccinated 680 against COVID-19, tested 775 for HIV, initiated 193 on PrEP, and distributed 1,500 PrEP factsheets. The Zambia Ending AIDS Facebook page recorded 1,945,425 impressions, and 64,553 people were actively engaged. The event culminated in a live-streamed 'Virtual Fest', bringing music and messaging together; the momentum continued with the artists and other participants continuing to champion COVID-19 vaccination and HIV prevention.

Lessons learned: Targeted edutainment events appeal to both young and old, and effectively rally target audiences around a cause, providing correct HIV prevention and COVID-19 vaccine information and increasing knowledge levels and numbers accessing services. It is, however, crucial to harness the momentum for ongoing activism. A website or mobile app is recommended for ease of registration, to capture run-data in real-time, and to provide targeted messaging/engagement, for events that might attract a similarly overwhelming response.

Conclusions/Next steps: The #Run2EndAIDS #Run4COVID-19Vaccination event empowered primarily young people, but also others, to make smart and safe choices about COVID-19 and take control of their physical, mental and sexual health. It created a group of HIV and COVID-19 prevention champions who continue to champion these causes.

PESAD20

Does normalizing sexual conversations increase HIV prevention demand in young women aged 20-24 years? Lessons from the *Mo'ghel, Get Your Life Pack* campaign in five South African districts

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Background: Shout-It-Now (Shout), a PEPFAR/DREAMS partner in South Africa, experienced difficulties mobilizing young women aged 20-24 years to access community-based HIV prevention services during the country's first two COVID-19 waves between May 2020-May 2021. During the third wave, Shout engaged clients, staff and a creative/media partner to develop a demand creation campaign that tapped into young women's desire to move forward in their lives and relationships after feeling stalled by COVID-19 lockdowns.

Description: Using human-centered design principles, Shout engaged clients and staff to provide input on messaging and service journey mapping. Informed by this, Shout's *Mo'ghel, Get Your Life Pack* campaign featured an aspirational value proposition: a free pack of youth-friendly services that improve young women's lives and relationships.

Campaign promotion hinged on sexual conversations in a youthful but trustworthy vernacular using print media, targeted radio broadcasts/podcasts and social media via igniters and Shout's platforms. Shout also improved staff engagements with young women about HIV pre-

vention through a training video and IEC materials that facilitated organic sexual health conversations. The campaign was implemented August 12-October 8, 2021 in five districts.

Lessons learned: Clients and staff valued contributing to the campaign design, and their input was instrumental to the core message. Shout surveyed clients during the 6-week campaign to assess its impact on HIV prevention uptake. A combined 2,854 of the total 3,499 (82%) clients served reported they heard of the campaign, including 2,697 females of whom 1,368 (51%) were aged 20-24 years. A comparison of service data among females aged 20-24 years between the six weeks leading up to the campaign and the six weeks of the campaign found a 668% increase in HIV testing and a 44% increase in PrEP initiations.

Analysis of the engagement channels found the podcasts and one radio promoter were most effective at mobilizing young women.

Conclusions/Next steps: Increased uptake of HIV prevention services among young women during the campaign shows that promoting empowerment and normalizing sexual health conversations can lead to HIV prevention seeking behaviors among a highly vulnerable population. This approach is now used to design all Shout communications and is easily replicable.

PESAD21

Fake porn videos helped save real lives - creative approaches to increase demand in Ukraine in the context of the HIV epidemic

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Background: Ukraine is the second-fastest HIV-spreading country in Europe and Central Asia. HealthLink project is aimed at HIV case-finding in Ukraine through testing populations at risk of HIV. In Ukraine 257000 people live with HIV, 30% among them don't know their HIV-status and one of the largest key risk groups is MSM (near 179400 people). Almost 90% of HIV testing within the project is implemented in healthcare facilities.

A project's study indicated that men are the priority group for HIV testing and detection, but are less likely to visit the doctors than women. The uptake of HIV testing is especially low among MSM who widely experience stigmatization in the Ukrainian context.

Description: HealthLink project set a goal to inform MSM about the option to order the oral HIV self-tests online completely confidential. Porn sites are those digital places where people seek for anonymity and which are extremely popular at the same time. For the second year in a row, Ukraine is in the top 20 countries in which the PornHub site is used the most.

We created 4 high-quality videos, which had one detail making them different from most porn site content. There was no sex. Different scenes with real actors and dialogues, but always with the same message — a passionate relationship must be followed by a test which is easy to order. The videos have been uploaded on PornHub and more than 20 famous gay category resources.

Lessons learned: For 3 month of campaign in 2020: total reach of 85000 people had a positive effect on the level of knowledge about HIV testing. 9000 clicks were received. The level of clickability reached 3.35%, indicating that the advertising visual was interesting to the audience. More than 700 self-tests were ordered online.

Conclusions/Next steps: Crucial aspect of motivation for HIV testing is meeting the need for protection and staying confidential, therefore it's important to emphasize that testing is confidential, completely safe, fast and easy. The information space is so full of content that it is important to be bold and choose communication channels, messages and visuals that will definitely attract the attention of the target audience.

Comprehensive sexuality education

PESAD23

Awareness and acceptability of undetectable=untransmittable among a national sample of HIV-negative young adults in Nigeria

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Background: Despite widespread support for the U=U statement as an empowering initiative aimed at raising awareness about treatment as prevention (TasP) and ending stigma towards PLWH, information about its reach and impact in developing countries is sparse.

In our study, we described the socio-demographic characteristics and sexual behaviors that are associated with awareness of and trusting U=U in a Nigerian national sample of HIV-negative participants.

Methods: Cross-sectional cohort analysis of an internet-based survey of HIV-negative young adults in Nigeria (n = 1,016) between February and September 2021. Measures included socio-demographics, sexual behaviors, and awareness of and trust in U=U. Descriptive statistics and multivariable logistic regression were used to identify the characteristics associated with awareness of and trust in U=U, as well as patterns of willingness to engage in condomless sex based on trust in U=U.

Results: The participants' mean age was 26.94±4.68 years. Of the participants, 52.1% of participants reported having heard of U=U. Among those who were aware of

U=U, 51.0% reported they trusted it, 20.4% did not trust it, and 28.5% were unsure. Gender identity, sexual orientation, and having tested for HIV in the last 6 months were significantly associated with being aware of U=U. Non-gay participants were 2 times more likely to be aware of the U=U message (OR =2.99; 95% CI: 1.08-8.25) than gay participants.

Similarly, gender identity, sexual orientation, and having tested for HIV in the last 6 months were significantly associated with trust in U=U. No significant differences were observed by age, level of education, geographic region, or recent condomless sex in the study.

Overall, participants were more likely to engage in condomless sex with HIV-negative partners than with HIV-positive partners. However, willingness to engage in condomless sex with an HIV-positive but undetectable partner was associated with trust in U=U.

Conclusions: Although we observed moderate U=U awareness and trust in this cohort, crucial populations and minorities are still unaware and distrustful of the U=U message. This study will serve as a basis for further elaborate studies and to develop community-based health education and awareness initiatives regarding U=U in Nigeria.

People who inject drugs

PESAD24

Differences in drug use and HIV stigma among people who inject drugs in Kyrgyzstan

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Background: The Eastern Europe and Central Asia (EECA) region has the highest annual rate of HIV infections worldwide, primarily concentrated among people who inject drugs (PWID). In Kyrgyzstan, where stigma appears to be reducing syringe service program (SSP) access, approximately 51% of people living with HIV are PWID. We aimed to characterize differences in drug use and HIV stigma by SSP access.

We hypothesized that PWID who did not report recent (i.e., past 6 month) SSP access would have higher mean levels of structural and internalized drug use (DU) and HIV stigma, but lower mean levels of anticipated DU and HIV stigma compared to those with recent SSP access.

Methods: A cohort of 279 PWID were recruited via community-based HIV service agencies and word of mouth in the Kyrgyzstan capital city of Bishkek and surrounding rural Chuy region. Participants completed DU and HIV stigma measures that included structural, anticipated, and internalized stigma subscales (1=low stigma, 5=high stigma). Anticipated stigma items distinguished between three stigma sources (e.g., healthcare workers, family, other PWID). Internalized HIV stigma was only assessed among PWID who reported living with HIV at baseline (n=57). Chi-square and t-tests were used to assess group differences by SSP utilization.

Results: Participants were primarily male (75.3%) with a median age of 40 years. Compared to PWID that did not recently access SSP, those that did access SSP had a higher prevalence of public injection (16.2% vs. 5.3%, p=.018) and a lower prevalence of sharing syringes and equipment (14.2% vs. 22.7%, p=.092). Compared to PWID that did not access SSP, those that did access SSP had significantly higher internalized DU stigma (M=3.52 vs. M=3.04, p<0.001) and anticipated DU stigma from family (M=3.28 vs. M=2.89, p=0.020). Compared to PWID without SSP access, those that did access SSP had significantly greater anticipated HIV stigma from other PWID (M=3.52 vs. M=3.20, p=0.005) and internalized HIV stigma (M=2.88 vs. M=1.83, p=0.004).

Conclusions: DU and HIV stigma levels are high, but significantly higher among PWID with recent SSP access, whose drug use is more publicly visible, than PWID without recent SSP access who remain at higher risk for HIV transmission.

Implementation science of scaling up prevention (including PrEP)

PESAE01

At risk in the emergency department: can the electronic health record identify patients with indications for PrEP?

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Background: Persons newly diagnosed with HIV often had previous, recent contact with healthcare, including emergency departments (EDs). While EDs have become vital partners in screening and linkage to care for persons living with HIV, ED engagement in HIV prevention efforts, to include risk assessment and pre-exposure prophylaxis (PrEP) referral, are rare. We sought to assess the proportion of patients presenting to the ED with HIV risk factors and PrEP indications.

Methods: In an ED with a preexisting universal HIV screening program, a retrospective electronic health record (EHR) query was performed for all patients who screened negative for HIV in 2019-2020. Objective laboratory evidence of sexually transmitted infection (chlamydia, syphilis, gonorrhea, and/or trichomoniasis) at the time of ED

visit or within six months prior was utilized to assess risk of HIV acquisition through sexual behavior. Urine drug screen positive for commonly injected substances at the time of ED visit or within twelve months prior, was utilized to assess risk of HIV acquisition through injection drug use practices. Descriptive and chi-square analyses were performed.

Results: 26,914 ED patients screened negative for HIV during the study timeframe. Of these, 1,403 (5.2%) were found to have one or more potential HIV risk factors and PrEP indications; 304 (21.7%) had a sexual behavior risk identified and 1,111 (79.2%) had an injection drug use risk identified; of note, 12 (0.9%) had both. Median age was 40; the majority (58.2%) were male and white/non-Hispanic (50.8%), followed by Black/non-Hispanic (43.5%). Injection drug use as a risk factor represented a significant proportion as compared to the general population (79.2% versus 9.3% nationally; $p<.0001$).

In consideration of sexual behavior as a risk factor, women in this study represented a significant proportion as compared to national estimates (62.2% versus 41.9%; $p<.0001$). During the study period, 52 ED patients were newly diagnosed with HIV; retrospective application of 'EHR query' approach successfully identified 29% of this cohort.

Conclusions: In addition to screening, EDs may represent an opportune setting for HIV risk assessment and PrEP referral. Given time constraints and competing demands inherent to EDs, an objective EHR approach represents a low resource option for risk factor identification.

PESAE02

The fidelity of a pharmacy-based PrEP delivery model in Kenya: an unannounced standardized patient actor assessment

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Background: The delivery of HIV PrEP at private pharmacies is a promising new model that may address barriers to clinic-based delivery. In Kenya, a pilot study testing this new model found it reached populations at HIV risk and had comparable PrEP continuation to clinic-based PrEP delivery models. We used unannounced standardized patient (USP) visits to measure the fidelity of pharmacy PrEP delivery in a pilot study.

Methods: Five retail pharmacies were purposefully selected to participate in the pilot. Following a two-day training, pharmacy providers delivered counseling on HIV risk and PrEP safety, provider-assisted HIV self-testing, and PrEP to eligible clients as per the Kenya national guidelines. We trained eight USPs and asked them to visit each pharmacy acting the following cases:

1. A young woman seeking emergency contraception,
2. A young woman who fears HIV testing,
3. A young man who has sex with men seeking treatment for a sexually transmitted infection, and;
4. A young man seeking sexual performance enhancement drugs.

After each visit, the USP actors completed a 40-item checklist that assessed PrEP promotion, behavioral risk assessment, counseling, medical safety assessment, HIV testing, PrEP dispensing, and service quality at the pharmacy. We descriptively analyzed our data.

Results: From February 2021 to August 2021, eight USPs completed 15 pharmacy PrEP visits. At these visits, 60% (9/15) of the USP were asked about their interest in PrEP and 80% (12/15) about behaviors associated with HIV risk. All USP actors (100%, 15/15) reported being counseled

on PrEP safety and side effects and most (87%, 13/15) on the PrEP efficacy Almost all USP actors (87%, 13/15) were assessed for a history of kidney or liver disease and all (100%, 15/15) received assisted HIVST and PrEP in a private room during the visits. Of the USPs, 60%(9/15) agreed and 40%(6/15) strongly agreed that the quality of service at their visits was as expected.

Conclusions: The fidelity of PrEP delivery at private pharmacies in the pilot study was high, as assessed by USP actors. This suggests pharmacy providers can deliver high-quality PrEP services supporting possible scale up of pharmacy-based PrEP delivery models in Kenya and similar settings.

PESAE03

Community preparedness to embrace new biomedical HIV prevention technologies. CHEDRA's experience with the Dapivirine vaginal ring and Female Sex Workers (FSWs) amidst a volatile atmosphere in Masaka, Uganda

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Background: In Uganda, HIV prevalence is high among FSWs (37%) and their partners (18%). The brutal law against sex work creates institutional obstacles in accessing HIV prevention services for FSWs. Since 2015 todate, the International Partnership for Microbicides supports CHEDRA (Community Health, Empowerment, Development and Relief Agency) introduced the Dapivirine Vaginal Ring among FSWs within fishing communities to assess preparedness towards uptake of new Biomedical HIV prevention technologies.

Description: We popularized the Dapivirine Ring among key populations.'Bar to Bar', 'With the Brothel' and 'Personalized HTS', strategies were developed to intensify advocacy and awareness raising for the Dapivirine Ringas well as assessment for uptake and acceptance preparedness. Permission to operate from within brothels was obtained from owners, Trained front line staff used a snowball approach to penetrate FSWs networks, demonstration on how to use the vaginal ring, personalized HTS, STI management, Counseling, condom and contraceptive distribution was done within brothels. 314 FSWs were secretly mobilized, 154(49%) of them were between 14-22 years, others were above 23 years.283 (90%) of them received HTS, 108 (38%) of them were HIV positive. 65 (60%) enrolled in HIV care, all brothel owners yearned for our services. 100% of FSWs reported that the ring is the best HIV prevention option they had ever heard, those aged 26 and above showed much willingness to use it compared their younger counterparts, 100% of them desired to have a ring that would prevent both HIV and pregnancy.

Lessons learned: New biomedical HIV prevention strategies need to be tailor made to address gender specific imbalances in HIV prevention. 'Within the Brothel' and 'Personalized HCT, strategies proven highly effective in increasing HIV prevention services to FSWs, Communities need to be educated about a new HIV prevention option even before it becomes available for public consumption.

Conclusions/Next steps: HIV prevention programs urgently need to widen HIV prevention options. No one size its all.

PESAE16

Impact of a community health worker intervention on PrEP knowledge and utilization in Rakai, Uganda: a mixed methods assessment

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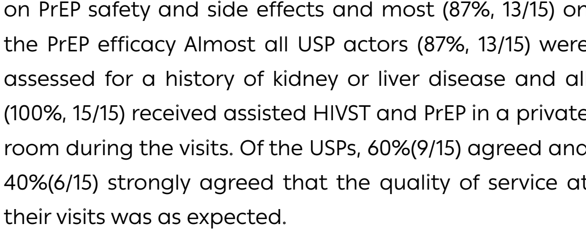
Background: Highly mobile individuals living in Ugandan fishing communities face increased HIV acquisition risk. From 2015-2018, the Rakai Health Sciences Program (RHSP) implemented a novel mHealth, motivational interviewing-informed counseling intervention led by community health workers (CHW) to improve uptake of HIV treatment and prevention services in an HIV hyperendemic fishing village.

Following introduction of PrEP in 2017, a PrEP counseling module was incorporated into the intervention to increase PrEP awareness and uptake. This mixed-methods study evaluated the intervention's impact on PrEP knowledge and utilization.

Methods: Survey data were collected from all available community members aged 15-49 through the Rakai Community Cohort Study. Multivariable logistic regressions with generalized estimating equations were used to estimate the effect of the CHW intervention on PrEP knowledge and use.

We also conducted 74 in-depth interviews with 5 types of informants: clients, CHWs, program staff, community leaders, and health clinic staff. Transcripts were analyzed using a deductive, iterative approach.

Findings were triangulated with programmatic data from an electronic mobile application used by CHWs during counseling visits.



Results: 1848 individuals were surveyed; 46% were female; mean age was 31.8 years (SD: 8.2). In as-treated analyses, individuals exposed to the CHW intervention reported significantly higher PrEP knowledge (N=1848, PRR: 1.10, 95% CI: 1.06-1.14, p= <.0001), lifetime PrEP use ((N=1176 (HIV-negative participants only) PRR: 1.77, 95% CI: 1.33-2.36, p= <.0001)), and current PrEP use (N=1176, PRR: 1.86, 95% CI: 1.22-2.82, p= 0.0039) compared to those unexposed. Qualitative data supported quantitative findings and attributed positive PrEP outcomes to CHW counseling and effective use of motivational interviewing skills by CHWs.

Barriers to PrEP uptake included misinformation about PrEP, HIV-related stigma, and pill burden. Mobile application data demonstrated that the PrEP module was delivered consistently by CHWs throughout the implementation period.

Conclusions: CHWs positively influenced PrEP knowledge, use, and retention among clients of a motivational-interviewing informed counseling intervention in an HIV hyperendemic fishing community. A mixed methods approach provided important insights to inform implementation of future PrEP programs. Findings suggest use of CHWs and motivational interviewing-informed counseling can be effective components of interventions to improve PrEP outcomes.

Implementation science of scaling up HIV testing

PESAE04

Optimising provider-initiated indicator condition guided testing for HIV to identify undiagnosed individuals: preliminary results of a multifaceted, multicentre intervention study

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Background: In the Netherlands, approximately 7% of people with HIV (PWH) remained undiagnosed in 2020. Indicator Condition (IC)-guided HIV testing is a cost-effective strategy to identify such undiagnosed individuals. We implemented a multicentre intervention study in hospitals in the Amsterdam region to increase provider-initiated IC-guided HIV testing.

Methods: Two university hospitals, two teaching hospitals, and one non-teaching hospital participated. Seven ICs were selected (Table 1).

Relevant departments participated in a multifaceted intervention from June-December 2020, including competitive audit and feedback and multimedia materials. Department-specific solutions such as guideline adaptation, implementation of order sets and reflex-testing varied by IC and hospital. HIV testing among patients ≥18 years not known to have HIV and presenting with an IC was assessed using electronic health records during pre-intervention (January 2015-May 2020) and post-intervention (June 2020-December 2021) periods. The primary endpoint was documentation of an HIV test ≤3 months around IC diagnosis. The difference in endpoints between periods was compared using logistic regression.

Results: Data from 8,017 patients were included. During the pre-intervention period, HIV testing varied widely, (range 0.7%-83.7%), and increased significantly in 4/7 ICs post-intervention, but not in the two ICs with the highest-

and the one with the lowest baseline testing (Table 1). Of 3,074 tested patients, 18 (0.6%) were HIV positive [4 (22%) female; median age 45 years (IQR=34-54)], exceeding the consensus cost-effectiveness threshold of 0.1%. Eight (44%) had tuberculosis, 7 (39%) malignant lymphoma, 2 (11%) hepatitis B and 1 (6%) hepatitis C. Median CD4 count at diagnosis was 97 cells/mm3 (IQR=50-130); 94% had CD4 <350 cells/mm3.

Indicator condition	Tested before intervention n/N (%)	Tested after intervention n/N (%)	OR	95% CI	aOR*	95% CI
Tuberculosis	312/373 (83.7%)	57/65 (87.7%)	1.39	0.63 - 3.07	1.61	0.69 - 3.80
cervical carcinoma/ intraepithelial neoplasia grade III	46/1065 (4.3%)	78/295 (26.4%)	7.96	5.38 - 11.79	14.30	9.04 - 22.62
vulvar carcinoma/ intraepithelial neoplasia grade III	2/279 (0.7%)	0/56 (0.0%)	2.06	0.00 - 26.67	0.72	0.00 - 10.76
Malignant lymphoma	993/1580 (62.9%)	316/398 (79.4%)	2.28	1.75 - 2.97	2.27	1.73 - 2.98
Hepatitis B virus	514/798 (64.4%)	84/112 (75.0%)	1.66	1.06 - 2.60	1.64	1.02 - 2.62
Hepatitis C virus	345/491 (70.3%)	54/75 (72.0%)	1.09	0.63 - 1.87	1.07	0.61 - 1.88
Peripheral neuropathy	217/2041 (10.6%)	56/389 (14.4%)	1.41	1.03 - 1.94	1.74	1.24 - 2.45
*Odds ratio adjusted for hospital and patients' sex, age category and socio-economic status						

Table 1: Patients tested for HIV ≤3 months around indicator condition diagnosis, by period before and after intervention

Conclusions: Overall HIV positivity underlined this testing strategy's cost-effectiveness to identify undiagnosed PWH. IC-guided testing improved in some, but not all ICs. Differences in intervention elements and observed effect by IC and hospital must be used for tailored, impactful strategies to optimise IC-guided HIV testing by setting.

PESAE05

Index testing approaches for early diagnosis of PLHIV and treatment initiation for HIV epidemic control

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Background: Innovative case identification strategies remain critical for countries to achieve the UNAIDS fast track targets. Telangana is one of the Indian states with the highest HIV prevalence. Of the estimated 158,000 PLHIV in Telangana, ~35% remain undiagnosed. We evaluate the impact of index testing as a case identification strategy.

Description: Under the PEPFAR/USAID funded ACCELERATE, index testing was implemented across 50 facilities (38 testing and 12 treatment) in five high prevalence districts of Telangana. Contacts were elicited from newly diagnosed clients at testing centers and PLHIV with either unsuppressed viral load, low CD4, demonstrated poor adherence, or previous loss-to-follow-up at treatment centers. Contacts elicited were contacted and offered testing as per National guidelines.

Lessons learned: From Aug 2020-Dec 2021, from 8,868 index clients, 13,375 contacts were elicited and tested (7,200 sexual partners; 4,155 spouses; 1,973 children; and 47 mothers) of whom 2,634 (20%) were newly diagnosed with HIV infection. Positivity was highest among spouses (23%), followed by sexual partners (21%), parents (11%) and children (7%). There was also heterogeneity in positivity by district (range, 17-24%). Positivity was comparable by type of facility (testing vs, treatment sites = 19% vs 21%). However, within treatment sites, positivity among contacts of virally suppressed index clients, virally unsuppressed index clients and clients with no viral load data but CD4<500 cells/mm^{3}were 17%, 21% and 29%, respectively. 2,433 (92%) of all new cases diagnosed were initiated on treatment.

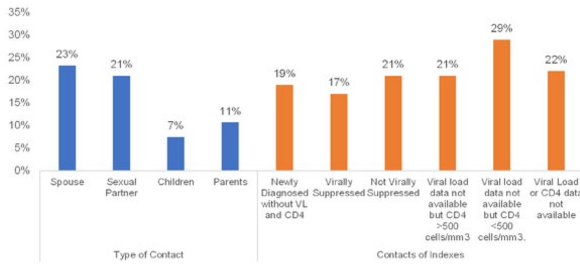

Figure. Case identification (test positivity) by characteristics of the index case.

Conclusions/Next steps: We demonstrated the efficiency of index testing in identifying and linking cases to ART at testing and treatment facilities. It is critical to ensure that all clients at treatment facilities undergo index-testing when initiating ART with regular updating of contacts particularly for clients who are virologically unsuppressed. If scaled, such efforts could significantly support new case identification globally and achieve HIV/AIDS epidemic control.

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Implementation science of scaling up HIV treatment

PESAE06

Scale-up of "same-day ART initiation" in South Africa

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Background: Initiation of HIV antiretroviral therapy (ART) on day of diagnosis has been shown to increase treatment uptake and viral suppression in randomized trials. South Africa implemented "same-day ART" in September 2017, a year after expanding ART eligibility to all patients under Universal Test-and-Treat (UTT). We assessed the impact of same-day ART and UTT on time from diagnosis to ART initiation.

Methods: The study included all patients diagnosed with HIV at public-sector health facilities in six South African provinces from 2016-2019 who started ART within 90 days. Data were extracted from the Three Interlinked Electronic Registers (TIER.Net) clinical database, and patients were followed up for 90 days.

For each patient, we computed days from HIV diagnosis (or first clinical presentation with HIV) to ART initiation and defined this duration as same-day (within 24 hours), rapid (≤7 days), or 90-day. We stratified the analysis by province and CD4 count at presentation.

We also assessed trends in the share of facilities that had adopted rapid ART as standard of care, which we defined as initiating at least 80% of patients within 7 days.

Results: Among 1,193,618 ART-initiators who entered care between 2016 and 2019, the proportion starting ART on the same day and ≤7 days increased from 16% and 38% in 2016 to 70% and 87% in 2019, respectively (*Figure 1a*). The increase in same-day and rapid initiation occurred starting during the Universal Test-and-Treat (UTT) in September 2016 and continuing with the formal implementation of same-day ART in 2017. The pace of same-day rollout varied by province (*Figure 1b*). In 2019, the share of patients starting ART within 7 days ranged from 53% in Northern Cape to 90% in KwaZulu-Natal and Mpumalanga.

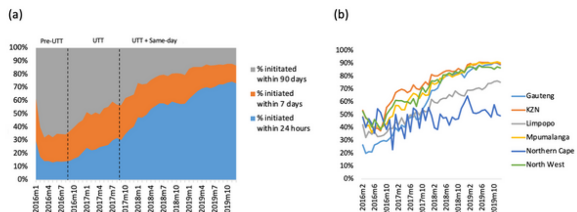

Figure 1. (a) Percent of patients starting ART within 24 hours (blue), 7 days (orange) or 90 days (grey) of HIV diagnosis; and (b) percent starting ART within 7 days by province.

Conclusions: By 2019, over two-thirds of people starting ART did so on the day they were diagnosed with HIV.

PESAE07

Long term effects of donor transition processes and their potential influence on the realization of the country's 90-90-90 targets. Experiences from a subnational level in Uganda

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Background: Great improvements in the quality of HIV service delivery coupled with performance of some national key HIV/AIDS delivery indicators arising from donor support bestowed hope that realization of the 90-90-90 targets by 2030 were within reach. However, experiences from some districts following implementation of donor transition activities reflected potential threats to the country's ability to achieve some of the set targets.

We explore this phenomenon in-depth to document the long-term effects of donor transition processes on HIV service provision at subnational level and its potential influence on the country's 90-90-90 aspirations over a ten-year period.

Methods: A exploratory qualitative study was conducted between November 2021 and January 2022 in three districts representing three regions of the country that received donor support. Interviews were conducted among a purposively selected sample of 25 health managers and providers. Data was collected using audio recorders with analysis conducted following a thematic content analysis technique.

Results: Results reflected mixed experiences with the first 90 of the population tested being compromised by withdrawal of community linkage facilitators which greatly affected the community HIV counselling and testing (HCT) activities. HIV services to key population were worst affected as they greatly rely on community component and having been set in project mode rendered it challenging to integrate into routine care. Disruptions in medical supplies and human resource for health following scale-down of formally supported activities affected the second 90 of provision of appropriate care.

However, whereas some previously supported health workers were absorbed into the government pay roll, not all were lucky particularly community linkage facilitators. Scale down of service delivery for the community component affected retention in care while disruptions in the hub system caused delayed delivery of test results which impacted clinical decision making.

Conclusions: Despite progress in realizing national 90-90-90 targets, transitional processes presented challenges to maintenance of these achievements. Effective transition calls for orderly and consultative processes beyond focusing more on set outcome targets calling for dedicated efforts to prioritize transition processes as a target for achievement in its self.

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PESAE08

High rates of interruptions in HIV treatment in people living with HIV on ART less than three months across the age continuum

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Background: The importance of retaining people living with HIV (PLHIV) on treatment has been established. Emerging evidence indicates that many newly initiated persons experience treatment interruptions within the critical first few months after antiretroviral (ART) initiation. We analyzed treatment interruption rates among PLHIV on ART less than or more than three months in President's Emergency Plan for AIDS Relief- (PEPFAR) supported ART programs.

Methods: Aggregate routine program data from 45 countries receiving PEPFAR support for HIV services between July and September 2021 were included in this analysis. Interruptions in treatment (IIT) were defined as more than 28 days since a client's last expected clinic appointment or medication pick-up date. Trends in IIT were examined by age, sex and time on ART for PLHIV aged 15 and older.

Results: Overall, 2.7% (292,722/10,790,728) of females and 3.0% (167,934/5,674,008) of males on ART experienced IIT during the last quarter of the fiscal year (July – September, 2021). PLHIV who were on ART less than three months experienced IIT approximately three times more often than PLHIV on ART more than three months (7.8% versus 2.6% p<.0001), respectively. Significant differences in IIT rates for females (8.0% and 2.6%, p<.0001) and males (7.6% and 2.8%, p<.0001) between time on ART disaggregates were also observed. Across all age groups of PLHIV on ART less than 3 months, IIT rates were significantly higher than of those on ART for more than three months (p<.0001 for each age group comparison; Figure 1).

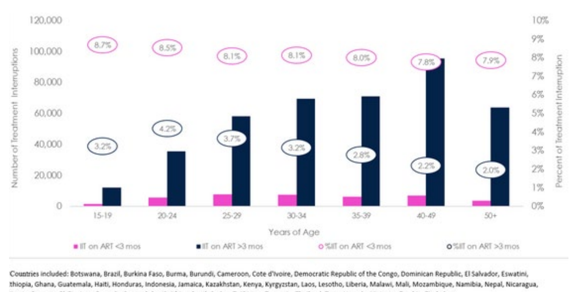

Figure 1. Number and percent of treatment interruptions by time on ART and age group July - September, 2021 across 45 countries*

Conclusions: The overall rate of treatment interruptions across PEPFAR-supported programs was low during this investigation period. However, the risk of interruptions for those on ART less than three months is a critical challenge across sex and age groups. Targeted interventions for PLHIV newly initiating ART should be prioritized to ensure treatment continuity, especially in the era of multi-month dispensing.

Scaling up access to models of integrated services (HIV, hepatitis, STI and other services, such as harm reduction, SRHR, gender affirming care, TB, NCDs and mental health)

PESAE09

Asynchronous prescribing of ART and antihypertensives results in frequent clinic visits despite multi-month dispensing of ART in Malawi

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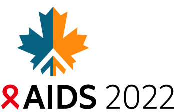
Background: While multi-month dispensing (MMD) of antiretroviral therapy (ART) up to 6 months has become routine in Malawi, hypertension care often involves dispensing a 1-2-month supply of medication, diminishing the benefits of MMD for ART.

We assessed the degree of asynchronous dispensing in patients on ART and antihypertensives and estimated visit savings that would result from synchronized three- and six-month prescribing of these medications.

Methods: We performed a cross-sectional study of adults receiving care for both HIV and hypertension at an urban, PEPFAR/USAID-supported clinic in Malawi between June-December 2017. During this timeframe, the clinic provided integrated ART and hypertension care, with free ART and antihypertensives available for purchase. The quantity of ART and antihypertensive medications prescribed at individuals' three most recent clinic visits was abstracted, and the median quantity for each medication was used to estimate the total number of refill visits per year (including visits where both meds were prescribed at the same time and any additional visits where prescribing of ART or antihypertensives would be required for a continuous supply).

We then estimated visit savings that would result from synchronized three-month and six-month dispensing of ART and antihypertensives.



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Results: We evaluated 193 adults (≥18 years): 65% female, median age 53 years (IQR 44-59), and median of 4 years (IQR 2-7) on antihypertensive medication. Four-month dispensing was most common for ART (64.8%), while one-month dispensing was most common for antihypertensive medications (59.6%). Only 16.6% of individuals received synchronous dispensing for both conditions at all three visits. The majority (62.2%) of participants were estimated to have 12 annual refill visits, 22.8% had 6-8 annual visits, and 15.0% had 3-4 annual visits. Under synchronized six-month dispensing nearly two-thirds of patients (64.8%) would eliminate 6+ visits. Under three-month synchronized dispensing, 85.0% of respondents would eliminate at least 2 visits per year.
Conclusions: We found a high rate of asynchronous dispensing of ART and antihypertensive medication in an integrated care setting, with most individuals requiring monthly clinic visits despite MMD of ART. Expanding integrated care with synchronized MMD for stable individuals with HIV and hypertension has the potential to reduce patient and health system burdens.

PESAE10

Using a robust approach to rapidly scale up integration of cervical cancer screening and treatment of pre-cancerous lesions in HIV clinics

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Background: Cervical cancer (CxCa) is the second most common cancer among women worldwide, causing significant mortality. In 2020, an estimated 604,237 women were diagnosed with CxCa globally. In Uganda, CxCa is the leading cause of cancer death. Women living with HIV (WLHIV) are 4-5 times more likely to develop CxCa. In October 2020, with support from CDC/PEPFAR, Mildmay Uganda (MUg) started implementing CxCa screening and treatment of precancerous lesions among WLHIV in central Uganda. This paper describes MUg's experience and successes in implementing the program.
Description: The CxCa screening program was implemented in 49 health facilities (HFs) in 8 districts of central Uganda. The program implemented from October 2020 to September 2021 targeted to reach 17,464 WLHIV aged 25 to 49 years. A needs assessment conducted to identify hindrances to CxCa screening found that HFs lacked equipment for screening and health workers lacked technical capacity to conduct screening and treatment of precancerous lesions. Mildmay provided the equipment, trained, and mentored the health workers. Two screening approaches used were visual inspection under acetic acid (VIA) at all HFs and Human Papilloma Virus (HPV) testing at 4 HFs with GeneXpert capacity.
Lessons learned: A total of 250 health workers from 49 participating HFs were trained on CxCa screening and treatment of precancerous lesions.
The number of WLHIV screened for CxCa markedly improved from 560 (3.2%) in Jan-March to 14,101 (81%) in July-September 2021. The positivity rate was 7% and treatment rate 83%. Twenty-one women with suspicious lesions were supported to access biopsies. Five had invasive carcinoma and were referred for further management.
The scale up of differentiated service delivery models and multi- month dispensing of ARVs and COVID-19 lockdown restrictions affecting access to HFs by clients and health workers were key challenges. Strategies implemented to mitigate these included pre-appointment reminders, screening at community drug distribution points, cancer camps, mentorship, and flexi -hours for HPV testing and treatment.
Conclusions/Next steps: It is feasible to integrate CxCa screening into HIV care using the screen & treat approach. The roll out was able to achieve 81% of the target despite the challenges from COVID-19.

Strategies to enhance U=U communication and implementation

PESAE11

Community antiretroviral therapy dispensation in Cameroon associated with superior client outcomes: a national evaluation

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Background: The USAID- and PEPFAR-funded Meeting Targets and Maintaining Epidemic Control (EpiC) project and the Government of Cameroon developed and evaluated a model in which some health facilities providing antiretroviral therapy offered clients the option to receive antiretroviral (ARV) drug refills at community-based organizations (CBOs).
Methods: A mixed-methods evaluation was conducted from October to December 2020 in10 regions of Cameroon to determine the CBO model's impact on client retention and viral suppression.
Retention was compared cross-sectionally at 3, 6, 12, and 24 months between clients receiving ARV refills at 50 CBOs (n=2633, 2549, 2425, 2063 respectively) and clients receiving refills at 38 health facilities offering the CBO option/model (offering facility) (n=2017, 1916, 1805, 1606 respectively).
Additionally, retention at 3, 6, 12, and 24 months was compared between a cohort of clients receiving ARV refills at

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a subset of 3 health facilities offering the CBO model (offering facility) (n=126) and 3 health facilities that did not (non-offering facility) (n=114).

Lastly, viral suppression was compared each year from 2016-2020 cross-sectionally between clients receiving ARV refills at CBOs (n=91, 217, 550, 664, 964 respectively) and at offering health facilities (n=31, 130, 342, 347, 543 respectively). Program data from August 2014 to October 2020 was used for descriptive and inferential analysis.

Results: Clients receiving ARV refills at CBOs had higher retention than those at offering health facilities at 3 (94% vs. 90%, p-value<0.000), 6 (91% vs. 86.1%, p-value<0.000), 12 (86.6% vs. 81.1%, p-value<0.000), and 24 (86.1% vs. 72.2%, p-value<0.079) months. Clients receiving ARV refills at offering facilities had higher retention than at non-offering facilities, but significantly only at 3 (100% vs. 93.1%, p-value=0.0013) and 24 months (90.5% vs.79.0%, p-value=0.0127).

Similarly, viral suppression was higher among clients receiving ARV refills at CBOs than at offering health facilities each year, but significantly only in 2018 (98.6 vs. 92.4%, p-value<0.00) and 2020 (95.1% vs. 92.3%, p-value=0.02).

Conclusions: Dispensation of ARV through CBOs was associated with higher retention and viral suppression. The model has potential to improve clinical outcomes for clients who receive ARV refills at CBOs and those who continue to receive refills at health facilities offering the CBO option/model.

PESAE12

Awareness of U=U among sexual and gender minorities in Brazil, Mexico and Peru: differences according to self-reported HIV status

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Background: The slogan "Undetectable=Untransmittable" (U=U) was created to translate the message that people living with HIV (PLHIV) using antiretroviral treatment (ART) with undetectable viral load will not transmit HIV to sex partners.

We describe U=U awareness among sexual and gender minorities (SGM) in Latin America and investigate differences by self-reported HIV status.

Methods: We conducted an online survey among SGM (≥18 years) living in Brazil, Mexico, and Peru during 2021. We used Poisson regression to calculate prevalence ratios of factors associated with awareness of U=U stratified by self-reported HIV status (PWH, negative and unknown). First, we estimated initial models (Model A), including socio-demographic factors (country, gender, age, race, education, and income) and then subsequent models (Model B), including risk behavior, ever taking PrEP, and HIV risk perception for HIV-negative/unknowns or taking ART for PLHIV.

Results: A total of 21,374 respondents were included (Brazil: 61%, Mexico: 30%, Peru: 8%); median age was 32(IQR:26-39), 96% cisgender man, 57% Black/Mixed-race; 3% <secondary education and 23% <minimum wage.

Among HIV-negative (16338/21374; 76%) and unknown status (2169/21374; 10%) SGM, 9% reported high self-perceived HIV risk, 58% were classified as high-risk for HIV, and 13% ever used PrEP. Among HIV-positive SGM (2867/21374; 10%), 93% were using ART.

Awareness of U=U was 89% in both Brazil and Mexico, higher than Peru 65%. Awareness of U=U was higher among HIV-positive (96%) than negative (88%) and unknown (69%) SGM.

In multivariate models, U=U awareness was lower among lower-income and Black/Mixed-race SGM. Among HIV-negative SGM, trans/non-binary had lower awareness of U=U compared to cisgender men, while those reporting high HIV-risk and ever using PrEP had higher awareness.

Characteristics	PLHIV Model A	PLHIV Model B	HIV Negative Model A	HIV Negative Model B	Unknown HIV Status Model A	Unknown HIV Status Model B
Country (ref. Brazil) Mexico Peru	**1.04 [1.03-1.06] 0.93 [0.88-0.98]**	**1.04 [1.02-1.05] 0.92 [0.87-0.97]**	**1.02 [1.01-1.04] 0.78 [0.75-0.82]**	1.01 [0.99-1.02] **0.79 [0.76-0.83]**	1.01 [0.95-1.08] **0.59 [0.51-0.68]**	0.95 [0.89-1.00] **0.60 [0.51-0.71]**
Trans/non-binary (ref. Cisgender men)	0.96 [0.91-1.01]	0.97 [0.92-1.02]	**0.91 [0.88-0.95]**	**0.95 [0.92-0.99]**	0.89 [0.77-1.04]	0.90 [0.77-1.06]
Age 25+ (ref. Age 18-24)	1.00 [0.96-1.03]	0.98 [0.95-1.02]	1.00 [0.98-1.02]	1.01 [0.99-1.03]	0.97 [0.90-1.03]	0.96 [0.90-1.02]
Black/Mixed-race (ref. White)	**0.98 [0.96-1.00]**	0.99 [0.97-1.00]	**0.98 [0.97-1.00]**	**0.98 [0.98-1.00]**	0.95 [0.90-1.01]	0.95 [0.89-1.01]
<Secondary education (ref. >0 = secondary)	0.97 [0.91-1.03]	0.96 [0.90-1.02]	**0.86 [0.81-0.90]**	**0.91 [0.86-0.96]**	**0.79 [0.66-0.95]**	0.86 [0.71-1.04]
<Minimum wage (ref. >= Minimum wage)	**0.97 [0.94-0.99]**	0.98 [0.96-1.00]	**0.94 [0.92-0.95]**	**0.95 [0.93-0.96]**	**0.93 [0.87-1.00]**	0.95 [0.88-1.01]
ART use / PrEP use	-	**1.18 [1.09-1.26]**	-	**1.07 [1.06-1.08]**	-	0.98 [0.75-1.29]
High HIV risk perception	-	-	-	0.99 [0.97-1.01]	-	1.02 [0.91-1.14]
>=10 (ref. <10, MSM risk index)	-	-	-	**1.01 [1.01-1.03]**	-	1.01 [0.95-1.07]

Table.

Conclusions: Awareness of U=U varied according to HIV status, sociodemographic characteristics, and HIV risk behavior. Broad educational strategies, including teaching U=U , focusing on SGM vulnerable to HIV infection are urgent to decrease stigma against PLHIV.

PESAE13

Changes in "Undetectable Equals Untransmittible" (U=U) knowledge and practices by HIV and PrEP status among gay, bisexual, queer and trans men and Two-Spirit and non-binary people across Canada, 2015-2021

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Background: Canada officially endorsed "Undetectable equals Untransmittible" (U=U) in 2018, but few longitudinal and nation-wide studies on the impacts exist. We sought to examine population-level trends of U=U-related knowledge and sexual behaviour among gay, bisexual, trans, Two-Spirit, and queer men and non-binary people (GBT2Q) across Canada, by HIV and pre-exposure prophylaxis (PrEP) status.

Methods: Data are from community-based repeated cross-sectional bilingual (English/French) surveys: 2015 (online), 2018 (pride festivals), 2019 (online), 2020 (online), and 2021 (online).

Online recruitment used advertisements on sociosexual websites/apps, and community-based organizations' social media and email lists. Eligible participants were at least 15 years old, lived in Canada, and either identified as non-heterosexual or reported recent sex with a man. Women were ineligible.

Temporal trends were evaluated using separate multivariate logistic regressions by HIV/PrEP status, with survey year (continuous) as the primary explanatory variable, and controlling for age, education, ethnoracial identity, sex/gender identity (cisgender man, transgender man, non-binary), and number of recent sexual partners (for behavioural outcomes). Adjusted odds ratios (AOR) with 95% confidence intervals are shown.

Results: The pooled sample included 24,160 responses: 8.6% from GBT2Q living with HIV, 14.4% HIV-negative PrEP users, and 77.1% HIV-negative non-PrEP users.

Knowledge that HIV medications effectively suppress viral load increased from 2015-2021 for those living with HIV (68.8%-100%, AOR=3.43 [2.69-4.37]), PrEP users (70.3%-97.3%, AOR=1.77 [1.56-1.99]), and non-PrEP users (69.6%-84.1%, AOR=1.26 [1.22-1.27]).

Knowledge of the U=U scientific consensus on sexual transmission increased from 2018-2021 for those living with HIV (95.2%-98.3%, AOR=1.61 [1.04-2.47]), PrEP users (92.3%-95.5%, AOR=1.20 [1.02-1.42]), and non-PrEP users (68.9%-77.7%, AOR=1.25 [1.19-1.30]).

Reporting recent anal sex with an undetectable partner decreased from 2018-2021 for those living with HIV (55.3%-52.7%, AOR=0.78 [0.67-0.90]), PrEP users (46.3%-24.5%, AOR=0.73 [0.68-0.79]), and non-PrEP users (7.2%-6.8%, AOR=0.91 [0.84-0.99]) after additionally controlling for number of recent sex partners.

In 2021, participants living with HIV reported whether U=U impacted stigma (37.9% decreased, 55.6% no change, 6.5% increased) and access to sexual partners (14.2% decreased, 57.9% no change, 28.0% increased).

Conclusions: While U=U knowledge increased over time among GBT2Q, behavioural uptake remains incommensurate. The self-reported impacts of U=U for GBT2Q living with HIV are mixed, and require further investigation.

Implementation of HIV status-neutral approach to enhance HIV testing, HIV prevention and HIV treatment services

PESAE14

U=U awareness promotes engagement in HIV care among HIV negative men who have sex with men in Mississippi and Alabama

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Background: Expanding public awareness of the "Undetectable=Untransmittable" (U=U) message is central to a status neutral approach prioritizing engagement with health care providers (HCP) to monitor HIV status and viral load.

This study tests the dissemination of a U=U communication campaign on HCP engagement among HIV negative men who have sex with men (MSM) in Alabama and Mississippi, two US states with high rates of new HIV diagnoses and deaths.

Methods: We use a two-group pre/post study design with data from MSM in Alabama and Mississippi. Three interactive social media ads designed by Prevention Access Campaign (PAC) were run in both states from April to June 2021. In Mississippi, PAC ambassadors provided additional peer-to-peer engagement around U=U from February to May 2021. Survey data were collected from December 2020 to April 2021 (N=801; pre) and June to July 2021 (N=504; post) with similar retention across states (62% vs 64%). HIV negative men comprised 72% of the sample. Analyses below are restricted to HIV negative men who completed follow-up (N=368).

Results: Before campaign exposure, 38% of HIV negative men reported having an HCP monitoring their HIV status and 29% were aware of and understood U=U. Campaign exposure significantly increased overall U=U awareness with comprehension (29% to 52%), with larger increases in Mississippi (28% to 41%) than Alabama (30% to 38%).

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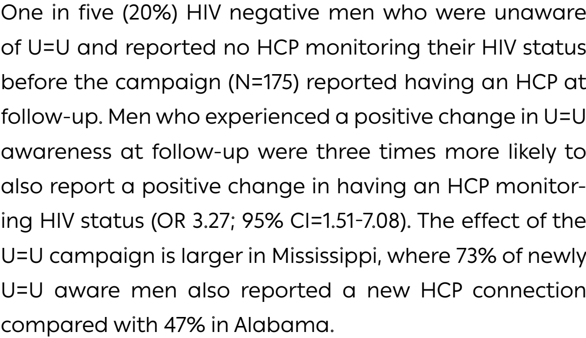

One in five (20%) HIV negative men who were unaware of U=U and reported no HCP monitoring their HIV status before the campaign (N=175) reported having an HCP at follow-up. Men who experienced a positive change in U=U awareness at follow-up were three times more likely to also report a positive change in having an HCP monitoring HIV status (OR 3.27; 95% CI=1.51-7.08). The effect of the U=U campaign is larger in Mississippi, where 73% of newly U=U aware men also reported a new HCP connection compared with 47% in Alabama.

Conclusions: Engagement with care is an important step for improving timely HIV testing and PrEP uptake for at-risk MSM. The U=U communication campaign increased HCP engagement among HIV negative men, with larger increases in Mississippi where men received the social media campaign with peer-to-peer outreach.

Innovations and lessons for supporting HIV prevention effective use and treatment adherence

PESAE15

Amazon smart locker collaboration as a pick up point preference for medicine distribution programs in Sub-Saharan Africa

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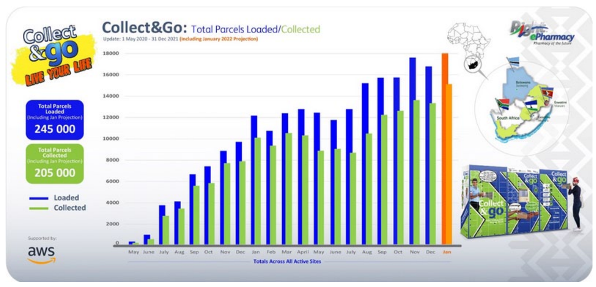
Background: The Collect & Go Smart Locker Solution serves as a Pick-up Point (PuP) for pre-dispensed medicines from Centralised Dispensing Facilities with built in monitoring and reporting capabilities. There are currently 101 Smart Locker sites located in South Africa, Lesotho, Eswatini, Zambia and Botswana. In response to the COVID-19 pandemic, PuPs were required to encourage medication collection outside overburdened facilities.

Right ePharmacy deployed Collect & Go Smart Locker PuPs as an alternative and scalable solution for various distribution programs, including ART refills.

Description: Commodity distribution programs in Africa utilises various PuPs to cater for patient and program needs. Alternative PuPs are a priority to alleviate burden on clinical staff and to reduce patient waiting times and exposure. Collect & Go Smart lockers further reduce waiting times and eliminate interpersonal contact, ultimately improving patient experience.

In May 2020 the 1st smart lockers were deployed and continue to be scaled due to patient preference, positive impact on adherence and accurate supply chain management capabilities.

Lessons learned: Rapid uptake of Collect & Go lockers were observed in Southern Africa with more than 250 000 prescriptions loaded and 220 000 successfully collected by January 2022. Smart lockers addressed critical challenges related to patient and commodity management, decreasing exposure risk and increasing capacity, with the goal to facilitate more convenient and safe collection practices for patients.



Conclusions/Next steps: While alternative PuPs remain a critical solution for convenient access to chronic and HIV medication, the locker solution does provide an additional layer of patient satisfaction in terms of preference for quality, privacy and safety when compared to other PuP options. The integrated temperature control unit, technology and parcel monitoring also allows for accurate commodity and supply change management, and ultimately positive patient adherence management. In addition, this solution proved to be an ideal solution to limit exposure during the COVID-19 pandemic.

PESUE17

Triangulating orphans and vulnerable children program and health facility data to improve HIV treatment outcomes for children and adolescents living with HIV

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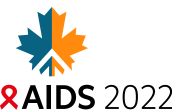
Background: COVida (2016-2022) is a PEPFAR/USAID-funded orphans and vulnerable children (OVC) project implemented in 30 districts in seven provinces in Mozambique by FHI 360 and local partners. A project priority is to help children and adolescents living with HIV (CALHIV) achieve viral load (VL) suppression, but lack of accurate data on their treatment status prevented COVida from providing appropriate support at the community level. To address this challenge, COVIDA introduced a data-triangulation approach in October 2019.

Description: The data-triangulation approach compares self-reported OVC program data with data in the health facility (HF) patient information system to identify data gaps and discrepancies and inform corrective actions. This approach was piloted during October–December 2019 in 14 HFs in five districts in Inhambane province in collaboration with the PEPFAR HIV clinical partner.

Lessons learned: Of the1,555 CALHIV self-reported as on ART in OVC program data, HFs confirmed only 1,473 as on ART. Among those confirmed, only 767 (52%) had VL data, of whom only 462 (60%) were virally suppressed. These results led to improvement actions such as finding de-



faulters, referring CALHIV to VL testing, and providing enhanced adherence counseling to those with high VL loads. In September 2020, the number of CALHIV on ART had increased to 1,647, those with known VL to 1,183, and those virally suppressed to 552, a 12%, 54%, and 19% increase, respectively. Given these results, data triangulation was scaled up to all 203 HFs in COVida's program sites during the remainder of 2020.

Data triangulation has contributed to improve treatment outcomes among CALHIV in all project sites. The project's overall VL coverage rate increased from 50% in 2020 to 91% in 2021, and VL suppression from 61% to 82%.

Conclusions/Next steps: Data triangulation helps OVC and clinical partners work together to improve treatment outcomes for CALHIV. It also allows OVC programs to access real-time clinical data to meet the needs of CALHIV at the community level.

This approach is critical to reduce the pediatric and adolescent HIV treatment gap and should be used by all OVC and HIV clinical partners working in the same geographic areas.

PESUE18

Take home dose of Methadone: new arena for OST adherence during COVID-19 in Bangladesh

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Background: Bangladesh has an estimated 33,067 people who inject drugs (PWID) who are the major drive for HIV among the Key population (KP). In 2015-16, HIV prevalence in Dhaka among the male PWID was 22% and among female PWID was 5%. The Global Fund HIV project in Bangladesh, implemented by Save the Children, targets high impact & cost-effective interventions towards 14,035 PWID through 35 centers in 13 districts that was 60% of the national target (23,371).

Description: This project offers differentiated HIV prevention and treatment services to PWID in the 13 districts, contextualized by epidemiological and other factors. Save the Children provides Oral Substitution Therapy (OST) to 2,351 PWIDs in 2021, that was 2,013 in 2020 and 1,257 in 2019. After the outbreak of COVID-19, OST could not be dispensed from some centers due to restricted movement and lockdowns. Many centers also were forced to close. Some PWIDs were shifted to other nearby centers temporarily for OST, and also to the Central Drug Addiction Treatment Center (CTC), Tejgaon.

In addition to the Directly Observed Therapy, a take-home dose (THD) of OST for 3-10 days was introduced to the stable and home-based PWID upon getting approval from DNC. PWID Network members were engaged as volunteers to dispense OST, manage crowds, maintain social distance, and ensure adherence. The proportion of THD in any given location varied with the intensity of lockdown requirements. THD was highest (90%) in April-June 2020 when lockdown was most strict, and gradually dropped to 64% in October 2020 when lockdown became relaxed.

Lessons learned: During July- Dec 2019, the retention rate of OST was 68.1%. In initial months of COVID-19, OST intake reduced to 62-63% due to restriction. After taking different approaches and THD, OST intake increased and the OST retention rate increased to 72.9% during Jan-Jun 2020; 82.73% in Jul-Dec 2020; and 87.33% during Jan-March 2021.

Conclusions/Next steps: Use of THD as an option for OST and use of outreach workers for follow up, had a positive impact on adherence of OST. THD need to continue as alternative options in reasonable scale for better compliance of PWID when COVID will no longer exist.

Laws and policies on HIV transmission, exposure, and non-disclosure

PESAF01

The role of the *Canadian Coalition to Reform HIV Criminalization* in changing Canada's approach to HIV criminalization: 5 years of community-led strategies, advocacy and consensus-building

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Background: Canada has one of the world's highest number of recorded HIV-related criminal cases, resulting from a broad interpretation of the sexual assault provisions in the *Criminal Code*. The most commonly laid charge in cases of alleged non-disclosure is *aggravated sexual assault,* where conviction carries a maximum penalty of life imprisonment and mandatory registration as a sex offender. People living with HIV (PLWH) have been convicted even in cases where no transmission occured, when they used a condom or had an undetectable viral load.

Description: In 2016, a number of organizations and advocates, including people with lived experience of HIV criminalization, created the Canadian Coalition to Reform HIV Criminalization (CCRHC) to change Canada's approach to HIV criminalization. In 2017, CCRHC conducted its first national consultation, leading to a widely endorsed Community Consensus Statement that makes specific demands to the federal and provincial governments to limit HIV criminalization.

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Lessons learned: Involving people with lived experience and adapting strategies to shifting (political and social) landscapes are key to the CCRHC's work, and led to positive developments.

In 2017, Justice Canada made recommendations to both federal and provincial officials to limit HIV criminalization. In 2018, following a call for action by the CCRHC, the Attorney General of Canada (AGC) issued a (limited) directive based on Justice Canada's recommendations.

In 2019, CCRHC members testified before the House of Commons Standing Committee on Justice and Human Rights (SCJHR) on the issue of HIV criminalization. The SCJHR majority report concluded that Canada's approach is too broad, too punitive and unscientific. It recommended limiting the use of criminal law in cases of HIV non-disclosure, including through *Criminal Code* reform.

In 2021, the CCRHC launched a second community consultation on *Criminal Code*reform advocacy. Since 2017, some provinces have also adopted policies or directives to limit HIV-related prosecutions.

Conclusions/Next steps: While significant, these developments remain insufficient to end the overbroad criminalization of PLWH in Canada. While results from the ongoing consultation around Criminal Code reform will inform advocacy strategies at the federal level, CCRHC must continue to demand concrete actions from both levels of government to implement recommendations to limit HIV criminalization.

PESAF02

Harms of Sex Offender Registries in Canada among people living with HIV

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Background: The number of prosecutions of people living with HIV in Canada for alleged HIV non-disclosure is among the highest in the world, and Canada is unique in applying aggravated sexual assault charges in the majority of these cases. Following amendments to Canada's Criminal Code in 2011, all individuals living with HIV convicted of aggravated sexual assault for non-disclosure became subject to mandatory sex offender registration, in many cases for life.

Methods: This research is based on qualitative interviews conducted from 2017 to 2019 with 16 people living with HIV from across Canada who have faced criminalization and incarceration for alleged non-disclosure of their HIV status, and compulsory registration with the National Sex Offender Registry due to their conviction. We combined this qualitative research with a legal analysis of the interplay between federal legislation, correctional policy, and the related regulatory practices of law enforcement.

Results: Mandatory sex offender registration triggers substantial harms among people living with HIV, further exacerbating the harms caused by ongoing criminalization and incarceration of non-disclosure.

These harms include: family estrangement and internalized stigma, negative impacts on re-entry and reintegration, an excessive burden due to onerous registration requirements, as well as psychological harms arising from potential lifetime government and police surveillance.

These impacts also interact with – and are reinforced by – harms resulting from news media reporting of sex offender status to the public and resulting stigma and social violence, as well as psychological harms from inappropriate sex offender treatment stemming from correctional policy.

Conclusions: This study provides an assessment of the complexity of interlocking legal and social harms experienced by people living with HIV as a result of sex offender designation and registration.

The research makes visible and contextualizes these harms, providing important knowledge for individuals supporting and caring for people living with HIV who have been subject to criminalization.

Our analysis also offers critical knowledge related to how sex offender registration laws operate in the daily lives of people living with HIV for individuals engaged in advocacy and law reform regarding the criminalization of HIV non-disclosure.

Laws, policies and practices impacting access to HIV testing, prevention, treatment, care and support

PESAF03

Flawed by Design: Canada's First Prison Needle Exchange Program

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Background: Prisoners have long been recognized as a "key population" disproportionately affected by HIV. Yet despite ample evidence demonstrating the effectiveness of needle and syringe programs in reducing the risk of HIV infection and other harms to prisoners' health, for decades Correctional Service Canada (CSC) refused to implement this essential harm reduction measure in prison. This had an especially severe impact on the disproportionate number of Indigenous people in federal prisons, and particularly Indigenous women in prison — 11.7% of whom are reported to be living with HIV.

Description: In 2012, a former prisoner and four HIV organizations challenged CSC's failure to provide prisoners with equivalent access to sterile injection equipment as breaching their constitutional rights to life, liberty, and security of the person and to equal benefit of the law without discrimination.
Eventually, in response, the federal government announced that it would introduce a prison needle exchange program (PNEP) in two prisons in 2018, and gradually extend the program to all federal prisons.
Lessons learned: Serious deficiencies in the PNEP's design have impeded access to the program. Participation involves a four-step assessment process that requires disclosure of one's drug use to the prison warden, among others — without any guarantee of approval of participation.
Those approved to participate are subject to daily "visual inspections" by security staff to verify accountability for the equipment distributed, breaching prisoners' confidentiality regarding their participation.
CSC's own interim evaluation revealed extremely low rates of participation, and as of September 2021, only 9 (out of 43) federal prisons were identified by CSC as having a functioning PNEP, despite CSC's initial pledge to fully implement the program by August 2020.
Of those 9 prisons, CSC identified only 43 people participating in the program across four prisons, and only two participants in one women's prison.
Conclusions/Next steps: CSC's PNEP is seriously compromised by design deficiencies, low uptake and the indefinite suspension of its roll-out during the COVID-19 pandemic. There is an urgent need to continue monitoring the program and address barriers to participation. If the benefits of a PNEP are to be realized, prisoners need easy, confidential access.

PESAF04

Investigating premarital HIV testing in Indonesia and its risks of human rights violations

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Background:
HIV programs in Indonesia often place families as the basis of intervention, believing that resilient families will result in HIV prevention. One of such policies is mandatory premarital HIV testing. This study aims to review this intervention, using the lens of human rights.
Methods: This research uses a qualitative method, combining literature reviews and interviews. The literature includes laws, modules, and healthcare guidelines. In total, the researchers collected 218 laws, spanning across different provinces in Indonesia. The data was then complemented by online interviews with stakeholders and civil societies.

Results: Fourteen regions have local regulations imposing premarital HIV testing. There are four forms of the regulation, namely
1. Mandatory premarital HIV testing,
2. Recommendations for testing through the provision of information,
3. Mandatory health check, or
4. Mandatory notification to the partner of HIV status.
Most of them require people who want to get married to provide health certificates detailing their health alongside recommendations from doctors.
Clients are often not free to opt-out of the test since the Office of Religious Affairs or the Civil Registration Service is only willing to marry people when there is a health certificate. This requirement results in marriage cancellations in Gorontalo, Banyuwangi, and Jakarta.
In addition, when the test result is positive, a health certificate will be issued only when the person is willing to undergo ARV therapy. The test also does not guarantee one's right to privacy since the notification of HIV status is conducted together with the partner.
Some displayed a lack of risk mitigation efforts, causing reluctance to undergo the test for fear of being abandoned or experiencing violence, especially when the positive is the bride.
Conclusions: Mandatory premarital HIV testing, which has been implemented in various regions in Indonesia and used different strategies to compel people to take HIV tests poses many human rights issues. It is not based on voluntariness that should be the underlying principle of HIV tests. Without comprehensive risk mitigation strategies, this effort could potentially result in violence, stigma and discrimination from partners—counterproductive to the idea of 'making the family resilient'.

PESAF05

An advocacy campaign to increase access to Post-Exposure Prophylaxis (PEP) through expansion of pharmacist scope of practice in North Carolina

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Background: Since 2010, North Carolina AIDS Action Network (NCAAN) has led HIV/AIDS treatment and prevention advocacy/lobbying efforts in North Carolina (NC), a state in the southern United States. In 2020 & 2021, NCAAN partnered with Southern AIDS Coalition (SAC) to lead an educational advocacy campaign to increase access to Post Exposure Prophylaxis (PEP) through policy change that expands the scope of practice of NC pharmacists to prescribe PEP medications.

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Description: In 2020 there were 1,079 reported new cases of HIV in NC, with disproportionate incidence in rural counties. There are five rural counties without a family physician, while licensed community-based pharmacists often serve as the main healthcare contact. There is a negative correlation between the availability of specialized medical services and the rate of incidence of HIV transmission. Therefore, expanding the scope of practice of pharmacists to prescribe PEP promotes public health outcomes in rural and other under-resourced communities.
To build support for pharmacists prescribing PEP, NCAAN hosted virtual advocacy trainings and organized an advocacy day at the NC state capitol. Advocates met with NC legislators to discuss HIV trends and barriers to care in rural communities. Professional lobbyists worked closely with key legislators and medical associations to ensure expansion of pharmacist scope of practice was included in key legislation introduced in 2021.
Lessons learned: Based on interviews with key legislators, lobbyists, and stakeholders, NCAAN and SAC's joint advocacy efforts were critical to the passage of NC State House Bill 96 (2021), which allows NC pharmacists to prescribe PEP and other public health-promoting agents. Framing PEP as medication to be prescribed with urgency and demonstrating support from other medical providers was politically strategic and helped generate support from more conservative, Republican lawmakers.
Conclusions/Next steps: In 2022, NCAAN and SAC will partner with the NC Association of Pharmacists to train pharmacists on their new authority in the expanded scope of practice, with a focus on rural communities that have limited PEP prescribers. This successful advocacy case study serves as a model for other states and communities on advancing policy change to increase access to HIV biomedical prevention tools.

PESAF06
Community-led law making in HIV field as a Ukrainian know-how

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Background: Over the last 15 years only 3 laws regulating issues in the field of HIV and key populations were adopted in Ukraine. While the world is moving forward protecting the rights of PLHIV and other KPs legislation of our country slows down this progress being an impediment to innovations in medicine, decreasing retention in treatment and strengthening stigma towards PLWH and KPs.
Description: For acceleration of changes in laws most relevant to the interests of PLWH and other key affected populations a Parliamentary platform „Fight for Health" was established.
Taking into account the fact that key populations should be the final beneficiary and the main drivers of the mentioned changes the structure of the Platform includes:
9 Platform Community representatives collecting the needs of key communities (WHIV, AHIV, ex-prisoners, SW, MSM, TG, PWID; PLHIV, TB) on national level;
Lawyers developing draft bills and recommendations on changes to legal acts for submission to the Parliament, Ministries, CCM and regional Coordinating bodies based on needs ofKPs;
Coordination of activities is conducted by supervisors. Supervisors communicate with Parliamentarians, Ministries, CCM presenting proposals of communities;
27 Community representatives taught to collaboration with Legislative, Executive and Judicial branches of power at the School of Power.
Technical support visits to regions improve communication with communities and regional coordinating bodies at regional level.
Lessons learned: The intervention has had the following outcomes:
5 draft bills for decriminalization of sex work with 1 parliamentarian as a lead;
3 draft bills for decriminalization of HIV with 3 parliamentarians as leads;
A draft bill on HIV and a Parliament Committee with participants representing key communities;
A draft bill on decriminalization of drug use;
A concept and draft bill on civil partnerships for LGBTIQ+;
communities of Trans* people, women and adolescents living with HIV developed and submitted their proposals for changes in the regulatory documents of different relevant Ministries.
Community of ex-prisoners initiated penitentiary system reform on all levels.
Conclusions/Next steps: Further work of the Platform will focus on passing of the draft bills by the Parliament of Ukraine and strengthening capacity of KPs in law making initiatives improving their lives and protecting their rights.

PESAF07
Strengthening youth voices for change: the role of advocacy training in enhancing meaningful engagement of young people in youth-friendly HIV service provision

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Background: In 2020, 3.3 million young people were living with HIV. To meet the global goal of ending AIDS by 2030, specific attention must be paid to adolescents and youth living with HIV, including provision of youth-responsive programming and meaningful engagement of adolescent and youth voices in decision-making fora.

Description: The Elizabeth Glaser Pediatric AIDS Foundation, supported through ViiV Breakthrough Partnership project, led an advocacy training for 20 adolescent leaders living with HIV in Uganda. The three-day virtual training was designed according to principles of adult learning and adapted to suit participants through adolescent-friendly language, case studies, and real-life scenarios. Digital tools were utilized to adapt to challenges of the COVID-19 pandemic.

Through a range of activities targeting diverse learning styles, the training focused on three key themes:

1. The foundations of advocacy,
2. Planning for advocacy, and;
3. Building advocacy skills.

Lessons learned: All participants noted in a post-training assessment an increase in knowledge about advocacy and the development of new skills relevant to their work as youth leaders living with HIV which includes advocating for other adolescents living with HIV, providing peer psychosocial support and bridging the gap between the health care system and the client.

Additionally, the advocacy training was found to refine participants' strategies and skill for engaging decision makers and stakeholders, including service providers.

Using their new skills, all participants successfully organized World AIDS Day activities, related to community sensitization, increasing psychosocial support visibility, and ending stigma. Furthermore, 25% of participants have since engaged with media programs to advocate for improved HIV service delivery.

Conclusions/Next steps: A virtual advocacy training, tailored specifically to adolescents and youth, was found to be an appropriate and effective method for building youth advocacy capacity, engaging adolescent voices in the HIV response, and enhancing youth-friendly service provision.

Further research is needed to confirm durability of knowledge and skills gained, and investigate the long-term impacts on youth advocacy amongst participants.

Moving forward, a skills-based advocacy training targeted at adolescents and youth should be replicated to increase the substantive participation of this population in HIV policy development and program implementation.

Laws and policies regulating access to drugs and medical devices (including intellectual property and trade regimes, competition law and price regulation)

PESAF08

Community based organizations: the lastest bastion against abusive patent protection on life saving medicines. The experience of Make Medicines Affordable consortium

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Background: For decades, patent barriers have been identified as key barriers for access to HIV, TB, and HCV treatment and more recently to COVID-19 vaccines and antivirals in several low and middle-income countries (LMICs). The use of the TRIPS flexibilities to remove patent barriers remains important component of ensuring access to affordable medicines. Today, civil society and community based organizations (CBOs) play a major role in challenging patents on medicines by filing patent oppositions.

Description: Since 2015, under Make Medicines Affordable (MMA) campaign, an ITPC-led consortium of 13 CBOs managed to file 69 challenges on patent applications and patents aimed at protecting monopolies on 10 ARVs (31 oppositions), 5 DAAs (10 oppositions), 3 COVID (12 oppositions) and 4 anti-TB medicines (16 oppositions) in 13 countries in Latin America, EECA and SEA regions. Oppositions were prepared by local multidisciplinary teams consisting of community representatives (PLHIV, people affected by TB, HCV and COVID), lawyers and chemists. Targeted medicines were informed by consultation with local community organizations and health officials.

Lessons learned: Although filing patent opposition remains a technical process, it is possible to build local CBOs capacity to file oppositions, as it was done by MMA consortium since 2019 in Belarus, Georgia, Guatemala, Kazakhstan, Kyrgyzstan, Moldova. In order to define most optimal target medicines wide consultation with local CBOs in combination with clinical trials, patent and market intelligence work was beneficial. To develop strong patent oppositions arguments that will succeed it is also important to conduct capacity building of local chemists involved in patent oppositions work.

Conclusions/Next steps: While patent oppositions to succeed take some time to prepare and support - from months to several years, - and not all of oppositions succeed, from 69 oppositions - 17 oppositions (25%) led to positive outcomes generating significant savings for state budgets in relevant countries (estimated $472 million savings in Argentina, Brazil, Thailand, Ukraine), which led to significant increases in HIV and HCV treatment programs coverage. Thus, among TRIPS Flexibilities patent oppositions is one of the most accessible and impactful options that can be used by local community organizations.

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PESAF09

Brazilian civil society role in opposing HIV/AIDS patent applications: 15 years of experience defending the Brazilian public health system

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Background: The Brazilian IP law foresees the possibility of any interested party to fill patent oppositions (PO), i.e., document with technical grounds for a given patent application to be rejected. ABIA/GTPI is a civil society coalition that challenges the impact of pharmaceutical monopolies on public health.

Over the last fifteen years (2006-2021), ABIA/GTPI have filed PO against eight patent applications related to six ARVs, to prevent unfair monopolies.

Methods: We analyze the PO's outcome using: patent application granting or rejection, price reductions: yes or not, entry or not of generic versions. We set three categories:

a. Total success,

b. Partial success, and;

c. Unsuccessful.

Total success means the patent was rejected, and there was a price reduction.

Partial success means when the patent is rejected without the entry of generics or a price reduction.

Unsuccessful means when the patent was granted, there was no entry of generic competitors nor price reduction.

Results:

Drug	Patent #	Rejected or granted?	Price reduction?	Generic entry?
TDF	PI0406760-6	rejected	Yes	Yes
TDF+FTC	PI9811045-2 PI9816239-0	rejected	Yes	Yes
Lopinavir +ritonavir	PI1101190-4 PI0413882-1	rejected rejected	Yes	Yes
Dolutegravir	PI0610030-9	granted	Yes	No
TAF	PI0112646-6	granted	-	No
Atazanavir	PI0509595-6	granted	Yes	No

Table 1

Two drugs were total successes (TDF and TDF+FTC), three were partial success (atazanavir, dolutegravir, and lopinavir/ritonavir) and one was unsuccessful (TAF). Considering TDF and TDF+FTC: rejected patent applications and price reduction with the entry of generics.

Granted patents for atazanavir and dolutegravir without generic entry, but with price reductions after PO. In the Lopinavir/ritonavir case, the patent application was rejected, but there was no price reduction or generic entry. The unsuccessful case was TAF.

The patent was granted, but there was no purchase by the Brazilian government until the date of the data collection.

Conclusions: The study showed total or partial success in five out of six cases. The ABIA/GTPI's POs have helped to decrease prices for five ARVs. We highlight the TDF and TDF+FTC cases. TDF was the backbone of treatment in Brazil for almost a decade. The purchase of generic versions of TDF contributed to the universal access public policies. Generic version of TDF+FTC, used in PrEP, made possible this policy's expansion.

Conceptualizing political drivers and their impacts

PESAF10

Where the world stands on the '10-10-10' social enabler policies: mapping and analyzing progress and gaps

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Background: Criminalization and stigma/discrimination against PLHIV and key and marginalized populations create significant barriers to achieving global HIV/AIDS goals. In the 2021 UN Political Declaration on HIV/AIDS, governments committed to address these barriers by adopting the UNAIDS-proposed '10-10-10' societal enabler targets.

We identify seven laws/policies that countries should adopt in order to create a legal/policy environment conducive to achieving these targets. They are: non-criminalization of

1. Same-sex sex,
2. Sex work,
3. Drug use,
4. HIV transmission;
5. Creation of national human rights institutions; and legal protections against
6. Discrimination and
7. Gender-based violence.

Methods: Using data from Georgetown University's HIV Policy Lab on 194 countries, we analyze whether each country has adopted each law/policy. We then map and compare policy adoption globally and across regions and other country groupings to describe the current state of policy progress towards the 10-10-10 goals and pinpoint where policy change is needed.

We then apply network analysis methods to map the co-occurrence, clusters and intersections of different sets of policies to deepen and quantify our "3D" understanding of how policies overlap and interact in practice and pinpoint underlying cross-national patterns in policy adoption.

Finally, we investigate correlations between the adoption of different combinations of social enabler policies and key HIV outcomes (e.g., % of PLHIV who know their status, are on ART, and are virally suppressed).

Results: Preliminary descriptive findings indicate that, on average, countries have adopted three of the seven laws/policies (range: 1-6 policies). The adoption rates for individual policies vary widely; whereas 78% of countries have gender-based violence laws, only 3% and 4% do not criminalize drug use and sex work, respectively.
Regionally, we observe the greatest variation in adoption rates for: same-sex sex non-criminalization, where WCENA and EECA countries have significantly higher rates of policy adoption than other regions; and HIV transmission non-criminalization, where sub-Saharan African countries have significantly higher rates of policy adoption than other regions.
Conclusions: These findings will further deepen our understanding of the patterns and political, economic, and geographic factors that shape policy adoption and the importance of supportive law/policy environments in the fight against HIV. They also inform policy change advocacy around the 10-10-10 targets.

Political violence and armed conflict

PESAF11
Violence against people living with HIV in the context of Colombian armed conflict: findings from a report presented to the Colombian Truth Commission

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Background: In 2020 a group of scholars and activists with expertise on HIV and LGBTQ rights from *Universidad de los Andes*, *Caribe Afirmativo* and *Red Somos* allied to produce a report on how internal armed conflict affected people living with HIV -PLHIV- in Colombia. It was produced as a research document and as a tool for advocacy.
The report was submitted to the Colombian Truth Commission in 2021. It intended to make visible that PLHIV were victims of internal armed conflict due to stigma, vulnerability and lack of institutional support. They were targeted as individuals and as a specific social group for the benefit of armed actors.
Methods: The report describes the patterns of violence suffered by PLHIV from 1995 up to 2020. It has a focus on the experiences of victims, taking a distance from the more common epidemiological approaches in the analysis of interactions between war and HIV (Elbe, 2000; Whiteside, 2006; McInnes, 2009).
17 in-depth interviews to HIV activists in 11 municipalities and a meta-analysis of newspapers and human rights reports were conducted.
Results: Two main patterns of violence were identified:
i. Direct violence, including threats, forced displacement and selective killings of PLWHIV;
ii. Indirect violence, including threats, persecution of marginalised populations and gendered and sexualised violence against PLHIV or collectives associated with HIV, as sex workers and LGBTQ people.
Those patterns acted against individuals with real or assumed diagnostic of HIV and their organisations; occurred all through the period of analysis and in urban and rural areas; were committed by armed actors from all sides of political spectrum in their disputes for territorial control; affected the fabric of community based activism and leadership that has been pivotal in the response to HIV and its consequences.
Conclusions: Findings suggest that a crime of persecution was committed against PLHIV and their organisations during internal armed conflict.
Results are useful in advocacy for rights of PLHIV and in the implementation of transitional justice measures, particularly for truth telling mechanisms such as truth Commissions; in the prosecution of perpetrators; and in the design of reparatory measures for PLHIV victims of armed conflict.

Sexual- and/or gender-based inequalities, inequities and violence

PESAF12
Benchmarks and beyond: assessing and addressing structural barriers to rights-based HIV programming for LGBTI key populations in six African countries

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Background: There has been significant progress in reducing new HIV infections and related morbidity and mortality in the general population in Africa, but much less among key populations. According to UNAIDS, by 2019, approximately 50% of new infections in Sub-Saharan Africa were among key populations and their sexual partners.
There is considerable evidence that stigma, discrimination, criminalization and social exclusion make key populations more vulnerable to HIV infection and less likely to access and use relevant services.
The UNDP's Inclusive Governance Initiative commissioned baseline research in six African countries to benchmark progress and barriers to the rights and inclusion of LGBTI people in national laws, policies, strategies and programmes, in the health sector and beyond.

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Methods: One of the aims of this research is to contribute to strengthening the structural conditions for effective and accessible HIV programming for diverse LGBTI populations in Africa. Country baseline studies were undertaken in Namibia, Zimbabwe, Angola, Côte d'Ivoire, Kenya and the Democratic Republic of Congo.

Data was gathered through desktop research, targeted policy analysis, and stakeholder interviews in each country including with state decision-makers (in the judiciary, parliament, the executive, national human rights institutions and government departments) and leaders from development agencies and civil society.

Results: Given the links between regulatory environments and HIV outcomes for key populations, structural interventions are necessary to tackle human rights barriers to HIV related services. Extrapolations from the country-level studies identified key policy and legislative developments where significant progress has been achieved, along with critical entry points for the further reduction of structural impediments to effective HIV programming for key populations. Structural factors that perpetuate the vulnerabilities of LGBTI people are also identified, along with potential strategies to address those.

Conclusions: The findings, which highlight contextual dynamics and explore their implications for structural reform efforts, are highly relevant to understanding LGBTI rights and inclusion as a critical step to reducing structural obstacles facing key populations. This provides contextually relevant knowledge to inform advocacy, law reform, and country and multi-country programming, aimed at challenging the structural dynamics that undermine right-based HIV prevention, care and support for marginalised groups in Africa.

Humoral immunity (including broadly neutralizing antibodies), Antibodies and B cells

PESUA14

Administration of the broadly neutralizing, CD4-binding site targeting antibody VRC07-523LS in dual- and triple-antibody combinations with 10-1074, PGT121, and/or PGDM1400: impact on pharmacokinetics compared to VRC07-523LS administration alone

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Background: Broadly neutralizing antibodies (bnAbs) are a promising approach for HIV-1 prevention. In the only bnAb HIV prevention efficacy studies to date (the AMP studies), intravenous (IV) administration of a CD4-binding site targeting bnAb (VRC01) prevented infection only against highly susceptible viruses. BnAb combinations, particularly using bnAbs engineered for increased potency, breadth, and half-life, may be more efficacious. Clinical data assessing potential interactions between co-administered antibodies is limited.

We present the first interim clinical data comparing VRC07-523LS pharmacokinetics (PK) when administered alone (HVTN 127/HPTN 087) versus co-administered with other bnAbs that bind non-overlapping HIV Env epitopes, including V2-binding PGDM1400 and V3-binding 10-1074 and PGT121 (HVTN 130/HPTN 089).

Methods: Healthy, HIV-uninfected adults received VRC07-523LS administered IV at four-month intervals alone at five timepoints (n=29; 2.5, 5, or 20 mg/kg), sequentially in dual combination with 10-1074, PGT121, or PGDM1400 at one timepoint (n=18; 20 mg/kg), or in triple combination with PGDM1400 and PGT121 at two timepoints (n=9; 20 mg/kg). VRC07-523LS serum concentration kinetics were measured by anti-idiotype Binding Antibody Multiplex Assay. A two-compartment population PK model was fitted to estimate PK parameters.

Results: Participant demographics and baseline characteristics were similar between the two studies. Predicted VRC07-523LS levels from the fitted model were in excellent agreement with observed levels (see Figure).

Small changes in clearance, intercompartmental clearance, and peripheral volume PK parameters of VRC07-523LS were observed with co-administration of 10-1074, PGT121, and/or PGDM1400. VRC07-523LS alone has an estimated median half-life of ~54.8 days versus ~52.3 days when co-administered with 10-1074, PGT121, and/or PGDM1400 (p=0.55).

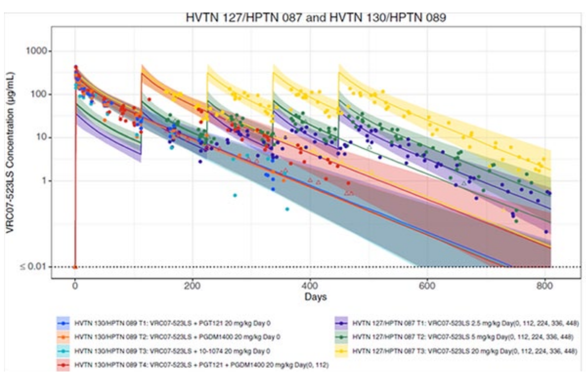

Figure. Observed VRC07-523LS individual binding antibody concentrations with the 90% prediction interval from the population-level model. The shaded area is the 90% prediction interval from the population-level model and the solid line is the median predicted concentration. The points are individual-level observed concentrations. The triangles are participants who missed at least one infusion.

Conclusions: VRC07-523LS appears to be cleared more rapidly with a larger peripheral volume when co-administered with 10-1074, PGT121, and/or PGDM1400 versus administration alone. With an insignificant impact on elimination half-life, these data suggest that the duration of PK coverage for single anti-HIV bnAbs, like VRC07-523LS, is preserved in bnAb combinations.

Mucosal immunity

PESUA15

Depot-medroxyprogeterone acetate use alters immune modulation function of cortisol and thyroid hormones

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Background: Depot-medroxyprogesterone acetate (DMPA) is a popular contraceptive; however, some studies report an association with increased HIV susceptibility through mechanisms that are not yet fully elucidated.

We investigated the plasma levels of cortisol, free triiodothyronine (T3), and free thyroxine (T4) and the correlation of these hormones with markers of inflammation and CD4+ T cell activation in female sex workers and non-sex workers using DMPA and those not using any hormonal contraception (non-HC).

Methods: From a group of Kenyan female sex workers (FSW (51)) and non-sex workers (60), blood and cervical cytobrush-derived T cells were phenotyped using flow cytometry. Cytokine concentrations were determined in plasma and cervico-vaginal lavages and comparisons were done between the women according to contraception use.

Results: In FSW, we observed that DMPA users (27) had significantly higher levels of Cortisol (p<0.001), T3 (p<0.001), and T4 (p<0.001) while in non-sex workers, only T3 levels were significantly higher in DMPA users (p<0.01). Correlation of the three hormones revealed a direct relationship in the levels of T3 and T4 (r=0.67, p< 0.001), T3 and Cortisol (r=0.54, p=0.002), and T4 and Cortisol (r=0.56, p= 0.001) in DMPA-using non-sex workers.

Increased cortisol levels in DMPA-using FSW inversely correlated with plasma MIP-1β levels but had no effect on genital cytokines. In FSW non-HC users, cortisol and T4 positively correlated with MIP-1α at the genital tract. T3 positively correlated with plasma IL-8 and sCD40L in DMPA-using FSW but had no impact in non-HC users.

Cortisol had an inverse correlation with the proportion of mucosal CD4+CCR5+ T cells in DMPA-using FSW, yet positively correlated with the same cells in non-HC users. Levels of T4 correlated with the per cell expression of CD69, and the proportions of CD4+ T cells expressing CD38, HLADR and CCR5 in DMPA-using FSW.

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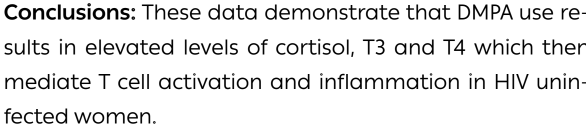

Conclusions: These data demonstrate that DMPA use results in elevated levels of cortisol, T3 and T4 which then mediate T cell activation and inflammation in HIV uninfected women.

This effect of DMPA may be an important yet under investigated mechanism by which the contraceptive DMPA may influence susceptibility to HIV in women.

Host cellular factors and viral mechanisms of HIV/SIV persistence and latency

PESUA16

Role of the *pol*gene enhancer in HIV-1 transcription and replication in myeloid infected cells

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Background: There is increasing evidence for the physiological relevance of myeloid HIV-1 reservoirs such as brain microglia and urethral macrophages. However, the molecular mechanisms of HIV-1 expression in myeloid infected cells are still poorly understood. The HIV-1 intragenic *cis*-regulatory region (IRR) located in the *pol* gene exhibits an enhancer activity on the 5'LTR promoter. The IRR possesses multiple binding sites for various cellular transcription factors (TF).

Here, we characterized several of these binding sites and their functional involvement in the IRR-mediated control of HIV-1 gene expression in monocytes/macrophages.

Special emphasis was put on studying several binding sites for the myeloid-specific PU.1 TF, known to be a pioneer factor inducing the opening of heterochromatin in enhancers.

Methods: Electrophoretic Mobility Shift Assays (EMSAs), chromatin immunoprecipitations, infection studies, ATAC-seq (Assay for Transposase-Accessible Chromatin sequencing).

Results: We demonstrated the *in vivo* recruitment of PU.1 to the HIV-1 intragenic enhancer in latently-infected cell lines from myeloid origin. We physically characterized *in vitro* PU.1 binding to the different intragenic PU-boxes by EMSAs and identified mutations abolishing PU.1 binding without altering the underlying amino acid sequence of the *pol*gene. We demonstrated the role of the PU-boxes in the IRR enhancer activity, its chromatin remodeling and HIV-1 epigenetic regulation, in concert with other IRR transcription factor binding sites. We showed the importance of intragenic TF binding sites in HIV-1 replication using mutated viral particles in single-round infection experiments using primary monocytes-derived macrophages isolated from uninfected individuals. To overcome HIV- 1 persistence, targeted approaches for each specific cellular reservoir are needed.

As a proof-of-concept, we revealed the potential therapeutic application of a specific inhibitor interfering with PU.1 binding as a new anti-HIV-1 approach.

Conclusions: The HIV-1 intragenic enhancer brings an additional factor in an already complex network of regulators affecting the level of HIV-1 transcription. Such complexity could allow a finer-tuned regulation that might find its purpose when HIV-1 transcription needs to be moderately or transiently modified within different cellular and chromatin environments. The cell specificity of the IRR in HIV-1 gene expression regulation opens new avenues for HIV cure approaches targeting the heterogeneous cellular and tissue latent reservoirs of virus.

PESUA17

Role of UHRF1 in HIV-1 transcriptional regulation

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Background: DNA methylation is one of the epigenetic mechanisms involved in HIV-1 latency. The latent 5'LTR methylation profile is heterogeneous in latency model cell lines and in patient cells where it increases with the duration of cART.

We have previously demonstrated that 5-Azadeoxycytidine (decitabine) treatment, an inhibitor of DNA methylation, resulted in variable levels of HIV-1 reactivation

in latently infected T-cell lines and in *ex vivo* patient cell cultures. Nevertheless, the mechanisms mediating HIV-1 latency through DNA methylation remain unclear.

Methods: Sodium bisulfite sequencing, Electrophoretic mobility shift Assay, ChIP-qPCR, RNA interference, GFP fluorescence FACS, p24 ELISA and purification of primary cells from HIV+ patient blood.

Results: Using latently infected J-Lat cell lines, displaying different integration sites, we showed that decitabine-induced reactivation of HIV-1 was accompanied by differential DNA demethylation profiles at the 5'LTR, occurring at specific CpG positions, termed DDMP (*Differentially De-Methylated Positions*).

Interestingly, we showed that UHRF1 (Ubiquitin-like with PHD and Ring Finger domain 1) bound *in vitro*to several of these DDMPs through different binding modalities where DNA methylation was either non-essential, either essential, or enhancing UHRF1 binding.

Moreover, since UHRF1 was originally identified as an CCAAT/enhancer binding protein (C/EBP), we were able to show *in vivo* recruitment of UHRF1 to four C/EBPs motifs localized in the 5'LTR independently of DNA methylation, in both cell line and primary cell models for HIV-1 latency. UHRF1 depletion through RNA interference induced an increase in HIV gene expression accompanied by global DNA and histone demethylation of the 5'LTR .

We showed that UHRF1 repressed HIV-1 in absence and presence of Tat, independently of 5'LTR DNA methylation. Pharmacological inhibition of UHRF1 in PBMCs isolated from aviremic cART-treated HIV+ individuals reactivated expression of HIV-1 RNAs.

Conclusions: We demonstrate an important role in HIV-1 latency of UHRF1 which binds to multiple sites throughout the 5'LTR in a methylation-dependent and -independent manner. As UHRF1 is known to maintain heterochromatic profiles during replication, our results suggest its involvement in HIV-1 latency by maintenance of the 5'LTR methylation and other mechanisms. In this regard, UHRF1 constitutes a new therapeutic target for HIV cure strategies.

Identification, characterisation and Quantification of HIV/SIV reservoirs and rebounding virus

PESUA18

In vivo and *in vitro* evidence for infection of naïve CD4 T cells with CCR5-tropic HIV

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Background: Historically, the field of HIV research has largely ignored the viral reservoir in naïve CD4+ T cells, due to lower HIV DNA levels compared to memory subsets. Our analysis reveals unique proviral sequences within naïve CD4 T cells suggesting that the naïve reservoir is distinct from the memory reservoir. The naïvereservoir represents a unique hurdle because it is persistent, diverse, and resistant to immune clearance. It may also serve to replenish the more differentiated memory reservoir.

Curiously, we detected CCR5-tropic HIV in naïve cells in Persons Living with HIV (PLWH) using computer algorithms to determine tropism. Given that naïve T cells appear to lack the CCR5 co-receptor, we first wanted to determine tropism phenotypically *in vivo* and then explore mechanisms of naïve infection *in vitro*.

Methods: We tested the *in vivo* tropism bystimulating sorted naïve CD4 T cells (distinguished as CD95-, CD45RA+, CCR7+, CD27+) to release virus at limiting dilution from PLWH on antiviral therapy. Tropism of HIV RNA+ supernatants were then determined by infecting cells engineered to express CCR5 or CXCR4.

We next investigated *in vitro* conditions that promote naïve infections. We infected mixtures of CD4 subsets, as well as pre-sorted naïve cells alone with a CCR5-tropic HIV utilizing fibroblast reticular stromal cells to preserve the naïve phenotype.

Results: We showed CCR5-tropic HIV can be isolated from naïve CD4 T cells of PLWH by performing infection studies with out-growth virus in the presence and absence of CCR5 inhibitors.

We also found CCR5-tropic infection occurred *in vitro* in phenotypically naïve cells when CD4+ T cells were infected in bulk, but not when naïve cells were pre-sorted and then infected. Thus, memory T cell reversion or transient upregulation of CCR5 expression may provide a mechanism for CCR5-tropic naïve infection which may be promoted by cellular interactions that occur in the lymph node milieu.

Conclusions: We present *in vivo* and *in vitro*data that CCR5-tropic infection occurs in naïve cells.

Additionally, we developed an infection model that promotes naïve infection, potentially by reversion. This model can be utilized to explore mechanisms that underlie naïve infection and for preclinical studies to probe the naïve reservoir.

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PESUA19

High prevalence of HIV persistence in CSF of adolescents and young adults with perinatally-acquired HIV and cognitive impairment in the IMPAACT 2015 study

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Background: HIV persistence in the central nervous system (CNS) may be an important barrier to cure/remission strategies and may impact long-term cognitive outcomes in adolescents and young adults with perinatal HIV (AYAPHIV). IMPAACT 2015 systematically examined AYAPHIV with cognitive impairment and receiving effective antiretroviral therapy (ART) to quantify HIV persistence in blood and cerebrospinal fluid (CSF).

Methods: AYAPHIV (13-30 years old) with cognitive impairment and on suppressive ART were consented and enrolled into IMPAACT 2015, an IRB-approved U.S.-based cross-sectional, multi-site, exploratory, observational study. Cognitive impairment was defined as NIH Toolbox Fluid Cognition composite standard score >1 S.D. below the normative group mean.

Participants underwent lumbar puncture (LP), phlebotomy, and hair collection. CSF and blood were measured for HIV-RNA and HIVpol/gag-DNA and 11 biomarkers of inflammation and neuronal injury. Hair was used to quantify ART exposure levels. Exact binomial confidence intervals (CIs) were calculated, and 41 comparisons evaluated with Wilcoxon rank sum tests.

Results: Among 24 enrolled participants, 22 underwent LP, and 20/22 (91%) had successful CSF collection. 18 participants met ART suppression criteria, and had plasma HIV-RNA <20 copies/ml from entry through the day of LP. 9/18 (50%) were cisgender females and 14/18 (78%) were Black. Median (range) age was 20 years (13-27), time on ART 18.3 years (8.0-25.5), CD4 count 701 cells/mm^3 (143-1342), and Fluid Cognition T-score 68 (53-80). HIV-DNA was detected in PBMCs in all participants. In CSF, 2/18 participants had detectable HIV-RNA, one of whom was quantifiable (5.6% 95% CI (0.1%, 27.3%)) and HIVgag and/or pol-DNA was detectable in 13/18 (72% 95% CI (47%, 90%)).

Detectable HIV-DNA in CSF was associated with higher levels of HIVpol-DNA copies in PBMCs (medians 227, 27 per million cells, p=0.04), and trended with lower scores on a Fluid Cognition subtest measuring Inhibitory Control and Attention (medians 49, 65 p=0.09). Measured biomarkers and ART levels were not statistically associated with presence of detectable HIV-DNA in CSF.

Conclusions: Findings from IMPAACT 2015 suggest that the CNS is a site of HIV persistence in the majority of AYAPHIV with cognitive impairment, warranting further evaluation in pediatric HIV treatment and eradication studies.

PESUA20

Subtype A1 and D HIV-1 proviral genome landscape in Rakai, Uganda

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Background: Whether various HIV-1 subtypes have similar reservoir profiles, such as the frequencies of intact proviruses and extent of clonal expansion, remains a major knowledge gap in cure research. Here, we describe and compare near-full-genome DNA sequences of subtype A1 and D HIV-1 and their associated recombinant forms observed in Rakai, Uganda.

Methods: Blood was collected from 7 male and 16 female participants with chronic HIV-1 who were virologically-suppressed for >1-year. Resting CD4+ cells were negatively selected from total PBMC (CD69$^-$/CD25$^-$/HLA-DR$^-$) and extracted for DNA. Total HIV-1 DNA levels were quantified via *gag*-specific droplet digital PCR, followed by limiting dilution, nested near-full-viral-genome PCR (HXB2 638-9632) and Illumina sequencing. Viral genome-intactness was assessed using a previously published software suite HIVSeqinR adapted for non-B HIV subtypes.

Results: We obtained 607 near-full-genome HIV-1 DNA sequences after sampling ~two million cells per individual. Among the 23 donors, subtype distribution was 4 A1, 9 D, 9

A1/D and 1 A1/C/D. Intact genomes were relatively rare and made up <1.6% to 33%, whereas clonal expansion was detected in both intact and defective genomes and made up <2-14% (intact) and <3-70% (defective) of the intrahost viral DNA population. Total HIV-1 DNA load per million CD4 cells, relative proportions of intact genomes, proportions of clonally expanded genomes, and proportions of hypermutated genomes did not differ among subtypes (Kruskal-Wallis all p>=0.1) and did not differ by sex (Mann-Whitney all p>=0.2).

Large deletions were significantly less frequently observed in *gag* relative to reverse transcriptase, RNaseH, integrase, *vif, vpr, vpu,*and *env* (intra-host median 50% *gag-retained* versus 18-35% other genes, Mann-Whitney p=0.0004-0.03). Among all the defective genomes, 85% (A1), 87% (D), 87% (A1/D), 79% (A1/C/D) lacked one or both of the Intact Proviral DNA Assay (IPDA) psi/*env* primer binding sites, whereas 100% of intact genomes in this study contained both regions.

Conclusions: Similar to subtype B reservoirs reported in the literature, persisting HIV DNA pools in subtypes A1, D, A1/D and A1/C/D had high proportions of defective genomes and/or had undergone clonal expansion. Future research should explore whether re-activatability differs across HIV-1 subtypes and utilize these sequence data to validate IPDA for non-B HIV-1.

Strategies to reduce/eliminate viral reservoirs

PESUA21

The LRA HODHBt synergizes with IL-15 to enhance the cytotoxic capacity of HIV-specific CTL

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Background: More potent "shock and kill" therapeutics are likely needed to achieve reductions in HIV reservoirs. We previously showed that 3-hydroxy-1,2,3-benzotriazin-4(3H)-one (HODHBt) enhances IL-15-mediated HIV reactivation in cells from people living with HIV (PLWH), by increasing occupancy of STAT5 on the HIV-LTR. Since IL-15 can also enhance CD8+ T-cell effector functions through STAT5 activation, we hypothesized that HODHBt would also synergize with IL-15 to enhance cytotoxic functions of HIV-specific CD8+ T-cells.

Methods: CD8+ T-cells from 9 HIV-negative donors were treated with HODHBt and IL-15, and assessed by flow cytometry for phosphorylation of STAT-1, -3, and -5, and expression of Granzymes A (GZMA) and B (GZMB), Perforin and Granulysin. GZMB ELISpots were performed on PBMCs from 14 PLWH – suppressed on ART for an average of 10.9 years - stimulating with peptide pools spanning Gag, Pol, Nef, Env, or CMVpp65, with or without IL-15 and HODHBt. Secreted cytokines were measured in supernatants using the CorPlex Human Cytokine Panel 10-Plex array.

Results: HODHBt alone increased STAT-1 phosphorylation (p=0.031) but did not increase STAT-3 or STAT-5 phosphorylation, nor expression of GZMB, GZMA, perforin and granulysin. Relative to IL-15 alone, CD8+ T-cells treated with IL-15 and HODHBt showed increases in phosphorylation of STAT-1 and STAT-5 (p=0.031) but not STAT-3, as well as expression of GZMB (p<0.001). HIV-specific GZMB-releasing responses were enhanced by treatment with HODHBt in combination with IL-15, relative to medium only as follows: Gag 6.8-fold (p=0.005), Pol 6.8-fold (p=0.005), Nef 12.8-fold (p<0.001), and Env 3.7-fold (p=0.438, ns). These were substantially increased relative to enhancements with IL-15 alone (IL-15+HODHBt/IL-15+DMSO) Gag 2.4-fold (p<0.001), Pol 1.8-fold, (p<0.001), Nef4.3-fold, (p<0.001), and Env 2.6-fold, (p<0.001). HODHBt alone did not increase background (no peptide) above IL-15 alone.Across all conditions, except CMV stimulation, GZMB was significantly positively correlated with cytokines IFNγ (r=0.89, p<0.001) and IL-22 (r=0.73, p<0.001) by CorPlex.

Conclusions: HODHBt synergizes with IL-15 to significantly enhance HIV-specific cytotoxic T-cell responses in *ex vivo*-PBMCs from ART-treated PLWH.

Our results highlight that pharmacologic enhancement of IL-15 mediated STAT activation can be a therapeutic strategy with the potential to enhance both the 'shock' and the 'kill' components of strategies aimed at depleting HIV reservoirs.

PESUA22

Productively-infected CD4 T cells are resistant to ADCC mediated by non-neutralizing antibodies

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Background: The conformation of the HIV-1 envelope glycoprotein (Env) substantially impacts antibody recognition and antibody-dependent cellular cytotoxicity (ADCC) responses. In its unliganded form, the Env samples a "closed" conformation that is preferentially recognized by broadly-neutralizing antibodies (bNAbs). CD4 engagement drives Env into the "open" CD4-bound conformation, preferentially targeted by non-neutralizing Abs (nnAbs). The virus prevents exposure of CD4-induced epitopes by downregulating CD4 via Nef and Vpu. Despite sig-

nificant advances on the understanding of HIV resistance to ADCC, the capacity of nnAbs to mediate ADCC against productively-infected cells remain controversial.

Methods: We used a multiplexed viral RNA detection by flow cytometric fluorescent *in situ*RNA hybridization (RNAflow-FISH) technique to characterize cell populations targeted by bNAbs and nnAbs in the context of primary CD4+ T cells infected with a primary HIV-1 isolate or isolated from HIV-1-infected individuals.

Results: Productively-infected cells are recognized by bNAbs, efficiently downregulate CD4, express high levels of Nef and p24 proteins and are enriched in HIV-1 mRNA ($CD4^{-}p24^{+}Nef^{+}HIV\ mRNA^{+}$).

In contrast, cells targeted by nnAbs are CD4-positive, express little or no p24 and are negative for Nef expression and HIV-1 mRNA ($CD4^{+}p24^{-}/p24^{low}Nef^{-}HIV\ mRNA^{-}$).

Moreover, cells recognized by nnAbs are *env* mRNA negative, suggesting that they represent cells coated with either shed Env and/or non-infectious viral particles. As expected, we observed that CD4 downregulation precedes the expression of HIV-1 late transcripts, thus confirming that the $CD4^{+}p24^{low}Nef^{-}HIV\ mRNA^{-}$cells targeted by nnAbs are not part of the viral replication cycle.

Finally, we found that *ex vivo* expanded CD4+ T cells isolated from HIV-1-infected individuals are sensitive to ADCC mediated by bNAbs but resistant to those mediated by nnAbs.

Conclusions: Our results demonstrate that productively-infected cells are resistant to nnAbs. This information is important for the development of immunotherapy-based strategies aimed at targeting and eliminating productively-infected cells.

Immune responses to SARS-Cov2

PESUA23

Longer intervals between SARS-CoV-2 infection and SpikeVax doses improve the neutralization of different variants of concern

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Background: Optimal time to administrate COVID-19 vaccines after natural infection is a matter of debate. This study aims to evaluate the humoral immune response elicited against the variants of concern (VOCs) alpha, beta, and delta in convalescent and naïve people vaccinated with SpikeVax (Moderna).

To evaluate the effect of extending the vaccination schedule we compared the impact of immunization 1-3 months versus 4-12 months after the natural infection in recovered patients.

Methods: Sera from 66 health care workers were collected at pre-vaccination, at pre-boost, and at post-boost. A total of 31 out of the 66 participants had a documented prior history of SARS-CoV-2 infection, including 17 (53.1%) lately-infected (LI) within three months before vaccination and 14 (43.7%) with early infection (EI) documented from 4 to 12-months before vaccination.

Antibody-mediated immune responses were assessed by three commercial immunoassays and a SARS-CoV-2 lentiviral-based pseudovirus neutralization assay.

Results: Levels of immunoglobulins (Ig) to SARS-CoV-2 were lower in naive participants at post-boost as compared with convalescents after a single dose of SpikeVax ($p<0.05$). In recovered patients, after two vaccine doses total Ig to RBD were higher in EI (21,618 BAU/ml; 95% CI: 18,092-25,831) as compared to LI (10,219 BAU/ml; 95% CI: 7572-13,792 BAU/ml) ($p<0.001$). These differences were also observed for anti-trimeric spike IgG levels and anti-spike IgA.

The SARS-CoV-2 neutralization titer 50 (NT50) observed in EI was consistently higher than in LI against VOCs alpha, beta, and delta. Specifically, after the second dose of SpikeVax, the geometric mean NT50 against alpha were

6306 (95% CI: 4548-8743) for EI and 2575 (95%CI: 1737-3817) for LI; 2607 (95% CI: 1614-4211) vs 922 (95% CI: 553-1536) for beta, and 4991 (95% CI: 3319-7506) vs 1795 (95% CI: 1135-2838) for delta.

These levels involve fold reductions in NT50 of 2.4-, 2.8-, and 2.8-fold against alpha, beta, and delta respectively in LI in comparison with the EI group.

Conclusions: Increasing more than 4 months the interval between SARS-CoV-2 infection and the immunization with mRNA-based vaccines generates a more efficient humoral immune response against VOCs. This improvement can be related with the time requested to mount a strong recall memory B cell response.

PESUA25

Unvaccinated individuals admitted to the ICU due to fatal COVID-19 showed progressive decay of unresponsive cytotoxic cells

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Background: Individuals admitted to the ICU due to critical COVID-19 show an ineffectual cytotoxic activity against SARS-CoV-2. We determined whether this impaired cytotoxic activity could be restored in PBMCs from individuals with critical and fatal COVID-19.

Methods: 23 patients with critical COVID-19 admitted to the ICU were divided in two groups according to the outcome: Exitus (n=13) or Survival (n=10). Blood samples were collected every 10-15 days during 80 days of hospitalization. Cytotoxic activity against SARS-CoV-2-infected Vero E6 cells was analyzed after co-culture (2:1) with PBMCs treated or not with IL-15 (0.13µL/mL) 48h.

Results: 1) Median age was 65.0 (IQR 62.0-69.0) and 63.0 years (IQR 59.0-68.5) in Exitus and Survival groups, respectively. 73.9% individuals were men with dyslipidemia (52.2%), hypertension (40.1%), and/or diabetes mellitus (26.1%).

2) Mean length of hospital stay was 65.3 (SD: 37.1) and 68.1 days (SD: 29.3), respectively, whereas mean length of ICU stay was 53.8 (SD:30.6) and 46.3 days (SD: 23.3). 3) Cytotoxic activity against SARS-CoV-2 of PBMCs in the Exitus group increased 1.9-fold (p=0.0313) after 21-35 days of hospitalization, but this response decayed steadily until the fatal outcome (*Figure 1*).

In the Survival group, cytotoxic activity was 5.6-fold (p=0.0290) higher than the Exitus group at days 21-35 and it increased steadily until days 36-50. 4) Treatment with IL-15 increased cytotoxic activity of PBMCs in both groups but it remained 6.2-fold (p=0.0303) lower in the Exitus group after 21-35 days. 5) CD8 count increased 2.1-fold (p=0.0409) in the Exitus group (t=0) and remained enhanced until the fatal outcome.

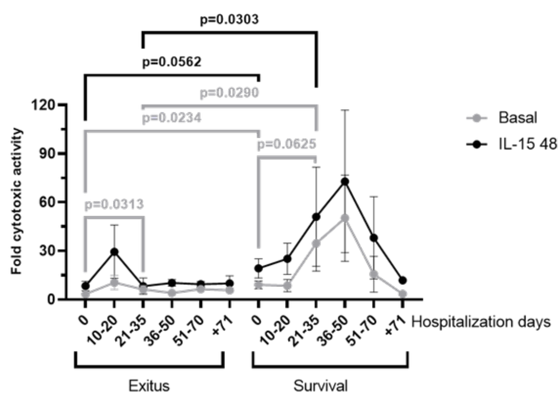

Figure 1. Measurement of cytotoxic activity against SARS-CoV-2 of PBMCs from individuals with critical (Survival) and fatal (Exitus) COVID-19 during 80 days of hospitalization in the ICU, in the presence (black) or the absence (grey) of IL-15.

Conclusions: Individuals with fatal COVID-19 showed increased levels of CD8 with impaired cytotoxic activity that were unresponsive to IL-15-induced proliferation. The reactivation of this impaired cytotoxic response appears to be essential to avoid a fatal outcome and has to be considered to develop new strategies against critical COVID-19.

PEMOA30

Persistent AP-1-induced immune activation during early SARS-CoV-2 infection revealed by simultaneous single-cell epigenetic and gene expression profiling

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Background: SARS-CoV-2 induces cytokine response dysregulation and immune dysfunction. What remains unclear is how cytokine signaling shapes immune responses during early SARS-CoV-2 infection when adaptive immunity is developing.

Our goal is to identify immune pathways that shape the early development of adaptive immune responses in COVID-19 patients.

Methods: We performed paired single-cell transcriptomic and epigenomic profiling at two time-points of early SARS-CoV-2 infection to determine immune signatures of acute infection and epigenetic drivers that underpin immune response dynamics. PBMC samples from Yale IMPACT cohort were collected from four moderate to severe COVID-19 patients at two early time-points (n = 3 for Week 1 and n = 3 for Week 2 after symptom onset, including 2 participants having paired blood sampling at both time points) and from two healthy controls (n = 2). Using paired scRNA-Seq and scATAC-Seq, we captured transcriptomic and epigenomic profiles in the same single cells to

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identify chromatin accessibility changes as a potential mechanism for the surge and decline of immune responses elicited during acute SARS-CoV-2 infection. Using bioinformatic approaches, we identified heterogeneous immune cell populations, determined dysregulated immune pathways through gene set enrichment analysis, and connected RNA expression profiles with chromatin co-accessible landscapes.

Results: We captured transcriptomic and epigenomic profiles of 34,954 single cells and identified paired transcriptional and epigenetic landscapes. We found that SARS-CoV-2 infection induced an early surge in IL-2, IL-6, IFN-α, IFN-γ, and SMAD-dependent TGF-β responses at Week 1 that declined at Week 2 in adaptive immune cells (CD4+ T, CD8+ T, and B cells).

In contrast, we found steady increase in AP-1-induced immune responses that persisted at Week 1 and 2 in adaptive immune cells despite convalescence. Expression levels of the AP-1 transcription factors *JUN* and *FOS* were upregulated in tandem with increased chromatin accessibility at the AP-1 binding sites and increased expression of host genes epigenetically regulated by AP-1 signaling, such as MAP kinase activation genes (*PPIA* and *ADAP1*), *NFKB1*,and the CXCR5 ligand *CXCL13*.

Conclusions: Our finding suggests that AP-1 signaling shapes early adaptive immune responses during early stages of acute SARS-CoV-2 infection.

PEMOA31

HIV skews the B cell response to SARS-CoV-2 toward extrafollicular maturation

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Background: HIV dysregulates the B cell compartment affecting the nature and quality of the memory B cell, antibody secreting cell (ASC) and resulting antibody response to infections. Understanding the B cell response to COVID-19 in people living with HIV (PLWH) could explain the increased morbidity, reduced clearance and intra-host evolution of SARS-CoV-2. We compared the B cell response to SARS-CoV-2 infection in PLWH and HIV negative patients.

Methods: Our cohort from Durban, KwaZulu-Natal, South Africa comprised primarily of mild to moderate COVID-19 severity and was recruited during the first wave of the pandemic, in July 2020. Most HIV positive patients were on effective ART (n = 28), of which five were HIV viremic, and 32 were HIV negative. Patient blood samples were collected weekly for five weeks from symptom onset and positive diagnostic swab. Peripheral blood cells (PBMC) were isolated for B cell phenotyping by flow cytometry using three phenotyping panels to assess maturation, homing and regulatory populations.

Results: Using an unbiased tSNE analysis we observed a coordinated B cell homing response after infection. The ASC frequency associating with disease severity; where class switched memory and transitional B cells associated with resolution of disease. PLWH had lower germinal center (GC) homing capacity and class switched memory responses.

In stark contrast to HIV negative patients, the COVID-19 B cell response in PLWH had pronounced EF activity, despite only mild to moderate disease. This included expanded activated double negative (DN2) and activated naïve responses. In turn the higher early plasma blast frequencies also supported an active EF pathway in PLWH. The SARS-CoV-2 specificity of the EF response was confirmed using viral spike and RBD bait proteins.

Conclusions: HIV primes an EF B cell response to COVID-19 even with mild to moderate disease, contrasting with the response in HIV negative patients. This suggests a potentially suboptimal B cell response to infection in PLWH. These results could explain the reduced antibody affinity and B cell memory responses in PLWH and support future studies aimed at monitoring both responses, especially considering new SARS-CoV-2 variants and vaccine dosing for optimal protection in PLWH.

PEMOA32

The impact of delta and omicron variants in the T-cell response to mRNA vaccination in people living with HIV

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Background: SARS-CoV-2 variant-of-concern (VOC) B.1.1.529 (Omicron) presents a surprisingly large number of mutations in its spike protein escaping from antibody neutralization.

Thus, it is important to determine how well T-cell responses perform against different variants including Omicron in people living with HIV (PWH) following SARS-CoV-2 vaccination.

Methods: Pilot study of PWH who underwent blood tests for humoral and cellular immunogenicity testing 30 days after the second dose of a SARS-CoV-2 mRNA vaccine. Humoral (anti-S IgG, CLIA) and IFN-γ producing T-cell responses to spike peptides of the ancestral virus, delta, and omicron variants were performed.

Results: Overall, 24 PWH were included. Median age was 53 (interquartile range, IQR, 33-57) years, 71% were male, 4% were obese, and 42% had at least one comorbidity. Median nadir CD4+ count was 287 cells/mm3, and 13% had a previous AIDS diagnosis. Median current CD4+ count was 746/mm3 and HIV-RNA viral load was ≤ 50 copies/ml in all the individuals.

After the second vaccine dose, humoral and T-cell responses to ancestral SARS-CoV-2 were observed in 96% and 92% of PWH, respectively, and were highly correlated (rho=0.657; p<0.01 between IgG and CD4+).

Additionally, there was a high correlation between T-cell responses to the ancestral strain, delta, and omicron variants. However, the magnitude of CD4+ and CD8+ T-cell responses were significantly lower to delta (-13%, p=0.004; and -32%, p=0.007, respectively), and to omicron variants (-40%, p<0.001; and -27%, p=0.012,respectively) compared to the ancestral strain. In any case, 75% and 87%% of PWH continued to have CD4+ and CD8+ T-cell responses to the omicron variant. As expected, those with the best cellular response to delta or omicron variants were those with the highest humoral response (rho=0.62, p<0.01 for CD4+, rho=0.42, p=0.03 for CD8+).

Conclusions: We report that IFN-γ producing T cell responses against delta and omicron spike peptides, although preserved in an important proportion of PWH, were significantly lower than to the ancestral strain in individuals who received two doses of SARS-CoV-2 mRNA vaccine.

The clinical importance of these findings should be further evaluated, as the presence of T-cell responses could avoid the progression to severe disease in most cases.

PEMOA34

Seroprevalence of cross-reactive anti-SARS-CoV-2 antibodies in pre-COVID-19 samples collected from Cameroonian women during pregnancy and at delivery

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Background: TheCOVID-19 Pandemic still causes significant morbidity and mortality worldwide. Significantly more cases of COVID-19 and its related deaths are reported in High-Income countries compared to Low- and Middle-Income Countries (LMIC). This might be due to pre-existing cross-reactive antibodies to other human coronaviruses in the LMIC setting. It is also unclear whether these antibodies circulate amongst pregnant women and can be acquired transplacentally.

Our study aimed to determine the seroprevalence of cross-reactive anti-SARS-CoV-2 antibodies in pre-COVID-19 samples collected during pregnancy and at delivery from women in three settlements in Cameroon.

Methods: A total of 1,711 archival plasma from pregnant women and 84 cord blood plasma collected from 2009 to 2019, were tested for COVID-19 using the Abbott Panbio ™- COVID-19 IgG/ IgM rapid diagnostic test that captures antibodies to viral N protein. Samples from 128 (7.5%) women were collected from the rural area, 1115 (65.2%) in the peri-urban area, and 468 (27.3%) in an urban area at different antenatal visits. Samples from the peri-urban area were split into pregnancy (293) and delivery (876) arms. Data was summarized in proportions.

Results: Overall, 13.7% (235/1711) of pregnant women were seropositive for COVID-19, among whom, 27.3% (35/128) were from rural areas, 14.3% (160/1115) from peri-urban areas, and 22.0% (103/468) from urban areas. During pregnancy 22.8% (8/35), 2.2% (1/46), 30.09% (31/103) of the women were IgG positive while 2.8 % (1/35), 2.2% (1/46), 3.9% (4/103) of pregnant women were seropositive for both IgG and IgM in rural areas, peri-urban and urban respectively. At delivery, the seroprevalence of IgG, IgM, and both were 13.1% (15/114), 83.3% (95/114), and 3.5% (4/114) respectively. Transplacental transfer of cross-reactive anti- SARS-CoV-2 IgG was found in 5.9 % (5/84) of these women.

Conclusions: This study provides evidence of existing of cross-reactive anti-SARS-CoV-2 antibodies among pregnant Cameroonian women in the Pre-COVID-19 era and

that these antibodies can be transferred transplacentally. However, the protective nature of these antibodies should be investigated further.

Neuropathogenesis

PESUA24
Chronic CNS inflammation in ART-suppressed SIV-infected rhesus macaques is associated with immune activation and viral persistence in the gut

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Background: HIV-associated neurocognitive disorders (HAND) affect ~30% of virally suppressed people with HIV (PWH), suggesting that HAND pathogenesis may be driven by mechanisms other than direct viral replication in the brain including chronic systemic inflammation.
However, to date, the precise viral dependent and independent changes to the brain of virally suppressed PWH remains unclear.
Methods: Here we comprehensively characterised the CNS reservoir and immune environment of SIV-infected (SIV+) rhesus macaques during acute (n=4), chronic (n=16) or ART-suppressed SIV infection (n=11). Multiplex immunofluorescence for markers of SIV infection (vRNA/DNA) and immune activation was performed on frontal lobe and matched gut tissue. CNS and gut inflammation was also measured in an SIV-uninfected model of chronic colitis, validated to mimic SIV-induced gut damage, to determine the effect of gut damage on neuroinflammation independent of SIV infection.
Results: SIV+ animals contained viral DNA+ cells that were not reduced in the brain or gut by ART (P<0.05), supporting the presence of a stable viral reservoir in these compartments. SIV+ animals had heightened levels of activated astrocytes (GFAP+) and microglia (Iba1+) producing antiviral (Mx1 and/or TGF-β1) and oxidative stress markers (SOD1) as well as reduced blood-brain barrier integrity than uninfected animals, and these dysfunctions were not abrogated by ART (P<0.05 for all). Interestingly, measures of CNS immune activation and blood brain barrier integrity correlated with gut, but not CNS, viremia and immune activation in virally suppressed animals, supporting the role of systemic inflammation as a contributor to neuroinflammation.
Furthermore, SIV-uninfected animals with experimentally induced gut damage showed a similar immune activation profile in the brain to animals with SIV, supporting the role of chronic gut damage as an independent source of neuroinflammation.
Conclusions: Collectively, we show that ART-suppressed SIV+ rhesus macaques exhibit impaired blood brain barrier integrity and heightened microglial and astrocyte activation which is associated in part with viral reservoirs and immune activation in the gut.

Neurologic disorders (e.g. CNS malignancies)

PESUB14
Low frequency of activated T cells in people living with HIV, aviremic under treatment, and presenting neurocognitive disorders

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Background: Prevalence of HIV-associated neurocognitive disorders (HAND), either asymptomatic neurocognitive impairment (ANI), minor neurocognitive disorder (MND), or HIV-associated dementia in people living with HIV (PLWH) under efficient combined antiretroviral therapy is high. Here, we looked for links between immune activation and HAND in an HIV-population over 55 years age with controlled HIV-disease.
Methods: This study is an ancillary study of the French national ANRS EP58 HAND 55-70 project (Clinical trial registration NCT02592174). We recruited 71 PLWH with a mean (±SD) age of 62±2.4 years; CD4 count, 553±249 cells/µL; CD4:CD8 ratio, 1.03±0.58; duration of infection, 20.0±7.7 years under efficient treatment during at least two years (<50 copies/mL and less than 2 viremic blips). We used the Frascati criteria to classify neurocognitive performances. We analyzed 31 peripheral blood soluble and cell surface markers of T cell, NK cell, monocyte, endothelial cell activation and inflammation by ELISA and flow cytometry. We performed two hierarchical clustering analyses, one at a participants' level, and the other one at a markers' level.

Results: We found that 53% of PLWH were classified as HAND (ANI, n=21; MND n= 12). The proportion of CD8+ (44.3±10.3 vs. 52.6±10.4 %, p = 0.002), activated (HLA-DR-positive) CD4+ (19.6±10.3 vs. 28.9±14 %, p = 0.002) and activated (HLA-DR-positive) CD8+ (19.6±10.3 vs. 28.9±14.0 %, p = 0.025) T cells were lower in participants with ANI or MND than in participants without HAND. The double hierarchical clustering identified six different immune activation profiles in participants.

Participants with one of these profiles, also characterized by a low frequency of circulating activated CD4+ T cells, presented more frequently ANI and MND (odds ratio 8.8 [95% CI 1.0-77.0], p = 0.041) than the participants with other profiles.

Conclusions: We did not find a positive correlation between HAND and circulating markers of immune activation in ageing PLWH. Our observation of a low percentage of activated T cells in peripheral blood raises the interesting hypothesis of a recruitment of these lymphocytes into the central nervous system.

Mental health (including depression and psychiatric manifestations) and HIV

PESUB16

The burden of and risk factors for maternal mental health and the impact on parenting by mothers living with HIV in rural Zimbabwe

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Background: Mothers in limited-resource settings, especially those living with HIV, are at increased risk of comorbidities, including mental health disorders. In sub-Saharan Africa, mental health disorders are common in the population living with HIV, yet they remain undetected and untreated. We explored the prevalence of, and factors associated with prolonged depression and parenting stress in HIV positive mothers and their association with parenting behaviour. We hypothesised that prolonged depression leads to stress and hostile parenting.

Methods: We conducted a secondary analysis of a cluster-randomised controlled trial in two districts in Zimbabwe between 2016-2017, enrolling 485 HIV positive mothers of infants. Outcomes included prolonged depression, measured using the 14-item Shona Symptom Questionnaire (and defined as depression at baseline and 12 months follow up) and parenting stress using the Parenting Stress Index Short Form.

We assessed mother-child interaction, maternal social interaction, and health. Logistic regression was used to determine the correlates of prolonged depression and parenting stress.

Results: Overall, 26% of mothers experienced prolonged depression with no difference by the trial group. Risk factors for prolonged depression included being the only adult in the household (aOR=2.49); food insecurity (aOR=1.90); domestic violence (aOR=3.45); mobility problems (aOR=3.77); lack of social support (aOR=1.33) and poor postpartum bonding (aOR=2.52). For those in a relationship, prolonged depression was independently associated with impaired postpartum bonding and lower relationship quality. Overall, 73% of mothers with parenting stress were at risk of symptoms suggestive of prolonged depression. Factors associated with parenting stress included symptoms of prolonged depression and having pain or discomfort. 70% of mothers with prolonged depression had slapped, shaken or spanked their child and it was associated with increased parenting stress.

Conclusions: We found a high prevalence of prolonged depression and parenting stress among HIV positive mothers associated with food insecurity, experiencing pain or mobility problems, being less resilient and having poor relationships and low social support. There is a critical need to address depression and parenting stress both for its own sake and to benefit child outcomes.

Weight gain

PESUB17

DTG associated weight gain: real or perceived? Real world experiences from Zimbabwe

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Background: Dolutegravir (DTG) based regimens have been associated with weight gain in clinical trials. We compared real-world weight changes after starting or switching of treatment for DTG, efavirenz (EFV), and atazanavir (ATV/r) based regimens.

Methods: We included adults (≥18 years) starting or switching (defined as baseline) to EFV, ATV/r, or DTG between 2008 and 2021 at Newlands Clinic, Zimbabwe.

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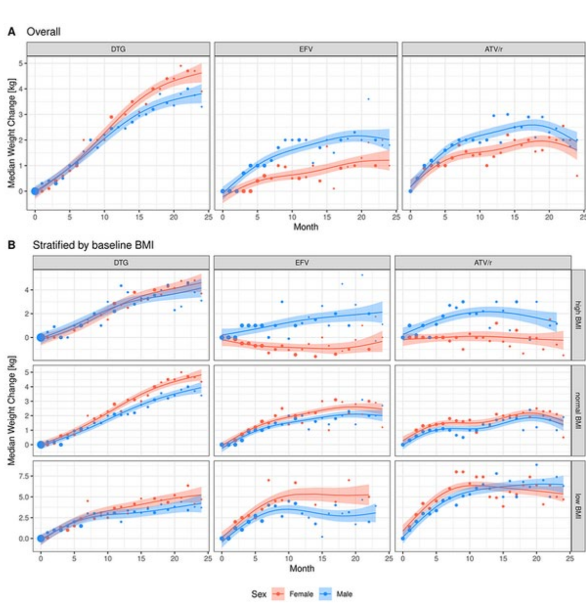
We calculated weight changes for subsequent visits from the baseline weight. We aggregated data by treatment regimen, sex, and month after baseline and calculated median weight change for each data cell.

We analyzed trends in median weight changes after baseline by generalized additive models. We included sex, regimen, and their interaction as fixed effects, and smoothed monthly trends by sex and regimen. We analyzed overall and baseline BMI category (<18.5 "underweight", 18.5-24.9 "normal", ≥25 "overweight/obese") stratified weight gain.

Results: We included 59,564 weight measurements of 7047 adults, with 5342, 1108, and 597 being on DTG, EFV, and ATV/r, respectively. Two years post-baseline, estimated median weight (95% CI) increased by 3.81kg (3.43-4.19), 2.01kg (1.58-2.44), and 1.92kg (1.52-2.31) for DTG, EFV and ATV/r, respectively in males and by 4.63kg (4.24-5.01), 1.21kg (0.81-1.61), and 1.61kg (1.23-2.00) for DTG, EFV and ATV/r, respectively in females (Figure).

Overall, DTG-based regimens showed a strong, almost linear increase in weight over time, with the inflection point towards the end of the two years, while weight gain plateaued with time for ATV/r and EFV-based regimens. For patients underweight at baseline BMI, increases in weight were similar among treatment groups, while normal or overweight/obese patients had substantially larger weight gains with DTG-based regimens.



Conclusions: Patients receiving DTG based regimens had a two- to four-fold weight gain compared to EFV and ATV/r over two years, with little evidence of plateauing of the trend among those in on DTG.

Hepatic complications (e.g., NASH)

PESUB18

Progression of hepatic steatosis in people with HIV on integrase inhibitors

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Background: Hepatic steatosis (HS) is frequent in people with HIV (PWH), due to viral hepatitis coinfection, overweight and antiretroviral therapy (ART). Recent data suggest weight increase in PWH on integrase inhibitors (INIs)-based ART. The effect of this ART regimen on HS progression is not known.

Methods: Fibroscan with controlled attenuation parameter (CAP) was performed in consecutive PWH from the LIVEHIV Cohort in Montreal. Overweight was defined as body mass index>25Kg/m^2. Any grade and severe HS were defined as CAP>270 and CAP>330dB/m, respectively. HS progression was defined as development of any grade HS, or transition to severe HS if CAP<330 at baseline.

We compared incident overweight and HS progression in PWH with and without INIs-based ART. Covariate adjustments for HS progression were evaluated by multivariable Cox regression analysis.

Results: We included 393 PWH (mean age 50yrs, HIV duration 16yrs, BMI 26Kg/m^2; 76% male, 32% with viral hepatitis coinfection, 29% on INIs). Prevalence of any grade and severe HS at baseline was 25% and 7%, respectively.

During a median follow-up of 2.7yrs, incidence rate of overweight was similar in PWH with (28.8 per 100 person-years [PY], 95% CI 23.8-50.5) or without (36.2 per 100 PY, 95% CI 29-45.1) INIs-based ART (log-rank: p=0.50).

Progression of HS between baseline and last visit was observed in both PWH with and without INIs-based ART (see Figure). Progression rate of HS was 14.3 (95% CI 11.5-17.9) and 11.9 (95% CI 7.1-20.9) per 100 PY, in PWH with or without INIs-based ART (log-rank: p=0.46).

In multivariable analysis and after adjusting for HIV duration, overweight (adjusted hazard ratio 2.91, 95% CI 1.33-6.36) was associated with progression of HS while INIs-based ART was not.

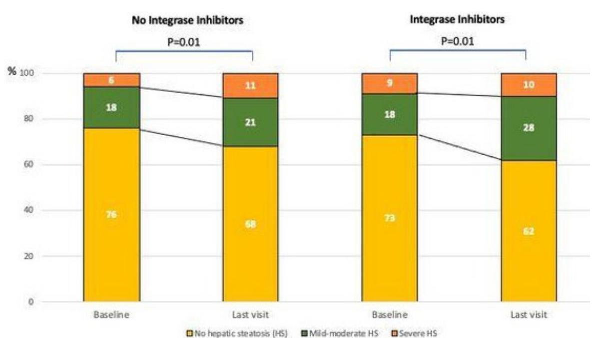

Figure.

Conclusions: PWH on INIs-based ART did not exhibit accelerated progression of HS. Incident overweight was similarly observed in PWH with or without INIs-based ART. Overweight was associated with HS progression.

ART in acute, first- and second-line therapies

PESUB19

Rapid ART initiation: a four-years observational study

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Background: Rapid initiation of antiretroviral therapy (ART) benefits both people living with HIV (PLWH) and the community. We assessed predictors of virological suppression and adverse outcome in a cohort of newly diagnosed PLWH, comparing rapid ART initiation with other treatment strategies.

Methods: Observational, single center, retrospective study.

The study population was divided into: "same-day ART" (0-3 days post diagnosis/referral), "rapid ART" (4-14 days post-diagnosis/referral), and "early ART" (more than 14 days after diagnosis).

Predictors of virological suppression (HIV RNA < 50 copies/mL) and of adverse outcome (composite of lack of virological suppression, loss to follow up and death) within 24 weeks were analyzed using a binomial regression model.

Results: 116 PLWH were enrolled from January 2018 to December 2021, 33 (28.4%) in same-day ART, 61 (52.6%) in rapid ART and 22 (19.0%) in early ART group; baseline characteristics are shown in image 1.

	Same day ART	Rapid ART	Standard ART	*p*
Age in years: median (IQR)	32 (28-53)	42 (30-53)	47 (35-55)	0.125
Female sex at birth	7 (21.2%)	16 (26.2%)	2 (9.1%)	0.245
Risk factor for HIV infection				0.269
Heterosexual	16 (48.5%)	44 (72.1%)	14 (63.6%)	
MSM	15 (45.5%)	15 (24.6%)	7 (31.8%)	
IVDU	2 (6.1%)	2 (3.3%)	1 (4.5%)	
Italian nationality	26 (78,8%)	40 (65,6%)	14 (63,6%)	0.349
Year of HIV diagnosis				0.029
2018	6 (18.2%)	22 (36.1%)	9 (40.9%)	
2019	15 (45.5%)	12 (19.7%)	5 (22.7%)	
2020	9 (27.3%)	11 (18.0%)	6 (27.3%)	
2021	3 (9.1%)	16 (26.2%)	2 (9.1%)	
Log_{10} HIV RNA: mean (SD)	4,94 (0,90)	4.83 (1.15)	4.95 (1.03)	0.847
T CD4+ (cell/mmc)				0.694
≤ 200	10 (30.3%)	25 (41.0%)	9 (42.9%)	
201-500	12 (36.4%)	18 (29.5%)	8 (38.1%)	
> 500	11 (33.3%)	18 (29.5%)	4 (19.0%)	
CD4+/CD8+: median (IQR)	0.35 (0.20-0.66)	0.36 (0.10-0.66)	0.38 (0.11-0.80)	0.727
AIDS	6 (18.2%)	18 (29.5%)	7 (31.8%)	0.414
HBsAg +	0 (0.0%)	4 (6.6%)	1 (4.5%)	0.327
Available GRT at baseline	28 (84.2%)	47 (77.0%)	19 (86.4%)	0.509
RAMs at baseline GRT	13 (46.4%)	17 (36.2%)	9 (47.6%)	0.577
HIV RNA < 50 copies/mL at 24 weeks	33 (100.0%)	50 (87.7%)	16 (76.2%)	0.020
Loss to follow-up at 24 weeks	0 (0.0%)	4 (6.6%)	1 (4.5%)	0.327
Death at 24 weeks	0 (0.0%)	4 (6.6%)	0 (0.0%)	0.154
Adverse outcome at 24 weeks	0 (0.0%)	15 (24.6%)	6 (27.3%)	0.006

Image 1. Difference between the study groups.

ART: antiretroviral therapy; MSM: men who have sex with men; IVDU: intravenous drug users; AIDS: acquired immunodeficiency syndrome; HBsAg: Hepatitis B surface antigen; GRT: genotypic resistance test; RAMs: resistance associated mutations.

Same day and rapid ART strategies became more used, with two (9.1%) people starting ART more than 14 days after HIV diagnosis in 2021 compared with 9 (40.9%) in 2018. PLWH in the same day ART group showed higher rates of virological suppression and lower rates of adverse outcomes.

AIDS diagnosis (p 0.025) and a longer time between HIV diagnosis and ART initiation (p 0.014) were negatively associated with virological suppression; the same variables were predictors of adverse outcome at multivariate analysis (Image 2).

	Predictors of virological success at 24 weeks						Predictors of adverse outcome at 24 weeks					
	OR	95% CI	p	AOR	95% CI	p	OR	95% CI	p	AOR	95% CI	p
Age in years	0.97	0.93-1.02	0.224				1.02	0.99-1.06	0.210			
Female sex at birth	3.33	0.41-27.20	0.261				0.55	0.15-2.05	0.376			
Risk factor for HIV												
MSM vs heterosexual	2.62	0.54-12.84	0.234				0.32	0.09-1.18	0.087	0.32	0.07-1.41	0.132
IVDU vs heterosexual	0.60	0.01-5.99	0.663				2.42	0.37-15.73	0.356	3.24	0.26-39.80	0.359
Italian nationality	1.57	0.46-5.33	0.472				0.88	0.32-2.41	0.801			
Year of HIV diagnosis	1.54	0.82-2.86	0.174				0.75	0.48-1.19	0.220			
Log_{10} HIV RNA	0.49	0.24-0.99	0.046	0.65	0.27-1.60	0.349	1.79	1.07-2.98	0.026	1.23	0.63-2.38	0.541
T CD4+ (cells/mmc)	2.30	0.97-5.45	0.059	0.65	0.17-2.55	0.539	0.46	0.24-0.89	0.022	1.29	0.35-4.76	0.669
CD4+/CD8+	4.39	0.59-32.5	0.148				0.16	0.03-0.87	0.034	0.58	0.04-8.44	0.694
AIDS	0.11	0.03-0.41	< 0.001	0.10	0.01-0.75	0.025	6.90	2.51-19.26	< 0.001	4.92	1.12-21.52	0.034
HBsAg +	0.16	0.02-1.05	0.056	0.18	0.02-1.57	0.121	3.23	0.51-20.65	0.216			
Time between HIV diagnosis and ART start	0.26	0.10-0.71	0.080	0.24	0.07-0.75	0.014	2.87	1.34-6.14	0.007	3.52	1.39-8.94	0.008
Available GRT at baseline	0.38	0.05-3.15	0.372				2.53	0.54-11.79	0.236			
RAMs at baseline GRT	0.80	0.22-2.84	0.730				1.35	0.49-3.71	0.561			

Image 2. Predictors of virologic success and predictors of adverse outcome at 24 weeks.

ART: antiretroviral therapy; MSM: men who have sex with men; IVDU: intravenous drug users; AIDS: acquired immunodeficiency syndrome; HBsAg: Hepatitis B surface antigen; GRT: genotypic resistance test; RAMs: resistance associated mutations.

Conclusions: Rapid ART initiation is associated with improved clinical outcomes and represents a key strategy to control the HIV epidemic and optimize the health of PLWH.

ART in highly treatment-experienced persons

PESUB20

Ibalizumab long-term efficacy is not impacted by partially active antiretrovirals

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Background: Ibalizumab (IBA) is a long-acting post-attachment inhibitor approved for heavily treatment-experienced (HTE) adults with multidrug resistant HIV-1 failing their current antiretroviral (ARV) regimen. We have previously demonstrated IBA's efficacy in the TMB-301/311 clinical trials. Complex resistance profiles in HTE patients limit the number of fully active agents.

Therefore, partially active ARVs are required to build optimized background regimens (OBR) to maintain suppression. As such, we sought to characterize the complexity of OBR in TMB-301/311 and determine its impact on the durability of response to IBA.

Methods: In TMB-301/311, 40 viremic patients received a 2000 mg loading dose of IBA followed by 800 mg doses every 2 weeks up to 96 weeks. OBR was incorporated 7

days after starting IBA. Baseline resistance mutations were entered into the Stanford database to scale the activity of each ARV in the patient's OBR 0-1. Drug activities were summed to generate a continuous genotypic susceptibility score (CGSS), which was averaged when OBRs were adjusted.
The impact of CGSS on virologic outcomes was evaluated by linear or logistic regression, controlling for baseline viral load and CD4 count.
Results: The study population was 85% male with a median age of 53 and 23 years of HIV infection. Baseline median viral load and CD4 count were 35,350 copies/mL and 73 cells/mm^3, respectively. The median number of drugs in participants' OBRs was 4.
Despite this, the median CGSS of OBR was only 1.58, indicating many partially active agents, the most common being tenofovir. Average CGSS was not associated with decrease in viral load at week 96 (p=0.18), maximal decrease in viral load (p=0.59), or viral suppression (p=0.69).
In addition, no CGSS threshold was associated with virologic outcomes, even after weighting boosted PIs and DTG to account for differences in potency and barrier to resistance amongst ARVs.
Conclusions: The high disparity between the number of drugs in patients' OBR and their median CGSS highlights the challenge of building OBR in HTE patients.
Importantly, IBA remained effective across a range of CGSS scores through week 96, demonstrating the durability of IBA in HTE patients despite combination with partially active agents.

Regimen simplification and switch studies

PESUB21

Efficacy and safety of switching to Dolutegravir/Lamivudine (DTG/3TC) in treatment-experienced, virologically suppressed PLHIV aged ≥50 years: pooled results from the TANGO and SALSA Studies

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Background: As older adults living with HIV (OALHIV) are one of the fastest growing populations, concerns over managing age-related comorbidities and polypharmacy while maintaining virologic suppression highlight the importance of their inclusion in clinical trials. DTG/3TC is an international guidelines-recommended 2-drug regimen demonstrating high efficacy and barrier to resistance. We present pooled TANGO and SALSA efficacy and safety analyses in participants aged ≥50 years.
Methods: Week 48 data from the phase 3 TANGO and SALSA trials evaluating switch to DTG/3TC vs continuing current antiretroviral regimen (CAR) were pooled. Proportions of participants with HIV-1 RNA ≥50 and <50 c/mL (Snapshot, ITT-E) and safety were analyzed by age.
Adjusted mean change from baseline in CD4+ cell count was assessed using mixed-models repeated-measures analysis.
Results: Of 1234 participants, 29% were aged ≥50 years (9% female; 3% aged ≥65 years). At baseline, participants aged ≥50 vs <50 years had greater concomitant medication use (median (range): 2.0 [0-20] vs 1.0 [0-16], respectively) and more comorbidities (86% vs 71%); baseline characteristics were otherwise similar.
Among those aged ≥50 years, 1 (0.6%) DTG/3TC participant and 3 (1.6%) CAR participants developed HIV-1 RNA ≥50 c/mL; proportions with HIV-1 RNA <50 c/mL were high, consistent with overall efficacy (Table). CD4+ cell count increased from baseline in DTG/3TC participants in both age groups.
No participants in the DTG/3TC group had confirmed virologic withdrawal (CVW); 1 participant in the CAR group had CVW (no resistance detected). Proportions of AEs, AEs leading to withdrawal, and serious AEs in DTG participants were similar between age groups.

Parameter	Overall DTG/3TC (N=615)	Overall CAR (N=619)	Overall Adjusted difference (95% CI)	Age <50 years DTG/3TC (N=438)	Age <50 years CAR (N=432)	Age <50 years Adjusted difference (95% CI)	Age ≥50 years DTG/3TC (N=177)	Age ≥50 years CAR (N=187)	Age ≥50 years Adjusted difference (95% CI)
Key efficacy endpoints									
Snapshot HIV-1 RNA ≥50 c/mL, n (%)	2 (<1)	5 (<1)	−0.5 (−1.3, 0.4)	1 (<1)	2 (<1)	−0.2 (−1.0, 0.5)	1 (<1)	3 (2)	−1.1 (−3.2, 1.0)
Snapshot HIV-1 RNA <50 c/mL, n (%)	576 (94)	575 (93)	0.8 (−2.0, 3.6)	413 (94)	402 (93)	1.3 (−1.9, 4.5)	163 (92)	173 (93)	0.1 (−5.4, 5.5)
Adjusted mean change in CD4+ cell count (SE), cells/mm^{3b}	22.4 (7.2)	−2.0 (6.9)	24.4 (4.9, 43.9)	29.0 (8.5)	7.6 (8.2)	21.4 (−1.8, 44.6)	6.3 (13.6)	−24.7 (12.5)	30.9 (−5.2, 67.1)

Key safety endpoints	Overall DTG/3TC (N=615)	Overall CAR (N=618)	Age <50 years DTG/3TC (N=438)	Age <50 years CAR (N=432)	Age ≥50 years DTG/3TC (N=177)	Age ≥50 years CAR (N=186)
Any AE	475 (77)	464 (75)	333 (76)	330 (76)	142 (80)	134 (72)
AEs leading to withdrawal	18 (3)	5 (<1)	11 (3)	2 (<1)	7 (4)	3 (2)
Drug-related AEs	93 (15)	21 (3)	65 (15)	18 (4)	28 (16)	3 (2)
Serious AEs	28 (5)	32 (5)	18 (4)	16 (4)	10 (6)	16 (9)

Adjusted mean change in CD4+ cell count was analyzed using mixed-models repeated-measures analysis adjusted for treatment, visit, age, sex, race, baseline CD4+ cell count, baseline third agent, baseline BMI, treatment-by-visit interaction, baseline CD4+ cell count-by-visit interaction, and study, with visit as the repeated factor; analysis by age groups also adjusted for visit-by-age interaction, treatment-by-age interaction, and treatment-by-visit-by-age interaction. [a]In TANGO, 1 participant was found to be taking a TDF-based regimen and was excluded from the safety population. [b]Median (range) CD4+ cell count at baseline, DTG/3TC vs CAR: overall analysis, 680.0 (133-2089) vs 684.0 (94-1954) cells/mm^3; <50 years group, 685.0 (154-1904) vs 686.0 (94-1954) cells/mm^3; ≥50 years group, 649.0 (133-2089) vs 671.0 (119-1530) cells/mm^3.

Table. Efficacy and safety results from the pooled analysis of the TANGO and SALSA trials by age: ITT-E and safety populations.

Conclusions: Although participants aged ≥50 years used a higher number of concomitant medications and had a greater prevalence of comorbidities, switching to DTG/3TC maintained virologic suppression, demonstrating robust efficacy, a high barrier to resistance, and good safety and tolerability.

Pharmacokinetics/pharmacodynamics/pharmacogenomics and therapeutic drug monitoring

PESUB22

Pharmacokinetics of a simplified subcutaneous lenacapavir regimen versus Phase 2/3 regimen

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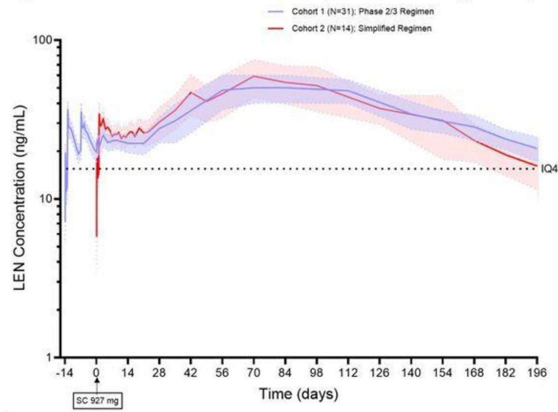
Background: Lenacapavir (LEN) is a potent, first-in-class, HIV-1 capsid inhibitor currently in clinical development for HIV-1 infection treatment and prevention. The ongoing Phase 2/3 studies in people with HIV-1 uses every 6 months subcutaneous (SC) dosing injection with oral loading/lead-in (oral LEN 600 mg on Days 1 and 2, and oral LEN 300 mg on Day 8 followed by SC LEN 927 mg on Day 15 and every 6 months thereafter). While this Phase 2/3 regimen has been shown to be safe and effective, a more simplified regimen (oral LEN 600 mg on Days 1 and 2, with SC LEN 927 mg on Day 1 and every 6 months thereafter) can be more convenient. Our objective was to compare the pharmacokinetics (PK) of the simplified regimen with that of the Phase 2/3 regimen.

Methods: 31 and 14 healthy participants received the Phase 2/3 regimen (Cohort 1) and the simplified regimen (Cohort 2), respectively, in a Phase 1 single subcutaneous dose study. Intensive LEN PK and safety through Day 196 were summarized. PK was evaluated using noncompartmental analysis.

Results: LEN C_{max} (within ±8%) and $AUC_{0\text{-}196\ days}$ (within ±15%) were comparable between regimens. Mean LEN concentrations achieved the efficacy target (inhibitory quotient of 4 [IQ4] =15.5 ng/mL) rapidly and were maintained above IQ4 through the dosing interval. LEN was well tolerated with no Grade 3 or 4 adverse events (AEs), serious AEs or deaths reported. Most common AEs were injection site reactions.



*Blue and pink shaded areas represent 90% confidence interval band for the mean profile for Cohort 1 and Cohort 2, respectively; Horizontal dotted line shows IQ4 of 15.5 ng/mL; Values -14 to 0 on the X-axis represent 14-day oral loading/lead-in period for Cohort 1
#Phase 2/3 regimen (Cohort 1) = oral LEN 600 mg (2x300 mg tablets) on Days 1 and 2, and oral LEN 300 mg (1x300 mg tablet) on Day 8 followed by SC LEN injection (927 mg; 309 mg/mL NaS; 2x1.5 mL) on Day 15
^Simplified regimen (Cohort 2) = SC LEN injection (927 mg; 309 mg/mL NaS; 2x1.5 mL) and 600 mg (2x300 mg tablets) on Day 1, followed by 600 mg (2x300 mg tablets) on Day 2

Figure 1. Mean LEN plasma PK profiles following phase 2/3# and simplified^ Regimens*

Conclusions: LEN concentrations of the simplified regimen were generally comparable to those of the Phase 2/3 regimen. LEN concentrations reached efficacious target rapidly and were maintained through the dosing interval.
These results suggest that the simplified regimen provides similar exposures to the Phase 2/3 regimen and can be utilized as a potential clinical regimen for treatment and prevention of HIV-1 infection.

PESUB23

Simulations for once weekly dosing of oral lenacapavir

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Background: Lenacapavir (LEN), a potent first-in-class inhibitor of HIV-1 capsid function, is in development for thetreatment and prevention of HIV-1 infection. Current data indicates that LEN exhibits near maximal antiviral activity when the lower bound of the 90% confidence interval (CI) of mean C_{trough} are maintained above inhibitory quotient 4 (IQ4) (at least 4-fold greater than the *in vitro* protein adjusted 95% effective concentration).
The objective of this analysis was to utilize a population pharmacokinetic (PopPK) model to simulate various oral weekly dosing regimens of LEN that would rapidly achieve and maintain concentrations above IQ4.

Methods: A 2-compartment PopPK model with first order absorption and linear elimination was previously developed to describe LEN concentration data from multiple clinical studies (384 participants). This model was utilized

to simulate various dosing regimens (loading + maintenance doses) that can achieve efficacious LEN concentrations rapidly and maintain it throughout the dosing interval. Additionally, various scenarios of missed oral doses were simulated to evaluate the forgiveness window.

Results: Simulations showed that an oral loading dose of 600 mg on day 1 and day 2 followed by 300 mg oral once weekly doses maintained the lower bound of the 90% CI of mean C_{trough} above IQ4 (15.5 ng/mL) throughout the dosing interval (Figure 1).

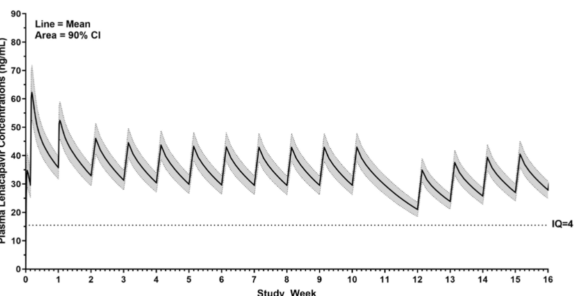

Figure 1. Simulated plasma concentration time profile of oral LEN following once weekly dosing.*

**Profile shows 600mg oral LEN dose on day 1 and day 2 followed by oral LEN 300mg on day 8 and once weekly thereafter with a missed 300mg oral dose at week 11 and continuation of 300mg once weekly from week 12 onwards.*

This dosing regimen reached IQ4 rapidly within 4 hours. In addition, simulations also showed that oral LEN administered once weekly is expected to maintain concentrations above IQ4 with a forgiveness window of up to 7 days after the last missed dose.

Conclusions: Once weekly oral LEN 300 mg is expected to maintain concentrations above IQ4 throughout the dosing interval while allowing for a 7-day forgiveness window after the last missed oral dose. Oral LEN can be developed as part of a complete oral weekly regimen for the treatment of HIV-1 infection.

PESUB26

The first-in-human clinical trial of STP0404, a novel potent HIV-1 allosteric integrase inhibitor

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Background: STP0404 is a novel HIV-1 allosteric integrase inhibitor with potent *in vitro* anti-HIV-1 activities, an *in vitro* resistance profile different from those of other catalytic-site integrase inhibitors, and favorable nonclinical safety and PK profiles.

Methods: The safety and PK of STP0404 was evaluated in a double-blinded, placebo-controlled, randomized phase 1 clinical trial in healthy male adult volunteers with once daily regimen. Single and repeated administration with ascending doses (200, 400, 600 and 800 mg for SAD (Single Ascending Doses), 200 and 400 mg for 10 days for MAD (Multiple Ascending Doses)) and food effect (200 mg) were evaluated through this trial.

Results: A total of 65 male subjects were enrolled (aged 18 to 45 years old). Most AEs were mild (75%, 21/28), headache (9/28) and diarrhea (5/28) were most frequently observed. No severe AE, SAE and withdrawn due to AE observed or occurred during the trial.

PK was linear but less-proportional over the dose ranged administered except for SAD 800 mg. C_{max} were reached at 4 to 6 hours throughout the whole study. Accumulation ratio is around 1.3 at steady-state (D10). Food effect factor was around 1.5 to 2, and resulted in a lower variability in drug exposure. $AUC_{0-\tau}$ and C_{max} in plasma ranged from 23.6 h·µg/mL and 2.05 µg/mL at a 200 mg dose (fasted) to 67.7 h·µg/mL and 6.16 µg/mL at a 200 mg dose (fed, steady-state), respectively.

Steady state was reached between Day 3 and Day 6, The mean $C_{ss,24h}$ with a 200 mg dose was 1.37 µg/mL, approximately 600-fold of the protein-adjusted EC_{95} (0.0022 µg/mL).

The elimination half-life were about 18 to 33 hours throughout the study. MAD 400 mg PK data will be ready before presentation.

Conclusions: STP0404 was well tolerated and its PK profile indicated a once-daily regimen at low dose level given after meal will achieve therapeutic concentrations. A Phase 2a clinical trial of STP0404 is planned to start at 3Q, 2022.

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Long-acting agents and other drug delivery systems (e.g., injectables, implants, dual therapies, microneedle patches)

PESUB24

A study evaluating the safety, tolerability, and pharmacokinetics of a high-concentration (CAB 400mg/ml) cabotegravir long-acting injectable formulation following subcutaneous and intramuscular administration in healthy adult participants

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Background: Long-acting (LA) injectable cabotegravir (CAB200mg/mL) administered intramuscularly is approved for HIV-1 prevention (every-2-months), and treatment (suppressed switch) with rilpivirine (monthly or every-2-months). A high-concentration (CAB400mg/mL) formulation was developed to support less frequent dosing and/or potential self-administration via subcutaneous or thigh injections.

Methods: The safety and pharmacokinetics of single/repeat administration of CAB400 mg/mL 200–800 mg (Cohorts 1–4, 4b, 4h, 5) intramuscularly (*gluteus medius*, *vastus lateralis*) or subcutaneously (abdominal) in healthy adults was evaluated in this ongoing Phase I study (NCT04484337). CAB200 mg/mL active controls (n=1–2 per cohort) were matched by dose or volume. In Cohort 4h, recombinant human hyaluronidase rHuPH20 will be co-administered subcutaneously.

Pharmacokinetic parameters were estimated via non-compartmental analysis and population pharmacokinetic (PPK) modelling. Simulations were performed using PPK model to assess various CAB400mg/mL regimens. Participant-reported outcome measures (PROMs) were also assessed.

Results: Seventy participants received CAB (oral and/or injection) across Cohorts 1–4; 40% were female (sex), 40% were non-White. Median age, weight, and BMI were 34y, 76.9kg, and 26.1kg/m^2, respectively. Overall, safety profiles, including injection site reaction (ISR) frequency, were similar between formulations. CAB400mg/mL ISRs occurred in 92–100% of injections; most were Grade 1–2 (88–94%, maximum grade) (*Table 1*).

	IM gluteal		IM thigh		SC abdominal	
	600mg [1.5mL] (n=18)	400mg [1mL] (n=34)	600mg [1.5mL] (n=11)	400mg [1mL] (n=12)*	600mg [1.5mL] (n=9)	200mg [0.5mL] (n=24)
Any AE, n (%)	17 (94)	33 (97)	11 (100)	12 (100)	9 (100)	24 (100)
Drug-related AEs, n (%)	17 (94)	33 (97)	11 (100)	12 (100)	9 (100)	24 (100)
Drug-related serious AEs, n (%)	0	0	0	0	0	0
Drug-related AEs leading to withdrawal, n (%)	2 (11)	1 (3)	1 (9)	0	0	0
Any ISR AE, n (% of injections)	17 (94)	33 (97)	11 (100)	11 (92)	9 (100)	24 (100)
Grade 1 events, n (% of ISRs)†	8 (47)	19 (58)	4 (36)	4 (36)	2 (22)	6 (25)
Grade 2 events, n (% of ISRs)†	8 (47)	10 (30)	6 (55)	6 (55)	6 (67)	16 (67)
Grade 3 events, n (% of ISRs)†	1 (6)	4 (12)	1 (9)	1 (9)	1 (11)	2 (8)

Note. Participants receiving CAB400mg/mL across Cohorts 1–4 were pooled by administration route and dose. All participants were scheduled to receive two injections. Each participant received a single injection at one dose/administration route (except the one detailed below), with the other injection being at a different dose/administration route (as seen in Table 2). Therefore, the n numbers are event level and represent the number of participants receiving an injection at each dose/administration route.
*One participant received two injections at the indicated dose/volume for injection 1 and 2 and is therefore counted twice.
†Maximum grade reported following each injection. The denominator is the total number of injections leading to ≥1 ISR. There were no Grade 4 or 5 ISRs.
AE, adverse event; CAB, cabotegravir; gluteal,gluteus medius;IM, intramuscular; ISR, injection site reaction; SC, subcutaneous.

Table 1. Safety Summaryof CAB400mg/mL in Healthy Adult Participants (Cohorts 1–4)

Erythema and induration/swelling occurred more commonly after subcutaneous versus intramuscular injections. CAB400mg/mL pharmacokinetics were similar across administration routes (*Table 2*).

Cohort route	Cohort 1 IM gluteal		Cohort 2 SC abdominal		Cohort 3 IM thigh		Cohort 4 IM gluteal	Cohort 4 SC abdominal
Injection dose	Injection 1 600mg (n=18)	Injection 2 400mg (n=16)	Injection 1 600mg (n=9)	Injection 2 200mg (n=8)	Injection 1 600mg* (n=13)	Injection 2 400mg (n=10)	Injection 1 400mg (n=18)	Injection 2 200mg (n=16)
C_{max} (µg/mL)	6.51 (28.6%)	7.10 (25.8%)	6.76 (37.7%)	4.32 (33.5%)	7.14 (69.4%)	5.87 (75.3%)	3.98 (61.6%)	3.03 (21.1%)
Concentration at: Week 4 (µg/mL)	2.78 (45.2%)	2.90 (37%)	1.31 (82.4%)	1.29 (65.3%)	0.784 (198.6%)	1.59 (57.2%)	1.22 (31.7%)	1.26 (38.6%)
Week 8 (µg/mL)	NA	0.745 (131.5%)	NA	0.308 (95.8%)	NA	0.24 (215.6%)	NA	0.328 (13.8%)
LA absorption rate constant (h^{-1})	NA	0.00155 (56.2%)	NA	0.00203 (62.8%)	NA	0.00191 (112.3%)	NA	0.00186 (40.8%)
Terminal half-life (weeks)	NA	2.67 (56.2%)	NA	2.03 (62.8%)	NA	2.16 (112.3%)	NA	2.22 (40.8%)

PK parameters were estimated using noncompartmental analysis. Values displayed are geometric mean (CV%).
*Two participants in Cohort 3 received 400mg instead of 600mg for injection 1, and their plasma concentrations were increased by 50% (dose normalized to 600mg) for estimating PK parameters.
CAB, cabotegravir; C_{max}, maximum plasma concentration post IM injection; gluteal,gluteus medius; IM, intramuscular; LA, long-acting; NA, not applicable; PK, pharmacokinetic; SC, subcutaneous (abdominal); thigh, vastus lateralis.

Table 2. Plasma Pharmacokinetic Parameters of CAB400mg/mL in Healthy Adult Participants (Cohorts 1–4)

CAB400mg/mL C_{max} was higher and half-life was 62% shorter than CAB200mg/mL after adjusting for demographics. CAB400mg/mL administered monthly, regardless of route, was predicted to exceed the plasma concentrations of approved CAB200mg/mL regimens. The conference presentation will include Cohort 4b, 4h, and 5 and PROM results.

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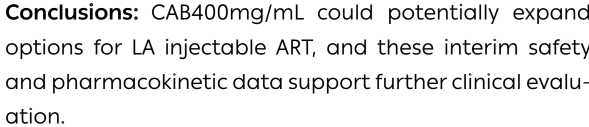

Conclusions: CAB400mg/mL could potentially expand options for LA injectable ART, and these interim safety and pharmacokinetic data support further clinical evaluation.

Adherence

PESUB25

Bridging the gap between patient perceptions and delivered care among people living with HIV in the Asian region

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Background: Client-centered care is recommended for the care of people living with HIV (PLHIV) to improve client retention and treatment adherence. We assessed how Asian PLHIV perceived their personal healthcare needs/priorities were met, and how these beliefs were associated with health-related outcomes.

Methods: 230 PLHIV aged ≥18 years on anti-retroviral therapy (ART) completed the 2019 Positive Perspectives survey from Taiwan (n=55), Japan (n=75), China (n=50), and South Korea (n=50). Using logistic regression adjusting for age, gender, and HIV duration, we explored how having personal health needs met was associated with ART-related perceptions and self-rated health.

Results: Overall, 57.4% perceived their provider met their personal healthcare needs (South Korea, 38.0%; China, 56.0%; Japan, 62.7%; Taiwan, 69.1%). Prevalence of ART satisfaction was 50.0% (South Korea, 34.0%; China, 40.0%; Japan, 54.7%; Taiwan, 67.3%).

However, 27.0% (China, 38.0%; South Korea, 28.0%; Japan, 24.0%; Taiwan, 20.0%) would not discuss treatment concerns with providers believing, "I don't think my main HIV care provider's priorities are the same as mine". Participants perceiving their personal needs were met had higher odds of reporting ART satisfaction (AOR=5.83, 95%CI=3.19-10.64), optimal overall health (AOR=2.98, 95%CI=1.67-5.31), and greater self-efficacy in managing their daily ART (AOR=2.31, 95%CI=1.32-4.04). Yet, over one-fourth of those wanting more involvement in healthcare decisions indicated their viewpoint was not sought by their provider before prescribing new treatments (overall, 29.1%[46/158]; China, 31.1%[14/45], Japan, 25.0%[10/40]; South Korea, 41.4%[12/29]; Taiwan, 22.7%[10/44]). Regional variations were seen in the extent to which PLHIV's concerns were collaboratively addressed with providers.

For example, while Chinese participants reported the highest overall percentage of those who missed ≥one ART dose in the past month because of concerns over long-term impacts of ART (China, 70.0%; South Korea, 42.0%; Taiwan, 29.1%; Japan, 26.7%), Chinese participants reported the lowest percentage of those whose ART had been changed in the past year by their provider to mitigate their concerns about long-term impacts among those with such concerns (China, 4.4%[2/46]; Taiwan, 9.5%[4/42]; South Korea, 10.5%[4/38]; Japan, 25.9%[14/54]).

Conclusions: Improving client-provider relationships may improve care continuum and treatment satisfaction. ART planning should be done proactively and collaboratively between PLHIV and providers to deliver person-centered care.

PEMOB27

Persistent low-level viremia in the era of dolutegravir in four African countries

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Background: HIV programs frequently use a viral load (VL) <1000 copies/mL as the threshold for VL suppression (VLS). Consequently, persistent low-level viremia (pLLV), VL between 50-999 copies/mL on at least two consecutive measurements, is often undetected even though it has been associated with worse clinical outcomes.

Methods: The African Cohort Study (AFRICOS) enrolls people living with HIV (PLWH) who are engaged in routine HIV care in Uganda, Kenya, Tanzania and Nigeria. Semiannually, participants come to study sites for more intensive evaluation, including quantified VL testing.

In this analysis, we included participants who were taking tenofovir/lamivudine/dolutegravir (TLD) for at least three months and had two subsequent VL measurements; we used the two most recent VL measurements. We calculated frequencies for VLS using the number of participants

with two VL measurements as the denominator. We documented participants with VL >1000 copies/mL and stratified results for those with VL <1000 copies/mL by: both VL measurements <50 copies/mL, pLLV, one VL 50-999 copies/mL and one VL <50 copies/mL.

We further stratified results by site, age group, and sex. We used Pearson's Chi-squared and Fisher's exact tests to compare frequencies.

Results: Between January 2013 and November 2021, 1439 participants were eligible. Across all sites, 1388 participants had VL <1000 copies/mL on both tests, 28 (2.0%) of whom had pLLV. Three participants were above 1000 copies/mL on both VL tests, 39 had one VL <50 copies/mL and one VL ≥1000 copies/mL, and 9 had one VL 50-999 copies/mL and one VL ≥1000 copies/mL. Prevalence of pLLV, by strata, was highest in Nigeria, among young adults, and among males (Table 1).

	N	Both tests <50 c/mL*	p-value	Persistent low-level viremia*	p-value	One test <50 c/mL and one test 50-999 c/mL*	p-value
Uganda	193	165 (85.5%)	<0.001	3 (1.5%)	<0.001	21 (10.9%)	<0.001
Kenya	777	704 (90.6%)	<0.001	5 (0.6%)	<0.001	48 (6.2%)	<0.001
Tanzania	264	195 (73.9%)	<0.001	7 (2.6%)	<0.001	49 (18.6%)	<0.001
Nigeria	205	130 (63.4%)	<0.001	13 (6.3%)	<0.001	48 (23.4%)	<0.001
15-24 years	64	43 (67.2%)	<0.001	3 (4.7%)	0.091	10 (15.6%)	<0.001
25-49 years	844	679 (80.4%)	<0.001	19 (2.2%)	0.091	119 (14.1%)	<0.001
50+ years	531	472 (88.9%)	<0.001	6 (1.1%)	0.091	37 (7.0%)	<0.001
Male	717	575 (80.2%)	0.005	19 (2.6%)	0.054	94 (13.1%)	0.061
Female	722	619 (85.7%)	0.005	9 (1.2%)	0.054	72 (10.0%)	0.061

Table 1.

Conclusions: Studies to investigate associations with unsuppressed and pLLV are needed in these populations, including documentation of differences in viral genomics (e.g., viral subtypes and drug resistance mutations) and local participant demographic factors associated with adherence.

Surveillance of HIV in key populations

PESUC18
Disproportionate HIV burden among key populations in sub-Saharan Africa: national estimates of population size, HIV prevalence, and ART coverage

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Background: The Global AIDS Strategy 2021-2026 calls for equitable programme access to end HIV/AIDS by 2030. Robust HIV data among key populations (KP) are important for monitoring and reducing inequality in the global HIV/AIDS response.

Methods: We systematically collated population size (PSE), HIV prevalence, and ART coverage data for female sex workers (FSW), men who have sex with men (MSM), people who inject drugs (PWID), and transgender (TG) populations in sub-Saharan Africa (SSA) 2000-2021 from existing databases and primary source review.

We used spatial random-effects regression to pool and extrapolate data relative to age-sex-year-area matched total population estimates.

Results: We extracted 1557 datapoints for PSE [FSW (n=670); MSM (n=522); PWID (n=296); TG (n=69)], 1248 HIV prevalence datapoints, and 212 ART coverage datapoints. Across countries, median 0.65% of women were FSW (interquartile range [IQR] 0.44-1.2%); 0.56% of men were MSM (IQR 0.33-0.72%); and 0.1% of adults injected drugs (IQR 0.08-0.15%) (Figure 1).

In Eastern and Southern Africa, HIV prevalence among FSW, PWID, and TG was correlated with and higher than total population prevalence, but less correlated for MSM.

In Western and Central Africa, KP HIV prevalence was higher than population prevalence with weak correlation. FSW and MSM ART coverage was similar to population ART coverage, and PWID ART coverage was lower (Figure 2). Insufficient data were available to estimate TG PSE or ART coverage.

Conclusions: National-level KP estimates may guide HIV programming to reduce inequality, but highlight insufficient data for many countries. HIV surveillance for PWID and TG should be prioritised to improve programmatic responses.

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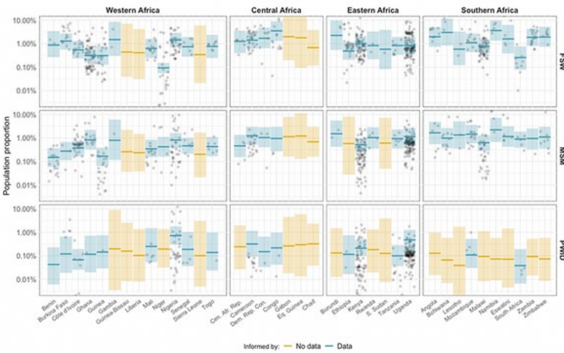

Figure 1. Key population size estimates for female sex workers (FSW, top row), men who have sex with men (MSM, middle row), and people who inject drugs (PWID, bottom row) as a proportion of age-sex-area-year matched total population for four subregions of sub-Saharan Africa. Countries which had empirical key population size data (dots) available are in blue. Countries which had no empirical data are in yellow (estimates are delivered solely from spatial smoothing). Observations are from 2000-2021.

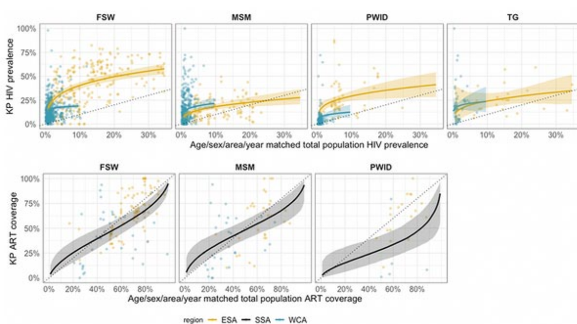

Figure 2. Estimated KP HIV prevalence (top) and ART coverage (bottom) against total population HIV prevalence and ART coverage in the same year and location. Observations are from 2000-2021 for ages 15-49, 15+, <25 or ≥25. Dotted line represents the line of equality.

Monitoring and evaluation of health systems along the HIV cascade

PESUC19

Assessing levels of provincial HIV virological suppression in the public health sector in South Africa during the COVID-19 pandemic

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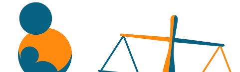
Background: In December 2019, the first reports of a novel coronavirus infection originated from the city of Wuhan, China. The World Health Organization named the new disease COVID-19, which spread globally and was classified as a pandemic in March 2020. Many countries, including South Africa, introduced social distancing and lockdown rules to limit transmission. South Africa has experienced four waves of infection with rises in the number of diagnosed cases. A local study has reported reductions in average weekly HIV viral load (VL) testing due to legislated lockdown levels. This study aims to assess the impact of COVID-19 on provincial HIV viral load (VL) suppression (<50 copies/ml).

Methods: Specimen-level VL data were extracted from the corporate data warehouse (CDW) for the period January 2019 to December 2021. We assessed the provincial percentage of samples with virological suppression (<50 copies/ml) by calendar year. Data without a province indicated in the CDW were excluded. The change in the provincial proportion of samples with virological suppression (VS) in 2019 was compared to the subsequent years where lockdown was implemented (percentage change).

Results: Data was reported for 17,460,264 samples, of which 61,073 did not have a valid province populated (%0.35%) and were excluded. Overall, VS was reported for 67.7%, 70.3% and 70.0% of samples for the 2019, 2020 and 2021 calendar years respectively. In 2019, VS ranged from 58.6% (Limpopo) to 76.3% (KwaZulu-Natal). The provincial percentage change in VS between 2019 and 2020 ranged from -1.3% (Northern Cape) to 8.6% (Eastern Cape). Similarly, between 2019 and 2021, the provincial percentage change in VS ranged from -6.0% (North West) to 1.5% (Western Cape). Between 2019 and 2021, the Limpopo province reported a percentage change decrease in VS of 5.8%.

Conclusions: Our findings indicate that Covid-19 has not had a substantial impact on the percentage of samples with virological suppression when compared with 2019 at the national level. However, at the provincial level decreases in VS have been shown particularly for the 2021 year for the Limpopo and North West provinces. Further analysis is required to understand why VS decreased in these two provinces.



Modelling future healthcare needs

PESUC20

Projection of age of people living with HIV and time since ART initiation in high-income countries in 2030: estimates for France

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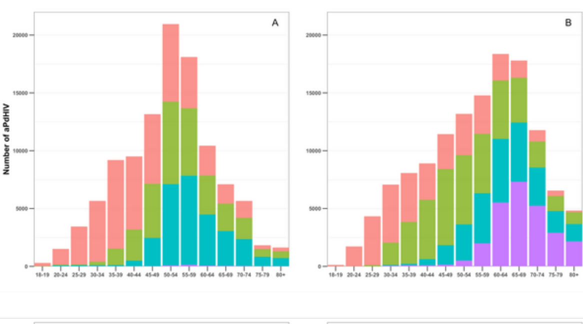
Background: Thanks to antiretroviral treatment (ART), HIV-infected individuals are aging. This involves increased co-morbidity risks, which also depend on when individuals started ART. These upcoming challenges require knowledge of the future demographic profile of HIV population. Here, we forecast the demographic profile of the adult population diagnosed with HIV (aPDHIV) in France up to 2030, accounting for the impact of ART initiation period on mortality.

Methods: Using national data from the French Hospital Database on HIV (ANRS CO4-FHDH) and a sample of the National Health Data System, we characterized the aPDHIV in 2018 and estimated their mortality rates according to age, sex, and ART initiation period. Using national surveillance data, we defined three scenarios for the numbers of newly-diagnosed HIV cases over 2019-2030: 30% decrease (S1), status quo situation (S2), and epidemic elimination (S3). Combining these data, we projected the age structure of the aPDHIV and time since ART initiation.



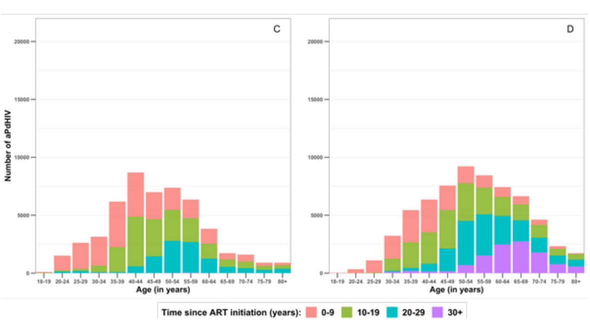


Figure. Numbers and age distribution of adults aged 18 years or older living with diagnosed HIV (aPLdHIV), stratified by time since ART initiation (in years): for men (A & B) and women (C & D) in 2018 (A & C) and in 2030 (B & D) under scenario 1 (i.e. 30% decrease in newly diagnosed HIV cases between 2018 and 2030).

Results: In 2018, there was an estimated 161,125 aPDHIV (67% men), of which 55% were aged 50 or older (50+), 22% 60+ and 8% 70+. In 2030, the aPDHIV would be 192,181 under S1, 204,813 under S2 and 164,224 under S3. Whatever the scenario, the age distribution would shift towards older ages: with in 2030, 64 to 71% aPDHIV aged 50+, 41-47% 60+ and 16-18% 70+. This corresponds to ~80,800 aPDHIV (72% men) aged 60+, among which ~69% started ART ≥20 years ago and ~39% ≥30 years ago, and to ~31,500 aPDHIV (72% men) aged 70+, among which ~72% started ART ≥20 and ~43% ≥30 years ago (Figure).

Conclusions: By 2030, in France, close to 20% of theaPDHIV will be aged 70+, of which >40% would have spent ≥30 years on ART. These estimates are essential to anticipate co-morbidity screening and resource provision in the aged care sector.

Demand creation for PrEP use

PESUC24

Willingness to use PrEP among gay, bisexual, and other men who have sex with men in five Asian countries: results of the Asia Pacific MSM internet survey

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Background: PrEP is highly effective at preventing HIV infection among gay, bisexual, and other men who have sex with men (GBM). However, across Asia, PrEP programs are limited, and little is known about men's willingness to use PrEP.

Methods: A cross-national online survey targeting GBM in Indonesia, Japan, Malaysia, Thailand, and Vietnam was conducted from May 2020–January 2021. Factors independently associated with willingness to use PrEP among non-PrEP-users were determined by multivariable logistic regression.

Results: We recruited 10,339 HIV-negative/untested GBM who reported ≥1 male sexual partners in the previous year (Japan = 5,660; Vietnam = 2,257; Thailand = 1,076; Indonesia = 803; Malaysia = 543).

Overall, 7.4% were currently using PrEP (Thailand = 14.0%; Vietnam = 11.1%; Malaysia = 7.4%; Japan = 5.4%; Indonesia = 2.0%). After restricting to the 9,578 non-PrEP-users, 54.4% were willing to use PrEP (Malaysia = 73.6%; Thailand = 65.2%; Indonesia = 62.6%; Vietnam = 51.2%; Japan = 50.6%). Among these non-users, 2.0% (n = 194) had previously

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used it (range = 0.8% in Indonesia/Japan–5.4% in Thailand). Factors independently associated with PrEP willingness among non-users were: younger age (adjusted odds ratio [AOR]=0.98, 95% confidence interval [CI]=0.97-0.98, p<0.001); higher levels of education (diploma: AOR=1.54, 95%CI=1.18-2.01, p=0.001; university: AOR=1.34, 95%CI=1.04-1.72, p=0.022); having more than 10 sexual partners in the previous 12 months (AOR=1.21, 95%CI=1.01-1.44, p=0.041); awareness of the "undetectable = untransmittable (U=U)" message (AOR=1.23, 95%CI=1.12-1.36, p<0.001); condomless anal intercourse with regular (AOR=1.16, 95%CI=1.05-1.28, p=0.003) and casual (AOR=1.29, 1.16-1.43, p<0.001) male partners in the previous 12 months; use of Viagra (AOR=1.33, 95%CI=1.17-1.50, p<0.001); being a former PrEP-user (AOR=1.93, 95%CI=1.34-2.77, p<0.001); and being willing to pay for PrEP (AOR=4.61, 95%CI=4.09-5.20, p<0.001). Of those willing to use PrEP, only 36.1% were willing to pay for it (versus 10.8% of those not willing to use it).

Conclusions: PrEP use was very low overall. However, more than half of non-PrEP-users were willing to use it, indicating that there is a large pool of potential users; these men were younger and at higher risk (having more sexual partners, reporting condomless intercourse).

In some countries, the gap between willingness and use can be explained by the lack of PrEP programs, but other factors may be important. Affordability of PrEP is critical, as most men – even many willing to use it – were not willing to pay for it out-of-pocket.

Scale up of PrEP

PESUC25

Recovery in the uptake of pre-exposure prophylaxis (PrEP) in Australia after COVID-19 restrictions: analysis of national pharmacy dispensing data

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Background: Initial COVID-19 restrictions in 2020 were accompanied by reductions in HIV pre-exposure prophylaxis (PrEP) prescribing in Australia. We analysed the rate of PrEP uptake nationally before and after COVID-19 restrictions to examine whether PrEP use returned to pre-COVID levels.

Methods: Data were extracted from all publicly-subsidised PrEP prescriptions dispensed in Australia between 01 January 2019 and 30 June 2021. We used interrupted time series analyses of time trends in the weekly number of bottles (30 pills) of PrEP dispensed nationally and by state/territory of residence, age group, and socioeconomic status of residential postcode.

We also report total dispensing in March 2020, the month immediately before COVID-19 restrictions were implemented with June 2021, the final month of follow-up.

Results: Over the 30-month period, 45,147 people (98.4% male) were dispensed 395,707 bottles of PrEP. Before restrictions, PrEP dispensing increased by 17 bottles each week (p<0.001; 95%CI:13.0, 21.6). In the week following implementation of restrictions, 1,023 fewer bottles were dispensed than the previous week (p<0.001; 95%CI:-1,339.8, -707.4). Dispensing then increased at an average of 13.1 bottles per week (p<0.001, 95%CI:6.9, 19.3). The rate of increase was not significantly different to the pre-restrictions rate (p=0.272; 95%CI:-11.8, 3.3). By the end of follow-up there were 15,330 bottles dispensed in June 2021, approaching the 16,635 bottles dispensed in March 2020 (immediately before COVID-19 restrictions were implemented). There were no significant differences between the rate of post-restriction dispensing between subpopulations of state/territory, age groups or socioeconomic status.

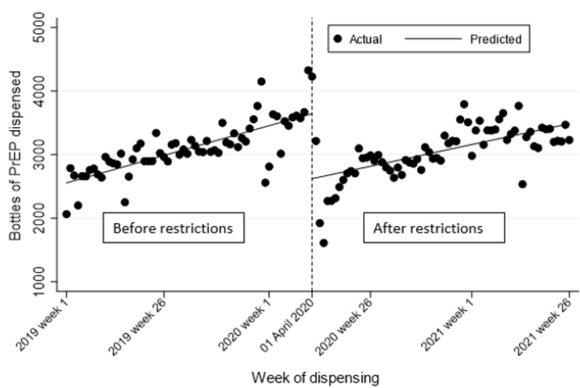

Figure 1. Number of PrEP bottles dispensed each week before and after COVID-19 restrictions were first implemented (dotted vertical line), and the number predicted by interrupted time-series analysis.

Conclusions: PrEP use steadily increased in Australia before COVID-19 restrictions led to a sudden large decrease in dispensing. By June 2021, nationwide PrEP use recovered to pre-pandemic levels. There were no disparities by jurisdiction, age, or socioeconomic status in the rate of recovery. This suggests that, as restrictions were lifted and sex increased, PrEP uptake also recovered.

PESUC26

Fostering access to PrEP among high-risk adolescent girls and young women aged 16 to 24 years through the DREAMS initiative in 4 districts in Zambia

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Background: In Zambia, adolescent girls and young women (AGYW) remain at high risk of HIV infection due to social, cultural, and economic vulnerabilities. Pre-exposure prophylaxis (PrEP) is effective at preventing HIV especially when used as part of a combination prevention approach. However, limited data exists on PrEP eligibility, uptake and persistence among AGYW in sub-Saharan Africa.The University of Maryland Baltimore CIRKUITS and Z-CHECK projects implemented the Determined Resilient Empowered AIDS-free Mentored Safe (DREAMS) initiative aimed at educating young girls, communities and families on HIV prevention using evidence-based interventions, as a holistic HIV prevention intervention, including PrEP provision to AGYW.

Methods: We examined PrEP uptake among AGYW aged 16 to 24 years using a retrospective cohort enrolled in DREAMS between October 2020 and September 2021 in four districts of Zambia. AGYW were screened for substantial HIV risk; those eligible were consented and voluntarily initiated on PrEP at DREAMS centers by health care workers. Follow ups were conducted for refills and laboratory investigations. Multivariable logistic regression was used to examine variables associated with obtaining at least one PrEP refill following initiation.

Results: A total of 1,734 AGYW were assessed for PrEP eligibility, of whom 1,733 (99.9%) were eligible and 1,716 (99.0%) started PrEP. The median age at PrEP initiation was 21 years (IQR: 19, 23). Of those who started, 938 (54.7%) had at least one PrEP refill. Factors associated with obtaining at least one refill included age 20-24 years (aOR 1.88, 95% CI 1.51-2.34), being married (aOR 1.80, 95% CI 1.37-2.36) or sexually active in last six months (aOR 2.82, 95% CI 2.29-3.48), and reporting an STI in the prior six months (aOR 10.13, 95% CI 3.08-33.34). Among AGYW who discontinued PrEP and had at least one follow-up visit (99, 10.0%), reasons for discontinuation included: no longer at risk (56, 57%), relocation (12, 12%), and side effects (7, 7%).

Conclusions: The DREAMS initiative was successful at reaching AGYW with PrEP services. A high proportion at risk of HIV elected to initiate PrEP for at least some time. More evidence is needed to assess reasons for discontinuation and improve persistence for those with sustained risk.

PESUC28

Primary care providers' perspectives regarding PrEP care at primary care settings: a qualitative analysis

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Background: Primary care providers (PCPs) are crucial for preventing HIV and promoting sexual wellbeing for their patients. PCPs are considered the ideal pre-exposure prophylaxis (PrEP) care providers as they usually encounter more HIV-negative patients with indications for PrEP use. Nevertheless, limited data are available to assess PCP's perspectives regarding PrEP care.

This current study will explore their perceived barriers and potential facilitators on providing PrEP care at primary care settings in a cohort of PCPs recruited from a northeastern state in the United States.

Methods: In the current study, we employed a semi-structured in-depth interview to collect information about barriers and facilitators in PrEP care implementation among 18 PCPs who practice in New York State. We coded texts using coding themes related to the central questions in our interview guides and new themes that emerged in the coding process. Mixed methods including content and grounded theory analyses were used to analyze the transcribed narrative data.

Results: The recruited PCPs aged 30-68 years old reported a few specialties, including internal medicine, family medicine, and adolescent health. We identified a few themes related to their perspectives on PrEP care in primary care settings. Perceived barriers included: reluctance for discussion on sexual health-related topics, lack of navigations for patients and providers, the complexity of the regimen for engaging and monitoring patients, patients' low perceived risks, and HIV and PrEP associated stigma. In addition to barriers, a few potential solutions have been proposed by PCPs, such as screening for PrEP eligibility before the doctor visit, increasing self-awareness of HIV risk among patients, the flexible regime being available (e.g., long-term injectable PrEP), providing comprehensive PrEP navigation system to both providers and patients, and providing PCPs with peer education and sufficient training for PrEP care.

Conclusions: Our study is one of the first to explore PrEP care implementation in primary care settings. Findings suggested a navigation system for PrEP care in patients and providers is urgently needed. Future studies should facilitate PrEP discussion, engagement, and monitoring in primary care settings.

Innovative behavioural prevention interventions

PESUC27

Transforming Social and Behaviour Communication (SBC) using digital platforms: the case of USSD HIV self-assessment and PrEP adherence support tools

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Background: In 2018 in Zambia, the USAID DISCOVER-Health Project, implemented by JSI, was one of the first partners to roll out PrEP. In Zambia, PrEP is only provided to individuals at substantial risk of HIV, using a paper-based national eligibility screening tool, administered by healthcare workers (HCWs) during service delivery. This is sometimes challenging to do in busy clinics, from both time-constraints and privacy perspectives.

Description: To help address this, the Project developed an Unstructured Supplementary Service Data (USSD) information management system, available to the public, to support self-risk assessment and improve linkage to services. Using mobile phones, clients access the HIV self-risk assessment platform to ascertain their risk level using the USSD. If an individual is at substantial risk, the USSD links them geographically to their nearest PrEP service provider (SP). TheSP reaches out to the client and makes an in-person appointment to initiate them on PrEP.

Once the client is initiated, the USSD, in combination with Short Message Service (SMS), provides PrEP adherence support, through periodic reminders.

Lessons learned: The Project analysed PrEP USSD/SMS access log to determine the volume of access for this service. 123,388 clients accessed this service between October 2018 and June 2019. Out of the 123,388 clients that accessed the USSD platform and used the HIV self-risk assessment, 16,430 were found to be at risk and requested the system to link them to the next step of in-person PrEP services.

In addition, 916 clients also requested to be linked to PrEP clinics, before full completion of the HIV risk assessment. Through the USSD, 17,346 people were linked to PrEP clinics from January to December 2021. During the same period, 33,776 clients accessed PrEP Adherence support using the USSD.

Conclusions/Next steps: The Project has demonstrated that simple digital solutions, such as USSD platforms, can facilitate health service linkage and adherence support for clients. The USSD platform provides privacy through self-risk assessment and reduces the initial screening burden on busy HCWs, while significantly opening up access to essential HIV prevention services to a wider beneficiary universe.

HIV prevention services for key populations

PESUC29

PrEP use and HIV incidence among young Thai men and transgender women who sell sex in Bangkok and Pattaya, Thailand: results of the COPE effectiveness study

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Background: Young men who have sex with men (MSM) and transgender women (TGW) who exchange sex in Thailand have high HIV incidence. Access to PrEP for combination HIV prevention is imperative.

Methods: The COPE study recruited HIV-negative Thai MSM and TGW aged 18-26 years, who exchanged sex in the last year through online and community outreach. Participants were offered oral PrEP and could start and stop PrEP as desired. Participants were followed for 1 year, with some extending up to 2 years, and completed quarterly assessments, weekly SMS surveys and HIV and STI testing. The primary outcome was HIV seroconversions per 100 person-years (PY) on PrEP and not on PrEP, based on monthly pill pickups.

Results: Among 846 participants at 4 community clinics (October 2017-August 2019), 531 (62.8%) initiated PrEP at baseline, 104 (12.3%) subsequently initiated PrEP, and 211 (24.9%) never initiated PrEP. Participants contributed 598.4 PY on PrEP and 335.5 PY not on PrEP. Sufficient adherence was self-reported during 96.2% of SMS surveys while on PrEP. In a sub-sample of 66 dried blood spots with high self-reported adherence (≥4 pills per week), 53 (80%) had protective levels of intracellular tenofovir diphosphate.

Of the 10 participants diagnosed with HIV during study participation, none were using PrEP at the time of diagnosis (Figure 1), corresponding to an on-PrEP incidence rate of 0.0 per 100 PY (95% CI = 0.0, 0.62), an off-PrEP incidence rate of 2.98 per 100 PY (95% CI = 1.43, 5.48), and an IRR of 0.0 (95% CI = 0.0, 0.25; p <.0001). Sensitivity analyses accounting for uncertainty in time of seroconversion provided an IRR of 0.041 (95% CI = .006, .311; p = .001).

Conclusions: Combination HIV prevention with PrEP for young Thai MSM and TGW who exchange sex can achieve high PrEP uptake, high adherence, and reduced HIV incidence.

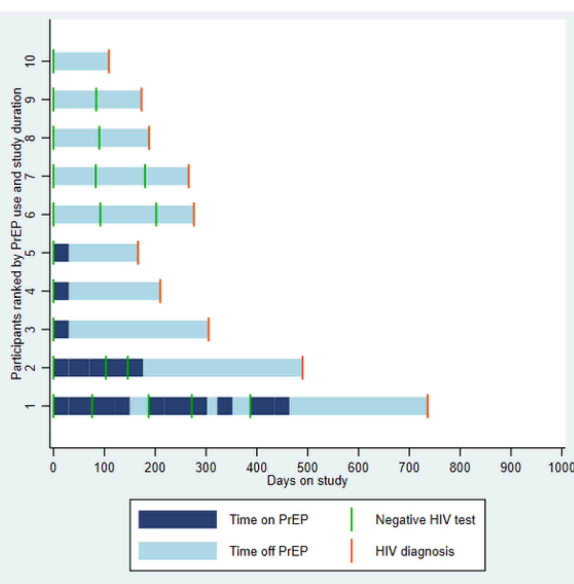

Figure 1. Patterns of PrEP use and HIV testing among participants with HIV seroconversion in the COPE study for young men who have sex with men and transgender women who exchange sex, Thailand (2018 - 2020).

PESUC30

Preferences for potential long-acting pre-exposure prophylaxis (PrEP) dosing regimens among gay, bisexual and other men who have sex with men (GBMSM) in Taiwan: 2021 HEART Survey

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Background: Various antiretrovirals have been examined as potential candidates for long-acting PrEP. While event-driven (ED) PrEP is currently the most prevalent dosing regimen among GBMSM in Taiwan, there is a need to determine preferences for other possible regimes and what factors might inform such preferences, in order to support future PrEP uptake.

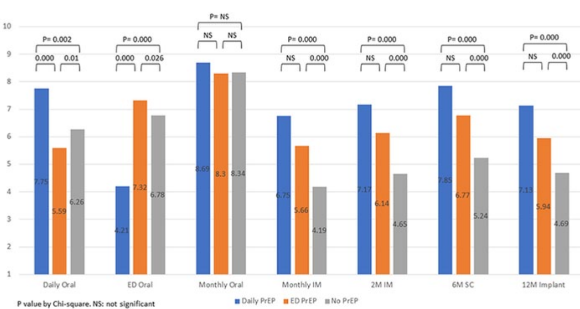
Methods: Between November 28th-December 28th 2021, a survey comprising 67 questions was administered online to GBMSM using social networking applications in Taiwan. Beyond demographics, HIV serostatus and HIV risk behaviors, respondents were asked to indicate their preference for different PrEP formulations on a 10-point Likert scale (1=least preferred; 10=most preferred).

Options included: daily oral, ED oral, monthly oral, monthly or bimonthly intramuscular injectable (2M IM), 6-month subcutaneous injectable (6M SC), and 12-month implant.

Results: In total, 1,880 survey responses were included in this analysis. Among 1,728 respondents who reported HIV-negative or unknown serostatus, 52 took PrEP daily and 198 event-driven.

Regardless of cost, current daily PrEP users were most likely to prefer monthly oral, followed by 6M SC, daily oral, and 2M IM. Current ED PrEP users preferred monthly oral form the most, followed by ED oral, 6M SC, and 2M IM.

Overall, the majority (67.7%) were only willing to pay less than 150 USD per injection to receive 2M IM PrEP. Multivariable logistic regression revealed current daily PrEP users (AOR 2.19 vs. ED user), those willing to take PrEP (AOR 1.45), those with more sex partners (AOR 1.39), and those not feeling happy about their sex life (AOR 1.60) had significant correlation with preference of 2M IM over ED oral PrEP.



Conclusions: Monthly oral was the most preferred dosing regimen. Bimonthly intramuscular injectable PrEP could be an alternative to ED PrEP for certain populations. Cost and means of administration could affect new regimen uptake and should be further investigated.

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PEMOC33

Real-world utilization of HIV Pre-Exposure Prophylaxis (PREP) by cisgender and transgender individuals in the United States

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Background: This study describes real-world utilization of daily oral PrEP regimens emtricitabine (F)/tenofovir disoproxil fumarate (TDF) and F/tenofovir alafenamide (TAF) by gender.

Methods: HIV-1 negative individuals receiving PrEP (F/TDF or F/TAF) were identified from a pharmacy claims database linked with medical claims from physicians' offices across the US. Transgender men (TGM) and women (TGW) were identified using an algorithm which incorporated claims for gender dysphoria, gender-affirming surgery, and gender-affirming hormone therapy. Individuals not identified as TGM or TGW were classified as cisgender men (CGM) or women (CGW).

Results: Most people receiving PrEP were CGM while the proportions of individuals classified as CGW, TGM, and TGW increased from 2015 to 2020 (CGW: 8.1% to 11.9%; TGM: 0.3% to 0.6%; TGW: 0.4% to 1.4%).

Among 104,354 people receiving PrEP from 10/3/2019 (approval date of F/TAF) to 3/31/2021, 90.2%, 7.9%, 0.6%, and 1.2% were CGM, CGW, TGM, and TGW, respectively, and 37% were from the South (Table). The proportion of people receiving PrEP of each state ranged from 79.2% (Louisiana) to 95.4% (Utah) for CGM, from 2.7% (Vermont) to 19.6% (Florida) for CGW, and from 0.0% (North Dakota) to 3.7% (Ohio) for TGM/TGW (Figure).

Higher proportion of people on F/TAF received prescriptions from an infectious disease physician compared with F/TDF (9.2% vs. 6.7%); this difference was greatest among CGW (13.7% vs. 7.1%).

	Total N=104,354	CGM N=94,159 (90.2%)	CGW N=8,291 (7.9%)	TGM N=605 (0.6%)	TGW N=1,299 (1.2%)
F/TAF Users	28,372	27,211 (95.9%)	725 (2.6%)	114 (0.4%)	322 (1.1%)
F/TDF Users	75,982	66,948 (88.1%)	7,566 (10.0%)	491 (0.6%)	977 (1.3%)
Median Age at Initiation (IQR)	36 (28, 48)	36 (28, 48)	36 (27, 47)	32 (25, 44)	29 (23, 37)
Region: Northeast	24,143	21,703 (89.9%)	1,913 (7.9%)	154 (0.6%)	373 (1.5%)
Region: Midwest	17,253	15,787 (91.5%)	1,077 (6.2%)	106 (0.6%)	283 (1.6%)
Region: South	38,177	33,597 (88.0%)	4,078 (10.7%)	175 (0.5%)	327 (0.9%)
Region: West	24,287	22,631 (93.2%)	1,182 (4.9%)	167 (0.7%)	307 (1.3%)

Table.

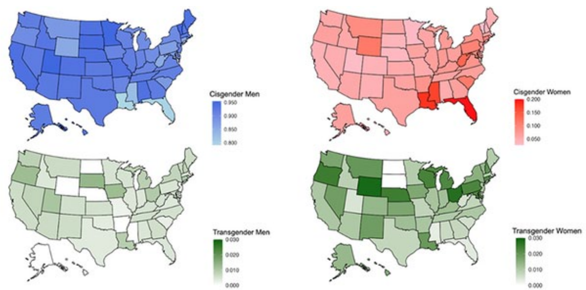

Figure. The proportions of CGM, CGW, TGM and TGW among people receiving F/TAF and F/TDF for oral PrEP by state in the US, 2019/10/3 - 2021/3/31

Conclusions: This study describes the changing gender composition of people on PrEP, with CGW, TGM, and TGW accounting for increased proportions over time in the real-world. Demographic and geographic variation across genders highlights the importance of improving access for people who would benefit from PrEP.

Community-based HIV testing strategies

PESUC31

Contact tracing - an innovative approach to fight the HIV epidemic in Haiti

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Background: Significant progress has been made in controlling the HIV epidemic in the past 20 years. In 2020, 84% of people living with HIV (PLHIV) knew their status in Worldwide. During the last decade, the Haitian Ministry Health (MSPP) through the National program against STIs and HIV/AIDS (PNLS) has concentrated on discovering creative techniques to expanding HIV testing in line with WHO, CDC and USAID strategies. One of implemented strategy was contact tracing which was adapted to the Haitian settings to be more effective. This study's objectives were to identify the percentage of PLHIV (People Living with HIV) who accepted to participate in contact notification services, to determine the prevalence of HIV in tested contacts and to determine the number and profile of new cases enrolled in HIV-care and treatment services.

Methods: It was a retrospective cross-sectional descriptive study conducted between July 2018 to July 2021. The data were collected from the MESI (monitoring evaluation surveillance integree) national database. The search included (149) health facilities involved in providing care and treatment to PLHIV in the whole country with available data on partner services platform viamesi.ht. The data were collected on the platform from Index patient and their contact information forms.

Results: Among the Index cases contacted, 94% accepted the contact notification services. From July 2018 to July 2021, the contact tracing unveiled 52742 contacts. Among them (85.9%) 45324 were contacted. Among those contacted only (92.7%) were found. Among the interviewed people, 31806 persons were not aware of their HIV status. Among those who were not aware of their status (95.5%) 30393 were tested and (33.7%) 10252 of them were positive. (94%) 9636 of new cases were enrolled in the service of care and treatment. The analysis per index cases priority group revealed that 52% of MSM contacts and 43% of FSW contacts tested positive for HIV.

Conclusions: Contact tracing approach adapted to local settings is an effective targeted method of identifying and enrolling to treatment many patients. It helps finding the high number of contacts including the key population.

PESUC32

Potential use of pooled point-of-care HIV-1 viral load to detect HIV infection at PrEP initiation and follow-up visits in key population-led PrEP clinics in Thailand

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Background: Use of HIV-1 viral load (VL) assay can improve detection of HIV infection before pre-exposure prophylaxis (PrEP) initiation and during follow-up, as PrEP can delay detection by fourth- and third- generation immunoassays. We studied potential use of individual and pooled point-of-care VL assays to detect acute/early HIV infection in key population (KP)-led PrEP clinics in Thailand.

Methods: From August 2019 to September 2021, men who have sex with men and transgender women PrEP clients were enrolled from four KP-led clinics in Bangkok, Chiang Mai, and Pattaya. EDTA plasma was collected at entry and quarterly visits and tested for HIV VL (Xpert HIV-1 VL) and conventional HIV rapid testing algorithm (Alere Determine HIV-1/2, if reactive, then followed by Wantai Colloidal Gold Device and SD Bioline HIV-1/2 3.0).

Participants with detectable VL had their leftover plasma tested by Wantai and SD Bioline (regardless of Alere Determine result) and Alere HIV COMBO (fourth-generation rapid test). Their samples and those from other PrEP clients who came on the same day were pooled for VL testing by Xpert.

Results: Of 3,828 visits (390 PrEP initiation and 3,438 PrEP follow-up), VL was detected in three participants; one at PrEP initiation (>10,000,000 copies/mL) and two at PrEP follow-up visits (810 and 5,940,000 copies/mL). Pooled VL showed detectable VL at 3,670,000 (11 samples/pool), 43 (12 samples/pool), and 670,000 (7 samples/pool) copies/mL, respectively (see Table 1). Alere HIV COMBO showed antigen positivity for the participant with detectable VL at initiation, and antibody positivity for the follow-up participants. All tested HIV negative by conventional algorithm.

Participants	HIV testing algorithm at KP-led clinics				Individual HIV-1 VL result (copies/mL)	Alere HIV COMBO (4th generation rapid HIV test) Individual HIV-1 VL result (copies/mL) Alere HIV COMBO (4th generation rapid HIV test)	Pooled HIV-1 VL	
PrEP users	Conventional HIV test result	A1: Alere Determine HIV-1/2	A2: Wantai Colloidal Gold Device	A3: SD Bioline HIV-1/2 3.0			Number of samples per pool	HIV-1 VL result (copies/mL)
PrEP initiation	negative	negative	negative	negative	> 10,000,000	positive (Ag band)	11	3,670,000
PrEP follow-up	negative	negative	negative	positive	810	positive (Ab band)	12	43
PrEP follow-up	negative	negative	positive	positive	5,940,000	positive (Ab band)	7	670,000

Table 1: Results of individual and pooled virological and immunological response to HIV-1 infection among PrEP users.

Conclusions: Pooled point-of-care HIV VL testing and fourth-generation rapid test detected HIV infections at PrEP initiation and follow-up visits that were missed by conventional third-generation rapid testing algorithm. Both assays have high potential and affordability to be integrated into KP-led PrEP clinics in resource-limited settings.

PEMOC40

Leveraging faith communities to test and treat men living with HIV in Uganda

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Background: In Uganda, disproportionately fewer men living with HIV (MLHIV) than women are aware they have HIV. This is partly due to not seeking out healthcare, so providing testing services where men frequent might help MLHIV get tested and treated for HIV. Uganda's population comprises 84.4% Christians and 13.7% Muslims, so faith communities are effective venues for reaching many Ugandans.

Here, we describe how national faith-based medical organizations introduced HIV testing to faith communities in Uganda; we compare results from Catholic churches with those from regional HIV testing programs to demonstrate the potential of faith community HIV programs.

Description: In April—September 2021, Uganda's Catholic, Protestant, Muslim, and Orthodox medical bureaux conducted two-day trainings of 794 faith leaders in three regions using curriculum endorsed by the Ministry of Health. Faith leaders used sermons, free/subsidized Christian radio and television, and social media to mobilize 53,826 community members for counseling and HIV test screening. Some men came to HIV testing events when COVID-19 vaccination and hypertension screening were offered concurrently. Faith leaders administered 15,578 HIV tests, including 9,101 rapid test kits.

We used a two-sample proportion test to compare results from a subset (5,449 rapid tests administered by Catholic faith leaders) with HIV test data in Uganda's Electronic Health Information System (eHMIS) from the same time period and regions.

Lessons learned: Catholic churches tested more men than women (62%; 3,378/5,449), while traditional testing programs tested fewer men (31%; 168,649/546,956). Tests in Catholic churches were more seropositive than in traditional testing programs (4.6% vs. 3.7%; OR=1.25; P=0.0005). Churches needed fewer tests than traditional programs to identify each person living with HIV. Of the 138 men and 114 women with positive results in Catholic churches, 111 men (80%) and 106 women (93%) went to facilities and had confirmatory positive tests; 109 men (98%) and 98 women (92%) initiated treatment.

Conclusions/Next steps: Faith communities can be leveraged to test and treat those who do not typically seek HIV services. We spent only 2 USD per person for one-on-one counseling and screening. Further implementation will help reveal whether faith communities can identify MLHIV at an impactful and cost-effective scale.

PEMOC41

A geospatially targeted field-based approach is more efficient than a network-driven approach for reaching PWID living with HIV in Punjab, India

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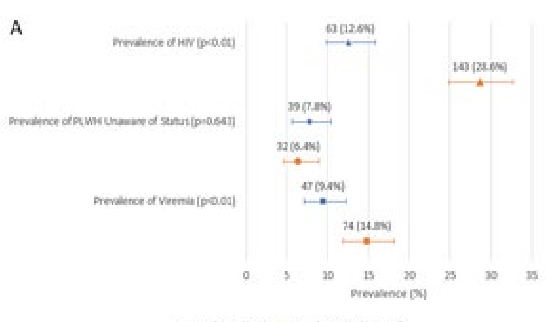
Background: Respondent-driven sampling (RDS) - network referral/recruitment - is an effective approach to reach people who inject drugs (PWID) at risk for or living with HIV. Yet, in most RDS samples, ~30-60% of recruitment coupons remain unreturned. We explored the impact of integrating a geospatially targeted field-based HIV testing strategy with an RDS survey.

Methods: PWID were first recruited in the town of Patti, Punjab near the India-Pakistan border using RDS (Nov 2019-Feb 2020) in which they reported on injection venues. HIV prevalence by venue informed field-based testing (Feb-May 2021; paused Mar 2020-Feb 2021 for COVID-19). Biometric data ensured individuals could only enroll in one of the two approaches. All participants completed a survey and underwent rapid onsite HIV testing. HIV RNA was quantified for positive participants. For each sampling approach, we calculated the number of: 1) HIV+; 2) undiagnosed (HIV+ but unaware of status [self-report]), and 3) viremia (≥150 copies/mL). We compared the prevalence and identification rate (average number identified per day) by each approach for each outcome.

Results: 501 PWID were recruited using RDS in 81 days; median age was 29 years, <1% were female, and 94% reported active injection. In the geospatially targeted field-based testing, 500 PWID were recruited in 81 days; median age was 31 years, 4% were female and 99.8% reported active injection. The prevalence of HIV in the RDS vs. field-based testing was 12.6% vs. 28.6% (p<0.01); and prevalence of viremia were 9.4% vs 14.8% (p<0.01; Figure). The field-based approach was significantly faster than RDS at identifying both PWID with HIV (1.77/day vs. 0.78/day; p<0.01) and PWID with viremia (0.91/day vs. 0.58/day; p=0.014).



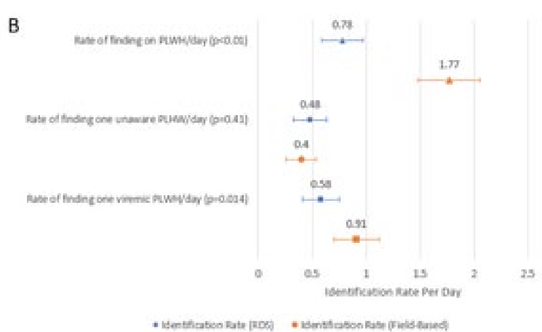


Figure A) Prevalence and B) identification rate of people who inject drugs living with HIV (PLWH) using repsondent-driven sampling (RDS) and a geospatially targeted field-based approach in India.

Conclusions: A geospatially targeted field-based testing approach was faster than a network-driven approach at identifying PWID with transmission potential. Surveillance programs should consider capturing injection venues to facilitate such field-based HIV testing approaches.

Community-based approaches (including empowerment, outreach and service delivery)

PESUD25

Burnout among service providers for people living with HIV: factors related to coping and resilience

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Background: Individuals who provide services for people living with HIV (PLWH) face numerous challenges at work, including psychosocial and structural factors, which affect quality of care and service delivery. Little is known about the factors that relate to burnout among case managers/ workers, peer counselors, group facilitators, social workers, and HIV testers who may share overlapping identities with their clients, which may increase their effectiveness in their roles, yet also exacerbate burnout.

The current study seeks to examine the factors associated with burnout, as well as the role of resilience and coping among service providers for PLWH.

Methods: Data was collected from 28 service providers for PLWH (67.9% Black/African American, 53.6% HIV negative and 57.1% HIV testers) in the United States from January to October 2021 using a mixed methods research design. Participants completed quantitative measures on sociodemographics, organizational factors, discrimination, trauma, depression and burnout.

A sub-sample of 19 participants also provided in-depth qualitative data via semi-structured interviews, which explored the aforementioned factors as well as the impact of COVID-19, coping, and resilience on burnout.

Results: Thematic content analysis revealed important themes on the factors related to burnout (e.g. discrimination, microaggressions, shared identities, limited financial and housing resources, and COVID-19), rejuvenating factors (e.g. finding purpose in one's work), coping with burnout (e.g. psychotherapy and spirituality), and intervention strategies that are individually tailored.

Results of Pearson correlations were consistent with the stories and insights shared by participants and revealed significant associations between mental health variables (i.e. depressive and posttraumatic stress disorder symptomology), discrimination and microaggressions, and burnout.

Conclusions: Our findings highlight structural barriers within organizations and discrimination that are impacting professionals in this sample who share identities (e.g. LGBTQ+, living with HIV, race) with the PLWH whom they serve.

This research also highlights the relationship between discrimination and the mental health and well-being of key professionals who serve PLWH. These findings may inform the development of an intervention targeting burnout among individuals providing services to PLWH as well as incite change to remove structural barriers that may improve the work environments for providers and ultimately the quality of care for PLWH.

PESUD26

Using technology to increase STI/HIV case finding through pharmacies in Cambodia

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Background: Pharmacies serve as an initial source of health care for key populations at risk of HIV and sexually transmitted infections (STIs) in Cambodia and other low and middle income countries. Despite this, public health programs have struggled to engage pharmacies at scale given the fragmented nature of the pharmacy channel in Southeast Asia.

In this context, the National Center for HIV/AIDS, Dermatology and Sexually Transmitted Diseases (NCHADS) collaborated with mClinica to leverage the SwipeRx network to facilitate HIV/STIs e-referral practices in Cambodia.

Description: With support from the Global Fund and technical assistance from USAID EpiC, Linkages, and Enhancing Quality Health Activity (EQHA), NCHADS and mClinica tested an e-Referral system. The system was built using an e-Referral tool within the SwipeRx app with linkages to three referral facilities (1 private and 2 public) in Phnom Penh. Clients who consent to be referred through SwipeRx provide a mobile phone contact through which they receive automated SMS messages to encourage them to seek referral care. Pharmacies invited to join the program were identified based on their pre-existing key population client volume, technology capacity, and willingness to participate in the program.

Lessons learned: Data from June-December 2021 suggest that 252 clients were referred through SwipeRx by 39 pharmacies trained to use e-Referral system.

Among the clients referred, 93 were referred for STI/HIV diagnosis, the average number of STI/HIV clients referred through e-Referral system increase by 130% based on comparison of 3-month averages.

Close to 3 out of 4 clients (73%) referred for STI/HIV services chose Chouk Sar (private, non-governmental) referral site while 27% chose one of the two (public) referral sites accessible through the system. During the initial 6.5 months of e-Referral, 17 STI cases and 4 HIV cases were diagnosed and treated.

Conclusions/Next steps: These findings highlight the potential for pharmacies linked to e-Referral system to contribute to national STI/HIV program goals. Future efforts to expand e-Referral system coverage to include additional pharmacies serving key populations and to include pharmacy access to HIV self-testing are sustainable strategies to increase coverage of key populations and link with the full cascade of care available at referral health facilities.

PESUD27

Integrated HIV testing service delivery: an innovative approach to reaching female head porters and high risk men in Ghana amid COVID-19

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Background: In Ghana, head porterage is an urban phenomenon dominated by young women who have migrated from other parts of the country. These young migrants live in deplorable conditions in the city and engage in risky sexual behaviours. UNDP and GAC collaborated on an integrated outreach programme to reach them and other vulnerable populations with an integrated HIV service in the COVID-19 era.

Description: To ensure sufficient coverage of the target population, leaders of the Female Head Porters (FHP) were engaged in mapping their sites with support of Peer-Educators in the nine communities (located in the Accra Metropolis and GA Central Municipality) targeted for the intervention.

Other vulnerable groups including seafarers, truck drivers and mates, HRM were reached and served. Event-based and mobile based testing was adopted to reach the target population with integrated health outreach services namely HTS, Malaria and Hepatitis B test, BMI checking, Blood Glucose Testing, TB Sputum collection and COVID-19 vaccination.

The participants benefited health education on HIV, nutrition, sexual and gender-based violence and substance abuse.Condom demonstration and BCC leaflets were also distributed.

Lessons learned: With the integrated services approach to HTS, 3,580 FHP and other vulnerable groups were reached in 9 days as against 821 and 488 reached in the whole of 2020 and 2021 respectively at the same catchment area.

Moreover, the integrated HTS approach yielded HIV positivity of 2.2% as against 0.01% for each of 2020 and 2021. Over 90% of positive clients were linked to care and treatment. 1,680 were screened for Blood Pressure and Body Mass Index Screening and 1,172 blood Sugar were checked with 104 receiving COVID-19 vaccines. Mobile testing strategy helped to overcome some barriers to HTS for persons who would otherwise not seek it. Ghetto clients had opportunity to interact with health care staff and the nutritionist and discuss matters of concern to them.

Conclusions/Next steps: Integrated services approach as against standalone HTS encourages more vulnerable people to test and removes stigma relating to HIV service uptake. GAC is therefore encouraged to pursue more such collaborations to reach hidden populations with the services they need.

PESUD28

High linkage to treatment among key populations who self-test through a peer HIV self-test distribution and community-based ART program among key populations in Lagos, Nigeria

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Background: HIV self-testing (HIVST) presents an opportunity to increase HIV testing uptake. It offers a confidential alternative particularly for highly stigmatized and criminalized populations such as men who have sex with men (MSM), transgender persons (TG), and female sex workers (FSW). However, follow-up of HIVST recipients is often a challenge, thus hindering appropriate referral to prevention and treatment services.

We report on implementation outcomes and lessons learned from community-based HIVST distribution and linkage to community-based ART and PrEP for key populations (KPs) in Lagos, Nigeria.

Description: In 2020, as part of outreach services of a community-based health clinic (CBHC) serving KPs, HIVST kits were distributed to 1,174 MSM, 224 FSWs, and 102 TG persons (TG men: 12; TG Women: 90) by peer educators (PEs). PEs (N=10) reached their peers at physical hotspots and through social media (WhatsApp followed by in-person distribution) and provided HIV education and shared an HIVST demonstration video and brochure on post-test services (e.g., confirmatory testing, ART, PrEP). Contact information was obtained from clients for follow-up (e.g., referral to the CBHC or linked with a community health extension worker for ART or PrEP enrollment).

Lessons learned: 17% of recipients were first-time testers. PEs reached 100% of kit recipients within five days of distribution (majority by phone call); all reported having unassisted self-testing.

The self-reported positivity rates were 3.1% in MSM, 0.4% in FSWs, and 4.9% in TG persons. All KPs who self-tested positive initiated ART; 10 of 1,458 who self-tested negative initiated PrEP (all MSM).

Employing trusted peers was an effective way of reaching KPs with HIVST. Follow-up calls were successful due to:
i. verifying the number at the time of kit distribution,
ii. following-up soon after distribution by the PEs themselves.
Successful linkage to treatment was likely due to referral to a KP-friendly community-based clinic supplemented by community-based ART initiation.
Conclusions/Next steps: The high uptake of HIVST and ART was facilitated by strategies led by PEs and post-test services being offered in KP-friendly clinics and in the community. HIVST is especially essential given that the COVID-19 pandemic has limited numbers of in-person testing at clinic and outreach.

Sexual- and/or gender-based violence and exploitation (including in conflict settings)

PESUD29
"Coming out or not": sexual orientation disclosure, HIV testing, and homoprejudiced violence for MSM in China

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[1]University of North Carolina at Chapel Hill Project-China, Guangzhou, China, [2]Social Entrepreneurship for Sexual Health (SESH) Global, Guangzhou, China, [3]Zhuhai Center for Disease Control and Prevention, Department of HIV/AIDS Prevention and Control, Zhuhai, China, [4]Dermatology Hospital of Southern Medical University, Guangzhou, China, [5]London School of Hygiene and Tropical Medicine, International Diagnostics Centre, London, United Kingdom

Background: Disclosure of sexual orientation to health professionals has been advocated in clinical settings because it could be an entry point to providing HIV testing and optimal care for men who have sex with men (MSM). Yet, sexual orientation disclosure is stigmatized or even criminalized in certain societies.
This study aimed to test the association between disclosure of sexual orientation and the uptake of HIV testing services, and explore whether disclosing one's sexual orientation would increase the risk of experiencing homoprejudiced violence (i.e., violence against individuals based on their actual or perceived sexual orientation) for Chinese MSM.
Methods: We obtained the data from a cross-sectional survey among Chinese MSM in January 2021. Participants were recruited online through a popular gay dating app called BlueD. The measurements 'ever disclosed sexual orientation', 'ever tested for HIV', and 'ever self-tested for HIV' were all dichotomous variables. Ever experiencing homoprejudiced violence was measured on a 12-item scale and recoded as a dichotomous variable (i.e., ever experienced any one of the twelve items). Multivariable logistic regressions were used to explore the relationships, adjusted for sociodemographic characteristics.
Results: A total of 1828 MSM were enrolled in the survey, of whom 73% (1334) identified as gay, 56% (1023) had ever disclosed their sexual orientation to others, 77.5% (1417) have ever tested for HIV, and 68% (1244) have ever self-tested for HIV. 46.3% (847) reported ever experiencing homoprejudiced violence. Ever disclosing one's sexual orientation was associated with greater odds of HIV testing (aOR=1.90, 95%CI: 1.50~2.41) and HIV self-testing (aOR=1.39, 95%CI: 1.13~1.71). However, sexual orientation disclosure was also positively associated with ever experiencing homoprejudiced violence (aOR=1.70, 95%CI: 1.48~2.07).
Conclusions: Sexual orientation disclosure is a double-edged sword for the MSM population in China. While it showed public health benefits in improving HIV prevention by increasing the uptake of HIV testing/self-testing services, we need to be cautious about encouraging disclosure in high-stigma settings as it may subject MSM to greater exposure of homoprejudiced violence.
Future researches should verify the causal relationship between these factors, and our findings call for an inclusive social environment that safeguards disclosure of sexual orientations.

Harm reduction

PESUD30
Marijuana use goals, patterns, and perceptions of health impact among persons with HIV in care in the era of state-level legalization

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Background: We sought to determine whether state-level marijuana policy changes were associated with marijuana use behaviors and perceptions among people with HIV (PWH), including access to marijuana, goals for use, patterns of use (e.g., frequency, modality), use of other substances, and perceived health impacts.
Methods: We recruited PWH aged ≥18 for 1:1 interviews at three U.S.-based HIV clinics within the Centers for AIDS Research Network of Integrated Clinical Systems (CNICS) between 2019-2020.
Two clinics were in states that legalized marijuana use. PWH reporting weekly or more frequent marijuana use on routinely administered, clinic-based, electronic assess-

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ments of patient reported outcomes (PROs) were eligible for inclusion. We transcribed and coded interviews based on sub-topic areas of interest.

Results: We interviewed 29 PWH who reported weekly-or-greater marijuana use [80% cisgender male; mean age=50; 48% Black, 34% White, 17% Hispanic, 10% multiracial, 7% Asian-American]. One-quarter of participants reported increased marijuana use since legalization in their state, primarily due to increased accessibility and a desire to explore products and varieties for therapeutic needs.

The most cited therapeutic goals included relaxation/sleep (66%), increased appetite (41%), stress/anxiety relief (31%), pain relief (28%), fun/recreation (28%), to reduce cravings for another substance (17%), and to alleviate physical symptoms other than pain (10%); overall, 69% of interviewees reported they used marijuana for more than one purpose.

Reasons for use were not reported to be influenced by legalization. In legalized settings, increased product diversity and attribute labeling (e.g., cannabinoid type and strength) facilitated decision-making, allowing PWH to tailor to their specific goals.

Several PWH reported marijuana's role in helping maintain sobriety from other substances. Edible marijuana products were regarded as a healthier alternative to smoking and very few reported concerns with over-use or addiction. PWH reported stopping use once a goal was met (e.g., being pain-free). Short-term therapeutic benefits were prioritized over what were believed to be ambiguous, potential long-term negative health consequences.

Conclusions: Among a sample of PWH who used marijuana, the broad availability of products following legalization offered a means for facilitating decision-making for targeted therapeutic use, including stress reduction and minimization of craving alcohol and 'harder' substances.

PESUD31

HIV remission trials with treatment interruption of fixed duration:Trial investigators' perceptions of strategies to mitigate HIV transmission risk

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Background: Early phase HIV remission („cure") trials aim to develop interventions to eradicate HIV from the body, or to sustainably control HIV without antiretroviral treatment (ART). Controversy over analytic treatment interruption (ATI) has been generated by trials with longer duration before re-starting ART, which involves greater risk for individuals and partners.

Methods: In a 2021 online survey of international HIV remission trial investigators and study team members registered on clinicaltrials.gov, we assessed perceptions of feasibility, acceptability, and efficaciousness of six HIV transmission risk mitigation strategies during trials with ATI of fixed duration, using 7-point semantic differential scales (-3; 0; +3).

Results: Of 170 recruited, 52 participated. Respondents were diverse in demographic characteristics, current geographical location, and clinical trial/professional role. Mean scores indicate respondent concerned about risk of HIV transmission during ATI (M=1.11). The mean scores for feasibility, acceptability, and efficacy for each of the transmission mitigation strategies are reported in Table 1. Requiring counseling for potential participants was judged feasible, acceptable, and efficacious. Respondents were, overall, neutral on the feasibility, acceptability, and efficacy of requiring that participants' sexual partner(s) participate in risk counseling. Limiting participation to those who commit to abstaining from sex during the entire ATI period was judged as not feasible and acceptable, but respondents were more neutral on its efficacy. Providing referrals so that all HIV negative partners of participants can obtain PrEP, providing PrEP directly to all HIV negative partners of participants without cost, and monitoring participants for new STD acquisition as an effort to assess sexual activity were all judged as feasible, acceptable, and efficacious.

Conclusions: Our study demonstrates that HIV remission trial investigators are concerned about the risk of transmission. Their assessment of risk mitigation strategies for transmission risk demonstrates the importance of examining feasibility, acceptability, and efficacy when designing risk reduction programs.

Anticipate how feasible, acceptable, and efficacious you anticipate the following actions would be to reduce transmission risk during trials with ATI of fixed duration. *(-3: Not at all; 3: Extremely)* Anticipate how feasible, acceptable, and efficacious you anticipate the following actions would be to reduce transmission risk during trials with ATI of fixed duration. *(-3: Not at all; 3: Extremely)*	Mean (n)		
	Feasible	Acceptable	Efficacious
Require counseling for potential participants that is focused on reducing transmission risk during ATI of fixed duration	2.31 (42)	2.14 (42)	1.07 (42)
Require that participants' sexual partner(s) participate in risk counseling targeted to reducing transmission risk during ATI of fixed duration.	-.22 (40)	-.03 (39)	.23 (40)
Limit participation to those who commit to abstaining from sex during the entire ATI period.	-.78 (36)	-.70 (37)	-.24 (38)
Provide referrals so that all HIV negative partners of participants can obtain PrEP	1.31 (42)	1.33 (42)	1.48 (42)
Provide PrEP directly to all HIV negative partners of participants without cost.	1.02 (41)	1.45 (42)	1.60 (42)
Monitor participants for new STD acquisition as an effort to assess sexual activity.	1.85 (41)	1.40 (40)	.98 (41)

Table 1. Feasibility, acceptability, and efficacy of HIV transmission risk mitigation strategies during trials with ATI of fixed duration- longer duration before re-starting ART.

Interventions to reduce stigma and discrimination

PESUD33

Addressing the unique needs of learners living with HIV in the education setting

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Background: In 2012,UNESCO collaborated with the Global Network of People living with HIV(GNP+) to produce the publication "positive Learning: Meeting the needs of young people living with HIV(YPLHIV) in the education sector". The tool identified key issues faced by YPLHIV in education settings and recommendations for the education sector on areas including confidentiality and disclosure.
In 2021 UNESCO commissioned the Global Network of Young People Living with HIV(Y+ Global) with support from GNP+ to revise the tool to reflect the current needs of YPLHIV in schools and to develop recommendations for stakeholders.

Description: The positive Learning revision process capitalized on youth leadership and leveraged on the experiences of the YPLHIV in schools engaging 145 young people from Asia (21),Middle East and North Africa (19), Anglophone and Francophone Africa (43),Eastern Europe and Central Asia (20) and Latin America and Hispanic Caribbean (17) and Global (25).
The revised tool highlights recommendations in seven thematic areas; comprehensive sexuality education, confidentiality and sharing information about HIV status, end HIV related stigma, discrimination, bullying and violence, HIV treatment and care, sexual reproductive health and rights, mental health and psychosocial well being and creating an inclusive and health promoting learning environment.

Lessons learned: YPLHIV globally are facing a compendium of cross cutting challenges such as stigma and discrimination, mental health issues and adherence to medication in the school settings. As YPLHIV we are aware of the issues and we have the solutions to these issues. YPLHIV leadership is critical as we are the agents of change in addressing these challenges and holding stakeholders accountable.

Conclusions/Next steps: The Positive Learning tool provides YPLHIV in schools with safe and conducive learning environments to improve treatment, education and mental wellbeing outcomes. The tool will be disseminated on a rolling basis through all platforms to ensure that relevant stakeholders in countries are reached.

PESUD34

Pathways from multiple stigmas to ART adherence among transgender women and men who have sex with men newly diagnosed with HIV in India: a prospective cohort study

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Background: Stigma remains a major barrier to ART adherence among persons newly diagnosed with HIV. However, little research exists on the impact of multiple stigmas on treatment outcomes for transgender women (TGW) or men who have sex with men (MSM) living with HIV in South Asia.
Guided by the Health Stigma Discrimination Framework, we conducted a longitudinal study among Indian TGW/MSM to understand how multiple stigmas (enacted, anticipated, and internalized) related to HIV and either gender (for TGW) or sexuality (for MSM) may influence ART adherence.

Methods: Between 2020-2021, 140 TGW and 227 MSM from 11 Indian states (≥18 years, diagnosed with HIV in past six-months) completed interviews at baseline, three- and six-months.
Using mediational analyses, we tested the associations of baseline stigma scores (HIV- and gender-identity for TGW, or sexual-identity for MSM) stigmas with past 30-day self-reported ART adherence (0-100) at six-months, and the indirect effects of stigma on ART adherence through three-month depression, anxiety, and alcohol use scores.

Results: Among TGW, mean age was 31.1 years and 23% were illiterate. At six-months, 92% of TGW had been prescribed ART; mean (sd) adherence was 77.9±17.1. Mediational analysis (Fig.1a) revealed a significant direct-effect of anticipated HIV-stigma in healthcare on adherence and indirect-effect of enacted HIV-stigma via alcohol use.
Among MSM, mean age was 33.3 years and 18.5% were illiterate.
At six-months, 98% of MSM were prescribed ART; mean (sd) adherence was 74.9±20.1. Mediational analysis (Fig.1b) revealed significant direct-effects from internalized MSM-stigma and enacted community HIV-stigma on adherence and indirect-effects of enacted HIV-stigma in healthcare via alcohol use.

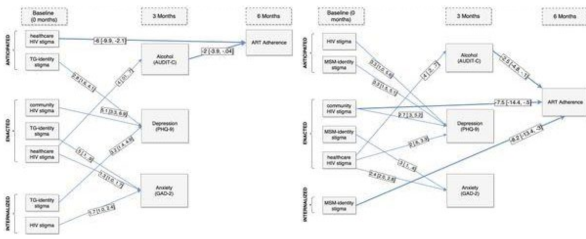

Figure 1. a) Significant pathways from stigmas to ART adherence for transgender women, b) Significant pathways from stigmas to ART adherence for MSM

Conclusions: Adherence was suboptimal and distinct forms of stigmas, either directly or indirectly differentially influenced ART-adherence among TGW and MSM. For both TGW and MSM, interventions to reduce stigma faced in healthcare settings and beyond and by addressing alcohol use could improve ART adherence.

Conceptualizing social and structural factors and their impacts

PESUD35

Racial residential segregation as a structural barrier to viral suppression among people living with HIV in Southern United States from 2013 to 2018: a county-level longitudinal study

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Background: Achieving viral suppression (VS) is one of the crucial goals of HIV care cascade. Residential segregation by race has long been framed as a potential structural barrier to successful VS at the individual level, but evidence is scarce at the population level, which has strong implication for healthcare policymaking and resources allocation.
This study aims to examine the longitudinal relationship between county-level racial segregation and VS rate among people living with HIV (PLWH) in 46 counties of South Carolina (SC) from 2013 to 2018.
Methods: De-identified laboratory reports of all PLWH in SC were extracted from the electronic HIV/AIDS reporting system in the SC Department of Health and Environment Control from January 2013 to December 2018. Based on CDC's definition, county-level VS rate was calculated as the percentage of PLWH who have viral load (VL) less than 200 copies/ml in the last VL report at each calendar year (excluding those newly diagnosed in that year).
Racial residential segregation was calculated using Massy and Denton's formula of isolation index for Black residents. The association between racial segregation and VS rate was tested by generalized linear mixed model, adjusting for potential confounders (e.g., sociodemographic characteristics, social capital, HIV care resources) and time.
Results: From 2013 to 2018, the average VS rate in SC increased from 64.3% to 65.4% among all PLWH. Counties in Upstate (Spartanburg and Cherokee) and Lowcountry (Orangeburg) reported low VS rate. Final model revealed that counties with higher residential isolation experienced lower VS rate (b = -0.354, 95%CI: -0.614 ~ -0.095). However, stronger county-level social capital, which was indicated by community health index, was related to higher VS rate in SC (b = 0.757, 95%CI: 0.277~1.237).
Conclusions: This study described the temporal and spatial distribution of VS rate in SC. Structural influence of residential segregation on viral suppression was found.
It is also suggested that more social cohesion at the county level was a protective factor of VS. These findings emphasize the need to address racial disparities in social capital based on racial residential segregation as part of a comprehensive strategy to curb the HIV epidemic.

PESUD36

Improving our understanding of how structural determinants impact HIV epidemics: a scoping review of dynamic models to guide future research

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Background: Dynamic models of HIV transmission have proven valuable tools for informing HIV prevention strategies. Including structural determinants in models is crucial to estimate their population-level impacts on HIV transmission and inform efforts towards HIV elimination. However, this is challenging due to a lack of coherent conceptual frameworks, limited understanding of their specific causal pathways, and few empirical estimates of their impacts on downstream mediators.
Methods: With the overarching aim to improve models, we conducted a scoping review of studies that used dynamic HIV transmission models to evaluate the impact of structural determinants. From included studies, we extracted information on the types of structural determinants and methods used to model their impacts on HIV transmission. We appraised studies on how they conceptualized structural exposures and represented their causal relationships over time within models.
Results: We identified 9 dynamic transmission modelling studies that incorporated structural determinants of HIV, including violence (N=3), incarceration (N=2), stigma (N=2), housing instability (N=2), migration (N=1), and education (N=1). Only one study modelled multiple determinants

simultaneously. In most models, structural determinants were conceptualized using current, recent, non-recent and/or lifetime exposure categories. Modelled structural determinants largely impacted HIV transmission through mediated effects on one or more proximate risk factors, including sharing injection equipment, condom use, number of partners, and access to treatment.

However, causal pathways were simplistic, with few mediators and/or lack of clear empirical justification. To measure impact, most studies simply assumed the elimination of structural determinants in counterfactual comparison scenarios. Few models included long-term and/or delayed effects of past, recurrent, or acute exposure, potentially overestimating impacts of determinants.

Conclusions: Despite the importance of structural determinants for HIV prevention, methods for including them in dynamic HIV transmission models remain insufficient. Few studies have attempted to incorporate structural determinants in HIV models, and methods vary considerably. To improve inferences, models should adopt precise exposure definitions, deconstruct and estimate their complex causal pathways, and translate them into their mechanistic components.

The need for development of coherent frameworks to conceptualize the synergistic interplay between strengthened empirical data analysis and the inclusion of structural determinants in dynamic models is pressing.

PEMOD56

Risk, vulnerability, and protective factors for HIV and STI infection among adolescent girls and young women in West and Central Africa: pooled analysis of available Demographic and Health survey data

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Background: Adolescent girls and young women (AGYW) are considered at heightened risk for HIV in sub-Saharan Africa, but most data on risk and vulnerability factors for this group comes from Eastern and Southern Africa, where HIV prevalence is highest. We assessed risk and vulnerability factors across nationally representative household surveys in West and Central Africa to better understand relationships and inform policy and programmatic decision-making in this region.

Methods: We used cross-sectional data from sexually-active AGYW participating in Demographic and Health Surveys from 17 West and Central African countries. Sexually transmitted infection (STI) symptomatology was used as a proxy for HIV risk. Modified Poisson regression models (for binomial outcomes) estimated prevalence ratios for associations between risk and vulnerability factors and past-year STI symptomatology among AGYW.

Models were stratified by five-year age bands (15-19, 20-24, 25-29 years) as well as current marital status to identify stratum-specific risk and vulnerability factors associated with STI symptomatology.

Results: Almost three-fourths of AGYW were married/cohabiting and 40% had completed secondary or higher education. Prevalence of past-year symptomatology was 20.7%. Consistent and strong associations existed between several risk and vulnerability factors and STI symptomatology.

Older age (25-29-year-olds) and secondary or higher education were associated with increased prevalence of past-year STI symptomatology in the pooled AGYW sample and among married AGYW, specifically.

Urbanicity and secondary or higher education were associated with increased prevalence of past-year STI symptomatology across five-year age bands.

Employment, migration and accepting spousal violence were strongly associated with past-year STI symptomatology among all three age groups, with adjusted prevalence ratios (aPR) ranging from 1.13–1.33 ($p<0.0001$).

Multiple sexual partners and unprotected last sex were also strongly associated among all three age groups, with aPR ranging from 1.35–1.64 ($p<0.0001$).

Conclusions: These findings indicate heterogeneities in STI symptomatology by key sociodemographic characteristics and corresponding sources of risk and vulnerability among AGYW, highlighting the need to develop effective policies to address increased risk and vulnerability of AGYW to HIV and STI infection.

HIV/STI prevention interventions should focus on supporting individual agency to engage in safer sexual practices and addressing harmful gender norms and practices, including acceptance of spousal violence.

PEMOD57

How can text-messaging change the context of living with HIV and engaging with treatment in Iran: building a realist programme theory

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Background: Text-messaging interventions are increasingly used to address the complex challenges of lifetime antiretroviral therapy (ART). A wealth of evidence supports the efficacy of text-messaging in improving treatment adherence, yet there is a dearth of evidence on

how text-messaging is improving outcomes and *why* it works in a particular context. This study uses stakeholder views to theorise *how*and *why* text-messaging could change the context of living with HIV and engaging with ART in Iran.

Methods: The study is part of an ongoing research project on ART engagement among Iranians living with HIV. We draw on the perspectives of recently-diagnosed and treatment-experienced patients and their providers, using purposive sampling, conducting 17 individual interviews and 9 focus group discussions. A realist framework of inquiry is utilised to conceptualise how interventions alter the context of people's lives by providing new paths for individual reasoning and [re]action, thereby producing altered outcomes.

Results: Our findings build on the previously identified socio-ecological pathways that disrupt ART in Iran (Figure 1).

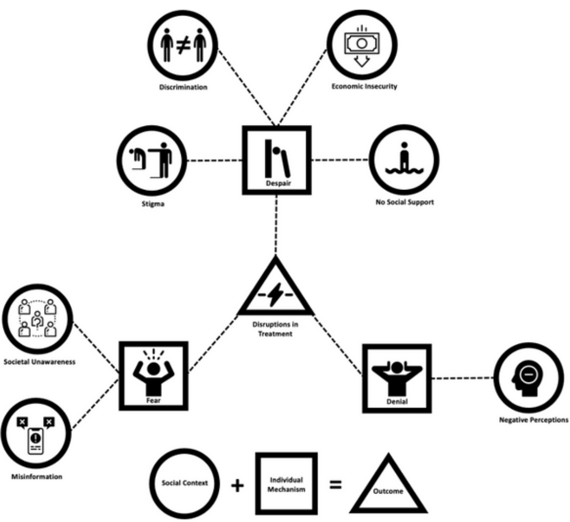

Figure 1.

We found that participants perceive text-messaging can improve adherence by changing socio-ecological pathways and the relation between the health-system and patients in terms of support, motivation, initiative, and information (Figure 2).

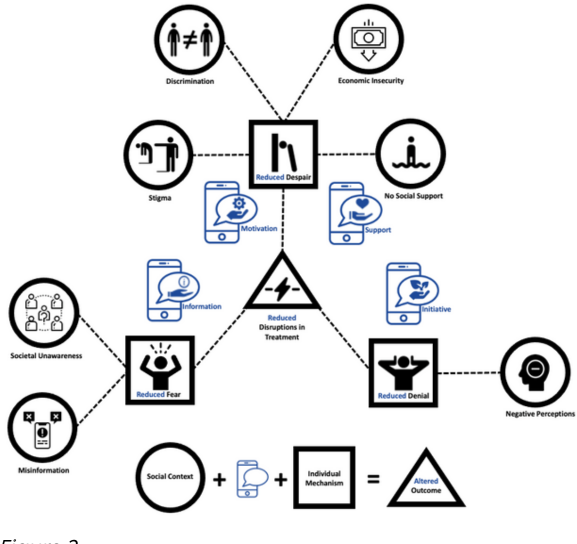

Figure 2.

Conclusions: We believe this is the first study to explain how and why text messaging works to reduce disruption in ART treatment. It identifies the important contexts that interventions need to address for desired outcomes to occur. The realist programme theory developed here can inform future design and evaluation of interventions and trials.

Dynamics of social status and power: Sex, gender, age, race/ethnicity, sexual orientation and disability

PESUD37

"Guys are different": young women's views on heterosexual relationship dynamics and how they influence women's potential PrEP uptake and disclosure in Durban, South Africa

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Background: Considerable evidence demonstrates that heterosexual relationship dynamics influence women's decisions around HIV prevention methods, but little research has been conducted among educated South African women.

In the context of oral pre-exposure-prophylaxis (PrEP) becoming publicly available in South Africa (2019), we explored urban, educated young women's views on relationship dynamics with male partners, how these dynamics might impact women's use of PrEP, and how women might navigate those dynamics if they chose to use PrEP. Understanding and taking into account the realities of the lives of women is key to designing successful PrEP programs.

Methods: This analysis utilized qualitative data from a study to develop a gender-focused PrEP information-motivation workshop to introduce young women to PrEP, in Durban, South Africa. Participants were aged 18-25, educated, and recruited from urban clinic and community settings. Six focus group discussions and eight in-depth interviews were conducted with 46 women. Data were analyzed thematically.

Results: Women described men as having a different culture and set of behaviors than women and as experiencing different societal gender norms, which leads to women being at a greater risk for HIV. These differences bring complexity to women's relationships and influence their choices around PrEP use and disclosure. While acknowledging the potential benefits of PrEP, women stated that risks included: potential for anger and loss of trust in relationships, breakup, physical violence, pregnancy or other sexually transmitted infections.

Despite these concerns, woman expressed desire for mutuality in relationships and shared suggestions to manage choices around PrEP use and disclosure, including willingness to end relationships.

Conclusions: These results document the challenges that even urban, educated women experience in heterosexual relationships with respect to gender dynamics and HIV prevention and add to the growing body of evidence that women's use and adherence to PrEP in Africa is shaped by male partners and women's perceptions of their male partners' reactions.

For PrEP to be rolled out successfully, implementation programs need to provide women with concrete methods to improve self-agency and communication skills that address conflict. Women need these skills to navigate the complex power dynamics they experience in heterosexual relationships.

Humanitarian crises and HIV

PESUD38

HIV testing experiences and priorities among refugee youth in a humanitarian setting in Uganda

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Background: Refugee youth experience social drivers of HIV, including violence, poverty, and constrained access to HIV prevention services. Scant research has focused on youth-centred HIV testing strategies—including HIV self-testing (HIV-ST)—in humanitarian crises.

We explored HIV testing experiences and preferences among refugee youth in Bidi Bidi refugee settlement, Uganda to inform development of an HIV self-testing intervention.

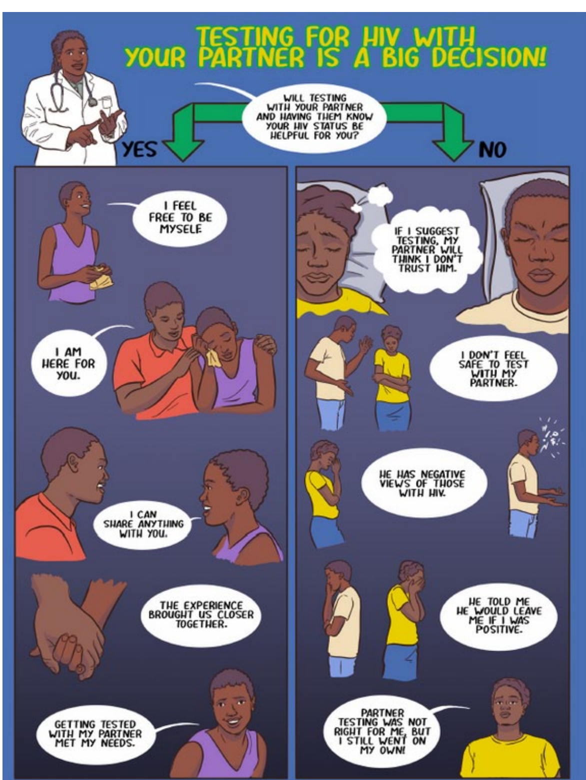
Methods: We implemented a multi-method community-based study in Bidi Bidi. We conducted four focus groups (FG) with refugee youth, 2 with ages 16-19 (women: n=1 FG; men; n=1 FG) and 2 with ages 20-24 (women: n=1 FG; men; n=1 FG). We developed a 9-page comic series illustrating FG findings and then conducted a 3-day human-centred design (HCD) workshop with refugee peer navigators (n=8). We conducted thematic analyses across methods.

Results: Focus group participants (n=40; n=16 ages 16-19, n=24 ages 20-24; 20 men, 20 women) were largely from South Sudan (83%). Most had a lifetime HIV test (83%) yet three-quarters (78%) had not tested in the past year. FG narratives revealed HIV testing decision-making considerations of:

a. positive outcomes (self-care, post-rape awareness, protecting others from infection, self-knowledge) and;

b. negative outcomes (HIV-related stigma, relationship mistrust/violence, healthcare mistreatment).

Participants expressed enthusiasm regarding HIV-ST (e.g., confidentiality, convenience) yet women detailed concerns of relationship violence with HIV-positive results. Comics detailed these HIV testing decision-making processes, including risk-assessment for partner testing. HCD findings identified ways to create youth-friendly HIV testing spaces, address HIV-ST misinformation, and reduce community and health-care stigma.



Conclusions: Findings provide unique insight into refugee youth HIV testing experiences and priorities. This research highlights the salience of the disclosure process model to understand antecedent goals (approach goals for positive outcomes, avoidance goals for negative outcomes) for HIV testing, including HIV-ST. Refugee youths' experiences of cumulative violence signal the need for trauma-informed, youth-centred HIV testing strategies in humanitarian crises.

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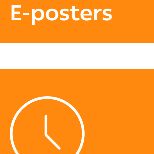

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Societal stigma towards people living with HIV and key populations

PESUD39
Partner social support and sexual satisfaction buffer the effects of stigma on ART adherencein Malawian couples

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Background: For couples affected by HIV, relationship dynamics can have a positive impact on adherence to antiretroviral therapy (ART) via social support and coping. While research suggests that general partner support can enhance ART adherence and that stigma may exert its influence dyadically, few if any studies in sub-Saharan Africa have explored whether relationship dynamics can buffer the experience of anticipated stigma from family members and healthcare providers on ART adherence. We examined this question among a sample of couples living with HIV in Malawi.

Methods: Married couples (N = 211) with at least one partner on ART were recruited from HIV clinic waiting rooms in Zomba, Malawi. Partners completed separate surveys on anticipated HIV stigma from family members of health-care providers, relationship dynamics (e.g., intimacy, trust, sexual satisfaction, general partner social support, communication), and ART adherence.

Using generalized estimating equation (GEE) regression models, we tested for associations between anticipated stigma and ART adherence at the individual level, and whether this association was moderated by relationship dynamics at the couple level, after controlling for socio-demographics and relationship duration.

Results: Couples had been together for a mean of 12.5 years (SD=9.0), 66% were sero-concordant, and 95.6% of participants reported 90-100% adherence. The mean anticipated stigma score was 1.6 (SD=0.74, scale range 1-5), with higher scores indicating higher stigma. In multivariable models, the odds of having 90-100% adherence were 45% lower for each one-unit increase in anticipated HIV stigma (aOR=0.55, 95%CI=0.34; 0.89).

There were significant interactions between partner social support and anticipated stigma from family members and healthcare providers (p=0.032) and between sexual satisfaction and anticipated stigma (p=0.039), showing that the association between higher stigma and non-adherence was moderated in couples with higher social support and sexual satisfaction.

Conclusions: Increased anticipated HIV stigma is associated with higher non-adherence to ART. Supportive and fulfilling relationships, particularly those with greater partner support and sexual satisfaction, may buffer the experience of stigma on ART adherence. Couple-based interventions that intervene on these important aspects of relationships may help lessen the negative impact of HIV stigma on HIV treatment engagement such as ART adherence.

PESUD40
Anticipated stigma among recently diagnosed HIV clients in the UTT era in Johannesburg, South Africa

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Background: Anticipated stigma – the fear that HIV diagnosis and status disclosure could have negative social implications – may adversely affect engagement with HIV care and treatment, despite universal eligibility for treatment under universal-test-and-treat (UTT).

We aimed to determine prevalence and predictors of anticipated stigma among newly HIV-diagnosed individuals under the UTT policy in Johannesburg, South Africa.

Methods: We analyzed a cross-sectional survey of 652 newly HIV-diagnosed adults (≥18 years) (64.1% female, median age was 33 years, interquartile range [IQR]: 28–39) enrolled in a cohort study from October 2017 to August 2018 from four primary clinics in Johannesburg. Participants were interviewed immediately after receiving their HIV test results. We used an adapted five-item, four-point scale measuring agreement with statements regarding HIV disclosure concerns and HIV status concealment (Cronbach's alpha =0.82). Mean scores were categorized as "low-to-medium" (score<=2.5), or "high" (score>2.5).

We used Modified Poisson regression to assess for predictors of high anticipated stigma and report adjusted risk ratios (aRR) with 95% confidence intervals (CIs).

Results: Overall, 55% of study participants had high anticipated stigma; 55.8% for males, 61.1% for 18–29-year-olds, and 43% for those married. Unmarried individuals who were in a relationship had a higher risk of high anticipated stigma than those married (aRR 1.10, 95% CI: 1.01-1.18). Risk of high anticipated stigma was lower among: older individuals (aRR 0.94 for being 30-39 vs 18-29 years, 95% CI: 0.88-0.99), those having a primary house in another province/rural (aRR 0.82 for primary house in another country vs current house, 95% CI: 0.78-0.87), (aRR 0.83 for primary house in another country vs current house, 95% CI: 0.78-0.88), those living in current homes for ≥5 years (aRR 0.93 for >5 years vs <1 year, 95% CI: 0.88-0.99), those with low ART concerns (aRR 0.86, 95 % CI: 0.82-0.90), and those with low perceived social-support (aRR 0.79 for low vs high, 95 % CI: 0.70-0.88).

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Conclusions: Over 50% of adults diagnosed with HIV in the UTT era experienced high anticipated stigma. Findings highlight the need to address factors that continue to drive anticipated stigma, to mitigate the potential impact on engagement in HIV care.

PESUD41

Experiences of viral detectability, undetectability, and stigma among recently diagnosed people living with HIV in Australia

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Background: HIV treatments can improve the health and wellbeing of people living with HIV (PLHIV) and eliminate the risk of sexual transmission for those who can maintain undetectable viral load (UVL). This has been accompanied by a promise of reducing HIV-related stigma. We explored how detectable and undetectable viral loads were experienced by PLHIV, including how these experiences interplayed with experiences of self- and anticipated stigma.
Methods: The RISE study is an ongoing qualitative cohort study of 34 PLHIV diagnosed from 2016 onward in Australia. Of these, 25 had participated in follow up interviews, providing 59 interviews for analysis. Interviews were conducted between January 2019 and November 2021.
Results: Median age was 41; 32 were male and 2 were female; 21 were gay, 8 were bisexual, and 5 were heterosexual. All participants except 1 were on treatment and had UVL when first interviewed.
Participants frequently associated the period in which they were detectable with feeling "dirty," "viral," and "a risk" to sexual partners. During this period, most participants limited or ceased sex, even when in an ongoing romantic relationship. Participants commonly framed reaching UVL as an important goal in their HIV care, with UVL acting as a marker of good health and as reenabling sexual and/or romantic relationships. This helped reduce experiences of self-stigma and enabled participants to envision living a "normal" life, something they could not imagine while detectable. However, some participants described that despite having UVL, and their belief in its preventative efficacy, they remained hesitant to reengage with sex.
This was mainly due to a perceived lack of awareness among the broader, HIV-negative population around UVL, concerns of sexual rejection, and anticipated stigma.
Conclusions: UVL can improve the physical and emotional wellbeing of PLHIV. However, these experiences occur in a context of persistent HIV-related social stigma and a lack of awareness around UVL more broadly. While UVL can reduce experiences of self-stigma, many PLHIV continue to anticipate HIV-related stigma and sexual rejection.
This highlights the limits of biomedicine alone as a stigma-reduction strategy and the need for strategies, programs, and interventions that aim to reduce HIV-related stigma in the broader community.

PESUD42

"Fear really comes from the unknowns": navigating 'unknowable' stigma and discrimination among people living with HIV in Singapore

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Background: Structural stigma and institutionalised forms of discrimination towards people living with HIV (PLHIV), especially in the areas of health insurance, immigration, and employment remain pervasive in many settings.
However, no study in Singapore has qualitatively explored how PLHIV navigate such forms of discrimination, its impact on health/social service seeking behaviour and quality of life, and interventions required to address such inequities.
Methods: Semi-structured qualitative interviews were conducted with 73 participants. These included 56 PLHIV (30 men who have sex with men, 23 heterosexual men, 3 women) and 17 stakeholders including healthcare professionals and other allied workers.
Interviews focused on participant perspectives or experiences of HIV diagnosis, navigating healthcare, attitudes towards and impact of HIV on relationships. Data were analysed through inductive thematic analysis.
Results: Participants highlighted that they were aware of institutionalised discrimination towards PLHIV (or experienced it, for participants who were PLHIV) across various aspects of their lives. These included experiences – overt and covert -- of discrimination in education, workplace, and healthcare settings.
However, participants disclosed a greater discriminatory impact due to the manifold unknowns; that is, experiences resulting from 'unknowable' discrimination. We interpreted this as participants' fear of potential legal and/or social repercussions resulting from the disclosure of their HIV status that they may not be able to anticipate. Even though employers may not overtly discriminate, the fear of such ‚unknowable' discrimination influenced decisions to conceal HIV status in job applications and workplaces.
This shroud of fear restricted agency for PLHIV, and impacted their regular medical follow-ups, socialising behaviours, and overall quality of life. Consequently, many participants felt that concealment of their status, and bypassing potential educational, employment, and even health opportunities were the only ways of protecting themselves from such 'unknowable' stigma. Both PLHIV and stakeholders articulated that an anti-discrimination framework is urgently needed to address such uncertainties in their lives.

Conclusions: An anti-discrimination framework, enforceable by law, on the institutional treatment of PLHIV would remove unpredictability and address the manifold unknowns surrounding discriminatory experiences and improve their quality of life. Subsequent elimination of fear for unknown discrimination may also greatly facilitate timely testing, linkage to care and treatment.

PESUD43

Engagement in HIV care and on-going substance use: a qualitative sub-study of BASE participants

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Background: Of the 1.2 million people living with HIV (PWH) in the United States, an estimated 48% are also experiencing a substance use disorder (SUD). Inconsistencies in treatment adherence and retention in HIV care have been reported among PWH that use illicit drugs, often leading to poor treatment outcomes and increased HIV transmission. This qualitative sub-study explored factors that influence engagement in HIV care among PWH and ongoing SUD.

Methods: In-depth, semi-structured interviews were conducted in 2021 with 15 PWH/SUD and were enrolled in a pilot study assessing the efficacy and safety of bictegravir/emtricitabine/tenofovir alafenamide (BASE study; NCT03998176) in Omaha, NE, USA. Interviews addressed participants' experiences living with HIV, substance use, and engagement in HIV care. Transcripts were analyzed using the methods of constructivist grounded theory, including initial coding, focused coding and categorization.

Participant Sex	80% Male, 20% Female
Race/Ethnicity	73% White Non-Hispanic, 13% White Hispanic, 13% Black/African-American
Age	Average 43, Range 30-62
Risk factors	53% MSM, 40% IVDU
Reported Substance Use	100% Methamphetamine, 7% Cocaine, 7% Opiate, 7% Sedative

Table.

Results: Participants described complex, interconnected, and mutually reinforcing barriers to engagement in HIV care. For example, experiences of homelessness often disrupted HIV care and medication adherence. At the same time, participants experiencing homelessness also experienced stigma from social service providers related to drug use, HIV status, sexual orientation, and participation in sex work.

Many participants internalized responsibility for these experiences, viewing themselves as unworthy of HIV care which would improve their health or extend their lifespan. In the absence of strong intrapersonal motivation to engage in HIV care, many participants relied heavily on interpersonal motivation, including caring for themselves in order to support loved ones, honoring the efforts of clinic staff, or attempting to prove others wrong.

Engagement in HIV care in respectful and supportive environments increased some participants' sense of self-worth and their own intrapersonal motivation to continue engaging in HIV care.

Conclusions: The development of this mid-range explanatory theory of engagement in HIV care for PWH/SUD highlights the significant role of layered stigma, as well as the importance of recognizing and utilizing interpersonal motivation to help overcome barriers to engagement in HIV care. Results have implications for clinical care and intervention development.

PESUD44

A longitudinal examination of anticipated HIV stigma as a mediator of the relationship between enacted and internalized stigma and self-rated health

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Background: HIV stigma remains high in Canada, causing significant impact on the health and wellbeing of people living with HIV. There is a limited understanding, however, around how different types of stigma act interact to impact overall health.

This study examines how enacted and internalized stigma may lead to worse self-rated physical, mental, and overall health through anticipated stigma as a mediator.

Methods: We recruited 724 participants in Ontario from September 2018 – August 2019 to complete the People Living with HIV Stigma Index at baseline (t_1) using validated measures for stigma and quality of life. Approximately two years later we resurveyed participants (n=407) with the same instruments (t_2).

Five separate mediation models were created with enacted and internalized stigma at t_1 as the antecedents and physical health, mental health, and overall health at t_2 as the outcomes.

Anticipated stigma at t_2 was entered as the mediator in all models. Age, years since HIV diagnosis, gender, ethnicity, sexual orientation, geographic region, education, employment, and anticipated stigma at t_1 were entered into the models as covariates.

Results: With internalized stigma (t_1) as the antecedent, anticipated stigma (t_2) was a significant mediator leading to both decreased mental health (indirect effect =

-0.48, 95% CI = -1.05, -0.01) and overall health (indirect effect = 0.04, 95% CI = 0.00, 0.08). The model with physical health as the outcome was not significant, nor were any of the models with enacted stigma (t_1) as the antecedent.

Conclusions: We found that higher internalized stigma can lead to an increase in anticipated stigma which resulted in worse mental health and overall health.

These findings show how internalizing negative thoughts and feelings about living with HIV can lead to anticipating experiences of discrimination and stereotyping with consequences for health and wellbeing. This highlights potential points for intervention to reduce the negative impacts of stigma.

PESUD45

Influence of multiple stigmas on psychosocial problems and condom use among MSM and transgender women in India: findings from a longitudinal S3 (stigma, syndemics and sex) cohort study

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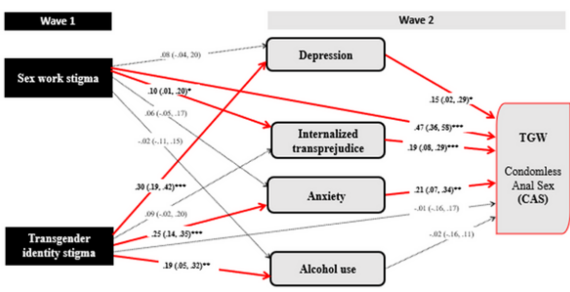
Background: The disproportionate HIV burden among MSM and transgender women (TGW) in India persists along with multiple forms of stigma and psychosocial problems such as depression and problematic alcohol use. Amid limited research in India on the associations between multiple stigmas, psychosocial problems and condomless anal sex (CAS), we explored these associations, informed by minority stress and syndemic theories.

Methods: We used two-wave data (November 2020 to Jan 2022) from an ongoing cohort study with 500 MSM and 500 TGW recruited through community-based organisations that conduct HIV preventive interventions in Chennai/Mumbai. Path analyses were conducted (Mplus-8) to predict CAS with male non-primary partners (wave-2) from stigma scores (wave-1 sexual stigma, transgender identity stigma, sex work stigma) and psychosocial variables (wave-2 depression, anxiety, internalized homonegativity, internalized transprejudice and alcohol use).

Results: Among MSM (mean age=28.2 years; HIV=4.2%)) and TGW (mean age=27.6 years; HIV=4.8%), CAS (wave-2) was 23.2% and 72.3%, respectively. Compared to MSM, TGW had higher prevalence of moderate depression (MSM-4.3%; TGW-21.1%) and anxiety (MSM-16.2%; TGW-45.9%), but lower prevalence of problematic alcohol use (MSM-13.4%; TGW-12.1%).

Among TGW, sex work stigma, internalized transprejudice, depression and anxiety had significant direct effects on CAS (Figure-1). Transgender identity stigma had significant direct effects on depression, anxiety and alcohol use, and significant indirect effect on CAS through anxiety. Among MSM, sexual stigma had significant direct effects on CAS, depression and anxiety, and sex work stigma had significant direct effects on internalized homonegativity and alcohol use (Figure 1).



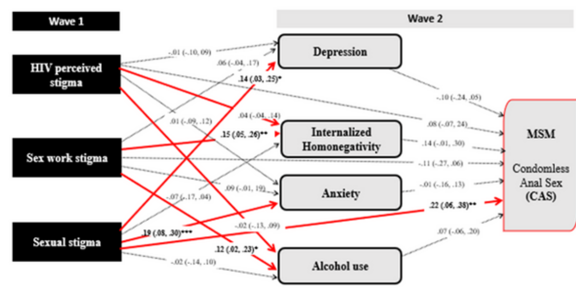


Figure 1. Associations between multiple stigmas, psychosocial problems and condomless anal sex (with male non-primary partners) among MSM (n=500) and TGW (n=500)
*Effects are standardized estimates (95% CI). Bold red arrows indicate significant effects: *p<.05, **p<.01, ***p<.001.*

Conclusions: Stigmas faced by MSM (sexual, sex work) and TGW (transgender identity) contributed directly and indirectly to HIV risk through multiple psychosocial problems. Expanded efforts to reduce societal stigma against transgender people, MSM and those involved in sex work, and to address population-specific psychosocial problems, are needed to promote safer sex and mental health among TGW and MSM in India.

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PESUD46

Impacts of intersecting stigma towards Gay, Bisexual men and other Men Who have Sex with Men (GBMSM) on HIV care in a clinical setting: breaking the vicious cycle in Zambia

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Background: GBMSM in Zambia face tremendous challenges in accessing HIV care services due to cultural, legal and religious context. A prominent barrier for GBMSM is intersecting stigma in HIV/STI clinic setting. However, few studies have examined impacts of stigma at various ecological levels based on GBMSM's lived experience in Zambia from a holistic perspective.

We aim to explore how the impacts of stigma at different ecological levels (intrapersonal, interpersonal and institutional level) interact with each other as a vicious cycle of impeding GBMSM from HIV-related care and services.

Methods: In-depth interviews were conducted with 19 GBMSM participants aged 18 to 35 purposively recruited from Lusaka in 2021. Interviews were conducted in English in private rooms, lasted 30-80 minutes and were audio-recorded with participant consent. The audio files were transcribed verbatim and then managed and iteratively coded with Nvivo. Inductive approach was applied to conduct thematic analysis.

Results: The impacts of intersecting stigma at different ecological levels interacted with each other as a vicious cycle preventing GBMSM from the linkage, engagement and retention in HIV prevention and treatment cascade. Mental health and substance abuse issues negatively affected their relationship with family/friends, causing social isolation which increased their stress, and reduced social support.

Confidentiality breaches in clinical setting caused unintentional disclosure of sexual orientation or HIV/STI status to family, friends, and communities, exaggerating the tensions between GBMSM and their social environment. Detention and harassment by law enforcement increased the distrust in institutes including some public/government facilities, which drove many GBMSM to select NGOs/private clinics.

However, not all GBMSM could access affordable and sustainable HIV care clinics/programs. GBMSM with negative self-images and mental health and substance abuse issues gave up self-care and self-management, which influenced their health seeking behaviors and medicine adherence (e.g., PrEP use). The negative experiences in health facilities further reinforced the existing social stigma against GBMSM and threatened their self-image.

Conclusions: To increase GBMSM's HIV care access and improve their psychosocial wellbeing in Zambia, integrated intervention strategies are needed to break the vicious cycle of the impacts of intersecting stigma at intrapersonal, interpersonal and institutional levels.

Adaptation to living with HIV for individuals, families and communities

PESUD47

Motivations behind seeking religious and spiritual support and their impact on health and social outcomes for PLHIV in Singapore

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Background: Existing literature on religion and HIV identified that people living with HIV (PLHIV) who have a religious or spiritual affiliation believe faith helps with coping with illness and finding a renewed sense of purpose in life. However, there is no existing study on religion and HIV in Singapore, much less a study on religion as a resource for treatment or support in clinical interventions for PLHIV.

Methods: Semi-structured qualitative interviews were conducted with a total of 73 participants. These included 56 PLHIV (30 men who have sex with men, 23 heterosexual men, 3 women) and 17 stakeholders including healthcare workers, contact tracers, religious leaders, social workers, and volunteers. Interviews focused on PLHIV and stakeholders' perspectives or experiences of HIV diagnosis, navigating healthcare, attitudes towards HIV, and impact of HIV on relationships. Data were analysed through inductive thematic analysis.

Results: Most PLHIV reported having a religious or spiritual affiliation with varying degrees of practice. Participants report that their faith communities are not directly involved with HIV/AIDS treatment, support, or resource provision. Instead, participants turn to religion to cope with their illness through practice (prayer, reflection) and support-seeking.

Our analysis revealed that those who practice Abrahamic religions (Islam, Christianity, Catholicism) are more inclined to seek support from their community members, while those of non-Abrahamic faiths (Buddhism, Taoism, Hinduism) seek spiritual support from their practice. PLHIV from both groups are reluctant to disclose their HIV-

status to members from their faiths, not because their religions, religious leaders, or fellow practitioners condemn HIV/AIDS, but because of existing prejudices against homosexuality, promiscuity, and infidelity in their religions.
This indicates that cultural stigmas are being reproduced in religious groups in Singapore, as well as conflated with HIV/AIDS by our religious participants.

Conclusions: This paper delineates the motivations of religious/spiritual practice in PLHIV. Understanding the differences between Abrahamic and non-Abrahamic faiths is paramount to conceiving of religion or spirituality as a resource for treatment/support in clinical interventions.
Further, understanding how cultural stigmas are reproduced in religious settings illuminates barriers to health and social outcomes for PLHIV, including a reluctance to seek support from social groups due to a fear of discrimination.

PESUD49

Photovoicing social ecological resilience and resources for youths living with HIV/AIDS in Western Uganda: towards empowering representations

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Background: The adversities and challenges faced by youths living with HIV/AIDS (YLWHA) are manifold, but their disproportional documentation results in overly disempowering representations of YLWHA as weak, suffering and vulnerable. What enables resilience has received subpar attention.
This study sought to explore YLWHA's perceptions and representations of social ecological resources that drive resilience. Through stimulating self-representation, the study further pursued critical consciousness and affirmation of voice and agency to challenge dominant disempowering representations and social injustices around YLWHA.

Methods: The study was conducted at a regional referral hospital in Kabarole district, western Uganda. Eleven YLWHA, aged 14-21 years, were recruited from an existing peer support group in the hospital. Drawing on photovoice methodology, seven consecutive sessions were organized to guide participants in producing and discussing their photos and associated narratives. These were subjected to preliminary inductive content analysis by participants, and then analyzed and interpreted by the researchers against the theoretical framework of social ecological resilience.

Results: Through their photos and narratives, participants portray tensions in resilience and document an array of multisystemic resources that are both informal and institutionalized.
Yet, these resources appear rather incidental and not structurally available to YLWHA. Six overarching themes emerged:
1. Availability of structural provisions,
2. Personal and collective senses of purpose,
3. Self-appraisal of strengths,
4. Achieving what society does not expect of them,
5. Expression of appreciation for supportive relationships,
6. Being of value to others and getting recognition.

Conclusions: The representations shared by participants challenge the trope of the weak, suffering, and vulnerable YLWHA and contribute to an understanding of the multisystemic resources that foster resilience and empower YLWHA. Yet, the study also shows that resources need to become more structurally available for these youths.

Confronting stigma: Lessons learned

PESUD50

Frameworks and measures for HIV-related internalized stigma, stigma and discrimination in healthcare and in laws and policies: a systematic review

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Background: While global progress towards eliminating HIV-related stigma and discrimination remains of key importance, there is wide variation in efforts to measure and assess existing interventions.

Methods: Given this variability, we carried out a systematic review to address two questions: What conceptual frameworks exist to assess internalized stigma, stigma and discrimination experienced in healthcare settings, and stigma and discrimination entrenched in national laws and policies? Which measures of different types of stigma and discrimination have been proposed and what are their descriptive properties? Searches, completed on 05/06/21, cover publications from 2008 onwards. The review is registered in PROSPERO (CRD42021249348), the protocol incorporated stakeholder input, and the data are available in the Systematic Review Data Repository.

Results: Sixty-nine frameworks and fifty measures met the inclusion criteria. While frameworks generally seek to highlight the complex web of factors affecting different types of stigma and their impacts, their scope varies tremendously as do outcomes of interest.

Measures are equally diverse with substantial differences even between those purporting to measure the same dimension of stigma. Overall, there was disproportionately little attention to stigma and discrimination in laws and policies.

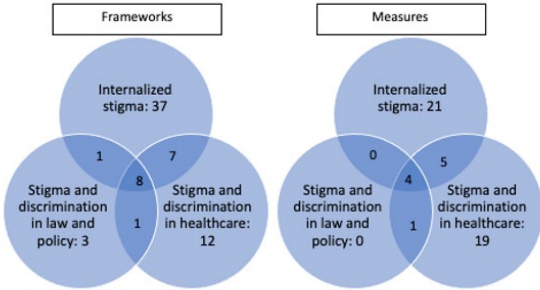

Figure. Number of frameworks and measures included in the review by the dimension(s) of stigma and discrimination covered.

Conclusions: To achieve global targets will require rigorous measurement of stigma and discrimination across different spheres, including those studied here. The challenge remains how to do this with frameworks and measures that are both locally appropriate and globally comparable. Frameworks and measures must be fit to help direct investment, prioritize appropriate actions, and strengthen learning about effectiveness.

Most importantly, the goal must be to understand, measure and help mitigate and alleviate the impact of different types of stigma on people's health and quality of life. This review provides a basis to seek consensus about appropriate concepts and measures to understand the experiences and drivers of stigma for different people in diverse contexts around the world.

PEMOD52

It's time to think positive about HIV – a strengths-based campaign to end HIV stigma from New South Wales, Australia

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Background: Campaigns to address HIV stigma often aim to raise awareness by communicating the experiences of people living with HIV (PLHIV) with stigma. In a new approach, ACON's innovative anti-stigma campaign *It's Time to Think Positive About HIV*reorientates how campaigns address HIV stigma. Rather than focus on the harms of HIV stigma, *Think Positive* celebrates HIV allyship and calls on the broader community, with a focus on those who are HIV negative, to confront HIV stigma together. Featuring Australian community members, *Think Positive*providesa blueprint to challenge HIV stigma through an uplifting, strengths-based message that celebrates allyship.

Description: Aligned with best practice and linked to the Greater Involvement and more Meaningful Engagement of PLHIV (GIPA/MIPA) principals, staff living with HIV led the conceptualisation, development, and delivery of the campaign. *Think Positive* launched on 1 September 2021 and ended promotions on 31 October 2021. Hosted on YouTube and embedded on ACON's Ending HIV campaign platform, the *Think Positive* landing page achieved 12,640 page views, suggesting robust engagement with the message. Beyond ACON web channels, *Think Positive* video content achieved 395,533 views across Facebook, Instagram, and YouTube.

Lessons learned: In an internal evaluation, 97% of survey respondents considered the main campaign video messaging to be extremely, very, or moderately effective. *Think Positive* demonstrates that anti-stigma campaigns can be constructed as uplifting messages that are empowering and optimistic for PLHIV.

Anti-stigma messaging does not need to shame behaviour or showcase harms, but rather can encourage better allyship and collective community care. This new approach relieves the burden on PLHIV around stigma.

Conclusions/Next steps: Addressing HIV stigma and improving quality of life for PLHIV should be prioritised in the global HIV response with equal importance to testing, treatment, and prevention. Reducing HIV stigma is much more than building resilience in PLHIV, who have carried this burden through the history of the epidemic.

Instead, positive examples that engage all of community and provide people with both a blueprint and vocabulary to end HIV stigma should be developed. Guiding people towards high quality HIV allyship should be core to these efforts.

PEMOD53

"My attitude towards my own journey changed the way others see me and treat me": insights from male peers living with HIV on challenging and changing stigma

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Background: HIV-related stigma and discrimination remain significant barriers to achieving the UNAIDS 95-95-95 targets and realizing optimal outcomes for people living with HIV (PLHIV). Among healthcare workers (HCW) living with HIV, there is a complex and multi-layered intersection of both externalized and internalized stigma particularly among peer navigators who work closely with communities.

Efforts are needed to directly address stigma reduction in HIV programs and create a safe and supportive working environment for HCWs.

Description: Programmes that engage with stigma at both inter-personal and community support environments in which stigma and discrimination are no longer accepted or practiced. We explored the experiences and perceptions of male peer navigators living with HIV- re-

ferred to as coaches-, with the aim of understanding how they have addressed stigma in their personal and work lives. We used a qualitative design involving individual semi-structured in-depth discussions with 45 coaches in 5 provinces in South Africa.

Lessons learned: By embracing their HIV status publicly and countering outdated notions of what it means to live with HIV coaches reported being able to overcome internal stigma by reframing their experience of HIV as a resource for advising and supporting other men living with HIV.

"Self-acceptance is the first step to healing and setting the tone on how others will treat you." – Coach, Free State

"Stigma will always be there from lack of information, but we move on, and now we are comfortable in our own skin." – Coach, Gauteng

"People do not believe when I disclose my status during campaigns because I am healthy and confident." – Coach, Free State

The social and professional standing that they hold as healthcare workers and the purpose and meaning that they find in their work appear to serve as protective factors.

Conclusions/Next steps: The Coach intervention has demonstrated that empathy and disclosure from a healthcare worker can reduce stigma and encourage others to seek care.

These approaches are interdependent and mutually reinforcing and have consequences for the way in which people react to others in their community as well as within healthcare facilities. This suggests that greater visibility of PLHIV could be a significant element of stigma reduction strategies.

PEMOD54

"I am a rural woman and living with HIV, how bad can it get?" Exploring the challenges of women living with HIV and AIDS on rural Ghana

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Background: The stigma and discrimination against Persons Living with HIV and AIDS (PLHIV) in Ghana is nothing short of abominable and for PLHIV in rural Ghana where traditional cultures are entrenched, it is virtually abusive. Women living in rural Ghana and having HIV therefore, face unique vulnerabilities that need to be explored in order to appreciate their distinct challenges and make programmatic interventions more effective.

Description: Qualitative data collection method of Focus Group Discussions was employed in the study in 2021. 5 FGD made up of 7 participants each were organized in 5 rural districts in the Ashanti Region of Ghana. The 35 respondents of rural women living with HIV were purposely selected.

The discussions were audio recorded after getting the informed consent of participants. The recorded data was transcribed and the transcripts were thematically analyzed.

Lessons learned: It was revealed during the interactions that the participants face the triple burden of being women, living in a rural area, and living with HIV. Negotiating how to lessen the effects of these burdens is both problematic and extremely difficult.

The perception that HIV is the curse of the gods, and hence has a spiritual aetiology makes these women ultimately responsible for their condition. The women living with HIV are considered to be prostitutes or have caused a sacrilege. Their male counterparts are treated differently and more positively.

It was further observed that women living with HIV and AIDS have limited economic opportunities, as those selling food see their businesses folding up because their customers after knowing their status stop buying from them.

Conclusions/Next steps: There is a need to increase facility lead community outreach services for both HIV sensitization and education and testing. The majority of the residents will be reached through outreach led by a health facility.

Differentiated service delivery for HIV testing, prevention and treatment

PESUE19

What are the 12-month retention and viral suppression outcomes for South African ART clients enrolled in DSD models compared to conventional care?

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Background: South Africa has implemented several differentiated service delivery (DSD) models for HIV treatment. Few comparisons of treatment outcomes between the country's DSD models and conventional care are available. We analyzed routine data to determine one-year retention and viral suppression of clients enrolled in DSD models.

Methods: We analyzed individual data from South Africa's electronic patient record (TIER.Net) for 24 clinics across 4 districts. We followed clients alive and in care on 01/02/2019 and estimated outcomes of retained at 12

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months after follow-up start and virally suppressed(<400 copies/ml^3) ≥3-18 months. We classified clients as eligible for DSD models if they were ≥18 years old, on ART ≥12 months and had two suppressed viral load (VL) measurements, per national guidelines at the time. We compared outcomes for those enrolled in a DSD model to those eligible but not enrolled and for those ineligible, compared outcomes by reason ineligible for DSD.

Results: Among 12,120 clients enrolled in DSD and 22,551 ART clients eligible but not enrolled in DSD, retention was 95% and 93%, respectively (risk ratio [95% confidence interval] 1.02[1.02-1.03])(Table). Viral suppression for those with a VL measure was 95% for both groups, but 29% of those in DSD models and 16% in conventional care had no VL measurement recorded. Of the 3,298 recently enrolled into a DSD model (≤6 months), 35% (n=1,153) did not meet the eligibility criteria (0.5% <18yrs, 3% on ART <12 months, 99% missing two suppressed VLs). Retention and VL suppression were higher for those with a known suppressed VL prior to DSD enrollment (93%, n=498) than for those with a known unsuppressed VL prior to DSD enrolment (87%, n=46).

Outcomes (N=59,226)	Total	DSD model enrollment status (n, %)					
		Enrolled in DSD		Eligible for but not enrolled in DSD		Not eligible for and not enrolled in DSD	
N	**59,226**	**12,120**	**20%**	**22,551**	**38%**	**24,555**	**41%**
Retained in care at 12 months							
Alive and in care at 12 months	52,830	11,554	95%	20,930	93%	20,346	83%
Transferred to another facility	3,002	341	3%	874	4%	1,785	7%
Lost to follow up	3,016	168	1%	635	3%	2,213	9%
Died	378	58	0%	108	0%	212	1%
Viral suppression in months 3-18							
VL suppressed	38,745	8,164	67%	17,943	80%	12,638	51%
VL unsuppressed	4,587	431	4%	926	4%	3,230	13%
No VL within 3-18 m	15,894	3,525	29%	3,682	16%	8,687	35%

Table. 12-month retention and viral suppression outcomes by DSD model enrolment status.

Conclusions: DSD model enrolment conferred a minor benefit to retention and equivalent viral suppression over one year of follow-up compared to conventional care for clients eligible for DSD enrolment.

PESUE20

The effect of multi-month dispensing of ART on viral load suppression rates in 18 PEPFAR-supported countries

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Background: Research studies demonstrate that people living with HIV (PLHIV) receiving multi-month dispensing (MMD) of antiretroviral therapy (ART) can maintain high rates of viral load suppression (VLS), but little is known about the programmatic effect of MMD on VLS rates rolled out at scale in global HIV programs. The President's Emergency Plan for AIDS Relief (PEPFAR) recommends three to six-month MMD of ART and collects data on ART dispensing and viral load testing at PEPFAR-supported ART sites.

This multi-country analysis aims to describe the effect of MMD scale-up on VLS rates across multiple countries under real world conditions.

Methods: We analyzed quarterly PEPFAR program data from Oct 2018 to Sept 2021 in 18 PEPFAR-supported countries with an average MMD reporting completeness rate > 80%. We compared the proportion of ART patients receiving at least three-month dispensing of ART to VLS rates (proportion of viral load results <1,000 copies/ml) using descriptive statistics, correlations, and a parsimonious fixed-effects regression model.

The analysis incorporated a six-month lag between quarterly MMD coverage and VLS data points to account for time between MMD initiation and subsequent VL testing.

Results: In the 18 countries and 1,472 subnational units analyzed, the scale-up of MMD was moderately positively correlated [r= 0.275] with improved viral load suppression. A fixed-effect regression on VLS and MMD using robust standard errors, suggests a positive correlation between lagged MMD and VLS (beta = 0.032; SE = 0.017, p-value = 0.087, CI = -0.006 to 0.069). Graphical summaries of the data show similar results and point towards a narrowing of the distribution of VLS outcomes with time [Figure 1].

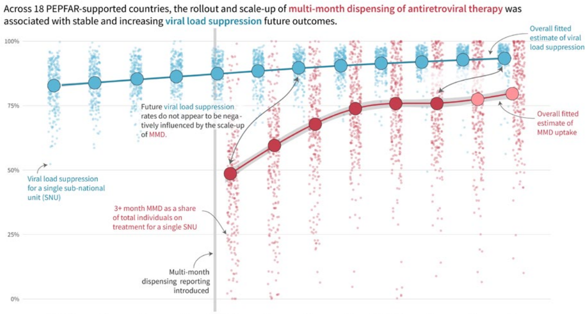

Figure 1. Correlation between changes in MMD and aggregate VLS rates by sub-national unit in 18 PEPFAR-supported countries (Angola, Burundi, Cameroon, Cote d'Ivoire, Democratic Republic of the Congo, Eswatini, Ethiopia, Kenya, Lesotho, Malawi, Mozambique, Nigeria, Rwanda, South Sudan, Tanzania, Uganda, Zambia and Zimbabwe).

Conclusions: Large HIV programs have successfully scaled-up MMD to patients while sustaining and increasing VLS rates in real-world settings, supporting data from clinical trials. Limitations include the use of aggregate program data rather than patient-level data.

National financing analyses and financing mechanisms for HIV, hepatitis and STI programmes and services

PESUE21

Domestic public spending in low-and-middle-income countries 2006-2020: levels and trends

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Background: Domestic public investments in HIV/AIDS have been the main driver of increase in HIV resources in LMICs during the last decade. For the first time, there is a sign of flattening for last two years and a 2% annual decrease of domestic resources in 2020. Understanding the correlates and predictors of domestic public spending on HIV can inform sustainability plans.

Methods: A panel data regression using reports to UNAIDS for 2006-2020 from 114 low-and-middle-income countries was used for the analysis resulting in 1452 country year data points. All the regression estimates are based on panel data random effects models.

Results: There are significant positive associations between the Gross Domestic Product(GDP) per capita (coefficient 0.2%, p value <0.01) of a country and its level of domestic public spending on HIV. The HIV Prevalence (8.61, <0.001), the non-GDP residuals of the Human Development Index (HDI) (0.25, <0.001) and share of health in total government expenditures (0.05, <0.01) were also significant predictors.

No significant effect was found for ODA for HIV or other independent variables. The domestic public resources per person living with HIV in 2020 were estimated at US$174 in East and Southern Africa, US$36 in West and Central Africa, US$369 in Asia and the Pacific, US$196 in the Caribbean, US$859 in Eastern Europe and Central Asia, US$1699 in Latin America, and US$320 in Middle East and North Africa.

Domestic public spending has increased 70% between 2010 and 2020. In 2020, domestic public resources constituted 50.4 % of all resources in LMICs. [1]

There are large differences in donor dependency across geographies, for example while 98% of AIDS resources in Latin America come from domestic resources, they constitute 35% and 31% in West Central Africa and the Caribbean respectively.

Conclusions: The main determinants of domestic public spending for HIV are ability to pay (GDP percapita), burden of disease (HIV prevalence), non-GDP residuals of HDI and the national prioritization of health within government spending.

With the observed flat lining of international resources, sustained and efficient domestic public spending will be key in achieving resource mobilization targets set by 2021 Political Declaration.

[1] UNAIDS Global report, 2021

Approaches to achieving sustainability, including sustainable financing for civil society

PESUE22

Stakeholders' perspectives on the financial sustainability of HIV response in Nigeria

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Background: Transitioning from donors to government requires an understanding of the contextual factors shaping financial sustainability in low-resource settings. As this evidence is scarce in Nigeria, we assessed the perspectives of HIV response stakeholders to understand how domestic funds can be mobilised, pooled, and strategically used to pay for HIV services.

Methods: The study adopted the framework of health financing functions including revenue mobilization, pooling, and purchasing. We conducted document reviews and semi-structured interviews with stakeholders at national and sub-national levels (n = 32) between December 2021 and January 2022. We adopted maximum variation sampling to purposively select individuals whose roles included financing in the HIV response. Data were analysed thematically using NVivo software (version 11).

Results: Public spending is low nationally and sub-nationally due to low resource allocation and low budget execution. Few state governments implemented the policy earmarking 0.5-1% of states' federal allocation to the HIV response.

Decision-makers and budgeting staff perceive the HIV response as getting substantial external assistance. Although private sector investment is low, the establishment of an HIV trust fund might increase its contribution to the HIV response. On pooling and fund management, appropriations are need-based, but releases do not reflect needs. In contrast, external assistance reflects geographic variations in the HIV burden.

Notwithstanding a national strategy for integrating HIV into social health insurance schemes, HIV services have not been prioritised by the schemes. Coverage of some HIV services in the Basic Health Care Provision Fund has not translated into practice. Users pay for some HIV services previously supported by donors.

Regarding purchasing, a parallel procurement system between donors and government, and high supply-side spending undermine the financial sustainability of the HIV response.

Purchasing of services for the key populations is limited by a lack of reliable estimates due to demographic shifts and stigma.

Dysfunctional inter-agency relationships hinder scaling up HIV testing and treatment in primary health facilities despite its efficiency gains. Civil society organisations can be financed through partnerships with the government.

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Conclusions: This study highlights the financing and governance factors that can inform the development of a financial sustainability plan for the HIV programme in Nigeria.

Costing of HIV, hepatitis and STI services

PESUE23

Do differentiated models of care for HIV treatment result in lower costs for recipients of care in Zambia?

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Background: One of the benefits that differentiated service delivery (DSD) models for HIV treatment are assumed to generate is a reduction in direct and indirect costs to recipients of care (RoC), but the savings that come with reduced costs must vary among the widely diverse DSD models. We estimated the costs to RoC of nine discrete models currently in routine use in Zambia, compared to conventional care.

Methods: From May to November 2021 we surveyed RoC at 12 clinics in two provinces of Zambia. Participants were selected consecutively on their arrival for routine visits, with stratification by DSD model participation, and asked about time spent and transport costs incurred when accessing care.

We calculated the cost/health system interaction (clinic and out-of-facility) and multiplied by the participant-reported number of interactions per year to estimate an opportunity cost (using the country-specific minimum wage of $1.99/day) and transport cost/RoC/year by model of care.

Results: We surveyed 558 RoC (median age 38, 72% female). Conventional care required four facility visits year, while most (but not all) DSD models reduced facility visits to two per year, with or without additional external interactions such as adherence club meetings or community medication pickups (Figure).

Depending on the model, opportunity costs to RoC ranged from roughly 1 to 3 days' minimum wage. Fewer than half of RoC incurred any transport costs; for those who did, the cost averaged 1-1.5 days' minimum wage. Variation in transport costs among models may reflect RoC choices about paying for transport based on how many interactions will be required and the locations of the interactions.

Model of care	N	Average number of health system interactions/RoC/year			Average opportunity cost/RoC/year†		Average transport costs/RoC/year	
		Facility visits*	Out-of-facility interactions	Total	Time spent (hours)	Cost	% RoC incurring any transport costs**	Travel costs/RoC incurring any transport costs
All facility conventional care	168	4 (4,6)	-	4 (3,5)	17.6 (8.0,33.7)	$4.37 (1.99,8.37)	43.5%	$1.49 (0.50,2.98)
Ineligible for DSD	102	4 (4,6)	-	4 (4,6)	16.0 (7.7,32.0)	$3.98 (1.91,7.95)	38.2%	$1.49 (0.50,2.49)
Eligible for DSD	66	4 (4,6)	-	4 (4,6)	20.5 (10.7,38.0)	$5.10 (2.65,9.44)	51.5%	$1.74 (0.70,4.97)
DSD models	390	2 (2,4)	0 (0,1)	4 (2,4)	3.4 (2.2,5.2)	$3.38 (2.17,5.17)	37.4%	$1.49 (0.60,2.49)
Facility 6-month refills	118	2 (2,2)	0 (0,0)	2 (2,2)	2.2 (1.9,3.3)	$2.17 (1.92,3.23)	35.6%	$1.74 (0.70,2.98)
Facility 3-month refills	68	4 (4,4)	0 (0,0)	4 (4,4)	4.3 (3.5,6.0)	$4.28 (3.55,6.02)	41.2%	$1.38 (0.50,2.49)
Scholar/adolescent groups	51	3 (2,4)	0 (0,2)	4 (3,12)	3.8 (2.4,14.5)	$3.84 (2.39,14.51)	25.5%	$0.99 (0.75,1.99)
Community adherence access points‡	38	2 (2,4)	2 (1,4)	6 (4,7)	4.2 (2.8,6.6)	$4.20 (2.79,6.58)	50.0%	$1.49 (0.50,2.49)
Fast track pickup at facility	33	3 (2,4)	0 (0,0)	3 (2,6)	3.4 (2.4,4.8)	$3.41 (2.42,4.84)	39.4%	$0.99 (0.50,1.49)
Community adherence groups	31	2 (2,2)	5 (2,15)	7 (4,21)	6.3 (4.2,19.5)	$6.33 (4.16,19.48)	38.7%	$0.99 (0.85,5.72)
Home ART delivery	27	2 (1,3)	0 (0,2)	3 (2,4)	2.5 (1.7,3.4)	$2.46 (1.71,3.41)	44.4%	$1.99 (0.99,4.10)
Extended clinic hours	15	2 (2,3)	0 (0,0)	2 (2,3)	2.1 (1.7,2.9)	$2.09 (1.67,2.88)	46.7%	$0.99 (0.60,3.48)
Mobile ART	9	0 (0,4)	4 (0,4)	4 (4,4)	3.4 (2.4,4.0)	$3.35 (2.36,3.98)	0.0%	-

*Includes both clinical consult visits and ART medication pick up visits at the facility.
**Remainder likely walked, incurred no cash costs.
†Calculated opportunity cost based on the cost of time spent travelling and time at clinic visits or out-of-facility events. The minimum wage for Zambia of $1.99/day (adjusted to an hourly minimum wage using 8 working hours/day) as used to assign a monetary value to the time spent.
‡Community adherence access points are equivalent to external medication pickup points.

Figure. Average costs to recipients of care per year in care, by model (2021 USD) (median (IQR))

Conclusions: DSD models generally minimise costs and time for RoC as compared to conventional care, but this depends entirely on model design (number of interactions required/year). Implementing models that minimize RoC interactions with the healthcare system and model events may improve outcomes.

Strategies to increase retention and re-engagement in HIV services

PESUE24

PLHIV refill booklet: an innovative way to reduce interruption in treatment among highly mobile PLHIV in Ghana

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Background: PLHIV who experience interrupted HIV care usually have poor clinical outcomes, and they also contribute to further HIV transmission. HIV-related mortality and morbidity significantly increases when there is interruption in treatment (IIT). Follow-up calls made to PLHIV who interrupted treatment revealed that high mobility from the nature of their jobs or circumstances was a major casual factor. Such clients find it difficult to get their refill when they are due. In October 2019, Maritime Life Precious Foundation (MLPF) a key population focus Civil society organization (CSO), collaborated with Tarkwa Municipal Hospital (TMH) in Western Region, Ghana to find an innovative way to mitigate this situation. We deployed a portable refill booklet system that is easy to use, convenient and ensures that refills are documented.

Description: In October 2019,MLPF and the ART team designed a pocket-sized booklet that enables PLHIV to conveniently get ARV refill from other ART sites. The phone numbers of the ART nurses and data officers were printed

in the booklet. 85% of all clients diagnosed HIV-positive (316 PLHIV) at the Tarkwa Municipal Government Hospital accepted the booklet. 68% (214) of them were female whereas 32% (102) were male. Health facility data officers documented refills on the e-tracker network.

Lessons learned: 91% (212) of all newly diagnosed PLHIV accepted the booklet. After 24 months, 48% (102) of the clients who accepted the booklet visited TMH for their refills and so, did not use their booklet, while 52% (110) used their booklets successfully. 65% (72) of the PLHIV who used the booklet got refills from facilities outside the municipality and 35% (38) got refills from outside the Western region.

The booklet was helpful to PLHIV might interrupt treatment as a result of their high mobility. It also reduced the need for client transfers in-between ART facilities. Data officers verified refill on the e-tracker network. Clients experienced difficulties ART sites that did not have prior information about the pilot.

Conclusions/Next steps: The PLHIV refill booklet is effective and has the potential to improve ART retention and records keeping. Therefore it is recommended that this refill booklet system be supported and scaled up nationwide.

Assessments of cost effectiveness: Provider and community perspectives

PESUE25

Optimal treatment and prevention mix for South Africa's UTT program

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Background: South Africa has over 8 million people living with HIV/AIDS. In 2016, it adopted the UTT program in a bid to control, the epidemic. There is room to fine-tune the current UTT program to get high impact, less costly programs that give the country a great value for its money.

Methods: We used Goals Model which is a dynamic compartmental model to project the results for the period, 2020-2030 for South Africa's entire population, including PLWHA. We fitted the epidemic model to South Africa's epidemic using current data. For the program components under consideration (PrEP coverage, ART coverage and retention on care), we subjected them to a 3% discount for costs and infections averted.

We further used a scenario analysis in which we varied the program components for different coverage levels to assess each impact on the HIV investment case for South Africa.

Results: Increased ART coverage is more cost-effective than any option with less coverage. The 95% scenario yielded better health benefits than both90% and the current coverage (72%). It records fewer AIDS deaths, gain more life years and averts more new HIV infections than the scenarios with less coverage. It also has an ICER of R13,111/QALY gained which was cost-effective.

A lower migration rate was much beneficial to South Africa. It showed the least amount of deaths recorded, lower costs, the highest number of new HIV infections averted than all scenarios with higher migration rates. It further had the lowest ICER which proved that it was the most cost-effective option. Increased PrEP coverage is associated with more health benefits however at a higher cost at a high cost.

However, the PrEP average to all-risk categories was quite phenomenally high and unsustainable.PrEP coverage was highly beneficial when given to high-risk populations.

Conclusions: The best investment option for South Africa is high ART coverage, low migration to second regimens as well as PrEP average to high-risk groups. With this, South Africa can save costs and redirect savings to other equally important areas. UTT costs are manly driven by ART costs. South Africa must consider local production of drugs to reduce imported inflation costs.

Community participation in systems for health, including community-led and key population-led health systems

PESUE26

Mapping opportunities for CSO financial sustainability through domestic funding access to ensure the continuation of HIV community-led response in Indonesia

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Background: To support the sustainability of HIV community-led response, Indonesia has launched a pilot project with the support of the Global Fund to strengthen the sustainability of HIV-CSO financing in ten cities through capacity building for CSOs and local governments in developing social contracting initiatives.

The objectives of this mapping were:

1. To evaluate the legality and competence of HIV-CSOs engaged in lobbying, advocacy, and social contracting in ten cities; and,
2. To identify policy and financial opportunities for HIV-CSOs at the national level and in ten pilot cities.

Description: This mapping applied the civic and fiscal space analysis approach and involved 84 HIV-CSOs and 35 local government officials as respondents/participants. The civic space analysis employed both quantitative and qualitative methods and gathered data via literature reviews, online surveys, in-depth interviews, and

FGDs. While the fiscal space approach gathered data through literature reviews and examination of relevant government papers.

Lessons learned: Local governments continue to be unsure about how to interpret the division of responsibilities in dealing with HIV-AIDS. Fiscal capacity is not a big driver, but commitment is. Accountability of HIV CSOs, particularly upward accountability, remains a challenge in comparison to internal and downward accountability. 26 organizations met the eligibility criteria for social contracting.

According to the Organizational Performance Index's score, 20 CSOs (51%) are in a nascent state, which means they are improving their effectiveness, internal efficiency, and human resource strength. And 49% are at an emergent state, which means that practice and skills at the fledgling stage have been achieved.

Conclusions/Next steps: General recommendations include:

1. To determine the area that will serve as the locus of advocacy for the social contract, the most critical factor to map, aside from fiscal capacity, is the commitment of local government, as well as the capacity of local CSOs.
2. Need to identify champions who come from local government leaders as primary partners in social contracting;
3. Invest in raising awareness and understanding of the HIV-AIDS issue as part of local governments' work mandate;
4. Strengthening CSOs' organizational capacity and accountability in order to build public trust in CSOs as strategic partners, particularly among local governments.

Approaches to effective paediatric HIV services

PESUE27

Optimizing diagnostic technologies for pediatric HIV - function or location? Modelling analysis of point of care technologies in Matabeleland South, Zimbabwe

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Background: Novel point-of-care (POC) devices for infant HIV testing provide prompt receipt of results and increase ART initiation, improving survival among HIV-exposed infants with HIV. POC device functionality (proportion of days devices are operational) varies with power supply, machine maintenance and testing commodities supply. Program planners must decide in which health facilities to locate a limited supply of POC devices.

Methods: We developed a location-optimization model to identify the placement of 11 currently available POC devices in Matabeleland South Province, Zimbabwe, that would maximize the number of infants with HIV initiating ART within 30 days of testing.

We first examined the current and optimal placement of the currently available devices, then determined the number of new POC machines that would need to be added and optimally located to achieve 50% 30-day ART initiation. We modelled 4724 infants who received HIV testing from Jan2019-Jan2020 using routine program data from 122 health facilities.

Results: With current placement of 11 existing POC machines, 37% of all tested infants with HIV would receive their results and 35% would initiate ART within 30 days.

With optimal placement of existing machines, 46% would receive their HIV test results and 44% would initiate ART within 30 days; retaining 2 machines in their current locations and moving 9 machines to new facilities. Requiring >/=1 machine/district reduced 30-day ART initiation to 42%.

The number of optimally placed POC devices required to achieve 50% 30-day ART initiation depended on device functionality: 38 devices would be needed with low (51%) functionality, 25 with current (63%) functionality, and 15 with high (75%) functionality.

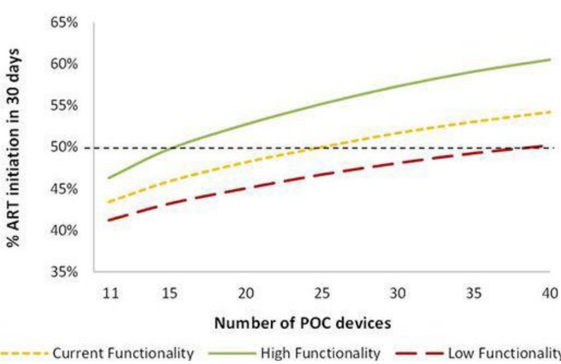

Figure. Percentage of ART initiation due to total number of POC machines across different functionality rates.
Functionality rates are district-specific; with the average of 51% low, 63% current and 76% high utilization.

Conclusions: We demonstrate substantial increases in 30-day result return and ART initiation among infants with HIV through optimization-based location of available POC machines for infant testing.
The benefits of optimal location and/or adding new POC machines are dramatically influenced by machine functionality.

Systems serving underserved populations

PESUE28
Digital Interventions through an online community portal to engage historically hard-to-reach populations of same-sex attracted men living in a heterosexual relationship or lifestyle

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Background: Same-sex attracted men living in a heterosexual relationship or lifestyle (often referred to 'gay and married men') have been historically difficult to connect with HIV prevention and sexual health education, peer support, and sexual health services due to a range of factors including structural, social, and self stigma associated with their same-sex attraction.
With limited success achieved through previous face-to-face interventions, this multidisciplinary project sought to realise the potential of digital interventions in engaging this population in Australia.
Description: Originally a two-year research partnership, the development of the DALE project was informed by preliminary qualitative interviews with same-sex attracted men living in a heterosexual relationship or lifestyle to develop a digital wireframe for the delivery of a dual education and contact approach through an online community. The community website included a feed of articles integrated with health promotion messaging alongside peer-moderated discussion boards and live chat sessions. The website also connected site visitors with an online survey about their mental health, sexual behaviours, sexual health, disclosure of same-sex attraction, substance use, and experiences of stigma.
Lessons learned: The online community at DALE has had more than 20,000 visitors and connected with men who have sex with other men identify as identified as gay, bisexual, and heterosexual. These men have reported to experience greater levels of anxiety, depression, stress, and stigma.
Survey participants also showed higher rates of condomless anal intercourse with casual and regular partners alongside lower rates of testing for HIV and other sexually transmitted infections. As the time of the original study period's completion, the findings from the survey combined with the quantitative data from site analytics represented the largest quantitative research to be conducted among this cohort of men.
Conclusions/Next steps: The original research partnership developed an online intervention to address compound forms of stigma and the resulting online community created a valuable connection with a historically hard-to-reach population of men who have sex with other men to disseminate health promotion messaging, peer support, and referrals to additional resources. The developed digital wireframe also has the potential to be adapted for other hard-to-reach communities.

PESUE29
Finding local models for comprehensive HIV/AIDS management in closed settings: documenting the experience of the Bureau of Jail Management and Penology (BJMP) in Cebu City, Philippines

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Background: HIV prevalence in Philippine jails, compounded by congestion and inadequate health services, pose challenges in treating PLHIV and preventing transmission among persons deprived of liberty (PDL). Acknowledging the public health imperative and opportunity to address HIV-related risks and deaths among PDL, BJMP issued a memorandum circular (MC) to guide jails in establishing HIV/AIDS programs.
Methods: LoveYourself, through the Global Fund SKPA program, helped document and analyze Cebu City Jail's HIV/AIDS program implementation to provide a model for other jails in the country to operationalize the BJMP

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MC. The process documentation involved policy reviews, stakeholder meetings, and key informant interviews with jail personnel, health officials, and select PDL.

Interventions and challenges throughout the PDL confinement stages (commitment, detention, transfer and release), as well as opportunities to extend HIV interventions for PDL's family members were explored.

Results: Despite PDL's access to condoms, knowledge retention on safer sex practices and HIV/STI prevention remains a challenge. Voluntary testing, offered upon commitment and during detention, is hampered by peer-driven stigma. PDL who test reactive are immediately enrolled to treatment assisted by peer health aides. Health aide accounts, however, reveal PLHIV hesitancy in accessing/maintaining treatment caused by fear of ARV side effects, ARV access issues, and perceived effects of family disclosure. PLHIV-PDL's continued access to treatment, care and support, following transfer or release, is also unsecured due to the lack of standardized procedure for referral and monitoring.

Local government social hygiene clinic and community-based organization collaborations help address these gaps, including through periodic mass HIV screening, conduct of PDL/PLHIV learning group sessions, treatment monitoring, and ARV refill.

Conclusions: Documenting Cebu City Jail's experience surfaced gaps on the BJMP MC and how it can be operationalized at facility level.

The study recommends addressing jails' health human resource limitations; mobilizing and enhancing health-related capacity of PDL aides and jail personnel; improving access of PDL and family members to HIV information and prevention commodities; better documenting PDL/PLHIV learning group sessions to inform service enhancements; firming-up case monitoring, reporting and referral mechanisms; integrating mental health interventions; and ensuring better access to food, water and medicine in-facility.

Public-private partnerships

PESUE30

Expedited development and registration resulting in successful uptake of generic, pediatric dolutegravir products for low- and middle-income countries through an innovative public-private partnership

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Background: There are 1.7M children living with HIV (CLHIV) globally, with only 54% on treatment and 100,000 deaths each year. Poor viral suppression is observed in CLHIV due to lack of accessible, effective child-friendly formulations. A significant contributor is the time delay between adult and pediatric formulation development, followed by generic development via voluntary licensing mechanisms. Dolutegravir (DTG) was originally approved in 2013 by the US FDA for HIV treatment in adults and children (≥12 years, ≥40kg). In 2018, WHO guidelines recommended DTG, in combination with NRTI backbone, as the preferred first-line treatment for adults and children.

However, ViiV Healthcare's child-friendly formulation (≥4 weeks, ≥3kg), under development, was not yet available and generic development had not yet commenced.

Description: A public-private partnership, consisting of CHAI (funded by Unitaid), ViiV, Mylan and Macleods, was initiated to expedite the development and registration of generic, pediatric DTG dispersible tablets for use in low- and middle-income countries (LMICs) within ViiV's pediatric licensing territory. CHAI/Unitaid provided a financial incentive for product development. ViiV provided a comprehensive technical package. CHAI and ViiV provided ongoing technical and regulatory support.

A novel regulatory strategy enabled generic filing to the US FDA under the PEPFAR program during ViiV's review period. FDA tentative approvals for pediatric DTG were obtained by Mylan and Macleods within 5 and 9 months of ViiV's approval, respectively. The financial incentive enabled a global price agreement (75% price reduction from the existing standard of care).

Lessons learned: Technical support throughout the generic development process was critical to reducing timelines. Early engagement with the US FDA prior to generic filing was key to gain alignment on the proposed novel regulatory strategy and timing.

Conclusions/Next steps: The collaborative partnership between CHAI, ViiV, Mylan and Macleods significantly accelerated development and registration of generic, pediatric DTG products. The gap between innovator and generic US FDA product approvals was reduced to months. The generic products launched at an affordable and sustainable price improving pediatric patient access in LMICs.

Delivering gender-transformative programmes and tackling violence against women and girls: Programmatic lessons

PESUE31

Sexual, physical, economic and emotional violence faced by women and adolescent girls living with HIV and at high risk of HIV in South Africa and Nigeria in time of COVID-19

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Background: The COVID-19 crisis is associated with a global surge in reports of gender-based violence (GBV). Little is known of its impact on adolescent girls and women living with HIV (W&GLHIV) or at high risk of HIV.
This study aimed to determine the risk factors for physical, sexual, emotional and economic violence during the COVID-19 crisis.
Methods: National cross-sectional surveys were conducted among W&GLHIV or at high risk of HIV ≥15 years in South Africa and Nigeria from July to December 2021. Participants were recruited using a combination of venue-based and snowball convenience sampling methods. The questionnaires were completed online or with assistance from a data collector for those with reading/writing impairment or in the absence of an internet-connected device. Multivariable logistic regression was used for identifying risk factors for GBV and controlled for age, education and working status.
Results: A third (30%) of the 6,689 participants reported experiencing physical or sexual gender-based violence , with 7% facing less violence, 10% facing the same level of violence and 13% facing more violence than before the COVID-19 crisis. W&GLHIV were more likely (adjusted odds ratio (AOR) 1.27, 95%CI 1.09-1.49) to experience violence compared to those HIV-negative. There was a monotonic relationship between violence and mental health with those experiencing violence more than twice likely to report severe symptoms of depression and anxiety (AOR 2.33, 95%CI 1.82-2.99). Violence was also strongly associated with housing insecurity (AOR 1.59, 95%CI 1.27-2.02). Participants engaging in sex work (AOR 2.74, 95%CI 1.62-4.61) or transactional sex (AOR 1.86, 95%CI 1.40-2.46) were more likely to face sexual and physical violence compared to those not engaging in transactional or sex work.
Furthermore, using validated instruments, 35% of all participants reported emotional as well as economic abuse with W&GLHIV reporting higher rates of emotional (AOR 1.19, 95%CI 1.04-1.37) and economic abuse (AOR 1.19, 95%CI 1.04-1.37) respectively.
Conclusions: The COVID-19 crisis resulted in an increase in already high rates of gender-based violence faced by W&GLHIV or at risk of HIV with substantial mental health and economic consequences. COVID-19 and HIV policy and programmes need to pay more attention to the multi-faceted manifestations of GBV.

Access to education

PESUF13

Sex workers educating sex workers, www.plaperts.org and its online school: LXS expertXS

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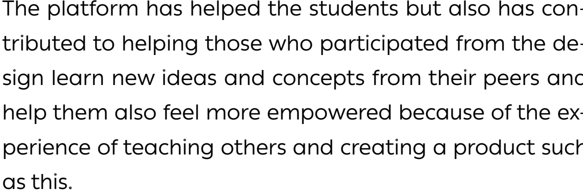
Background: Strengthen the capabilities of people who exercise sex work in order to grant them the abilities to better advocate for their access to basic rights, including access to integral health.
Description: Design and creation of an online learning ecosystem. Designed as a MOOC and with courses conceived through an inclusive and constructivist approach where sex workers use backwards design to create courses that help other sex workers strengthen their capabilities around advocacy, project design and human rights. As of now one course has been launched and has started to be applied in 12 countries in Latin America where Plaperts' allies are working every day to better the conditions of sex workers and their access to healthcare and other basic rights.
Lessons learned: Online tools have become a viable alternative in LATAM because of the exponential growth in internet penetration during the covid pandemic.
An online learning ecosystem created by sex workers for sex workers is a space that can potentially grow to become a tool that allows to better educate more women and men, cis or trans, H or LGBTQI+ in matters related to HIV, politics, human rights, gender diversity and other topics connected to the possibility of improving the conditions of the lives of people in a position of vulnerability.



The platform has helped the students but also has contributed to helping those who participated from the design learn new ideas and concepts from their peers and help them also feel more empowered because of the experience of teaching others and creating a product such as this.

Conclusions/Next steps: This initiative is an ongoing project that aims at the creation of 4 more courses in the next 4 years and that is looking to formally evaluate its results within the region, in order to better tune its resources to be able to achieve its goals. We believe that sharing this initiative in this space will allow for others to be motivated by our efforts and that the input obtained will also allow it to evolve and grow.

Criminalization, incarceration and living in closed settings

PESUF14

Community-based assessment on criminalization costs in the Central and Eastern Europe, and Central Asia region

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Background: Criminalization of people who use drugs in the Central and Eastern Europe, and Central Asia (CEECA) region, instead of maintenance of public health increases the financial and social burden on the states. This community-based assessment aimed to evaluate and compare costs of incarceration versus costs of health and social services for people who use drugs; as well, to analyze how incarceration and health costs changed in two years (same assessment was conducted in 2019).

Methods: Assessment was done in 2021, in 29 countries of CEECA region. It was conducted in two stages:

1. Desk research, and;
2. Verifying data with national partners, working in the harm reduction field.

The cost of incarceration was calculated by multiplying 365 days to the cost of maintenance of one prisoner/per day. This sum doesn't include law enforcement work, court proceedings and lost taxes, which person cannot pay, because of the incarceration. The costs of health and social services included cost of needle and syringe exchange services, opioid substitution therapy and unemployment benefit for one person per year.

Results: In most of countries of CEECA region, incarceration costs are 1,5 to even 17 times more than health and social services. The biggest difference of costs is assessed in Georgia (17 times), Hungary (17 times), North Macedonia (13 times), Romania (8 times).

Meanwhile the lowest difference of costs is assessed in countries, which has numerous and gross human rights violations in prisons - Belarus, Bulgaria, Azerbaijan and Kyrgyzstan. In comparison with 2019, few countries made improvements in increasing unit costs for health and social support: Azerbaijan (5,5 time), Croatia (1,6 time) and Czechia (1,5 time). In some countries both - costs of health and social services and incarceration increased on the equal level, in average - Lithuania (1,7 time), Estonia (1,4 time), Moldova (1,1 time).

Conclusions: Assessment shows that there are opportunities for governments to invest into the health and social services for people who use drugs. Governments should take evidence-based health and human rights approaches and reallocate money from policing, prosecuting, and incarceration of people who use drugs to community harm reduction and health services.

Law enforcement and public health

PESUF15

Experiences with criminal justice system and HIV/Hepatitis C testing among people who inject drugs (PWID) in Selangor, Malaysia

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Background: Early screening of people who inject drugs (PWID) co-infected with HIV and Hepatitis C (HCV) facilitates timely treatment and better management of these co-morbidities. However, the scale-up of HIV and HCV testing can be hampered by punitive criminal justice approaches for this key population. This study aims to describe the characteristics of PWID, experiences with police and incarcerated settings and HIV/Hepatitis C testing status.

Description: Using a cross-sectional, respondent-driven sampling (RDS) survey, a total of 367 PWID were recruited in Selangor, Malaysia between September 2021 to January 2022. The survey assessed the current situation of sociodemographic factors; drug use patterns; experiences with the criminal justice system; health status and access to social support or healthcare services, including HIV/HCV testing.

Lessons learned: Overall, the study recruited 345 (94%) male and 22 (6%) female, with 297 (81%) participants used Methamphetamine and 318 (87%) used Heroin in the past month. A total of 34 (94%) participants had ever been in lock up, 314 (85%) in prisons and 174 (47%) in compulsory

drug detention centers. Among these participants, 163 (44%) reported that they had a rushed injection for fear of police, 129 (35%) experienced confiscation of injecting equipment by the police; 182 (50%) have been beaten up or tortured by police, and 191(52%) avoided carrying injecting equipment for fear of the police. Only 283 (77%) participants and 186 (51%) ever had HIV and HCV screening, respectively. At the study visit, a number of 22 (6%) individuals were detected HIV positive, and 157(43%) were detected HCV positive.

Conclusions/Next steps: Results showed high Hepatitis C prevalence among PWID, in the context of high levels of negative experiences with the criminal justice system which may affect safer injecting practices. A change towards a more health-based policy will lead to a more enabling environment for PWID to access health services and implementation of a more effective harm reduction services for PWID.

Access to appropriate healthcare services (including for co-infections and co-morbidities)

PESUF16

Does travel time matter? Transportation vulnerability and access to HIV care among people living with HIV in South Carolina

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Background: Access to safe and reliable transportation is necessary for people living with HIV (PLHIV), particularly in areas where public transportation is limited. Transportation barriers and long travel times might result in delayed linkage to care and missed appointments, leading to disease progression for PLHIV. This study examined travel burdens, transportation barriers, and the associated HIV care outcomes among PLHIV in South Carolina—a rural southern state in the United States (US).

Methods: A total of 160 PLHIV from a large immunology center – who were re-engaging with HIV care after a prolonged absence or were in care but not virally suppressed – were enrolled in a randomized clinical trial from January 2020 to June 2021. During the enrollment, each participant completed an intake survey reporting their sociodemographic characteristics, barriers to HIV care, and transportation vulnerability.

Using Kruskal–Wallis tests, sociodemographic characteristics, transportation vulnerability, and negative care outcomes (e.g., missed or delayed appointments) were compared across residential proximity to HIV care, measured by number of minutes needed to travel to the immunology center.

Multivariable logistic regressions were employed to identify the likelihoods of negative outcomes for PLHIV living <15 minutes, 15-30 minutes and >30 minutes from the center.

Results: A majority of participants were male (63.8%), aged 45-64 years (54.4%), never married (77.0%), Black or African-American (77.5%), and non-Hispanic (82.5%). Many were unemployed (40.6%), receiving public insurance (50.6%), and reported transportation barriers (59.4%). Nearly 20% of participants lived <15-minutes from the clinic, 59.1% lived 15-30-minutes, and 21.4% lived >30-minutes from the clinic. Compared to participants living <15-minutes away, those living >30-minutes from the center were more likely to be late for appointments (aOR=5.25, 95% CI, 1.06-25.92), miss appointments (aOR=3.85, 95% CI, 1.04-15.89), and have difficulties seeing doctors (aOR=7.06, 95% CI, 1.61-30.99).

Conclusions: Long travel time is a barrier to care for PLHIV in South Carolina and is associated with negative care outcomes including missed HIV appointments. Lack of transportation is likely to further aggravate HIV disparities in the southern US. Local and statewide efforts such as expanding public infrastructure and developing ride-sharing approaches should be prioritized for underserved and low-resource communities.

PESUF17
Digital health and rights of young adults living with HIV and young key populations in Ghana, Kenya and Vietnam: a participatory action research study

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Background: Digital health is rapidly scaling up in low- and middle-income countries, transforming access to health services for young people living with HIV and key populations.
However, human rights experts have highlighted related threats to privacy, autonomy and equity, given weak governance of digital platforms.
Methods: To understand the experience of young adults with digital health and how they see their human rights, we conducted a qualitative study in Ghana, Kenya and Vietnam using a participatory action research approach. We combined a legal and policy review of digital health governance and access in each country, with digital ethnography, focus group discussions, and key informant interviews.
Global and national networks of people living with HIV, AIDS advocates, youth activists and human rights lawyers collaborated with anthropologists in design, data-gathering, analysis, and drafting of policy recommendations.
Results: During the Covid-19 pandemic, the 200 respondents described a major shift onto mobile apps and social media platforms to gain information and advice on sexual and reproductive health, which would otherwise be inaccessible to them due to stigma and confidentiality concerns.
In an ungoverned environment of conflicting health advice, many reported relying on social media influencers as trusted sources. Young adults shared positive experiences of empowerment and peer support online, and a growing interest in cybersex as "safe sex". They also reported online and offline harm, including data breaches, extortion, cyberbullying and censorship.
Most respondents lacked basic understanding of online security or data management. They expressed an interest to learn more, and to have a greater voice as youth in design and governance of digital technologies.
Conclusions: To achieve the aim of ending AIDS as a public health threat, more robust rights-based digital policy and governance are critically needed, complemented by digital literacy training for young people. Young people should be fully empowered and engaged in design, planning and governance of digital technologies used for health.

Human rights of people living with HIV and key populations

PESUF18
Understanding intersectional oppressions experienced by Immigrants and Refugees Living with HIV: Equity and social determinants of health lenses

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Background: This presentation examines the intersectional oppression experienced by Immigrants and Refugees Lining with HIV (IRLWH) in Alberta, Canada with a focus on COVID-19 pandemic.
The pandemic has had an unprecedented impact on IRLWH. In response, the Public Health Agency of Canada has expanded its list of risk factors to include occupational, socio-economic, and other life circumstances that increase risk for COVID-19 infection and severe outcomes. This is certainly an advance; however, gaps continue to exist. By recognizing the limited extant knowledge in relationship to the COVID-19 in particular in Alberta, a community-based study was designed.
The primary goal of the collaboration was to critically examine the challenges faced by IRLWH with a particular focus on the mental health and psychosocial wellbeing of IRLWH during the pandemic.
Methods: We employed the concurrent parallel mixed-methods approach. Quantitative data were collected using a self-developed survey (n=124), and qualitative data were collected through three photovoice sessions (n=13) among IRLH across Alberta between May 2021 and December 2021. The survey and the photovoice sessions assessed/captured the experiences of the IRLH on social determinants of health and its impacts on mental health and social wellbeing, both prior to and during the COVID-19.
Results: This study claimed that national HIV policies, programs and services do not address their issues, including affordable housing, food security/ employment opportunities, health plan, and racism, impacted on their mental health.

These results corroborated the findings from the surveys, for instance 51.5% reported having issues accessing healthcare services during COVID-19 compared to 38.4% before the COVID-19 pandemic. Similarly, 45.4% reported having difficulty accessing an HIV organization during the COVID-19 pandemic compared to 35.3% before the pandemic.

We also found that about 58% reported having problems finding housing services during COVID-19 compared to 47.5% before COVID-19.

Conclusions: This study found that COVID-19 had escalated their vulnerabilities to mental health and socio-economic marginalization. Based on the findings of the results, we developed the "Emerging community-led transformative HIV post COVID-19 Model" which speaks to the need of the active involvement of border communities including policy makers, health professionals, practitioners, educators and communities at large with IRLWH in addressing the challenges experienced.

PESUF19

Association between LGBTI+ health equity and achieving UNAIDS 2030 targets: findings from a global study of fast-track cities

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Background: Lesbian, gay, bisexual, transgender, and intersex (LGBTI+) individuals face inequities with respect to HIV prevalence, syndemic and comorbid conditions, and accessing services. Progress on LGBTI+ equity is essential to meeting the UNAIDS goals that at least 95% of people living with HIV know their status, 95% of those individuals are on treatment, and 95% of those individuals are virally suppressed.

Methods: Relevant laws and policies for LGBTI+ equity were assessed in 32 Fast-Track Cities. Key informants (131) from these cities were surveyed on LGBTI+ issues using a Likert scale. These responses were averaged and trends were assessed at regional and global levels.

The results were then compared to the cities' average percentage across the three 95 targets. Cities were divided into those with 95-95-95 averages below 85% ("limited progress group"), between 86% and 90% ("mid-progress group"), and at or above 91% ("high progress group").

Results: Cities in the limited progress group had lower LGBTI+ policy scores (2.27, wherein 0 was least inclusive and 4 was most inclusive) than did the mid-progress (2.33) or high progress (3.08) groups of cities.

Similarly, the limited progress group had the lowest-rated LGBTI+ primary care and HIV care, and the most serious problems with respect discrimination, according to key informants. In contrast, the high progress group of cities had the highest levels of LGBTI+ inclusive care and lower levels of discrimination.

Group	Primary care	HIV care
Limited progress	3.08	3.75
Mid-progress	3.24	3.89
High progress	3.64	4.10

Table. Quality of LGBTI+ care (1 = "poor," 5 = "excellent")

Group	Sexual orientation discrimination	Gender identity discrimination
Limited progress	2.85	3.12
Mid-progress	2.73	3.08
High progress	2.19	2.69

Table. LGBTI+ discrimination (1 = "not a problem," 4 = "serious problem")

Conclusions: While this study did not explore causality, an association was found between progress on the 95-95-95 targets and inclusive LGBTI+ policies, better LGBTI+ care, and less discrimination.

Additional research, including surveying LGBTI+ communities directly and using larger sample sizes, could further contribute to knowledge of LGBTI+ health at the local level and aid cities in ending HIV.

PESUF20

Human rights violations against key populations in South Africa Public health facilities: findings from the Ritshidze Community-led Monitoring Programme

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Background: Members of key populations (KPs), including men who have sex with men (MSM), sex workers (SW), trans* people, and people who use drugs (PWUD), have increased vulnerability to HIV and experience legal and social barriers to healthcare. The HIV response is dependent on the healthcare system's ability to serve these populations, yet they are often the most excluded from care.

Through the Ritshidze Community-led Monitoring Programme we track the quality of healthcare for KPs in South Africa with implications for improving services and rectifying abuses.

Methods: Key populations were recruited for a cross-sectional survey via community-based snowball sampling in 18 PEPFAR-supported districts across seven provinces from August to October 2021. Initial participants were community-recruited and had previously engaged in Ritshidze qualitative data collection. Survey data on KP healthcare experiences were collected electronically by trained KP data collectors. Data were analysed using descriptive statistics for key service quality and human rights indicators by population and province.

Results: A total of 5,979 KP members, including MSM (n=1,476), PWUD (n=2,397), SW (n=1,344) and trans* people (n=762) were surveyed. Over the past year, 14% of MSM (n=207), 13% of SW (n=175), 12% of PWUD (n=288), and 11% of trans* people (n=84) reported being denied health services at a public health facility (PHF) because they are a member of a key population. Denial of services was highest in Limpopo (30% n=218) and KwaZulu-Natal province (20% n= 81). Overall, 24% (n=849) of KPs reported experiencing privacy violations at a facility, including disclosure of their HIV and KP member status.

Among those who were not receiving services at a PHF, the primary reasons were lack of friendly services (66%, n=114), lack of privacy (49% n=84) and unsafe conditions (26%, n=45).

Conclusions: Human rights violations and unfriendly services at PHFs were frequently reported by KP members in South Africa. These violations are a likely detriment to the health of KP members as well as to the broader HIV and public health outcomes in South Africa. Denial of healthcare to KPs in South Africa violates their Constitutional right to access health and requires immediate attention by the National Department of Health.

PESUF21

If not now, when? A unique opportunity to reduce HIV-related stigma & discrimination, criminalization & other human rights-related barriers

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Background: Stigma and discrimination (S&D), criminalization, gender inequality and other human rights (HR) barriers have impeded access to HIV services and attainment of global HIV goals. Despite UN Member States´ commitments to support programs that reduce such barriers, until recently these programs had nowhere been sufficiently scaled up. To address this, the Global Fund's "Breaking Down Barriers" (BDB) initiative has been supporting and evaluating the scale-up of seven key HR programs and undertaken sustained efforts to increase country ownership of HR problems and solutions.

Description: 20 countries are part of BDB: Benin, Botswana, Cameroon, Côte d'Ivoire, DRC, Ghana, Honduras, Indonesia, Jamaica, Kenya, Kyrgyzstan, Mozambique, Nepal, Philippines, Senegal, Sierra Leone, South Africa, Tunisia, Uganda, Ukraine. In these countries, GF investment in HR programs increased more than 12-fold, to levels never seen before, from $10.57 million in 2014-16 to 130 million in 2020-22. Scale, scope and quality of programs, as assessed by independent researchers, also significantly increased. All countries developed country-owned, costed strategies to address HR barriers and established HR working groups to oversee and coordinate implementation.

Lessons learned: Elevating HR to one of four strategic objectives in the 2017-22 GF Strategy enabled the BDB initiative. Providing financial incentives, establishing programmatic conditions, making available long-term TA to assist development of national strategies and scale up of HR programs, and closely monitoring and evaluating the initiative, have been critical.

The initiative itself has evolved, integrating lessons learned and expanding partnerships in countries and at the global level.

Conclusions/Next steps: The experience of this initiative is providing unprecedented, well-evaluated and soundly costed models for rights-based approaches to HIV services. Already, the new GF Strategy (2023-2028) is integrating lessons learned, with an even greater focus on HR, equity and gender inequality and commitment to even greater action against S&D and criminalization and greater support for community-led efforts.

There is also unprecedented commitment to addressing these issues in the Global AIDS Strategy (2021-2026) and there are new and promising initiatives specifically to eliminate S&D. This provides for a unique opportunity we cannot afford to miss to make a real difference, with great expected benefits for health and human rights.

PESUF24

Capacity strengthening of local civil society organizations offering HIV services: learning experiences from Liberia

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Background: With support from PEPFAR and USAID, the FHI 360-led LINKAGES project and subsequent EpiC project implemented a comprehensive package of HIV prevention, care, and treatment services among 10 civil society organizations (CSOs) serving key populations (KPs) in Montserrado County, Liberia. When LINKAGES began, the technical and management capacity of these CSOs was limited. LINKAGES, in collaboration with Pact and EpiC, implemented capacity-building innovations to enhance technical delivery of HIV Services and improve organizational management systems.

Description: The project conducted baseline capacity-building assessments with all 10 CSO partners using two standardized toolkits: the integrated technical and organizational capacity assessment and the Organization Performance Index (OPI). Institutional strengthening plans were then developed and implemented to address the issues identified and monitor progress.

Project engagement with the 10 CSO partners around internal control systems, operational management, and governance helped foster ownership of HIV service delivery in Montserrado County.

Lessons learned: From April 2019 through September 2021, EpiC Liberia trained all 10 CSOs in HIV community interventions to empower peer outreach workers, people living with HIV (PLHIV), and KPs, including the members of 23 HIV support groups, to understand and manage their needs, risks, and rights regarding HIV services.

The project also trained CSO leadership in organizational system development, which focused on organizational management and operations policies, resource mobilization, sustainability, partnership, and networking to enable delivery of optimal HIV services.

At the first OPI assessment conducted to measure performance and impact, two out of four performance measurements — "efficiency" and "effectiveness" — achieved the maximum score of 4.0. "Relevance in meeting the needs of beneficiaries" scored 2.5 and "sustainability" scored 1.0.

Measures to improve relevance and sustainability are being implemented, and some CSOs already have won new grants and developed successful small business enterprises. These efforts contributed to reaching 15,000 individuals with a comprehensive HIV service package, testing 12,000 individuals for HIV, and identifying 850 individuals as living with HIV, 94% of whom were linked to treatment.

Conclusions/Next steps: Ongoing Support for CSO capacity building in technical and management operations facilitated the building of a strong KP HIV program and network of KPs and PLHIV.

Availability and access to harm reduction (including OST and NSP)

PESUF22

Evaluating legal obstacles to provider-assisted injection in Ontario's Supervised Consumption Services

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Background: Approximately 14% of new HIV infections in Canada were acquired through injection drug use,[1] and research indicates significantly higher HIV prevalence among people who require assistance injecting than those who do not. Provider-assisted injection within supervised consumptions services (SCS) could reduce this risk, particularly for people with disabilities, women, and youth.

However, concerns about providers' legal liability impede the provision of this critical service within SCS. We interviewed SCS providers in Ontario to identify key questions and concerns raised by SCS nurses and other SCS staff about potential criminal liability, civil liability, and professional discipline associated with providing assisted injection.

[1] "The epidemiology of HIV in people who inject drugs in Canada" (2018) at 2, online (pdf): *CATIE* <www.catie.ca/sites/default/files/fs-epi-idu-EN-2018-08-15.pdf>.

Methods: SCS providers (n = 11) were interviewed via videoconference in the fall of 2021. Nine respondents identified as nursing staff, one as management staff and one as a peer worker. SCS were selected from across the province to ensure geographical representation.

Interviews were transcribed and consolidated. Respondents were asked to share their experience with assisted injection in SCS, including whether they observed a need for assisted injection, the consequences of refusing assistance, and the perceived legal barriers to providing assisted injection.

Results: All respondents observed a significant need for provider-assisted injection and believed that it should be permitted. However, respondents identified several barriers that impede their ability to provide this service, including the threat of professional discipline (by the nursing regulatory body, for nurses) and a lack of clear guidelines condoning the practice from regulatory bodies and/or employers.

Few respondents expressed serious concern about civil or criminal liability. Respondents reported that clients seeking provider-assisted injection most often turn to peer-assisted injection to meet this need – although such assistance is not always accessible or safe.

Conclusions: There is a significant unmet need for provider-assisted injection within Ontario SCS. Although SCS staff are willing and competent to provide this support, legal and non-legal barriers mean that provider-assisted injection is unavailable to people who use drugs in Ontario, hampering the ability of staff to engage in vital HIV and overdose prevention work.

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Human rights programmes

PESUF23

The impact of scaling up human rights interventions on reducing inequality and increasing access to care and treatment for HIV and TB: mid-term results from the Breaking Down Barriers initiative

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Background: The Global Fund's *Breaking Down Barriers* (BDB) initiative provides support for countries to scale-up to comprehensive programs to remove human rights-related barriers to HIV and tuberculosis (TB) services, with the aim to increase the effectiveness of Global Fund grants and ensure that health services reach those most affected.

Description: A mid-term evaluation, conducted in 2020-21, examined progress in scaling up programs identified as effective in reducing human rights-related barriers to health services for HIV and TB in 20 BDB countries (Benin, Botswana, Cameroon, Cote d'Ivoire, Democratic Republic of Congo, Ghana, Honduras, Jamaica, Indonesia, Kenya, Kyrgyzstan, Mozambique, Nepal, Philippines, Senegal, Sierra Leone, South Africa, Tunisia, Uganda, Ukraine).

These included programs to: reduce HIV-related stigma and discrimination; train health care workers on human rights and ethics; sensitize lawmakers and law enforcement; provide legal literacy; provide HIV-related legal services; monitor and reform laws, regulations and policies; and reduce discrimination against women and girls. For tuberculosis, in addition to these programs, it also included programs that: protect confidentiality and privacy in TB services; mobilize and empower TB patient and community groups; and improve TB services in prisons and other closed settings.

The evaluation included both qualitative and semi-quantitative assessment, focusing upon measuring scale up of programs to ensure nationwide coverage and identifying emerging evidence of impact.

Lessons learned: All countries saw progress in removing human rights-related barriers to HIV and TB services. For HIV, Ukraine had the highest coverage of programs to reduce barriers, and Sierra Leone had the greatest increase compared to baseline, followed by Jamaica, Senegal, Cameroon, and Mozambique. For TB, program coverage was highest in Ghana, and increases in coverage were greatest in Ukraine and Côte d'Ivoire. Evidence of impact was found in relation to success in challenging rights violations in the courts, countering the criminalization of key populations, addressing discrimination and stigma, advancing harm reduction programs, working with police and responding to gender-based violence.

Conclusions/Next steps: Across a diverse set of countries, the scale up of human rights-based programs is possible and effective in reducing barriers and increasing access to HIV and TB services.

Immunotherapy (including broadly neutralizing antibodies)

PEMOA26

Developing a novel HIV cure strategy: retargeting potent cytotoxic T cells to kill HIV-infected cells

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Background: Cytotoxic T lymphocytes (CTL) are potent killers of virus infected cells. In most HIV-1-positive people, HIV-specific CTLs are exhausted with limited capacity to control or eliminate HIV-1 infection. Therefore, we developed a novel immunotherapy concept in which potent *de novo* vaccine-induced effector CTLs can be redirected to target and eliminate HIV-1-infected cells.

Methods: We developed a bispecific molecule (RoVER: **Re**director **of** **V**accine-induced cytotoxic T **E**ffector **R**esponses) comprising two functionally distinct domains:
1. A scFv-domain targeting HIV Env, and
2. An HLA-I molecule carrying a yellow fever vaccine epitope.

Following Yellow Fever (YF-17D Stamaril, Novartis) vaccination of 52 healthy volunteers, YF epitope-specific CTL responses were quantified by tetramer staining and multicolour flow cytometry. The ability of RoVER to mediate killing of HIV-infected cells by linking YF vaccine-induced CTLs was assessed in a series of killing assays. As target cells, Raji-Env and autologous CD4+ cells infected *in vitro* with a full-length HIV-1-egfp were used. Moreover, extracellular release of IFN-γ, Granzyme B and TNF-α were analysed by mesoscale multiplex assays.

Results: YF-17D vaccination induced strong epitope-specific CTL responses in all study participants. In HLA*A2 individuals, a mean of 2.8% of CTLs (range 0.1-10.3%) targeted the immunodominant $NS4B_{214-222}$ epitope. RoVER-mediated redirection of NS4B-specific effector CTLs to Raji-Env cells resulted in killing of target cells regardless of whether the two domains of RoVER were linked through streptavidin or recombinantly expressed. Redirection to HIV-egfp-infected autologous CD4 target cells resulted in 65% killing at E:T ratio 3:1. In contrast, no target killing was observed us-

ing autologous CTLs obtained prior to YF-17D vaccination or without exposure to RoVER. Moreover, RoVER-mediated target cell killing could be achieved using different HLA-molecules and YF epitopes. Lastly, target cell killing was associated with pronounced secretion of IFN-γ.

Conclusions: We have developed a novel immunotherapy concept in which epitope-specific CTLs induced by vaccination can be redirected towards HIV-infected cells. This novel technology is highly specific and easily adaptable to recognize any target of interest while obviating the need for *ex vivo* modification and expansion, thus holding great potential for various diseases.

PEMOA27

Clinical and immunometabolic patterns determining efficacy of DC-treatment reinvigorating HIV-1-specific CD8+ T cells in PLWH

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Background: Heterogeneous dysfunctional states of CD8+ T cells in people living with HIV-1 (PWLH) has limited the efficacy of dendritic cell (DC)-based immunotherapies. Here, we studied associations between improved functional response to Gag-loaded adjuvant-primed DCs of CD8 T cells from PLWH with ART duration, memory subset distribution and exhaustion and metabolic profiles in these cells.

Methods: A cohort of n=49 PLWH on ART with undetectable plasma viremia and CD4+ T counts above 400cells/ml were recruited. Monocyte-derived DC were activated with Poly I:C and 2´3´c-diAM(PS)2 adjuvants in the presence of a pool of HIV-1 Gag peptides and co-cultured with autologous CD8+

T cells. Induction and polyfunctionality of HIV-1 specific CD8+ T responses was evaluated by IFNg and CD107a expression by FACS. Functionality of DC-stimulated CD8+ T cells was evaluated by co-culture with autologous CD4+ T cells and the ability to reduce proportions of p24+ CD4+ T cells. Individual or combined anti-PD1, TIGIT, TIM3 antibodies and Metformin were used in some functional assays. Characterization of CD8+ T cell memory subset and exhaustion markers was analyzed by FACS. Metabolic profiles of CD8+ T cells were analyzed by Seahorse.

Results: Polyfunctionality and functional capacities to eliminate p24+ CD4+ T cells of HIV-1 specific CD8+ T cell responses from PLWH on ART for more than 10 years (LT-ARTp) significantly improved after activation with adjuvant-engineered DC *in vitro* (p=0.001 and p=0.0039; respectively).

In contrast, CD8+ T cells from PLWH on ART for less than a decade (ST-ARTp) were less responsive to DC (p=0.0024) and unable to increase cytotoxic function (p=0.0156). This was associated with lower frequencies of central memory CD8+ T cells, increased co-expression of PD1 and TIGIT (p=0.0362) and reduced mitochondrial respiration and glycolytic induction after TCR activation (p=0.002).

In contrast, enrichment on TIM3+ PD1- cells (p=0.001) and preserved glycolytic induction (p=0.0005) was observed in CD8+ T cells from LT-ARTp.

Finally, combined treatment of anti-PD1, anti-TIGIT antibodies and metformin restored cytotoxic properties of dysfunctional CD8+ T cells from ST-ARTp (p=0.0156).

Conclusions: We identified new immunometabolic parameters potentially useful to personalize DC-based HIV-1 vaccines and improve specific CD8+ T cell response in different PLWH populations.

PEMOA28

Pharmacologic intervention to reduce chronic inflammation in people with HIV

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Background: Chronic inflammation and persistent immune activation are critical for HIV-1 disease pathogenesis and progression. HIV-infected monocyte-derived macrophages (MDMs) contribute to long-lived reservoirs and chronic inflammation in people with HIV (PWH) due to persistent release of proinflammatory mediators. Tyrosine kinase inhibitor dasatinib, which is used to treat chronic myeloid leukemia (CML), inhibits HIV-1 infection in CD4+ T cells by preserving SAMHD1 antiviral activity. SAMHD1 also downregulates interferon (IFN) and other inflammatory responses to viral infections.

Our objective was to evaluate if dasatinib may control both infection and proinflammatory effects of HIV-1 on MDMs from PWH, as well as reduce the levels of proinflammatory cytokines in plasma of PWH on ART and dasatinib.

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Methods: 15 ART-treated PWH, 3 PWH with CML on ART and dasatinib, and 11 healthy donors were recruited. CD14+ cells from PBMCs were differentiated to MDMs and then infected with JR_FL_Renilla strain for 48h with or without dasatinib. HIV-1 infection was analyzed by flow cytometry. SAMHD1 phosphorylation and synthesis of IFNγ and TNFα were analyzed by flow cytometry after stimulation with lipopolysaccharide (LPS). Plasma cytokines were quantified by Luminex.

Results:

1. Dasatinib reduced 3.0-(p=0.0104) and 2.1-fold the LPS-induced synthesis of IFNγ from MDMs of PWH and healthy donors, respectively. TNFα synthesis remained unchanged.
2. Plasma levels of proinflammatory cytokines IL-15, IL-18, IL-21, and IL-23 were reduced 2.17-, 1.55-, 1.61-, and 4.86-fold in PWH on ART+dasatinib, in comparison with ART-treated PWH. IFNβ was undetectable in plasma of PWH on ART+dasatinib.
3. Dasatinib reduced 1.8-(p=0.0420) and 2.6-(p=0.0459) fold SAMHD1 phosphorylation in MDMs from PWH and healthy donors, respectively.
4. Dasatinib interfered with proinflammatory NF-κB-dependent transcriptional activity (p<0.0001).
5. HIV-1 infection was reduced 2.4-(p=0.0006) and 5.9-fold in MDMs from PWH and healthy donors, respectively, after treatment with dasatinib.

Conclusions: New therapeutic interventions are needed to reverse chronic inflammation caused by HIV-1 persistence. Dasatinib reduced the levels of proinflammatory cytokines in plasma of ART-treated PWH and reverted SAMHD1 constitutive phosphorylation of MDMs, protecting them from HIV-1 infection and reducing their inflammatory potential.

The use of dasatinib as adjuvant of ART would decrease the inflammatory environment characteristic of chronic infection, thereby improving health of PWH.

ARVs, small molecules and immunomodulating agents - pharmacodynamics and pharmacokinetics

PEMOA29

In vitro release and in vivo pharmacokinetics of antiretroviral drugs from ultra-long-acting polymeric implants: towards better outcomes for HIV prevention and treatment

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Background: Long-acting pre-exposure prophylaxis or treatment formulations that can provide sustained drug release over weeks or months can potentially reduce the incidence of new HIV infections and improve adherence.

Methods: Ultra-long-acting (ULA) biodegradable, removable in-situ forming implants (ISFIs) and polymeric solid implants (PSIs) were generated via phase inversion upon injection (ISFIs) or using a simple process combining phase inversion and compression (PSIs; **Fig. 1A**). These formulations can accommodate one or more antiretrovirals (ARVs) in a single injection or implant. ISFIs and PSIs of Cabotegravir (CAB) and Lamivudine (3TC) were tested for in vitro release (n=3) by HPLC, and in vivo pharmacokinetics in BALB/c mice (n=7) to establish correlations of CAB and 3TC, which have distinct physicochemical properties (**Fig. 1B**). Plasma CAB and 3TC concentrations were quantified by HPLC-MS/MS with a lower limit of quantification (LLOQ) of 25 and 0.1ng/ml, respectively.

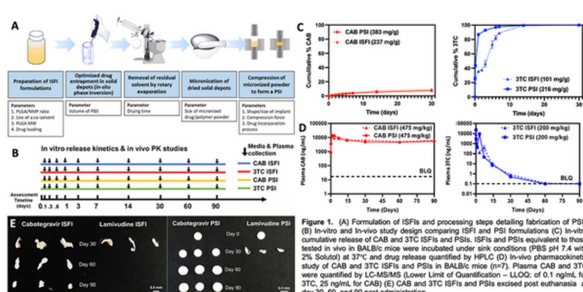

Figure 1. (A) Formulation of ISFIs and processing steps detailing fabrication of PSIs (B) In-vitro and In-vivo study design comparing ISFI and PSI formulations (C) In-vitro cumulative release of CAB and 3TC ISFIs and PSIs. ISFIs and PSIs equivalent to those tested in vivo in BALB/c mice were incubated under sink conditions (PBS pH 7.4 with 2% Solutol) at 37°C and drug release quantified by HPLC (D) In-vivo pharmacokinetic study of CAB and 3TC ISFIs and PSIs in BALB/c mice (n=7). Plasma CAB and 3TC were quantified by LC-MS/MS (Lower Limit of Quantification – LLOQ: of 0.1 ng/mL for 3TC, 25 ng/mL for CAB) (E) CAB and 3TC ISFIs and PSIs excised post euthanasia at day 30, 60, and 90 post administration.

Results: CAB ISFIs and PSIs exhibited minimal burst release (~1%) followed by sustained zero order release both in vitro and in vivo (**Fig. 1C-D**). PSIs and ISFIs (475 mg/kg CAB) resulted in nearly identical plasma CAB levels with sustained zero order kinetics over 90 days (**Fig. 1D**). 3TC ISFIs and PSIs exhibited high burst (38% and 68% respectively) and reached complete release within 14 days (**Fig. 1C**). PSIs and ISFIs (200 mg/kg 3TC) demonstrated nearly identical 3TC plasma concentrations; however, plasma 3TC rapidly declined to below LLOQ at day 60 (**Fig. 1D**). Drug physicochemical properties also influenced in vivo implant degradation rate. 3TC (log P -1.5, pKa 1.09) ISFIs

and PSIs exhibited faster degradation in vivo compared to CAB (log P 1.04, pKa 10.04) and reached complete degradation by day 60 (**Fig. 1E**).

Conclusions: ULA tunable, biodegradable ISFIs and PSIs can accommodate ARVs of distinct physicochemical properties and exhibited near identical plasma drug concentrations for both CAB and 3TC when administered at equivalent doses.

SARS-Cov2 vaccines

PEMOA33

Serological responses to SARS-CoV2 vaccination in people with HIV: the SCAPE-HIV study

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Background: People with HIV (PWH), despite efficient virological suppression on antiretroviral therapy (ART) often display blunted responses to vaccination. There is a need to establish correlates of vaccine efficacy in PWH to tailor vaccine strategies to maximise protection against disease and new emerging variants.

The SCAPE-HIV Study (SARS-CoV-2 antibody prevalence in an HIV cohort) was established to determine antibody responses in PWH following SARS-CoV2 infection and vaccination and evaluate parameters/clinical variables relating to antibody seropositivity.

Methods: SCAPE-HIV is an ongoing cross-sectional study in our adult PWH cohort. This interim analysis is restricted to 384 participants recruited between July-September 2020 reporting 2 doses of SARS-CoV2 vaccines. Participants completed questionnaires about sociodemographics, medical history, prior COVID19, and SARS-COV2 vaccine uptake. Anti SARS-CoV2 spike and nucleocapsid antibodies were quantified using commercial Roche assays at least 2 weeks after the last vaccine dose.

Results: 73.69% white; 82.55% male; 96.35% virally suppressed. 382/384 (99.47%) generated SARS-CoV2 anti-spike antibodies. 2/384 (organ transplant recipients) failed to seroconvert post two vaccines. Antibodies to nucleocapsid detected in 80/384 (20.8%) consistent with prior infection. 91/384 (23.69%) had an anti-spike titre that fell below the lowest level reported in a health care workers study (<400 after second dose vaccine). Low titre was associated with age ^{3}60y (p=0.018). No clear associations were observed with current CD4 count or CD4 nadir. Participants with history of SARS-CoV2 infection had higher anti-spike antibody titres (p<0.001). 7.8% of participants had an anti-spike titre of <100. These were more likely to be on immunosuppressants (p=0.016), have CD4:CD8 ratio <0.5 (p=0.009) and/or have other medical conditions (p=0.018).

Conclusions: SCAPE-HIV is ongoing. This preliminary analysis shows high levels of seroconversion in our study population (majority of whom are well controlled on ART) and highlights an inverse relationship between age and antibody responses. Immunosuppressants, receipt of a solid organ transplant, and a low CD4:CD8 ratio may all be indicators of poor/no response to SARS CoV2 vaccination. It remains to be determined how antibody titres correlate with functional protection against reinfection and cross protection against variants of concern, especially in people with suboptimal serological responses.

PEMOA35

Side-by-side comparison of SARS-CoV-2 neutralizing antibody responses after various COVID-19 vaccine regimens

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Background: Waning immunity and emergence of SARS-CoV-2 variants impact COVID-19 vaccine efficacy. Here, we studied longitudinally the humoral response induced by Pfizer, AstraZeneca, Janssen, Coronavac and Sputnik Vaccines, with or without booster doses. We also asked how breakthrough Omicron infection in Pfizer-vaccinated individuals enhances antibody levels and cross-reactivity.

Methods: We analyzed 349 sera from individuals immunized with five vaccines, Pfizer/BioNTech (BNT162b2), AstraZeneca (ChAdOx1 nCoV-19), Janssen (Ad26COV2.S), Sinovac biotech (Coronavac) or Sputnik (Gam-COVID-Vac). We also examined in 92 sera the impact of a Pfizer booster dose in individuals immunized with Pfizer, Janssen or Sinovac regimens. Samples were collected up to 13 months after the first injection, and 5 months after the boost. We measured anti-S antibodies by flow cytometry with the S-Flow assay, and neutralization titers against infectious D614G, Alpha, Beta, Delta and Omicron isolates.

Results: Administration of two doses of Pfizer, AstraZeneca, Sputnik vaccines, or an heterologous AstraZeneca/Pfizer regimen, induced seroconversion of 95% of individuals and neutralization activity against D614G, Alpha, Beta and Delta, but not Omicron. Janssen and Sinovac

vaccines elicited lower levels of anti-S antibodies, and no detectable neutralization of Delta and Omicron. During the first 8 months, the antibody levels and neutralization activity progressively declined with all vaccines. A booster dose of Pfizer strongly increased antibody response and elicited neutralizing antibodies against Omicron.
However, titers were 8- to 36- fold lower against Omicron relative to Delta. We observed a waning of the humoral response after the boost and estimated that neutralizing antibodies against Omicron will no longer be detectable in the sera after 6 months. Breakthrough Omicron infections strongly increased the levels of cross-reactive antibodies with titers only 2.5-fold lower against Omicron compared to Delta.
Conclusions: Our results highlight differences between vaccines and support the use of an mRNA-based vaccine as a booster regardless of prior regimens. The duration of the neutralizing humoral response after the boost is estimated to be about 6 months. A high level of cross-reactivity is observed in Omicron breakthrough cases. Our data suggest that an Omicron-specific booster may improve cross-immunity.

PEMOA36

Immunogenicity of the BNT 162b2 mRNA vaccine against COVID-19 variants in people living with HIV on antiretroviral therapy in Malaysia

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Background: Few studies have explored the immunogenicity of COVID-19 vaccines in people living with HIV (PLWH) from low-middle income settings where late presentation to care may lead to persistent immune deficiencies despite antiretroviral therapy (ART).
In this study, we compared humoral immune responses following BNT162b2 mRNA primary vaccination in PLWH on ART to age-matched controls and explored the clinical correlates of immunogenicity.
Methods: This prospective study recruited PLWH on ART and HIV uninfected controls (≥18 years) attending vaccination appointments at University Malaya Medical Centre, Malaysia. All participants received two doses of the BNT162b2 vaccine 21 days apart and had serum collected at D0 and D35 after dose 1.
Immunogenicity was assessed by anti-S1 antibody levels (Elecsys Anti-SARS-CoV-2 S assay, Roche) and percent inhibition of neutralization against wild-type D614G, beta and delta variants using cPass SARS-CoV-2 Surrogate Virus Neutralization Test (GenScript). Participant characteristics were extracted from medical records. Clinical factors associated with immunogenicity markers were assessed using univariate non-parametric analyses.
Results: A total of 68 PLWH and 52 HIV-negative controls were recruited with a median age of 37 years. The majority were males (PLWH=96%, controls=64%).94% of PLWH had HIV RNA<50 copies/ml. Median nadir and current CD4 T-cell counts were 182 (44-351) cells/ul and 554 (361-790) cells/ul, respectively. All participants were seropositive (>0.8IU/ml) following vaccination and no difference in median anti-S1 antibody levels were observed at D35 in both groups (p=0.871).
Neutralising activity was lower in PLWH compared to controls for the beta (73.1% vs 83.1%, p<0.001) and delta variants (92.7% vs 95.1%, p=0.008) but not significantly different for the D614G variant. Older PLWH (≥45 years), CD4 T-cell counts <800 cells/ul and CD4:CD8 ratio <0.8 were associated with significantly lower inhibition activity against the beta and delta variants compared to controls (p<0.05). These factors however, had no impact on anti-S1 levels and inhibition activity against the wild-type D614G variant.
Conclusions: Older PLWH with suboptimal immune recovery on ART had lower immunogenicity compared to age-matched controls against variants of concern and should be prioritized for SARS-CoV-2 vaccine boosters. Larger studies are needed to examine clinical correlates of vaccine effectiveness among PLWH on ART.

PEMOA37

Vaccine scheme, age and previous COVID-19 predict humoral response to SARS-CoV-2 vaccination in HIV-infected indivudals

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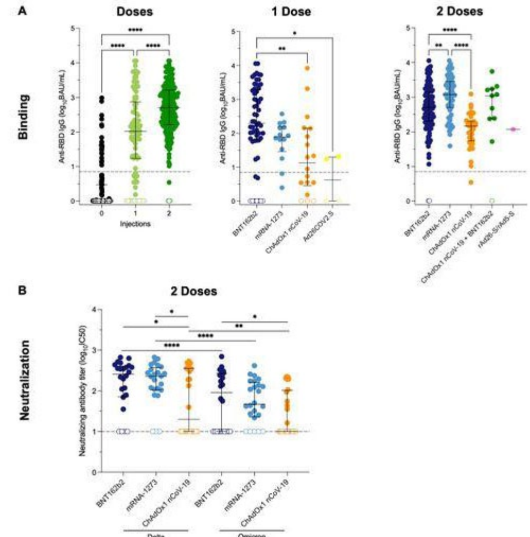
Background: Humoral response to SARS-CoV-2 vaccination in HIV-infected individuals on successful antiretroviral therapy (ART) remain undercharacterized. Here, we obtained anti-SARS-CoV-2 Receptor binding domain (anti-RBD) and neutralization titers detected after vaccination.
Methods: We collected longitudinal serum samples (pre- [D0] and post-vaccination era [M6]) from 447 participants (>200 CD4/mm^3) enrolled in the SECOVIHA study (NCT04515225, Strasbourg, France). We measured anti-RBD and neutralizing antibody titers (Delta and Omicron variants pseudoparticle-based assay), and analyzed predictors of humoral response.

Results: At D0 8.9% of individuals had developed COVID-19 and an additional 9.7% were subsequently infected at M6. Women were at higher risk of COVID-19 (logistic regression, p<0,01). At M6, 132, 93 and 222 participants had received 0, 1 or 2 doses of vaccine, respectively **(Fig1A)**. Median anti-RBD titers were of 2.0 and 3.2 log_{10}binding antibody unit [BAU]/mL after 1 and 2 doses.

Adjusting for time since last vaccine dose, a multivariate analysis showed that an older age was associated to lower anti-RBD titers (-0.09 log_{10}BAU/mL per 10-year increase) and COVID-19 prior to vaccination was associated with higher titers (+0.98 log_{10}BAU/mL).

Decreased titers were associated to an incomplete vaccine scheme (-1.06, -0.81 and -1.87 log_{10}BAU/mL for 1 dose of BNT162b2, mRNA-1273 and ChAdOx1nCov19, respectively) and 2 doses of ChAdOx1nCov19 vaccination (-0.27 log_{10}BAU/mL) but not with 2 doses of mRNA-1273 or heterologous ChAdOx1nCov19/ BNT162b2 compared to 2 doses of BNT162b2.

No HIV-related parameters were associated to humoral response. Delta and Omicron-neutralizing antibody titers from paired participants receiving 2 doses of BNT162b2, mRNA-1273 or ChAdOx1nCov19 (n=24 each) showed a higher neutralizing ability after mRNA-based vaccination and a weaker Omicron-neutralizing ability compared to Delta **(Fig 1 B)**.



Conclusions: Collectively, these data indicate that determinants of anti-SARS-CoV-2 humoral response in HIV-infected individuals on succesfull ART seem similar to those observed in the general population.

PEMOA38

People living with HIV who are receiving suppressive antiretroviral therapy mount strong humoral responses to two and three doses of COVID-19 vaccine

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Background: Immune responses to COVID-19 vaccines, particularly to third doses, remain incompletely characterized in people living with HIV (PLWH).

Methods: We are monitoring immune responses to COVID-19 vaccination in a cohort of 99 adult PLWH and 152 controls, aged 22-88 years, in British Columbia, Canada. All PLWH were receiving suppressive ART, with median CD4+ T-cell counts of 715 (Q1-Q3 545-943) cells/mm^3at cohort entry. In samples collected one month after the second and third COVID-19 vaccine doses, we quantified serum antibodies against the SARS-CoV-2 spike protein receptor-binding domain (RBD) using the Roche Elecsys anti-SARS-CoV-2 assay, and measured viral neutralization activity in plasma against the original (USA-WA1/2020) and Omicron (BA.1) SARS-CoV-2 strains.

Results: We previously reported that, at one month following the second COVID-19 vaccine dose, and after adjustment for sociodemographic, health, and vaccine-related variables, HIV infection was not associated with a difference in either anti-RBD antibody concentration nor live virus neutralization activity compared to responses observed in controls.

In PLWH, there was no significant correlation between the most recent (or nadir) CD4+ T-cell count and vaccine responses after two doses. Rather, at this timepoint, older age, a higher burden of chronic health conditions, and having received two ChAdOx1 doses (as opposed to mRNA or heterologous regimens) were associated with lower responses.

One month following the third dose, anti-RBD serum antibodies increased by 0.4 $\log_{10}$ higher on average, and viral neutralization by four-fold higher on average, than values observed one month after the second dose, in both PLWH and controls (Wilcoxon paired test p<0.0001 for all within-group comparisons between time-points). Importantly, there was no significant difference between PLWH and controls in terms of the magnitudes of post-3rd-dose responses. In a subset of 24 participants assessed to date, the ability to neutralize Omicron after three doses was on average 8-fold lower than the pandemic founder strain (p<0.0001).

Conclusions: In PLWH with well-controlled viral loads on therapy and CD4+ T-cell counts in a healthy range, humoral responses to two and three COVID-19 vaccine doses are comparable to individuals without HIV. Third COVID-19 vaccine doses induce responses capable of neutralizing Omicron to some extent.

Pregnancy (clinical management issues and pharmacokinetics) and contraception

PEMOB28

Safety outcomes among HIV-1 positive Zambian adults receiving Tenofovir Alafenamide combined with Dolutegravir: results from the VISEND clinical trial

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Background: Tenofovir disoproxil fumarate (TDF), isassociated with higher risks of renal and bone adverse events, a reason why the WHO had recommended the use of Tenofovir alafenamide (TAF) as a favorable option especially in those with preexisting renal or bone comorbidities.However, there has been limited use of TAF in resource limited settings with scanty data on its safety especially among pregnant women.

We thus evaluated the ARVsafety among HIV-positive, Zambian adults receiving TDF/lamivudine(3TC)/dolutegravir (DTG) or TAF/emtricitabine (FTC)/DTG after being switched from non-nucleoside reverse transcriptase inhibitors (NNRTI)-based ART.

Methods: The VISEND trial is a 144 week, randomized, open label, phase 3 noninferiority study in which weenrolled HIV-1 positive Zambian adults individuals who were receiving TDF/lamivudine (3TC) /efavirenz (EFV) or nevirapine (NVP) ART.

Individuals receiving TDF/3TC/EFV400 or TDF/3TC/NVP with baselineHIV-1 RNA<1,000 copies/mL (arm A) and those with baseline HIV-1 RNA≥1,000 copies/mL (Arm B) were randomized to either TDF/3TC/DTG or TAF/FTC/DTG. Participants who became pregnant after study enrollment were maintained on the study medicines.

Safety was monitored using various biomarkers including serum creatinine with creatinine clearance (CrCl) calculated using the cock-croft gault equation. Creatinine clearance < 50mLs/min and<30 mL/min warranted TDF and TAF discontinuations respectively.

Results: 837 were randomized toTDF/3TC/DTG or TAF/FTC/DTG. At Week 48, eight (8) individuals receiving TLD were discontinued due to kidney events and 2 due to bone related events. Individuals receiving TAFED had a slightly higher mean weight gain (BMI change +1.84) compared to those on TDF/3TC/DTG (BMI change +1.54) although higher among the female.Twenty-four (24) participants (from both arms) became pregnant with 19 (79%) viable babies delivered. There were 4 miscarriages (2 on TDF/3TC/DTG and 2 on TAF/FTC/DTG). 1 whose mother was on TDF/3TC/DTG had congenital cardiac anomaly.

Conclusions: Individuals on TAF/FTC/DTG had better renal and bone safety profiles whereas pregnancy outcomes were comparable in both groups. TAFED was associated with increased weight gain. Tenofovir alafenamide offers a choice for an ARV with balancedoptimal efficacy and potential for improved long-term safety among HIV positive individuals on ART. However, long term follow up is needed to ascertain metabolic complications in women.

Pharmacokinetics/pharmacodynamics/pharmacogenomics and therapeutic drug monitoring in paediatric and adolescent populations

PEMOB29

Selection of cabotegravir dosing regimens for HIV treatment and pre-exposure prophylaxis (PrEP) in adolescents by Leveraging adult data

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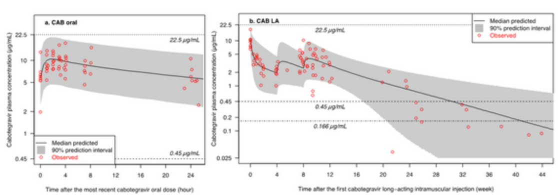
Background: Cabotegravir (CAB) is the first complete long-acting (LA) regimen for HIV treatment (with rilpivirine) in adults and PrEP in adults and adolescents (≥35kg). CAB LA is an important alternative to daily oral regimens for adolescents. Oral and LA CAB pharmacokinetics (PK) and safety were characterized in virologically-suppressed adolescents (≥35kg) on stable combination antiretroviral therapy in the ongoing MOCHA study. Population PK (PPK) modelling was used to support extrapolation from adults to adolescents and bridge dose regimens and therapeutic use.

Methods: Interim PK from MOCHA (8 adolescents) was compared to adult PK to establish PK similarity and determine feasibility of extrapolation. Adolescent PK profiles following monthly and every-2-months regimens were simulated by incorporating adolescent weight and BMI in a previously developed adult PPK model, and compared to adult PK targets.

Results: Observed and predicted adolescent PK were similar to that in adults receiving treatment or PrEP regimens (Figure 1).



Oral and LA dosing regimens were same as adult monthly regimen. CAB = cabotegravir; LA = long-acting; PK = pharmacokinetics. Reference line of 0.45 µg/mL = 5th percentile of the observed CAB trough concentration following the initiation injection in adult Phase 3 Studies 201584 (FLAIR) and 201585 (ATLAS). Reference line of 22.5 µg/mL = geometric mean of maximum concentration (C_{max}) observed at the supratherapeutic dose of oral CAB 150 mg (3 doses in total, twice daily) in the adult thorough QT/QTc (TQT) study, which is not associated with any toxicity but is the highest exposure observed in clinical studies. Reference line of 0.166 µg/mL = in vitro protein-adjusted concentration resulting in 90% of the maximum inhibition (PA-IC90) of viral growth.

Figure 1. Comparison between observed (interim data from MOCHA study) and simulated (using adult population PK model) cabotegravir pharmacokinetics in adolescents following oral (a) and long-acting (b) dosing.

Adult regimens in adolescents had resulting PK most similar to adults with similar weight range. PPK model accurately predicted PK from adolescents ≥35kg and bridged dose frequency and HIV-infection status. The observed and simulated data demonstrated that adolescents, receiving adult CAB regimens, remained above PK targets observed in adults and below safety thresholds (Figure 2).

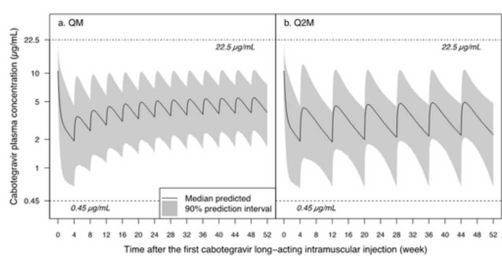


Figure 2. Simulated cabotegravir concentration-versus-time profiles follwing QM (a) and Q2M (b) regimens in adolescents aged 12 - <18 years with body weight of ≥35 kg. QM = once every month; Q2M = once every 2 months. See Figure 1 for interpretation of reference lines 0.45 µg/mL and 22.5 µg/mL.

Conclusions: Robust modelling and simulation approaches, combined with adolescent PK data from MOCHA, allowed bridging and extrapolation across several factors, and inform future study design. The consistency of adolescent and adult PK supports the use of adult CAB regimens in adolescents ≥12 years and ≥35 kg.

ARV management strategies in paediatric and adolescent populations

PEMOB30

Optimizing DTG uptake amongst children living with HIV in Ikom rural communities attending ART clinic at Comprehensive Health Center (CHC) Ikom, Cross River State

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Background: Treatment of HIV infection among children remains very challenging due to several reasons, including difficulties surrounding the availability of effective, palatable, dosage and storage friendly Antiretroviral medications. The introduction of pediatric friendly dolutegravir (DTG) based regimen addressed some of the challenges with previous regimens and this project worked on optimizing its uptake among children living with HIV in rural communities in Ikom Cross River State.

Description: Most of the rural communities in Cross river state are hard to reach making it difficult for children in these communities to have access to effective treatment. Also, due to experience with previous unpalatable regimen, adherence among them was not optimal. To address this challenge, this project was commissioned in one of the rural clinics, CHC Ikom supported by AIDS Healthcare Foundation.

Uptake of the newly introduced DTG was found to be low (25%) amongst children attending ART clinics in CHC Ikom despite being available on site for more than 3 months. Viral suppression among the children was about 35%. Strategies employed include capacity building on DTG administration for healthcare workers, weekly facility-based treatment literacy sessions for caregivers, geographical mapping of the children in care, followed by intensive follow-up through home visits.

Lessons learned: After 6months of this project, DTG uptake among the children increased to 100% and the clinical scores among the children improved significantly. Adherence increased to over 85%, viral load suppression among the children increased to 90% and there was no report of any adverse drug reactions.

There was no record of missed appointment within the period and most of their care givers understand better how ART treatment works. Access to treatment also improved among the children due to the geographical mapping and availability of differentiated services for them.

Conclusions/Next steps: Uptake of key interventions like Pediatric DTG is critical for improved treatment outcome for children living with HIV and should be offered in a comprehensive manner. A tripartite strategy of health-care worker capacity building, Treatment literacy sessions for caregivers and geographical mapping followed by intensive follow up is recommended to improve DTG uptake among Children living with HIV in rural communities.

Mental health and neurocognition in paediatric and adolescent populations

PEMOB31

The cognitive development of children born to adolescent mothers - does child HIV status matter?

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Background: HIV, both directly and indirectly, impacts child development outcomes. The most severe impacts are for children infected with HIV, and those exposed but uninfected are also shown to have challenges - though less severe. However, little is known regarding the development of children born to adolescent mothers affected by HIV.

This study aims to examine cognitive development for children born to adolescent mothers, comparing those children living with HIV, those HIV exposed and uninfected (HEU) and those HIV unexposed (HU).

Methods: Analyses utilise cross-sectional data from 920 adolescent mother (10-19 years)-first born child dyads residing in the Eastern Cape Province, South Africa. Participants completed detailed study questionnaires relating to sociodemographic characteristics, HIV, and maternal and child health. Trained assessors administered standardised child development assessments (Mullen Scales of Early Learning). Chi-square tests and ANOVA tests were used to explore maternal and child characteristics according to child HIV status on cognitive development. Linear regression models were used to explore associations between child HIV status and child cognitive development.

Results: 1.2% of children were living with HIV, 20.5% were classified as being HEU and, 78.3% were classified as HU. Overall, children living with HIV were found to perform lower across developmental domains compared to both HEU and HU groups (composite score of early learning: 73.0 vs 91.2 vs. 94.1, respectively: F=6.45, p=0.001). HEU children on average scored lower on all developmental do-

mains compared to HU children, reaching significance on the gross motor domain ($p<0.05$). Exploratory analyses identified maternal education interruption as a potential risk factor for lower child cognitive development scores and, higher maternal age to be protective of child cognitive development scores.

Conclusions: Analyses identify stepwise differences in the average child cognitive development scores according to child HIV status among children born to adolescent mothers affected by HIV; with children living with HIV performing worse overall. Young mothers and their children may benefit from adapted interventions aimed at bolstering child development outcomes.

Targeted programming particularly among younger adolescent mothers and those experiencing education interruption may identify those families, particularly in need.

HIV-exposed uninfected children

PEMOB32

No difference in prevalence of TB infection among infants in two Southern African cohorts by *in utero* HIV exposure status

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Background: Children under 5 years old are at risk for tuberculous (TB) disease. Bacillus Calmette-Guérin (BCG) mitigates this risk and may also improve all-cause mortality. However, whether this is the same for infants exposed *in utero* to HIV yet uninfected (iHEU) is unknown.

Methods: Leveraging mother-child health studies conducted in Botswana and South Africa, women living with HIV and without were enrolled during pregnancy. Mother-child pairs were followed prospectively, and samples collected at 9-12months and/or 18-month of life in Botswana and 9-month or 12-month of life in South Africa were used.

All infants were BCG vaccinated at birth. T-SPOT.TB assays were performed on cryopreserved peripheral mononuclear cells. Cells were stimulated with phytohaemagglutinin (PHA), ESAT-6, CFP-10, and medium.

Results were interpreted as positive, negative, borderline, or invalid, according to the manufacturer's instruction. For invalid or borderline results, re-testing was performed using another aliquot collected at the same visit or in follow-up, if available.

Valid re-tested results from later time points were considered reflective of the initial testing date, acknowledging the potential TB exposure between the tests. Proportions of T-SPOT.TB positive tests were compared by infant HIV exposure status using Fisher's exact test. Median PHA stimulated spot forming cells were compared using Wilcoxon rank sum test.

Results: Overall, 418 infants were tested; 293 (70%) iHEU and 125 (30%) HIV-unexposed infants (iHUU). Women with HIV were older with higher gravidity compared to women without HIV. No infant presented with TB disease. TB infection prevalence did not differ by infant HIV exposure overall or in either cohort. In Botswana, 6 iHEU (4.4%) and 1 iHUU (3.0%) tested positive (p=1.0). In South Africa, 4 iHEU (2.5%) and 3 iHUU (3.3%) tested positive (p=0.71).

Two seroreversions occurred in iHEU. South African iHEU showed a significantly higher PHA stimulation response compared to iHUU (median 575 vs. 409 spots; p=0.004). This was not observed in Botswana (median 289 vs. 426 spots; p=0.059).

Conclusions: TB infection prevalence was similar between two Southern African infant cohorts regardless of fetal HIV exposure status, contrary to previous reports where overall prevalence was higher in infants. Studies with larger cohorts are needed to confirm these findings.

Clinical issues in sex workers

PEMOB33

Causes of death and hospitalisations in a cohort of sex workers in South Africa

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Background: In South Africa, 60% of female sex workers (FSW) are living with HIV, and many face structural and individual-level barriers to initiating, accessing and adhering to antiretroviral therapy (ART). FSW are criminalized, stigmatized and marginalized. The Siyaphambili (we are moving forward) study enrolled 777 FSW with sustained viremia into an 18 month sequential multistage adaptive randomized trial (SMART) to compare the effectiveness and durability of a nurse-led decentralized treatment program (DTP) and individualized case management (ICM) in isolation or in combination to achieve sustained viral suppression. This study reports on morbidity and mortality in the cohort.

Methods: Non-virally suppressed FSW 18+ years living with HIV in Durban, South Africa were enrolled into the Siyaphambili trial from June 2018-March 2020; follow-up ended January 2022. Attempted contact was made with women every 1 to 2 months dependent on intervention arm and 6-monthly for study visits/blood draws.

We describe morbidity and mortality over 18-months of follow-up; mortality rates were estimated per 1000 person-years of follow-up.

Results: Average age of FSW was 31 years. Sixteen deaths were reported among 777 trial participants during follow-up at a rate of 18.7/1000 PY. Causes of death included TB (n=5), unspecified illness (n=5), murder (n=3), COVID-19 (n=1), suicide (n=1) and hypothermia (n=1). A further 6 women were known to have been incarcerated during study follow-up.

Adverse events outside of death were commonly reported in the study visits at 6, 12 and 18 months: A range of 10.1-15.7% of FSW reported hospitalization in the past 6 months across these each of these visits; 19.4-32.2% reported physical violence in the past 6 months; and 10.6-14.8% reported sexual violence (rape) across the past 6 months. No adverse events were determined to be due to the study.

Conclusions: FSW have high morbidity and mortality relative to their age group in the general population with TB being the major cause of mortality. Hospitalization, physical and sexual violence are also highly prevalent among FSW. Interventions to prevent and treat TB and violence need to be integrated into care for FSW.

Malignancies (AIDS and non-AIDS)

PEMOB34

Prevalence and risk factors for anal dysplasia among men who have sex with men living with HIV: the HPV Screening and Vaccine Evaluation (HPV-SAVE) Study

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Background: HPV-associated anal cancer is a common malignancy in men who have sex with men living with HIV (MSMLWH). Despite recent indications that screening reduces the incidence of anal cancer, access is limited to urban centres and is coupled with substantial waitlists requiring the need for triaging care. We assessed the prevalence of and risk factors for anal dysplasia among MSMLWH.

Methods: The HPV-SAVE study examines anal cancer screening in MSMLWH in Vancouver, Ottawa and Toronto, Canada. Between 01/2016 and 05/2021, participants were recruited from HIV clinics and completed a questionnaire pertaining to demographics and medical history. We screened participants for anal dysplasia via anal pap, defined as any non-normal result on cytology using the Bethesda classification.

We completed descriptive statistics to report the prevalence of anal dysplasia and binomial logistic regression to identify risk factors for dysplasia.

Results: Among 720 participants screened, most were white (70.0%), over 50 years-old (52.1%) and unpartnered (53.8%). Most had dysplasia (344/663; 51.9%): ASCUS (223/663; 33.6%), LSIL (77/663; 11.6%), HSIL (18/663; 2.7%); and ASC-H (16/663; 2.4%).

Many participants reported past anogenital warts (269/699; 38.5%) however, this did not increase the odds of dysplasia (odds ratio [OR] 1.03 95% confidence interval [CI] 0.75, 1.41).

Black participants were less likely to have dysplasia than non-Black participants (OR 0.47, 95% CI 0.23, 0.96), as were individuals who acquired HIV between 2000-2010 relative to those who were diagnosed after 2010 (OR 0.63 95% CI 0.42, 0.94). Elevated odds of dysplasia were observed for current smokers and individuals who quit within the past 5-years (OR 1.42; 95% CI 1.01, 2.01) and individuals with quarterly physician visitation compared to individuals with biannual visitation (OR 1.61, 95% CI 1.00, 1.93). There was no association between dysplasia and low self-reported CD4+ count (OR 1.10 95% CI 0.75, 1.62) or elevated age (OR 1.10 95% CI 0.80, 1.50).

Conclusions: Anal dysplasia is common among MSMLWH. Smoking, frequent physician visitation, recent HIV acquisition and non-Black ethnicity were associated with dysplasia. These interim results highlight the importance of further research addressing mediators and confounders of engagement in anal cancer screening to support treatment and care for MSMLWH.

Clinical issues in transgender people

PEMOB35

Addressing sexual health in trans masculinities: lessons learned from TransCITAR transgender cohort study in Argentina

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Background: Trans masculinities (TM) are usually underrepresented in clinical settings, and data involving HIV and other sexually transmitted infections (STIs) are scarce, highlighting health disparities among this community.

This study aimed to describe sexual health status of TM attending a transgender cohort at Buenos Aires, Argentina.

Methods: We conducted a retrospective review of TransCITAR cohort study TM medical records (September 2019-December 2021). Gathered data included age, sexual orientation, sex work history, age of sexual initiation, history of pregnancy, and use of gender-affirming hormone therapy (GHT). STI screening included: HIV (by rapid test), syphilis (by nontreponemal test-VDRL-), hepatitis A (HAV), B (HBV) and C (HCV) serologies, rectal chlamydia and gonorrhea and cervical cytology. Diagnosis of gonorrhea and chlamydia were made by in-house PCR on rectal swabs performed by a healthcare professional.

Results: Thirty-six TM were included, median age 25 years (IQR 21-30). Only two participants reported history of sex work. Regarding sexual orientation a great variation was reported: 15(42%) heterosexual, 9(25%) bisexual, 6(17%) pansexual, 1(3%) gay and 1(3%) asexual. Most participants 69%(n=25) were receiving GHT. Four participants had not initiated sexual activity.

All participants were tested for HIV and syphilis with negative results. Five (14%) had rectal gonorrhea and chlamydia screening, with negative results. Among TM

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who had initiated sexual activity, only 10/32 (31%) performed the cervical cytology, among these, 2 had low-grade intraepithelial lesions. At baseline visit, all participants consented to hepatitis serology, and all had IgG HAV positive, IgG HCV and HBsAg negative. Ten TM had HBsAb< 10 IU/ml. One person had pregnancy history with miscarriage.

Conclusions: Despite facilitated access to a trans competent facility, only few TM completed STI and genital cancer screening, and almost one third had HBV serology compatible with missing or incomplete vaccination.

These results highlight the urgent need for more formative research to understand how to offer adapted and acceptable genital evaluation and screening of STIs and cancer to this population.

Clinical issues in people who use drugs

PEMOB36

Connecting vulnerable people with opioid use disorder to care: expanding accessibility and building trust through a community-based telemedicine partnership in Montreal, Canada

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Background: The COVID-19 pandemic has greatly impacted health service delivery, with unprecedented expansion of telemedicine. To address the needs of people with opioid use disorder (PWOUD), the Centre hospitalier de l'Université de Montréal Addiction Medicine service (CHUM-A) began to initiate new patients on opioid agonist treatment (OAT) – a key intervention for reducing HIV transmission and overdose risk – via telemedicine.

However, PWOUD often lack access to the technological resources necessary for telemedicine. Likewise they often have complex needs while being disengaged from mainstream health services. The CHUM-A and CACTUS Montreal (a community-based harm reduction organisation) therefore co-constructed a unique telemedicine program aiming to provide evidence-based treatment and health care for PWOUD.

Description: Procedures were developed jointly to enable flexible and rapid appointment schedules. CACTUS Montreal workers, known and trusted by their clientele, inform PWOUD of the program, facilitate telemedicine connection in a private room located within their facilities, introduce the CHUM-A team and can accompany the patient throughout the appointment if requested.

Treatments offered by the CHUM-A team include a long-acting opioid, often combined with a short-acting opioid to increase comfort and reduce risk of illicit use and overdose, and other services including HIV and HCV prevention and treatment as needed. CACTUS Montreal workers maintain follow up and support to the participants following an holistic approach.

Lessons learned: Between April 2020 and October 2021, 66 people initiated OAT through the program and 83% currently remain engaged in care, much higher than reported 1-year OAT retention rates of 30-70%. Five participants commenced HIV treatment and 16 were treated for hepatitis C. Qualitative interviews with 20 participants suggest an enthusiastic response; the initiative was perceived to be convenient and protective in the pandemic context, and the implication of CACTUS Montreal was highly valued. Several participants reported having reduced their drug consumption and experiencing greater stability in other areas of their lives.

Conclusions/Next steps: Our telemedicine program provides a flexible approach with alternative treatment options for PWOUD disengaged from traditional care, integrated within a local organisation. It represents an affordable solution to reduce the gap between patients and health providers, and is promising to increase access in remote settings.

Impact of COVID-19 on HIV care

PEMOB37

COVID-related barriers associated with suboptimal adherence during India's second „delta" wave: results from a South India HIV cohort

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Background: Successful management of HIV requires excellent adherence and timely prescription refills to avoid treatment interruptions. The COVID-19 pandemic restrictions have resulted in unintended treatment barriers for people living with HIV (PWH). It is important to document the impact that these barriers had on ability to visit ART clinics, obtain prescription refills, and adhere to medical regimens during different phases of the pandemic.

Methods: The "Tel-Me-Box" study was designed to validate novel measures of medication adherence by enrolling and following a cohort of 526 PWH in South India for 24 months. During COVID-19-related government restrictions on travel and face-to-face visits, we conducted telephone surveys, adding questions on pandemic-related adherence barriers.

This abstract includes data collected in 1) Jan-Feb (n=442) 2) May-June (n=451) and 3) Aug-Sept (449) 2021, i.e. pre-, during, and post- India's "second wave," which occurred during the surge of the delta variant. We assessed past month HIV adherence and >48hr treatment interruptions, combined into a measure of "suboptimal adherence," as well as individual and structural adherence barriers.

Results: In 2021, <95% past month adherence was reported by 7% in Jan-Feb, 8% in May-June, and 4% in Aug-Sept of cohort participants. While these differences were not statistically significant, perceived pandemic-related barriers to clinic visits and medication adherence were significantly more common during the May-June surge of the delta variant than they were pre- or post-surge. These barriers were associated with suboptimal adherence during the surge (see table), but not before or afterwards.

Perceived pandemic-related adherence barriers	% who agreed with each statement (*p<0.05) Pre-surge (Jan-Feb) During surge (May-June) Post-surge (Aug-Sept)	% who reported suboptimal adherence during surge among those who agreed with barriers at that time	% who reported suboptimal adherence during surge among those who disagreed with barriers at that time	p (chi-square test bivariate)	Multivariate model aOR (95% CI)
"I worry that I will run out of my medication and not be able to get refills during the pandemic"	Pre: 13.3% (n=59/442) During: 34.8%* (n=157/451) Post: 8.2% (n=37/449)	16.6% (n=26/157)	7.8% (n=23/294)	p≤0.005	1.13 (0.53, 2.39)
"I don't have transportation to get me to the clinic"	Pre: 10.4% (n=46/442) During: 40.6%* (n=183/451) Post 7.8% (n=35/449)	16.4% (n=30/183)	7.1% (n=19/268)	p≤0.002	1.96 (0.98, 3.91)
"I'm afraid that taking my HIV meds will make me more vulnerable to COVID infection or complications."	Pre: 13.8% (n= 61/442) During: 20.6%* (n=93/451) Post: 6.2% (n=28/449)	20.4% (n=19/93)	8.4% (n=30/358)	p≤0.001	2.13 (1.01, 4.48)
"I'm afraid that doctors won't be available or will treat me differently if I seek care at the hospital"	Pre: 19.7% (n=87/442) During: 31.7%* (n=143/451) Post: 12.0% (n=54/449)	15.4% (n=22/143)	8.8% (n=27/308)	p≤0.036	1.13 (0.55, 2.30)

Table.

Conclusions: Although self-reported adherence levels in this cohort were similar throughout 2021, pandemic-related concerns were significantly greater during India's devastating "second wave" in May-June, during the surge of the delta variant. During this time, COVID-related worries and lack of transportation were significantly associated with suboptimal HIV medication adherence.

These findings have implications for policy and clinical care during future surges and suggest that PWH could benefit from additional counseling to reduce worries together with transportation assistance or medication deliveries to ensure consistent medication access.

Sexuality, gender and prevention technologies (including condoms, treatment as prevention, medical male circumcision, pre-exposure prophylaxis)

PEMOC34

Considerations for the delivery of long-acting HIV prevention methods in South Africa: provider perspectives on uptake and facilitating choice and informed decision-making

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Background: Clinical trials of the dapivirine vaginal ring (PrEP ring or ring) and long-acting injectable cabotegravir (CAB-LA) have shown promising results, with both products exhibiting efficacy in preventing HIV acquisition.

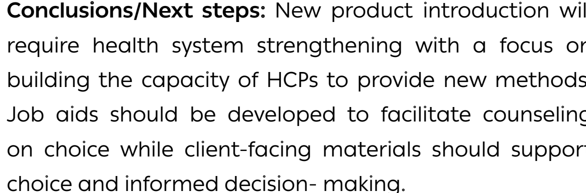
Successful product introduction and scale-up will require in-depth understanding of the knowledge, perceptions, and attitudes of healthcare providers (HCPs) related to these new products.

Description: Through the USAID-funded PROMISE collaboration, we used semi-structured discussion guides to conduct conversations with family planning (FP) and HIV prevention HCPs from public health facilities and project sites in South Africa from May to June 2021.

These conversations explored perceptions of the ring and CAB-LA; experiences with oral PrEP and FP provision; counseling on multiple methods; and strategies to enable informed choice and decision-making among potential clients. Conversations were audio-recorded and thematic analysis was conducted using a two-step rapid analysis process.

Lessons learned: A total of 59 (53 female and four male) HCPs providing integrated FP-HIV prevention services participated in the conversations. 57 HCPs had heard about the ring; about half had heard about CAB-LA. Perceived advantages of the ring included fewer side effects compared to oral PrEP and ease of insertion and removal. HCP concerns included low ring uptake due to low efficacy compared to oral PrEP; incorrect use with clients removing the ring before 28 days; or potential intimate partner violence. For CAB-LA, HCPs mentioned its discreet use and long-acting qualities as advantages. Concerns about CAB-LA included the risk of developing HIV drug resistance and lasting side effects.

Overall, HCPs said the introduction of new PrEP products would be beneficial to clients, allowing them to choose methods based on their lifestyles. They expected uptake of CAB-LA to be higher among women who already use injectable contraceptives. HCPs worried that introducing new products would lead to increased workloads, inadequate counseling, and improper stock control and storage measures, particularly for CAB-LA.



Conclusions/Next steps: New product introduction will require health system strengthening with a focus on building the capacity of HCPs to provide new methods. Job aids should be developed to facilitate counseling on choice while client-facing materials should support choice and informed decision- making.

Access to harm reduction interventions

PEMOC35

Effect of combination Needle and Syringe Program and Opioid Agonist Therapy on HIV and hepatitis C virus acquisition among people who inject drugs: a comparison between Amsterdam, Melbourne and Vancouver

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Background: Harm reduction programs for people who inject drugs (PWID) have been available in Amsterdam, Vancouver, and Melbourne since the 1980s. Compared to the current situation in Vancouver and Melbourne, coverage of harm reduction programs is higher in Amsterdam, fewer individuals initiate injection drugs, and HIV and HCV transmission has been largely stopped among PWID. We aimed to assess whether the effect of needle and syringe program (NSP) and opioid agonist therapy (OAT) participation on HIV and HCV incidence differs in these three settings.

Methods: We emulated the design of a target randomized trial using observational data from the Amsterdam Cohort Studies (ACS, 1985–2014), Vancouver Injection Drug Users Study (VIDUS, 1997-2009), and Melbourne Injecting Drug User Cohort Study (SuperMix, 2008-2021).

We included PWID with a recent history of injecting drug use and opioid use, and who tested negative for HIV or HCV. We compared the effect of complete NSP/OAT participation (current OAT and 100% NSP coverage, or current OAT if no recent injection drug use) versus no or partial NSP/OAT participation combined (no OAT and/or <100% NSP coverage) on HIV and HCV risk, per cohort (only HCV in SuperMix as transmission of HIV is rare among PWID in Australia). Marginal structural models were used to analyze data.

Results: During follow-up among participants included in analysis, there were 61/624 HIV seroconversions in ACS and 37/1,399 in VIDUS, and 34/129 HCV seroconversions in ACS, 30/216 in VIDUS, and 21/122 in SuperMIX.

Compared with no/partial NSP/OAT participation, complete participation led to lower risk of HIV and HCV acquisition, with the strongest effect on HIV observed in the ACS (Hazard ratio (HR)=0.38, 95%CI= 0.23-0.66) compared to VIDUS (HR= 0.45, 95%CI= 0.11-1.84), while its effect on HCV was strongest in VIDUS (HR= 0.11, 95%CI= 0.01-0.85) and ACS (HR= 0.29, 95%CI= 0.12-0.67) compared to SuperMix (HR= 0.49, 95%CI= 0.14–1.71).

Conclusions: Complete NSP and OAT participation led to a reduction of HIV and HCV acquisition compared to no/partial participation in regions from two and three continents, respectively.

Findings reinforce the crucial role of combined NSP and OAT in infection prevention and the need for comprehensive access to both interventions.

Combination prevention strategies

PEMOC36

The effect of universal testing and treatment for HIV on health-related quality of life – data from the HPTN 071 (PopART) cluster randomised trial in Zambia and South Africa

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Background: HIV treatment has clear Health-Related Quality-of-Life (HRQoL) benefits. However, little is known about how Universal Testing and Treatment (UTT) for HIV affects HRQoL. We examined the effect of a combination prevention intervention, including UTT, on HRQoL among PLHIV.

Methods: Data were from HPTN 071 (PopART), a three-arm cluster randomised controlled trial in 21 urban and peri-urban communities in Zambia and South Africa (2013-2018). Arm A received the full UTT intervention of door-to-door HIV testing plus access to antiretroviral therapy regardless of CD4 count, Arm B received the intervention but followed national treatment guidelines (universal ART from 2016) and Arm C received standard care.

The intervention effect was measured in an open cohort of randomly selected adults (18-44 years) in randomly selected households, using data from baseline and 36-months. HRQoL scores (range:0-1), and the prevalence of problems in five dimensions of HRQoL (mobility, self-care, performing daily activities, pain/discomfort, anxiety/depression) were assessed among all participants using the EuroQol-5-dimensions-5-levels questionnaire (EQ-5D-5L). HRQoL among PLHIV with laboratory confirmed HIV status was compared between arms.

This was achieved using two-stage cluster-level analyses, controlling for baseline imbalances in language(s) used to complete the survey, wealth and HRQoL, as well as age and gender.

Results: Data from 10,900 PLHIV (women, n=9,205, 84.4%; men, n=1,695, 15.6%) were examined. At 36-months, the mean HRQoL score was 0.893 (95% confidence interval:0.891-0.894) in Arm A, 0.888 (0.886-0.890) in Arm B and 0.891 (0.889-0.892) in Arm C. There was no evidence of a difference in HRQoL scores between arms (adjusted mean difference, A vs C:0.003, -0.001-0.006; B vs C:-0.004, -0.014-0.005).

However, the geometric mean prevalence of problems with pain/discomfort was 2.4% in Arm A, 7.5% in Arm B and 7.8% in Arm C, with prevalence lower in Arm A than C (adjusted prevalence ratio:0.37, 0.14-0.97). There was no evidence of a difference in effect between men and women.

Conclusions: The PopART UTT intervention did not change overall HRQoL, suggesting that improving HRQoL among PLHIV might require more than access to testing and treatment. However, PLHIV had fewer problems with pain/discomfort under the full intervention; this benefit of UTT should be maximised in further roll-out.

PEMOC45

A latent class analysis of combination HIV prevention strategies enacted by a prospective cohort of midlife and older men who have sex with men in the United States

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Background: Midlife and older (age 40+) men who have sex with men (MSM) in the United States remain disproportionately affected by HIV. The HIV prevention toolbox has evolved over the past decade, offering biomedical methods, like pre-/post-exposure prophylaxis [PrEP/PEP]

and HIV treatment as prevention alongside traditional methods, like condom use, anal sex alternatives, and discussions about HIV status. We aimed to identify the typologies of combination HIV prevention (CHP) methods used by midlife and older MSM during recent sexual encounters.

Methods: Participants were sexually-active, midlife and older adult MSM (N=566; mean age 61.1±8.2 years; 28.4% men of color) from the Multicenter AIDS Cohort Study/ Healthy Aging Substudy (2016-2019). We asked about their/their partners' enacted CHP methods (Table 1). Latent class analyses were performed cross-sectionally to identify CHP typologies stratified by HIV serostatus.

Prompt: "Thinking of the sex you have had with other men since your last visit. Which of the following safer sex methods have you used? (check all that apply). The first column asks about YOU, the second asks about your male sexual PARTNER(S)."

	Full Sample N = 566	Seronegative Men n = 293 (51.8%)	Seropositive Men n = 273 (48.2%)		
Prevention Strategy	n (%)	n (%)	n (%)	χ^2	p
Talked about HIV status – Self	274 (48.4)	130 (44.4)	144 (52.7)	5.23	.073
Talked about HIV status – Partner	216 (38.2)	106 (36.2)	110 (40.3)	1.01	.314
Talked about Viral Load – Self	-	-	110 (40.3)	-	-
Talked about Viral Load – Partner	93 (16.4)	22 (7.5)	71 (26.0)	35.22	<.001
Used Condoms – Self	139 (24.6)	61 (20.8)	78 (28.6)	4.58	.032
Used Condoms – Partner	118 (20.8)	49 (16.7)	69 (25.3)	6.26	.012
Took PrEP – Self	-	33 (11.3)	-	-	-
Took PrEP – Partner	99 (17.5)	41 (14.0)	58 (21.2)	5.15	.023
Took PEP – Self	-	5 (1.7)	-	-	-
Took PEP – Partner	25 (4.4)	9 (3.1)	16 (5.9)	2.61	.107
Pulled out before cumming – Self	77 (13.6)	31 (10.6)	46 (16.8)	4.73	.030
Pulled out before cumming – Partner	51 (9.0)	19 (6.5)	32 (11.7)	4.73	.030
Chose not to have anal sex – Self	155 (27.4)	98 (33.4)	57 (20.9)	11.23	<.001
Chose not to have anal sex – Partner	93 (16.4)	48 (16.4)	46 (16.5)	0.01	.974

Note: Responses are not mutually-exclusive.

Table 1. Individual HIV prevention strategies by serostatus

Results: Seronegative men yielded a 3-class CHP solution (Table 2); Class 1: high prevention orientation overall [43%], Class 2: low prevention orientation/anal sex abstention [15%], and Class 3: low prevention orientation overall [42%].

Seropositive men yielded a 4-class CHP solution; Class 1: high prevention orientation overall [21%], Class 2: high prevention orientation/low condom use [27%], Class 3: low prevention orientation/moderate condom use [22%], and Class 4: low prevention orientation overall [30%].

	Seronegative Men[a]			Seropositive Men[b]			
Prevention Strategy	Class 1 n = 126 (43.0%)	Class 2 n = 44 (15.0%)	Class 3 n = 123 (42.0%)	Class 1 n = 57 (20.9%)	Class 2 n = 74 (27.1%)	Class 3 n = 61 (22.3%)	Class 4 n = 81 (29.7%)
Talked about HIV status – Self	93.5	9.0	3.6	90.9	89.6	42.2	0.0
Talked about HIV status – Partner	80.6	0.9	0.5	76.3	82.8	9.7	0.2
Talked about Viral Load – Self	-	-	-	74.2	69.8	26.4	0.0
Talked about Viral Load – Partner	14.6	5.0	0.8	55.5	54.1	0.0	0.0
Used Condoms – Self	39.8	4.5	6.0	67.2	2.6	60.4	0.4
Used Condoms – Partner	33.3	0.0	4.7	65.9	6.3	42.8	0.0
Took PrEP – Self	18.7	6.6	4.9	-	-	-	-
Took PrEP – Partner	28.6	9.0	0.0	48.3	29.8	12.9	1.5
Took PEP – Self	3.1	0.0	0.8	-	-	-	-
Took PEP – Partner	6.9	0.0	0.0	19.6	6.4	0.0	0.4
Pulled out before cumming – Self	16.3	16.2	2.5	53.3	6.3	15.8	0.0
Pulled out before cumming – Partner	13.1	0.0	1.6	38.8	0.0	13.9	0.4
Chose not to have anal sex – Self	43.3	100.0	0.0	28.0	28.3	11.4	16.6
Chose not to have anal sex – Partner	21.0	49.6	0.0	30.6	24.1	0.0	12.5

Note: [a] Class 1 = High prevention orientation overall, Class 2 = Low prevention orientation/anal sex abstention, Class 3 = Low prevention orientation overall; [b] Class 1 = High prevention orientation overall, Class 2 = High prevention orientation/low condom use, Class 3 = Low prevention orientation/moderate condom use, Class 4 = Low prevention orientation overall

Table 2. Latent class analyses: Conditional response probabilities of final class solutions stratified by serostatus

Conclusions: Participants' CHP typologies differed by serostatus suggesting that midlife and older adult MSM's prevention behaviors are not one-size-fits-all. These findings support scaling up health providers' service capacity to ascertain MSM's prevention behaviors to promote and build self-efficacy for enacting the combination of effective strategies that align with patients' preferences.

Other new HIV prevention tools

PEMOC37

Men's voices on LA_PrEP: The acceptability and preferences of Long acting Pre-Exposure Prophylaxis (LA-PrEP) among Cis-gender men and Men who have sex with men in South Africa

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Background: Cisgender men who have sex with women (MSW) and men who have sex with men (MSM) are often under-represented in HIV prevention research despite their roles as key drivers of the HIV epidemic. As HIV prevention research around long-acting pre-exposure prophylaxis (LA-PrEP) options expand in sub-Saharan Africa (SSA), it is essential to engage these key populations to ensure their buy-in.

We investigated perceptions of implants and injectables as LA-PrEP delivery platforms among MSW and MSM in SAMURAI, an end-user acceptability and preference study.

Methods: In-depth interviews were conducted with 40 MSW (n=20) and MSM (n=20) from resource-restricted communities in Cape Town and Johannesburg, aged 18-35 years who self-reported as being HIV-negative and currently sexually-active.

We explored themes around sexual behaviour and relationships, masculinities and gender, and other factors influencing attitudes towards LA-PrEP. Data analysis followed a thematic framework approach.

Results: Both MSW and MSM felt that the proposed modes of administering LA-PrEP were acceptable and more appealing than daily oral PrEP because they offered longer lasting protection, while reducing the burden related to frequent clinic visits for refills.

They described these new products as having potential to overcome the various challenges relating to consistent condom use, while offering a more acceptable tool to reduce the risk of acquiring HIV. MSW voiced hesitancy around the use of '*foreign products*', expressing concerns about infertility and fears that these products may cause birth defects in their future children.

The convenience of implants with long dosing duration was acknowledged by both populations, but injections were deemed to be more discreet and familiar. Implant use was described to be potentially stigmatizing with a greater chance of causing tissue scarring, or lead to implant robbery, a narrative that implants are forcefully removed and used as recreation drugs.

Conclusions: Evidence about men's engagement in HIV prevention and what modalities of HIV prevention may be acceptable and preferred is limited. We found that both groups were enthusiastic about LA-PrEP.
This research will inform development of a clinical study to provide further insight into safety, acceptability and use of placebo versions of LA-PrEP among MSW and MSM.

Measuring and enhancing retention and adherence in HIV prevention programmes

PEMOC38
Adherence with antiretroviral therapy among recently pregnant HIV-positive women in 8 African countries

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Background: Adherence to antiretroviral therapy (ART) is essential for reducing morbidity and mortality among people living with HIV and HIV transmission, particularly mother-to-child transmission for pregnant and postpartum women.
This study compared self-reported ART use with antiretroviral drug (ARV) detection in blood among HIV+ women aged 15-49 who had delivered within three years before the survey, using population-based HIV surveys (PHIAs) in Eswatini, Lesotho, Malawi, Namibia, Tanzania, Uganda, Zambia, and Zimbabwe (2015-2019), conducted by the ministries of health in collaboration with ICAP and CDC.
Methods: Consenting participants from randomly selected households provided demographic and clinical information and blood for household HIV testing. Household HIV+ results were laboratory-confirmed. Viral load suppression (VLS) was defined as VL < 1000 cp/mL.
Commonly prescribed ARVs, namely, efavirenz, nevirapine, atazanavir, and lopinavir, were assayed in dried blood spots. All analyses accounted for complex survey design, and Taylor Series Linearization methods were used for variance estimation.
Results: Of all 91,728 female participants, 2,108 were included in this analysis. Most women took ARVs before their first antenatal visit, ranging from 46% (95% CI: 44%-49%) in Tanzania to 82% (95% CI: 79%-85%) in Namibia.
VLS ranged from 77% (95% CI: 73%-80%) in Lesotho to 88% (95% CI: 85%-91%) in Malawi. ARVs were detected in the blood of most women who initiated ART before their first antenatal visit, ranging from 88% (95% CI: 84%-92%) in Lesotho to 94% (95% CI: 90%-98%) in Malawi.
Adjusted for other demographic characteristics, women who initiated ART before the first antenatal visit were more likely to have detectable ARVs than those who initiated ART during pregnancy (adjusted odds ratio (aOR): 2.2; 95% CI: 1.7-2.9). Women aged 35-49 were more likely to have detectable ARVs than those aged 15-24 (aOR: 2.2; 95% CI: 1.5-3.1).
Conclusions: ART adherence, proxied by ARV detection in blood, was lower among women who initiated ART during pregnancy than those who started ART before pregnancy, particularly among women aged 15-24 years.
Women, particularly young women, who initiate ART during pregnancy require specific attention to enhance their own outcomes and prevent mother-to-child HIV transmission.

PEMOC39
Effect of client profiling for tailored adherence support on ART retention among children and adolescents living with HIV/AIDS in an OVC program in Nigeria

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Background: ART retention rate among Children and Adolescents Living with HIV/AIDS (C/ALHIV) enrolled in a CDC funded OVC program in Nigeria has been steadily low over the last four years. Despite significant efforts, which ensure drug pickup at supported health facilities and also in non-conventional locations like Patent Medicine Stores, C/ALHIVs continue to be poorly retained, because most interventions do not take into cognizance the underlying uniqueness of members of this population.
The objective of this study was to analyze the effectiveness of client profiling as a strategy for identifying characteristic barriers inhibiting ART retention and by the provision of corresponding tailored adherence support, improve ART retention rates among C/ALHIV.
Description: Of 12,440 C/ALHIV on ART in 10 HIV high burden Local Government Areas in Benue State, in-depth interviews were conducted on 10,433 who are enrolled in OVC program using pre-designed client profile forms administered by 126 Community caseworkers, to determine unique characteristics driving vulnerability to missed appointments and the type of support or incentives required to address it.
Data was analyzed using descriptive and summary statistics after a six months period following provision of required support or incentives.
Lessons learned: Absence of mobile phone 1,262 (12%), attending school or vocational center 1,640 (16%), not pleased with venue for ARV refill 3,025 (29%) and absence of transport fare 4,506 (43%) were identified as key barriers.
Following profiling, 1,094 (10%) required home visits 1,659 (16%) required reminder phone calls/text messages, 3,696 (35%) escort to facility for ARV refill, and 3,984 (38%) re-

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quired minimum fare support. Retention rate among 10,433 profiled CALHIV who received tailored adherence support or incentive improved from 71% at baseline to 92% after six months representing 21% increase while for the 2,007 C/ALHIV who are not enrolled in OVC program and weren't profiled or received intervention, retention rate was 75% after the same period, representing 4% increase.

Conclusions/Next steps: The study revealed that client profiling and provision of corresponding tailored adherence support or incentive is effective in improving retention rate among C/ALHIV. Program interventions, which will strengthen provision of escort services and minimum fare support to C/ALHIV is highly recommended.

PEMOC49

Strategies to support effective use of the vaginal ring and oral PrEP among adolescent girls and young women in sub-Saharan Africa: qualitative findings from MTN-034/REACH

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Background: Effective use of pre-exposure prophylaxis (PrEP) has been low among adolescent girls and young women (AGYW) in sub-Saharan Africa. The MTN-034/REACH trial offered AGYW a menu of adherence support strategies and achieved high adherence to both daily oral PrEP and the monthly dapivirine vaginal ring.

Understanding how these strategies promoted product use could inform design of adherence support systems in programmatic settings.

Methods: REACH was a randomized crossover trial evaluating safety of and adherence to the ring and oral PrEP among 247 AGYW (ages 16-21) living without HIV in South Africa, Uganda, and Zimbabwe. Adherence support included monthly counseling sessions with drug level feedback for all participants plus optional daily SMS reminders, weekly phone or SMS check-ins, peer support groups, "peer buddies", and additional counseling sessions. Through 16 focus groups, 24 sets of 3 serial in-depth interviews (IDIs), and 37 single IDIs (n=119 total), we used semi-structured guides to explore experiences with adherence support options and how they encouraged product use. Coded transcripts were analyzed thematically using the Psychological Empowerment Framework.

Results: All strategies except for peer buddies were frequently used and highly valued. Counselors were perceived as friendly, trusted, and non-judgmental; feeling 'cared for' by counselors during monthly sessions, additional sessions, and weekly check-ins increased AGYW's perceived self-worth and motivated adherence.

Drug level feedback showing high adherence increased perceived competence, while results indicating medium-to-low adherence motivated improvement and facilitated open counseling conversations to identify and address challenges.

Counseling and education increased perceived control over HIV acquisition by teaching AGYW how the products worked. In support groups, participants motivated each other, shared adherence challenges—especially on side effects, disclosure, and opposition to product use—and helped each other find solutions.

These groups built self-efficacy by normalizing experiences of experiencing and overcoming difficulties. SMS reminders and counseling exercises helped AGYW integrate oral PrEP into daily routines.

Conclusions: REACH empowered participants to adhere by creating positive, supportive environments and offering a choice of additional strategies to help identify and address use-related challenges. PrEP implementation programs could support effective use through counseling and peer support groups focused on building motivation, self-efficacy, and problem-solving skills.

HIV self-testing

PEMOC42
Adding to the HIV testing services toolkit! Caregiver-assisted oral HIV screening of children 18 months – 14 years in Uganda and Zambia

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Background: An estimated 26,727 children living with HIV (CLHIV) in Uganda and 31,461 in Zambia need antiretroviral therapy (ART). Pediatric ART coverage is 68.7% in Uganda and 59.5% in Zambia for CLHIV 0-14 years. Innovative methods are needed to improve the identification of undiagnosed CLHIV.
Studies in Uganda and Zambia evaluated the acceptability, feasibility, and effectiveness of caregiver-assisted oral HIV screening of children 18 months – 14 years.
Methods: Forty-seven facilities in Uganda (32) and Zambia (15) recruited parents/caregivers living with HIV who had children with an unknown HIV status from February-October2021 to screen their children with OraQuick *Advance*©Rapid HIV-1/2 Antibody test kits at home.
Children with reactive oral HIV self-test (HIVST) results received confirmatory testing per respective national guidelines. Children confirmed HIV-positive were linked to ART.
Acceptability, feasibility and effectiveness were evaluated through study registers documenting testing uptake/results returned, and a post-use survey administered to parents/caregivers.
Results: Of the 4,059 eligible index parents/caregivers, 3,931 (96.8%) accepted to screen their 7,593 children with oral HIVST kit; 7,416 (97.7%) children completed oral HIVST with returned results.
Among 2,722 caregivers surveyed, 2,639 (97.0%) reported HIVST was easy to use and 2,615 (96.1%) would recommend HIVST to other caregivers. One hundred-nineteen (1.6%) children had a reactive HIVST, decreasing the need for facility testing by 98.4%. Of these, 116 (97.5%) completed blood-based confirmatory testing. Forty-three (37.1%) children were confirmed HIV-positive and initiated on treatment with 97.7% (42) same-day ART initiations. Eleven (0.4%) caregivers surveyed reported a child had minor reactions to oral HIVST.

Demographic Characteristics	Offered oral HIVST n	Accepted oral HIVST n (%)	Returned HIVST results n (%)	Reactive HIVST screening results n (%)	Completed confirmatory blood-based HIV test n (%)	Reactive confirmatory blood-based test result n (%)	Newly diagnosed CLHIV initiated ART within 1 day n (%)	Caregivers Surveyed n	OTK easy to use n(%)	Would recommend OTK to other parents n(%)
Total Caregivers	**4059**	**3931 (96.8)**	**3841 (97.7)**	**104 (2.7)**	**102 (98.1)**	**39 (38.2)**	**39 (100.0)**	**2722**	**2639 (97.0)**	**2615 (96.1)**
Caregiver age (years): 18-34		1723	1684 (97.7)	46 (2.7)	45 (97.8)	15 (33.3)	15 (100.0)	1097	1064 (97.0)	1051 (95.8)
35+		2208	2157 (97.7)	58 (2.7)	57 (98.3)	24 (42.1)	24 (100.0)	1625	1575 (96.9)	1564 (96.2)
Caregiver sex: Male		828	808 (97.6)	20 (2.5)	19 (95.0)	4 (21.1)	4 (100.0)	675	658 (97.5)	651 (96.4)
Total Children		**7593**	**7416 (97.7)**	**119 (1.6)**	**116 (97.5)**	**43 (37.1)**	**42 (97.7)**			
Child age (years): 1.5-4		1979	1939 (98.0)	27 (1.4)	27 (100.0)	9 (33.3)	9 (100.0)			
5-9		3090	3023 (97.8)	56 (1.9)	54 (96.4)	25 (46.3)	24 (96.0)			
10-14		2524	2454 (97.2)	36 (1.5)	35 (97.2)	9 (25.7)	9 (100.0)			
Child sex: Male		3817	3727 (97.6)	55 (1.5)	53 (96.4)	19 (35.8)	19 (100.0)			

Table. Caregiver-assisted pediatric oral HIV screening uptake, results return, linkage to treatment, and acceptability in Uganda and Zambia.

Conclusions: Caregiver-assisted oral HIVST is an acceptable, feasible and effective option to screen high-risk children who might not otherwise receive HIV testing and decongest health facilities.
Policy makers may consider revised guidance to promote caregiver-assisted oral HIV screening for children 18 months-14 years, expanding community-based pediatric testing options during the COVID-19 pandemic.

PEMOC43
Understanding the potential for harm among men who have sex with men using HIV self-testing in the SELPHI online randomised controlled trial in England and Wales: a multi-method study

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Background: The potential of social-harms (e.g. coercion to test, relationship breakdown) resulting from HIV self-testing (HIVST) is a longstanding concern hindering widespread implementation. SELPHI (An HIV Self-Testing Public Health Intervention) is the largest randomised trial of HIVST in a high-income country. We aim to explore the relationship between HIVST and harm.
Methods: Cis/trans men who have sex with men (MSM) aged 16+, reporting life-time anal intercourse, resident in England and Wales were recruited through apps/social media, and randomised 60/40 to baseline HIVST (BT) or standard of care (no baseline HIVST (nBT)) between Feb2017-Mar2018. A subset (received HIVST in BT, remained

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HIV-negative, reported risk at 3-months) were randomised to 3-monthly HIVST (RT) or not (nRT). All received an exit survey including harms to relationships, well-being, false positive results or being pressured/persuaded to test when they did not want to. Nine reporting harm in surveys were interviewed in-depth; interviews were audio-recorded, transcribed and analysed narratively.

Results: The sample of 10,111 were predominantly cis-MSM (99%), 90% white, 88% gay, 47% university educated and 7% current/former PrEP users. Final survey response rate was: nBT=26% (1056/4062), BT=47% (2802/3567), nRT=42% (510/1228), RT=48% (581/1210).

Reports of harm were rare. In BT, nRT and RT combined, harms to relationships and to well-being were reported by 1% (n=25/2675) and 1% (n=37/2658) respectively. In all arms combined, being pressured/persuaded to test was reported by 1% (n=54/3678), and false positive results in 2% (n=32/1603). Table 1 provides details by trial arm.

Type of harm	nBT %(n)	BT %(n)	nRT %(n)	RT %(n)	Overall
Relationships	N/A	1% (15/1626)	0.2% (1/468)	2% (9/581)	1% (25/2675)*
Wellbeing	N/A	1% (18/1611)	2% (8/467)	2% (11/580)	1% (37/2658)*
Pressured / persuaded to test	1% (14/1013)	1% (21/1615)	2% (8/471)	2% (11/579)	1% (54/3678)
False positive	1% (3/280)	3% (8/273)	2% (11/470)	2% (10/580)	2% (32/1603)
*Data not collected for nBT					

Table 1.

Qualitative analysis revealed harms emerged primarily from the kit itself (technological harm), the wider psychosocial intervention (intervention harms) or from the social context of the participant (socially emergent harms). Generally, intervention and socially emergent harms did not reduce HIVST acceptability, whereas technological harms did.

Conclusions: Reported harms were extremely rare in this large RCT of HIVST. Potential for harm should be considered in each context, and individuals experiencing negative impacts from HIVST linked to appropriate support services, but these concerns should not undermine rollout.

HIV testing to support identification of new cases of people living with HIV

PEMOC44

Offering HIV index contact testing to improve case identification and linkage to appropriate care among sexual partnersand biological children of PLHIV: Kavango East and West Namibia

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Background: Despite progress in identification of people living with HIV (PLHIV), sexual contacts and biological children of PLHIV remain at significant risk of acquiring HIV. Introduction of Index Contact Testing (ICT) in routine HIV Testing Services (HTS) has improved case identification including in settings nearing epidemic control. In the Kavango regions, ICT was conducted at the facilities and in the community.

Methods: A retrospective data review of program outcomes from October 2020 to September 2021 was conducted at five selected high-volume facilities in Kavango East and West. Newly diagnosed HIV-positive individuals and PLHIV with viral loads >1000 copies/ml were offered ICT services using a structured interview guide. Recent sexual contacts and exposed biological children <18 years were listed. Index clients selected referral options for contacts following verbal informed consent and intimate partner violence (IPV) screening. Contact notification approaches included passive/self, provider, contract, and dual referral options. Contacts with unknown HIV status were notified, tested, and linked to ART or HIV preventions services depending on result. Data was captured using REDCap.

Results: ICT services were offered to 449 HIV-positive individuals, 413 (92%) consented and listed 538 contacts (1.3 contacts elicited per index client) with 443 contacts eligible for testing and 254 (57%) tested. Of contacts eligible for testing, 78 (31%) newly tested HIV-positive and 77 (99%) were linked to ART; 176 tested HIV-negative of which 110 were sexual contacts. Of the 110 sexual contacts testing HIV-negative, 78 (71%) were linked to PrEP. Overall, 32% of the listed contacts were HIV-positive.

Conclusions: Offering ICT services to sexual contacts and biological children of PLHIV identified many newly diagnosed HIV positive cases at selected high-volume sites. ICT services had a high rate of acceptance (consent), and more than one contact was elicited from each index client. A high proportion of contacts were linked to either ART or PrEP services.

Strategies to improve early retention in care (first year on ART)

PEMOC46

Attrition from antiretroviral treatment among adults in Mozambique, 2015-2019

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Background: Mozambique has one of the largest HIV epidemics in Africa. Although access to antiretroviral therapy (ART) has increased, Ministry of Health reports 32% are not retained in care. We used national data to estimate 12-month attrition and identify associated factors.

Methods: Data from adult (≥15 years) patients diagnosed with HIV who started ART between January 2015 and December 2019 were extracted from MozART, a national database covering 70% of all patients on ART in Mozambique. Attrition was defined as individuals who were either reported dead or who did not return to care for 90 days since their last clinical visit. Descriptive and multivariate regression analyses were conducted to identify attrition rates and associated factors.

Results: Of 15,634 patients who started ART between 2015-2019, 5% died and 17% did not return to care, for a 12-month attrition rate of 22% (95% CI: 21.16-22.46%). Of all patients 53% were men, 38% were married, 40% completed primary education, 84% reported no history of alcohol consumption, and 43% were in WHO clinical stage III. The median age was 35 years (IQR: 29-43) and median CD4 cell count at ART initiation was 155 cells/mm^3. WHO clinical stages IV (AOR = 2.09, 95% CI: 1.49 - 2.91) and III (AOR = 1.56, 95% CI 1.28 - 1.90), male sex (AOR = 1.53, 95% CI: 1.28 - 1.81), and increased number of partners (AOR = 1.21, 95% CI: 1.02 - 1.44) were associated with increased odds of attrition. Completing secondary education (AOR = 0.72, 95% CI: 0.56 - 0.92) and residing in the northern region of Mozambique (provinces of Cabo Delgado, Nampula and Niassa) (AOR = 0.68, 95% CI: 0.56 - 0.82) were associated with decreased odds of attrition.

Conclusions: This study shows that WHO clinical stages III or IV, and being male, were strongly associated with attrition. Reinforcement of interventions which target patients when they are still in early WHO clinical stages of disease and added support for patient groups at higher risk of attrition, could improve ART retention and thereby reduce HIV mortality in Mozambique.

Epidemiology of COVID-19

PEMOC47

Contrasting COVID-19 and AIDS orphanhood – How can AIDS inform this urgent need?

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Background: The AIDS Epidemic highlighted the plight of orphans and vulnerable children infected and affected by HIV globally. Specific funding and evidence based responses are needed. This study firstly contrasts global COVID-19 orphanhood and parental loss with AIDS orphanhood figures to examine the global burden and inform the global response. Then secondly examines how the global HIV and AIDS evidence base can inform the COVID-19 response.

Description: Parental or caregiver loss in childhood has long term consequences for development. An analysis of global data over time has enabled the creation of a model showing the global level of COVID-19 losses of parent or primary caregivers.

This analysis shows that over 6.7 million children have lost a parent or caregiver to COVID-19. This number is greater than the current COVID-19 global death rate. The rate of orphanhood has doubled every six months.

A detailed examination of the data shows that two out of three children are adolescents with the remaining third under the age of 10. Furthermore three quarters of losses worldwide are paternal deaths leaving children vulnerable to exploitation, abuse, poverty and HIV-infection, through elevated risk behaviours. The COVID-19 data was contrasted with the HIV orphanhood and vulnerability data.It took 10 years for 5 million children to become orphaned and vulnerable due to AIDS.

In contrast it has taken 2 years for 5 million children to experience orphanhood and vulnerability due to COVID. The impact of the overlap is unknown and uncharted. The HIV response to orphaned and vulnerable children provides a blueprint for action and a potential vehicle for an integrated and informed response.

Lessons learned: A strategy of '*prevent deaths, prepare families, and protect children*' should be followed based on the learnings from the HIV AIDS epidemic.Evidence based cost effective programmes should inform the urgent response with accelerator evidence guiding programmes.

Conclusions/Next steps: COVID-19 orphanhood and caregiver loss bears similarity with AIDS related orphanhood and vulnerability – although the rate of loss is accelerated. An integrated approach for all children is urgently needed with ongoing HIV and AIDS resources supplemented.

Effects of the COVID-19 on HIV epidemiology and prevention

PEMOC48

Trends in HIV viral load testing and viral suppression in US HIV cohort, 2017-2020

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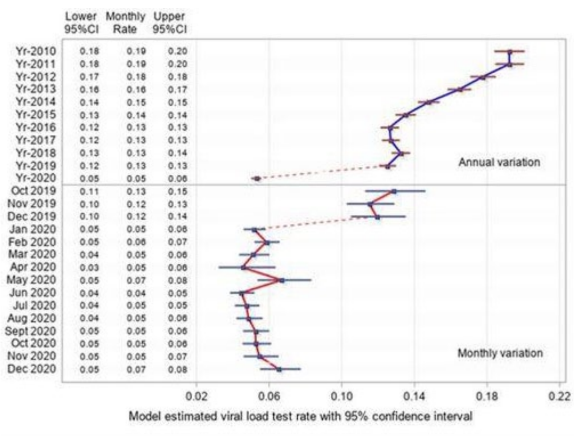
Background: COVID-19 pandemic effects on ambulatory care services for persons living with HIV in the United States, including HIV viral load (VL) testing frequency, and viremia (≥ 200 copies/mL) have not been well described.

Methods: We analyzed longitudinal data of study participants seen since January 1, 2019 at 8 HIV Outpatient Study (HOPS) sites. HIV VL test monthly rates were derived from generalized linear mixed models (GLMM), using data collected January 2010 to December 2020.

We examined demographic and clinical correlates of viremia before and during the pandemic using GLMM logistic regression with the 2017-2020 data.

Results: Of 2,249 active patients, 75.8% were male, 58.1% aged ≥ 50 years, 40.6% non-Hispanic White (NHW), 38.7% non-Hispanic Black (NHB), 16.9% Hispanic/Latino (H/L), and 51.4% publicly insured. Median CD4 count was 669 cells/mm^3 and 93% had a suppressed (< 200 copies/mL) VL on their last test before January 1, 2020. Monthly VL test rates as times/month (95% Confidence Interval) declined from 0.12 (0.10-0.14) in December 2019 to 0.05 (0.05-0.06) in January 2020, and subsequently stabilized with a rate of 0.07(0.05-0.08) in December 2020 (Figure). The model-estimated percentage of VL tests ≥ 200 copies/mL out of all VL tests was 5.6% before the pandemic (2017-2019), and 4.9% in 2020 (P=0.14). We detected no associations between key sociodemographic factors. Comparing the period before (2017-2019) and during (2020) the pandemic, the frequency of viremia over time was not significantly different by ethnicity, age, gender, type of insurance.



Note: Yr-2010 to Yr-2020 represent the yearly averaged viral load test rate; Oct 2019 to Dec 2020 represent monthly viral load test rates. The horizontal solid line divides longitudinal yearly and monthly viral load test rates. The dashed line highlights the drop of viral load test rates from 2019 to 2020, and from December 2019 to January 2020. Dots and high-low bars represent point estimates with 95% confidence intervals.

Figure. Estimated yearly average (2010-2020) and monthly average (October 2019-December 2020) rate (times/month) of HIV viral load tests using generalized linear mixed model, the HIV Outpatient Study, 2010-2020.

Conclusions: In the HOPS, HIV VL testing rates dropped by about half in early 2020 without year-end recovery. The decrease in VL testing was not associated with changes in the relative frequency of viremia, both overall and by demographics including age, sex, race/ethnicity, and healthcare insurance. Longer term effects of the COVID-19 pandemic upon HIV clinical care and outcomes, including viral suppression, require ongoing investigation.

Growing up with HIV: Specific needs and interventions for children and adolescents

PEMOD51

HIV care continuum outcomes after transition from pediatric to adult care

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Background: Youth living with HIV (YLH) receiving care in pediatric/adolescent settings will ultimately undergo healthcare transition (HCT) to adult-centered care. HCT is viewed as a high-risk time for care disengagement; however, there is a paucity of research documenting HIV care outcomes after HCT.

Methods: This is a prospective, observational cohort study of HCT among 70 YLH at an HIV care center in Atlanta, Georgia. Patients within three months of HCT were

followed to determine clinical care outcomes through medical record abstractions at five timepoints: baseline, 6-,12-,18- and 24-months. Outcomes were defined as

1. *Linkage to adult care*: at least one visit with an adult provider;

2. *Retention in adult care:* one visit in each post-HCT abstraction period;

3. *Viral suppression:* maintaining HIV RNA <200 copies/mL.

Kaplan-Meier curves were used to estimate time to linkage. Retention in care and viral suppression were estimated using generalized estimating equation analyses.

Results: The majority of our cohort identified as male (88.6%), Black (92.9%), horizontally-infected (80%), and were virally suppressed (73%). Most of our cohort was linked to adult care by 6-month (74%) and 12-month (84%) follow-up periods. Mean time to linkage was 105.8 days. Of those who linked to adult care by 12-months, the retention rate was 86% (CI:78-94%) at 6-months, 76% (CI:66-86%) at 12-months, and 66% (CI:55-78%) at 18- and 24-months (Figure 1).

Among those retained in care, the proportion with viral suppression was stable (74% at 6-months, 77% at 12-months, 67% at 18-months, and 78% at 24-months).

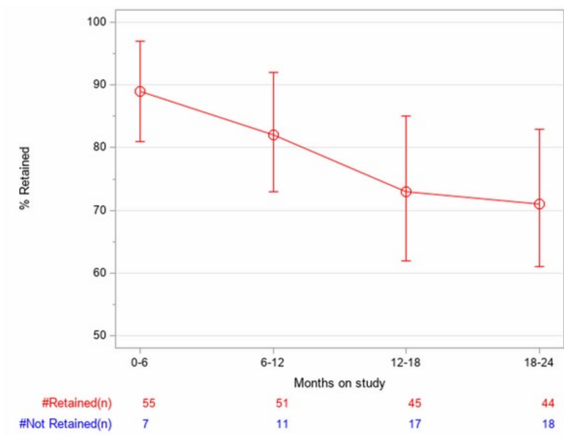

Figure 1. Retention in adult care (for participants who linked to adult care [N=62])

Conclusions: Although a majority of YLH in our cohort linked to adult care, rates of retention decreased over the 24-month follow up period. Rates of viral suppression were suboptimal, though stable.

Current interventions focus mostly on preparation for linkage to adult care; however, our data suggest that strategies to enhance retention in care after HCT will be critically important for YLH.

Experiences and impacts of antiretroviral therapy

PEMOD55

Acceptability of raltegravir granule use for neonates diagnosed with HIV at birth by healthcare workers and caregivers in Zimbabwe: A qualitative analysis

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Background: In 2020, Zimbabwe adopted the World Health Organization recommendation to use raltegravir (RAL) granule-based regimens for the treatment of neonates identified with HIV through birth testing. This study explores the acceptability of RAL granule use by caregivers and health care workers (HCWs).

Methods: Interviews were conducted with 15 caregivers and 12 HCWs from a subset of 14 health facilities in Zimbabwe participating in the initial roll-out of RAL granules.HCWs identified eligible caregivers that had administered RAL to their infant and attended the 8th and/or 28th day of life appointments. Caregivers were selected in the order of whose neonates were most recently initiated on RAL, and HCWs were identified from these same facilities.

Through convenience sampling, eligible HCWs who provided RAL preparation, administration instructions, and support to caregivers with neonates on RAL for at least three months were recruited. Caregivers and HCWs were interviewed on the same day. Transcripts were coded using the MAXQDA software and thematically analyzed.

Results: Caregivers reported their babies looking healthier after initiating RAL, noting improvements in skin appearance and weight. Some caregivers wanted their child to remain on RAL at the day 28 appointment instead of switching as recommended by national guidelines, and others recommended the national roll-out of RAL. HCWs felt that RAL granules were an improvement from previous neonatal antiretroviral medications stating beliefs that RAL improved health outcomes compared to previous regimens.

HCWs reported challenges with caregivers understanding dosing instructions, measuring with a syringe, the need to swirl and not shake the medicine, discarding unused medication, and changes in dosing schedule and amount if RAL was initiated a few days after birth.

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HCWs stated that adequate counseling, demonstrations, and repeat demonstrations were crucial to ensure that caregivers clearly understood RAL dosing instructions.HCWs requested more standardized training targeting nurses, guidance on handling missed doses, and clarity on instructions to not mix RAL granules with breastmilk.

Conclusions: While positive feedback was provided by caregivers who used RAL granules and HCWs, additional steps are needed for adequate training of HCWs and sufficient caregiver instruction and support to ensure that RAL granules are prepared and administered correctly.

COVID-19 social distancing and curfews: Implications for access to HIV care

PEMOD58

Impact of Covid-19 prevention measures including restrictions on socio-economic lives of people living with, at high risk of and those affected byhivonaccess, utilization of essential health services

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Background: Through its COP20, PEPFAR is supporting ICWEA, HEPS Uganda and SMUG to implement a scale up phase of the Community Led Monitoring model of health services delivery in Uganda. The model trains, supports, equips affected PLHIV communities carry out routine monitoring of HIVTB services aimed at improving quality, availability, accessibility and utilization of these services. the quality and accessibility of HIV services.

Description: In June 2021, An assessment on the impact of COVID-19 prevention measures including restrictions on the socio-economic lives of people living with, at high risk of and those affected by HIV on access and utilization of essential health services. The process involved consultations with key stakeholders and communities of people living with HIV and at high risk of HIV infection.

Data was collected through face-to-face interviews and online and telephone. The assessment involved 300 respondents across 46 districts in Uganda. Most of people living had difficulties accessing social or essential health services and these were more likely to experience drop out of treatment, relapses, stigma and discrimination in the communities, shortage of some essential health commodities such as ARVs, condoms and lubricants.

Lessons learned: A total of 310 people living with HIV consented and participated in the survey. Overall, 60% were female, 38.5% were males while 1.5% preferred not to identify their gender. The survey considered participants above 18 years of age and the results show that majority of the respondents were aged above 38 years. 72% of them suffered a reduction in the number of health workers. Only 41% of the clients were able to go for their clinic appointments of the 67% who had appointments during the COVID-19 era. 75% of the respondents acknowledge that they were stigmatized, discriminated against especially by law enforcement officers while travelling for ART refills on clinic days.

Conclusions/Next steps: Interventions to reduce the spread of COVID-19 in some situations as the attention is focused on controlling the epidemic, implications on access to health services such as drug stock outs were noted at facilities. Mitigating collateral impact of lockdowns where possible interventions, ensure continuity of access to essential services and strengthen support systems of PLHIV.

PEMOD59

Assessing the impact of COVID-19 on HIV prevention among rural populations in South-West Uganda

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Background: The global focus and prioritization of health systems was altered as a result of the COVID-19 pandemic. Social distancing and stay-at-home measures, termed „lockdowns" by the WHO, dominated public health approaches. Uganda was one of the countries with the strictest lockdown measures in the world, only re-opening schools in January 2022, 20 months after the pandemic began.

The full impact of the pandemic on HIV incidence and prevention is still under investigation, as the Gates' Foundation Goalkeepers report 2021 found that the global goal to fight HIV had been set back 25 years in 25 weeks.

Methods: Since 2014, the 'iKnow Kati' HIV awareness and prevention program implemented by RAHU and the GLI, has provided channels for youth to obtain HIV prevention information, testing, counselling, and treatment services. As a result, the campaign held on World AIDS Day 2020 targeted vulnerable groups that were disproportionately affected by the COVID-19 pandemic.We trained peer educators within 5 districts to collect data through a cross-sectional survey. Participants who accessed health outreach services responded to questions about the campaign and COVID-19.

Results: Out of 655 respondents, 65% were female and 35% male with the highest percentage age groups falling between 20-29 years old.When asked about how COVID-19 had impacted their health seeking behaviour, nearly 25% of respondents mentioned that lack of transportation was a barrier to seeking health services. About 12% indicated that finances played a role, while 3.7% mentioned the lockdowns, and 3% mentioned stigma and fear.

Conclusions: While the full impact of the COVID-19 pandemic on HIV services is still being researched,the Gates Foundation Goalkeeper's report identified that some of the most effective interventions have happened at the hyperlocal level, headed by leaders who have worked long and hard to earn the trust of their communities.
Our results show that access to health services through provision of accessible programs designed with specific communities in mind is effective. There is evidence that lack of transportation, finances and stigma and fear play related to COVID-19 played a role in health seeking behaviour.

PEMOD66

Impact of coronavirus disease 2019 social distancing and curfews on the people of western Uganda: implications for access to HIV care

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Background: The world has been hit by the covid-19 pandemic which led to the loss of several lives across the globe. Uganda following the WHO recommendations imposed social distancing and curfew restrictions on its population as measures to combat the rapid spread of covid-19. Little or no studies have been carried out on the impact of these restrictions on HIV care by people of western Uganda.
Methods: The study was conducted between March to December 2021 at the health care centers in western Uganda. A cross-sectional study design was used by interviewing the people with HIV (n=672) attending health care centers in the region using. XLSTAT, statistical software was used to obtain the descriptive data. Significant differences between means were determined using the T-test and Analysis of variance.
Results: The study revealed that 43% of people with HIV aged (18-30) years reported being beaten by security persons denying them access to health care centres for medication. The majority (65%) of the female people with HIV reported having run out of their ARV drugs as they could not walk long distances to access the health care centres due to halting of transport means.
A good number (95%) of the male persons with HIV that got to the health care centres were not attended to. The health care practitioners were reported to have attended much more on covid-19 cases than the HIV related cases.
The people ageing with HIV (above 50years) reported having contracted co-morbidities resulting from reduced HIV care access. Significant differences were observed in access to HIV care before and during the imposing of the restrictions.
Conclusions: The covid-19 social distancing and curfew restrictions denied the people with HIV access to health care centers which put their lives at stake. The government under the ministry of health should use this study data to establish HIV care centers at the village level. This will allow the People with HIV in western Uganda to easily access these facilities even in times of crisis.

Social and behavioural aspects and approaches to COVID-19

PEMOD60

Impact of the COVID-19 pandemic and related restrictions on the lives of young people living with HIV in Kisumu, Kenya

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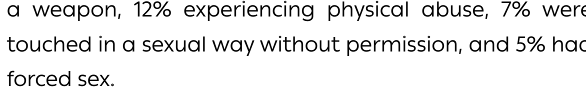
Background: Adolescents and young adults with HIV (AYAHIV) may be particularly vulnerable to the impact of the COVID-19 pandemic and associated mitigation measures which can adversely impact fragile social and economic systems. We examined the impact of the pandemic and related government mandated restrictions among AYAHIV in Kisumu, Kenya.
Methods: Between April-May 2021, a cross-sectional survey was conducted among a convenience sample of AYAHIV 18-25 years aware of their HIV status and receiving HIV care at Jaramogi Oginga Odinga Teaching and Referral Hospital. Information on demographics, COVID-19 knowledge, protective measures, and the impact of the pandemic and related restrictions (i.e., curfews, lockdowns, school/workplace closures) on their daily lives and wellbeing since the start of the pandemic was collected. Responses were analyzed using descriptive statistics.
Results: Of 275 AYAHIV enrolled: median age 22 years (IQR: 19-24 years); 178 (65%) female; 222 (81%) completed some secondary education or higher; 108 (39%) lived in an informal housing area.
Awareness of COVID-19 was high (99%), mean COVID-19 knowledge score was 4.32 (SD: 0.93; range 1-5) and most reported taking protective measures, including frequent handwashing (91%) and face mask use (85%). Over half (55%) reported recently going to a crowded place, including church (78%) and bars/clubs (13%).
Overall, 193 (70%) felt COVID-19 and associated restrictions impacted them including affecting their daily routine (38%), views on travel/immigration (22%), and relationships (14%). Almost half (49%) reported changes in living situation; 24% living with different people, 11% moved/relocated, and 5% newly living on the street.
Additionally, AYAHIV reported increased verbal arguments (30%) and physical conflict (16%) at home with 8% reporting someone having used/threatened them with



a weapon, 12% experiencing physical abuse, 7% were touched in a sexual way without permission, and 5% had forced sex.

Conclusions: AYAHIV in Kenya were knowledgeable about COVID-19 and prevention practices despite inconsistent adherence. Impacts of the pandemic and related restrictions were felt across various aspects of AYAHIV's lives, including disrupted living situations and increased exposure to verbal and physical conflict, including sexual violence. Interventions are needed to address the impact and potential negative long-term effects of the pandemic on AYAHIV health and well-being.

PEMOD61

Improving access to HIV services while minimizing potential exposure to COVID-19 among men who have sex with men (MSM) in Ghana

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Background: Ghana experienced disruptions in providing HIV services to MSM due to COVID-19. Factors such as social distancing which restricts large group outreaches; reduced demand for services because of fear of COVID-19 transmission in facilities; and reduced availability of services as providers are assisting with pandemic response affect delivery of HIV services for MSM.

Maintaining uninterrupted access to essential HIV services for MSM during the pandemic require using integrated and community-based strategies that minimizes potential risk for COVID-19 exposure.

Description: Maritime-Foundation introduced various community-based approaches to HIV service delivery for MSM during the pandemic in three districts. Peer educators were trained to provide education on COVID-19 during their community outreach activities. Authorization was sought for outreach workers in lockdown areas and provided with PPEs during delivery of physical outreach services.

Flexible strategies were implemented to preserve access to HIV services and promote safety of staff and clients during the pandemic:

1. Social media platforms were used to engage peers for HTS and support PLHIVs through virtual case management;
2. HTS and treatment took place at homes and safe locations identified and agreed by peers at their own convenience;
3. Condoms and lubricants were made available at community-led Drop-In-Centers and outlets for easy access;
4. The program promoted multi-month dispensing of ART and PrEP to eliminate clinic visits.

Lessons learned: Introduction of community-based strategies during the pandemic reached out to more MSM and increased HIV+ yield across the three districts. During the pandemic between February to April 2020, 445 new MSM were reached and tested for HIV; 32 were diagnosed positive.

After the introduction of community-based strategies, between May and July 2020, 634 new MSM were reached and tested; 89 were diagnosed positive.

Conclusions/Next steps: CSOs can adopt tailored community-based approaches that can be integrated into HIV programs to improve results in reaching, testing and linking MSM in times of a pandemic.

Scaling up community-based approaches to HIV service delivery can help safeguard the hard-fought gains of the global HIV response. If these solutions are sustained beyond the pandemic, they may serve to modernize KP programming and position it to be more effective in our new reality

PEMOD62

Factors influencing COVID-19 vaccine acceptability in women living with, or at high risk of HIV in South Africa

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Background: COVID-19 vaccines offer hope for a return to 'normality' but uptake varies. Previous research reported a 67% acceptability rate amongst the general South African population.

This study investigated factors influencing vaccine hesitancy amongst adolescent young girls and young women (AGYW), and key populations (KPs) living with, or at high risk of HIV living in South Africa.

Methods: We analyzed data from a cross-sectional survey of women (AGYW, HIV-positive women, sex workers, LGBTQ+ women, migrants and women using drugs) from four provinces in South Africa, conducted between September-November 2021. Surveys collected information on demographics, self-reported HIV status, vaccine hesitancy, and the impacts of COVID-19. We defined vaccine hesitancy as disagreeing with the statement: 'When a vaccine for COVID-19 is available to me, I will get it'.

Prevalence of vaccine hesitancy was quantified and factors associated with hesitancy were measured using multivariable logistic regression.

Results: Of the 2,812 women interviewed, 2,763 (98%) responded to the question on vaccine hesitancy and 2,332 (82.4%) reported their HIV status. From the 2,320 women with complete vaccine and HIV status data, 14.4% reported being vaccine-hesitant.

Prevalence of vaccine hesitancy was 13.4% among HIV-positive women, 18.3% among women 15-24 years-old, 16.9% among LGBTQ+ individuals, 29.3% among migrants (n=99), 17.6% among sex workers, 18.1% among women with disabilities (n=166) and 25.6% among drug-users.

The three most common reasons for vaccine hesitancy regardless of HIV-status or sub-population were being scared of side-effects (57.9%), a lack of trust in authorities (32.5%) and being anti-vaccines (23.9%).

Vaccine hesitancy was positively associated with age <25 years (adjusted odds ratio (aOR): 1.73(95% confidence interval (CI): 1.35-2.22), incomplete secondary schooling (aOR: 1.52(95% CI: 1.06-2.16), economic vulnerability (aOR: 1.43(95% CI:1.00-2.05) and reporting anxiety/depression (aOR: 1.81(95% CI: 1.35-2.42). Previous COVID-19 infection in the household was associated with reduced vaccine hesitancy (aOR: 0.41 (95% CI: 0.28-0.61).

Conclusions: This study demonstrated low vaccine hesitancy amongst AGYW and KP's. Our more granular analysis highlighted that broader contextual socioeconomic concerns, anxiety and youth affect vaccine uptake - mediated by concerns about side-effects, vaccine safety and social status. Customized interventions, adjusted with time, that build trust in vaccines and enhance uptake are needed.

PEMOD64

Project Samajh – Leveraging Social-Media for promoting COVID safety behaviors, safer sex practices, and ART adherence among the LGBTQ+ community during COVID -19 pandemic in India: lessons learned

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Background: In India, Covid-19 pandemic messaging/communication was linear thereby creating a severe knowledge gap among LGBTQ+ on transmission, prevention and HIV-related safety behaviors/measures. The Humsafar Trust (HST) envisaged, designed and implemented an LGBTQ+ community-led social media campaign to bridge this gap. Project *Samajh* (Understanding) was funded by UNAIDS India country office.

Description: Three-pronged communication strategy was implemented for LGBTQ+ communities awareness, improved services access and linkage to care. Communication content was designed by community members and focused on COVID-appropriate behaviors while addressing misconceptions, safer sex, STI protection, HIV/ART treatment, mental health, and information on NACO-govt and other helplines. Overall, 46 posters, 7 videos, 18 infographics and 24 quizzes were promoted on HST's social media pages; organisational Facebook groups, and HST's Youtube, Instagram, Twitter, and Linkedin channels. Whatsapp groups helped promote content amongst `hard -to-reach LGBTQ+'.

Influencers/micro-influencers were engaged to outreach specific local LGBTQ+ population. Better-performing posts were boosted for wider reach. In four months, *Samajh* reached 4 million persons across India. Largest audience reach 78% was achieved from paid promotions; 18% reach was achieved by eleven community influencers who also attracted 9% engagement. HST's social media handles achieved 6% engagement rate.

Lessons learned: Community inputs in designing content is critical for presenting COVID-19 information for LGBTQ+ communities. Content must be holistic, engaging and address issues such as mental health, partner safety, sexual health along with COVID-19 information. Content needs to be mobile-screen oriented as maximum consumption is on mobile phone. Age 18-24 years emerge as focus audience on social media.

Existing support services such as mental health and NACO helplines can be leveraged for further support. Social media paid promotion is able to reach a diverse set of audience based on campaign objective at a low cost however, LGBTQ+ community influencers attract higher engagement rate.

Conclusions/Next steps: Social media-based health communication is the new frontier for community based organizations to reach young/hard-to-reach populations. Effective virtual promotion strategies can be low cost and effective in behaviour change messaging.

Project Samajh experiences will be leveraged in Global Fund-supported NETREACH and other virtual outreach projects targeting virtual populations vulnerable to HIV/AIDS.

PEMOD65

South African adolescents living with HIV talk priorities! Longitudinal analysis of priorities of adolescent advisors living with HIV prior-to and during the COVID-19 pandemic

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Background: Growing evidence documents the indirect effects of the COVID-19 pandemic on youth. We explore and compare the priorities of youth living with HIV in the Eastern Cape province of South Africa prior to, and during the COVID-19 pandemic using longitudinal qualitative and participatory data.

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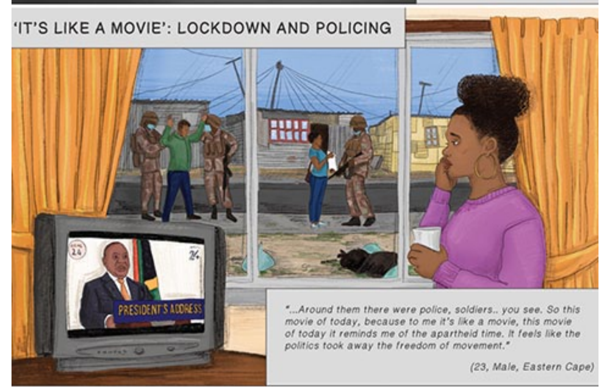
Methods: Findings were co-generated with adolescent advisors in the Eastern Cape Province of South Africa (n=19, ages 16-21), recruited from studies of adolescents living with HIV, and young parents.

Advisors engaged in an exercise to generate youth health and development-related priorities prior to COVID-19 in 2019 and 2020. During the COVID-19 pandemic in 2020/2021, they shared their experiences, challenges and coping strategies in semi-structured telephone interviews (n=14) and group-based social media activities (n=27). We thematically analysed COVID-19 data, then compared themes with pre-pandemic priority lists.

Results: The most common priorities pre-COVID-19 were substance abuse, unemployment and career, health and medication, pregnancy, peer pressure and bullying and blessers (age disparate transactional sexual partners). These pre-COVID-19 priorities, apart from blessers, presented as strong themes in the COVID-19 data.

Additional COVID-19-related priorities that were not in the pre-pandemic exercise included: mental health and emotional well-being, describing feeling depressed and anxious over uncertain futures and new concerns over crime and policing.



Conclusions: While many topics of concern to adolescents living with HIV remain unchanged before and during COVID-19, there were also notable differences.

New COVID-19 reported challenges included crime and policing as well as mental health and emotional challenges.

This data dovetails with a growing literature on mental health concerns exacerbated COVID-19 and warrants further consideration ofyouth mental health needs brought about by COVID-19. While this data demonstrates how COVID-19 may have exacerbated pre-existing issues, analysis also suggest that COVID-19 may have brought about a new paradigm for adolescents to make sense of, and articulate their challenges.

Sexual and reproductive health, fertility, family planning, pregnancy and abortion

PEMOD63

Pregnancy history and unmet need for contraception among female sex workers living with HIV in Durban, South Africa

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Background: In South Africa, an estimated 60% of female sex workers (FSW) are living with HIV, with studies indicating that the majority of FSW are mothers and primary caregivers.

This analysis aims to characterize pregnancy history, fertility intentions, and unmet need for contraception among FSW living with HIV.

Methods: Non-pregnant cisgender FSW living with HIV ≥18 years of age were enrolled into the Siyaphambili trial in Durban, South Africa (June 2018-March 2020).

Fertility intentions and contraceptive and antiretroviral therapy (ART) use were captured at baseline through an interviewer-administered questionnaire; viral load was measured.

Multivariable robust Poisson regression was used to estimate the association between correlates of unmet need for contraception at enrollment, controlling for age and education.

Results: Of the 1,379 FSW living with HIV enrolled in Siyaphambili, 85.2% had previously been pregnant. History of unplanned and unwanted pregnancy was high (90.7% and 90.2%, respectively).

Nearly all (95.2%) reported it was important to "avoid pregnancy now", but 18.8% desired future children. Use of hormonal/long-acting contraception was low (35.2%), and consistent condom use in the prior 30 days was limited with both clients and non-paying partners (59.7% and 49.5%, respectively).

Of the 485 using hormonal/long-acting contraception, 80.0% used injectable birth control. Unmet need for contraception was 60.1%. Participants with ≥1 child and those on ART and virally suppressed in comparison to those not on ART were less likely to have unmet contraceptive

needs (aPR:0.77, 95% CI:0.66–0.91; aPR:0.80, 95% CI:0.67-0.95, respectively), and participants reporting current drug use were more likely to have unmet contraceptive needs (aPR:1.26, 95% CI:1.08-1.47) [Table 1].

	Univariate analysis PR (95% CI)	Multivariate analysis PR (95% CI)[b]
Age (median, IQR)	1.01 (1.00 - 1.02)	1.02 (1.01 - 1.03)
Years engaging in sex work (median, IQR)	1.01 (1.00 - 1.02)	
Education		
None, primary or incomplete secondary schooling	REF	REF
≥ secondary schooling	0.88 (0.73 - 1.05)	0.91 (0.76 - 1.09)
Current relationship status		
Steady partner, cohabiting	REF	
Steady partner, living separately	0.85 (0.69 - 1.04)	
Single	0.96 (0.79 - 1.16)	
Parity (≥1 child)	0.78 (0.67 - 0.92)	0.77 (0.66 - 0.91)
Prior termination	0.88 (0.66 - 1.19)	
History of unplanned pregnancy	0.98 (0.78 - 1.27)	
Consistency condom use with new clients, in prior 30 days	0.90 (0.78 - 1.04)	
Consistency condom use with non-paying clients, in prior 30 days	0.97 (0.84 - 1.11)	
Consistency condom use with regular clients, in prior 30 days	1.14 (0.92 - 1.41)	
Drug use[c]	1.23 (1.06 - 1.42)	1.26 (1.08 - 1.47)
Alcohol consumption	0.87 (0.75 - 1.01)	
Monthly or less	REF	
Two times per month - four or more times a week	0.94 (0.88 - 1.01)	
ART and viral load status[d]		
Not on ART	REF	REF
On ART and not virally suppressed	0.89 (0.73 - 1.01)	0.88 (0.75 - 1.04)
On ART and virally suppressed	0.80 (0.68 - 0.95)	0.80 (0.67 - 0.95)

[a] Defined as the proportion who are not using a hormonal/long-acting contraception method out of all the women reporting it was important to not get pregnant now. A hormonal/long acting contraceptove method included birth control pill, intrauterine device, injectable birth control, implant.
[b] Factors significantly associated with unmet contraceptive need at the p<0.1 level in the univariate models were included in the multivariate, age-adjusted model.
[c] Includes marijuana, cocaine, sugar, ecstasy, methamphetamine, heroin, crack, flakka
[d] Viral suppression was defined at <50 copies/mL

Table 1. Determinants of umet needs for contraception[a] among female sex workers living with HIV in Durban, South Africa (n=1,379)

Conclusions: Moving forward, strategies to couple fertility intention screening and contraceptive care with ART are needed to optimize reproductive health and decrease vertical HIV transmission.

Further, understanding unmet contraceptive needs is critical to preventing unintended pregnancies and promoting safer conception among FSW living with HIV.

Effects of the COVID-19 on key populations

PEMOD67

Female sex workers (FSW) and police violence during the Covid-19 health crisis in 2020-21: results from the EPIC multi-country community-based research program in Argentina

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Background: Female sex workers (FSW) have been disproportionately impacted by the Covid-19 crisis. Data shows increases of police violence towards key populations (KP), a consequence of their greater attributions to enforce health government measures. This study aimed to identify factors associated with police violence experienced among FSW during the Covid-19 crisis in Argentina.

Methods: EPIC is a multi-country, cross-sectional, community-based research program evaluating the impact of Covid-19 among KP. In Argentina, the study was conducted by community-based organizations (CBO) working with and for FSW. 173 FSW completed an online survey (October 2020-April 2021). Police violence was measured as having experienced episodes of at least one type of violence (physical, verbal, psychological or sexual) by security forces since the start of the health crisis. Factors associated with police violence were assessed in logistic regression models.

Results: Among respondents (N=173, median age 34[IQR 27–42]), 39.3% were transgender women (TW), 78.1% declared that sex work was their only income source and 71.7% declared that their financial situation has deteriorated considerably with the health crisis. 44.5% of FSW reported experiencing police violence. Furthermore, 59 (76.6%) of them experienced more frequent violent episodes. After adjustment for age, being a TW (aOR[95%CI]= 4.00[1.69;9.45], deterioration of quality of life (4.59[1.28;16.51]), fear of being harassed/arrested by the police (6.39[2.12;19.68]) and having received medical assistance from a CBO (5.01[1.98;12.68]) were independently associated with police violence.

Conclusions: FSW in Argentina have experienced an increase in police violence since the beginning of the health crisis. Belonging to multiple KP (FSW and TW) increases the

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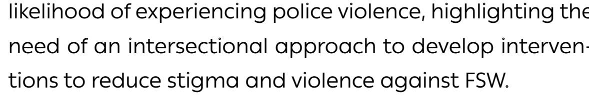

likelihood of experiencing police violence, highlighting the need of an intersectional approach to develop interventions to reduce stigma and violence against FSW.

Police violence is related to fear of the police, possibly impeding street-based sex work, and may contribute to a decline in the financial situation and the quality of life of FSW. CBOs have responded to the needs of FSW by offering medical assistance, among other services, to support KP.

PEMOD68

Who cares if you're poz right now? Learning and adapting risk and responsibility from HIV to COVID-19 among barebackers

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Background: COVID-19 has had major impacts on sexuality and sexual practices. Barebackers, gay men who engage in condomless anal intercourse, have adapted their experiences and risk management practices from HIV to navigate the new risks of COVID-19 and balance risk and desire.

Methods: We conducted an online ethnography of the most popular barebacking online forum in English during July 2021, retrieving 112 conversations comparing HIV and COVID-19, exploring how to navigate risk and retain pleasure. These were thematically analyzed.

Results: In our findings, we found significant differences between those users who had first-hand experience of living through the AIDS crisis, who were seen as 'experts' or as having a 'badge of honor', and younger forum members. Overall, barebackers compared the AIDS crisis (not the current HIV-as-treatable-moment) with COVID-19 in several ways.

First, they repurposed individual risk reduction practices (e.g. reducing the number of partners, limiting casual sex) as a way of preventing the spread of the virus both among barebackers and to society at large.

Second, they emphasised the role of 'individual responsibility' for preventing the spread of COVID-19 and chastised those they saw as 'reckless' (e.g. those engaging in casual sex while infected with COVID-19), repurposing serophobic language (e.g. 'slut-shaming').

However, third, they also strongly emphasised their desire to retain pleasurable barebacking practices, such as group sex in clubs, and suggested that temporary risk reduction would make these possible in a post-COVID-19 future.

Conclusions: This is, to our knowledge, the first study of how barebackers have adapted HIV learnings to COVID-19. Barebackers are a community historically disproportionally affected by HIV and culturally seen as 'risk prone' or 'hedonistic'. This paper evidences not only that barebackers have adopted narratives of individual responsibility deeply influenced by the history of the AIDS crisis, but that they have done so to preserve their future 'pleasurable practices', such as group sex, after COVID-19.

Thus, this paper reveals how one key community disproportionaely affected by HIV have adapted to COVID-19 and imagined their future after it.

PEMOD69

Understanding the lived experiences of people at the intersection of HIV and COVID-19

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Background: COVID-19 has been particularly challenging for marginalized communities affected by HIV. For many, this meant reliving experiences of fear, confusion, stigma and economic disenfranchisement.

To understand lived realities of those at the intersection of COVID-19 and HIV, IAVI, with Humsafar Trust, conducted a series of Community-Researcher Dialogues in India.

Description: Between November 2020 and June 2021, three virtual dialogues were conducted with 60 participants comprised of community members from FSW, PWID, MSM, AGYW and TG populations, CBOs, activists, scientists and researchers to initiate conversations and identify pressing programmatic and research needs.

Conversations were audio recorded with due participant consent and accompanied by detailed notes. This data was then coded using an inductive framework of analytic domains based on key areas of enquiry.

Lessons learned: These dialogues highlighted the following:

Poor testing and increased HIV risk-taking behaviours - Disruptions in services, fear of contracting COVID-19 at health centers, lockdown-related interruptions in transportation and mass migration led to poor testing and adherence. Food insecurity, fear of stigma and discrimination, lack of family/peer support and isolation, loss of employment, lack of access to care added to pandemic stress, pushing some to opt for unsafe sex for economic sustenance or due to limited access to safer sex options.

Mental health crises emerged as major concerns along with increased incidences of violence, especially among sexual minorities.

Existing networks/collectives of HIV-affected communities were instrumental in facilitating/creating innovative prevention/treatment service/delivery models, working with local/government health agencies to initiate strategies like multi-month dispensing and ART home delivery. In HIV knowledgeable communities, where targeted interventions have been sustained for years, adoption of COVID-19 appropriate behaviours and sharing of information among peers was easier.

Digital media also played a critical role in facilitating referral-, emergency care-, and peer support in real-time.

Conclusions/Next steps: The COVID-19 crisis has highlighted the need to rethink approaches to shared global health practices by putting communities at the centre. The role of HIV knowledgeable communities, along with the vitality of newly created networks during the pandemic, necessitate sharpened insights into how these networks were leveraged to support service uptake, and how they can be further bolstered for future pandemic preparedness.

PEMOD70

'Of the youth, by the youth, for the youth': a peer-led model for building resilience among youth living with HIV during the COVID-19 pandemic

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Background: HIV care access and delivery was adversely impacted due to the COVID-19 pandemic. Youth living with HIV were particularly affected and were vulnerable to reversal of health gains. In response to this need, Sneha Charitable Trust (SCT) mobilized youth peer leaders to build a model of continued healthcare access and support for those affected during the COVID-19 pandemic in southern India.

Description: The peer-led model consisted of ten HIV-postive youth leaders, who have have demonstrated leadership skills during crises. Between January 2020-September 2021, 500 adolescents and youth aged 12-25yrs with poor healthcare acess and social support were selected as beneficiaries. During this period, the peer leaders in a 1:50 ratio, reached out to beneficiaries and built an effective program focused on addressing misinformation related to COVID-19, strengthening COVID-19-appropriate behaviours, promoted continued support ofone another, ensuring access to ART and nutrition, and support for building healthy lives during pandemic-related adversity. Contact was maintained weekly, and additional nutrition and counselling support for affected families were provided by peer leaders.

Lessons learned: COVID-19 lockdowns impeded ART access among 83.0% of children and youth. Through coordination with the State AIDS Control Society, the program facilitated a 3-month supply of ART through home delivery, which helped to restore ART acesss to 93.0%. During the intervention period, 84.0% remained healthy, 5.8% developed tuberculosis, and 3.2% required hospital admission for opportunistic infections. COVID-19 infections were present in 8.0% adolescent' households. Nutritional support was provided to 60.0% of the households for over 6 months. The peer leaders were able to build strong partnerships with clinical service teams, and facilitated the beneficiaries' healthcare access. Informal surveys administered with the beneficiaries highlighted that the support extend by the peers helped in positive adaptation to adversity, recovery from illness and adaptation and resilience amidst crises.

Conclusions/Next steps: Our unique peer-led model of care provision and confidence-building activities during the COVID-19 restrictions led to HIV-positive youth handling pandemic adversity with resilience.
This model demonstrates that amidst unprecedented crises, peer-led mutual support and partnerships at the community and systems level are critical to ensure ongoing success.

PEMOD71

How the COVID lockdown and government measures affected gay men and transwomen's health care, sexuality, and life in Peru: a qualitative study from the EPIC multinational community research program

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Background: EPIC-international community-based program is coordinated by Coalition PLUS to collect comparable multinational data regarding the impact of the COVID-19 crisis in key populations (KP) concerning HIV.

Methods: As part of the EPIC-international community-based program by Coalition PLUS, we designed a qualitative study to gather experiences from Peruvian MSM and transwomen (TW) about the Covid lockdown and how they dealt with it regarding health/medical care, education, and work. From September/December 2021, 16 in-depth-interviews with TW and MSM, who identified as gay men, focused on how lockdown and government measures affected their health/medical/care, work, and education.

Results: Gay Men (GM) and TW associated Covid-19 with illness/death/stress. All had friends/relatives who had been severely ill or had died from Covid-19. Many experienced

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stress after being forced to reorganize their lives and budget, as their education/work routines had changed.
Normally excluded from stable, formal jobs, TW lost their livelihoods as hairdressers, peddlers, or sex workers, facing serious economic difficulties during the lockdown. The government formally includes KPs among vulnerable populations, but did not include TW as recipients of COVID-19 relief packages (food/money) due to technicalities, despite their clear financial vulnerability.
Regarding sexuality, GM/TW dropped out of their networks, but quickly returned to them when measures relaxed. However, sexual health services were suspended from the start of the pandemic, affecting condom and comprehensive care provision. Fortunately GM/TW with HIV picked up their treatment at the health services every three months.
Inconvenient for the general public, public movement restrictions by gender were harmful for TW, who were arrested by the police or ridiculed by the media when going out on women's days. Although this measure only lasted one week, it remained etched on the memory of those interviewed as an example of structural discrimination suffered by TWs.
Conclusions: During lockdown, TW were greatly affected, due to their social and financial vulnerability. They are not receiving government COVID-19 relief packages signals their social and structural exclusion. Public policies for vulnerable populations in Peru should take GM and TW into account. A strategic plan in sexual health services is needed for sizeable emergencies, so as not to leave aside vulnerable populations.

PEMOD72

Economic, social, and behavioural impacts of the COVID-19 pandemic on women and girls living with or at high risk of HIV in Nigeria

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Background: Little is known about how the COVID-19 pandemic affected women and girls living with HIV (WLHIV) or at high risk of HIV, who experience disproportionate levels of comorbidity and stigma. We describe the economic, social, and behavioural impacts of the pandemic on WLHIV or at high risk of HIV in Nigeria.

Methods: A cross-sectional survey was conducted between July and December 2021, collaboratively with community-based organizations to investigate the impact of the pandemic on WLHIV or at high risk of HIV, including those who sell sex, live with disabilities, use drugs, migrants and displaced people, and transgender women. Participants 15 years and older were recruited voluntarily, both online and face-to-face, using a combination of venue-based and snowball convenience sampling in ten states covering six geopolitical zones.
Results: There were 4541 respondents; 50% were between 19 and 30 years old, 47% reported living with HIV. 61% (2676/4411) reported a negative impact on their income, and 76% (3342/4409) had to cut back on food.
About 10% (468/4541) received assistance or cash relief. Some 25% (722/2835) started selling sex to meet their financial obligations. WLHIV or at high risk of HIV said they experienced issues accessing health services for HIV, 55% (1988/3581), sexually transmitted infections, 36% (1104/3073), tuberculosis, 22% (609/2773), family planning, 19% (510/2702), and safe abortion care, 13% (335/2570).
The biggest obstacles were financial: 54% affording transport, 39% medicines or tests, and 28% user fees at a health-care facility (Figure 1). Social and structural barriers were also reported (Figure 1).

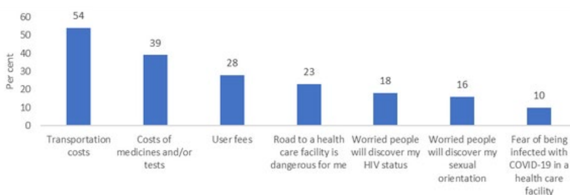

Figure 1. Barriers to health care for WLHIV or at high risk of HIV in Nigeria (N=4541)

Conclusions: Our study demonstrated the significant negative effects of the COVID-19 pandemic on WLHIV or at high risk of HIV in Nigeria. Interventions are necessary to mitigate socio-economic challenges, address structural inequality, and ensure access to health services.

PEMOD73

COVID-19 and self-perceived changes in psychosocial and behavioral outcomes of people living with HIV in community-based clinics of Mali: The EPIC programme of Coalition PLUS

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Background: In Mali, around 23% of the 57000 people living with HIV (PLHIV) on antiretroviral treatment (ART) are followed-up in community-based clinics. Their functioning was reorganized to guarantee the HIV-care continuum during Covid-19. We investigated changes in PLHIV's psychosocial and behavioral outcomes, associated factors to these changes, and their interrelationship.

Methods: The EPIC multi-country community-based research coordinated by Coalition PLUS was conducted in 33 countries including Mali, studying the impact of Covid-19 among PLHIV and key populations.

Analyses used data collected in March 2021 among PLHIV of 18 community-based clinics of ARCAD Santé PLUS. Face-to-face questionnaires collected participants' characteristics, and assessed perceived changes in psychosocial/behavioral and HIV-care related aspects compared before Covid-19.

Outcomes: perceived changes in day-to-day life (DDL) (negative = 1 / unchanged = 0), quality-of-life (QoL) (worse = 1 / unchanged = 0), and ART-adherence (worse = 1 / unchanged = 0). Three-equation multivariate probit model was estimated to investigate associated factors and the link between outcomes.

Results: Among 695 participants, 72.3% were female and median age was 38 years IQR[31-45]. Negative changes in DDL were declared by 74.5%; 27.2% and 40% declared poorer QoL and ART-adherence, respectively. Estimations showed deteriorated financial situation associated with worse DDL (coeff:0.805/p<0.001) and QoL (coeff:0.278/p=0.036).

Negative changes in DDL were less likely for older (coeff:-0.276/p=0.030) and those in rural areas (coeff:-0.507, p<0.013), although more likely for those with difficulties finding social support (coeff:0.640/p=0.003).

Female (coeff:0.263/p=0.040), older (coeff:0.468/p<0.001) and those in urban areas (coeff:0.568/p=0.002) were associated with poorer QoL.

Long-term ART delivery reduced QoL decline (coeff:-0.346/p=0.008). Accommodation difficulties (coeff:0.503/p=0.017), and perceiving that community-based response to Covid-19 was inadequate to PLHIV (coeff:0.331/p=0.002) were associated to negative changes in ART-adherence. Easy healthcare access (coeff:-0.653/p=0.010) and long-term ART delivery (coeff:-0.243/p=0.048) reduced ART-adherence issues.

Finally, ART-adherence and QoL changes are strongly related (correlation:0.308/p<0.001), but not ART-adherence with DDL (correlation:0.127/p=0.063). However, DDL and QoL are processes that evolve together (correlation:0.184/p=0.011).

Conclusions: QoL seems to be a key aspect in the management of negative changes in ART-adherence and DDL among Malian PLHIV, although the mechanism is different. Community-based related factors to QoL should contribute to the improvement of ART-adherence, while focusing on demographic/socioeconomic factors should contribute to the attenuation of the Covid-19 impact over DDL through the improvement of QoL.

PEMOD74

Impact of COVID-19 on access to sexually transmitted and blood-borne infections (STBBI) and harm reduction services for people who use drugs or alcohol in Canada

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Background: The COVID-19 pandemic has disproportionately affected people who use drugs or alcohol (PWUD). This population faces health inequities including increased risk of STBBI and severe COVID-19 illness.

Using national survey data, we describe changes in social determinants of health (SDOH) and access to STBBI-related health services among PWUD.

Methods: From January to February 2021, an anonymous, self-administered, online survey was conducted among anyone living in Canada aged 18+ years who identified as using substances, including alcohol or cannabis, in the past 6 months. Information collected included social determinants of health, substance use, and access to STBBI-related services, including harm reduction.

Results: 1034 individuals participated (61.2% cisgender female, 32.6% cisgender male; mean age 40.5, range 18-84 years). Increased use in cannabis (64.9%), alcohol (56.7%), and opioids (56.9%) was reported. Those who experienced discrimination pre-pandemic reported the highest increase in discrimination (59.7%) compared to those who never experienced it (4.4%). Worsening mental health since the beginning of the pandemic was noted, particularly among participants reporting fair-to-poor mental health prior to the pandemic (Figure 1).

Those who felt the least safe pre-pandemic reported the largest increase in feeling less safe (50.0%) since the pandemic-start, compared to those who felt somewhat

(35.6%) or very safe (19.3%) pre-pandemic. Participants reported pandemic-related difficulties accessing HIV, STI, or hepatitis C testing (58.8%) and harm reduction services (i.e. needle/syringe distribution programs, drug checking services, or drug consumption rooms) (80.6%).

Main barriers included: public health measures; reduced clinic hours; getting a referral or appointment; and concerns about stigma, discrimination, or violence.

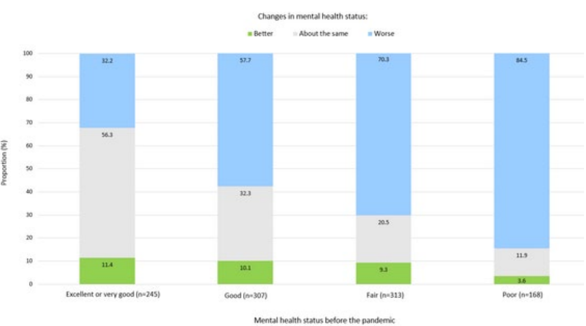

Figure 1. Changes in mental health status since the start of the COVID-19 pandemic

Conclusions: COVID-19 has exacerbated existing SDOH inequities among PWUD in Canada, and introduced challenges accessing STBBI and harm reduction services. Worsening mental health and increased substance use signal the need for improved and innovative support measures (e.g., mobile outreach) to overcome barriers from the pandemic for PWUD.

Role of social and behavioural science in biomedical responses

PEMOD75

PrEParados: a spatially explicit network visualization framework to identify Latino MSM who qualify for PrEP use

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Background: Frameworks are needed to increase PrEP initiation among Latino men who have sex with men (LMSM) in Miami Florida, a US epicenter of the HIV epidemic. Our PrEParados Network Framework identifies LMSM who qualify for PrEP through friendship, sexual, and spatially-explicit networks.

Description: This framework incorporates sociocentric friendship, egocentric sexual and geospatial networks. Findings are based on cross-sectional data collected from October 2018 to August 2019 (N= 130 PrEP eligible LMSM and their 507 sexual partners). Participants were predominantly White, employed full-time, single, mean age of 28 years; and half were foreign-born.

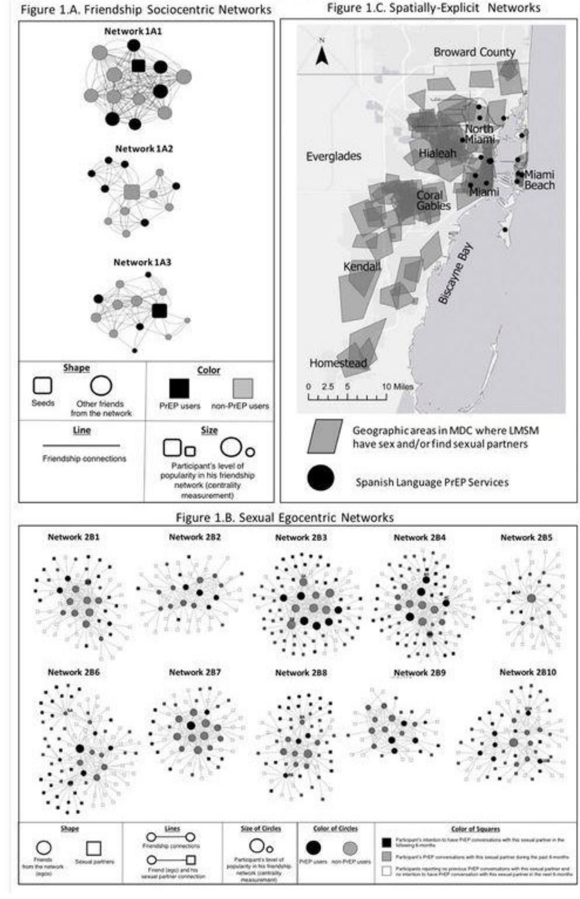

Figure 1. The PrEParados network visualization framework

Lessons learned: Friendship network structures identified correlates of PrEP communication, which included PrEP use within the network. LMSM may feel pressure to use PrEP, after hearing about or observing PrEP use through mutual acquaintances. The framework identified the characteristics of popularLMSM and their intention to disseminate PrEP messages and convince friends to use PrEP.

The PrEParados Framework also identified unconnected LMSM and opportunities to connect them through LMSM "bridges" to other members who use PrEP or encouraged their friends to use PrEP.

The majority of participants did not disclose their PrEP use status with sexual partners. We identified an increase in receptive condomless anal sex among sexual partners who reported at least one partner was on PrEP.

The spatial network found the absence ofSpanish language PrEP services in areas where LMSM find sexual partners and/or have sex, and priority locations for advertisements about HIV services.

Conclusions/Next steps: The PrEParados Network Framework incorporated sociocentric, egocentric, and geospatial networks to identify LMSM who qualify for PrEP use. This model can:

a. Identify, reach and engage key populations who qualify for PrEP but are not using PrEP,

b. Increase diffusion of accurate PrEP information and guidance to key populations, and;
c. Identify policies to increase access to PrEP services.

Social protection: New evidence and programmatic lessons

PEMOE32
Women's legal and economic empowerment project to improve HIV care and treatment outcomes: lessons from cross-border trading initiative in Northern Rwanda and Democratic Republic of Congo

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Background: Despite remarkable investments in health and social education, gender inequity and poverty remain the major predictors of health outcomes among HIV patients in rural and resource-constrained settings. To improve women's health and HIV outcomes among women from villages surrounding Rwanda-Congo border, LegEcoAccelerator, an innovative program combining legal and economic support were implemented. Family planning and child care services were provided.
We present results following five years of active implementation period. A mixed method evaluation was conducted to assess changes in household income, clinical outcomes before and after 60 months of active implementation. A qualitative assessment captured perceptions and acceptability of the program.
Description: Following poor outcomes among women crossing the Rwanda-RDC border for micro-businesses, we have deployed a micro-grant and saving program to empower women who had very little or no investment capital. We also launched a one-stop center for HIV care and treatment, facility planning and day care services were provided. This integrated and innovative approach was named LegEcoAccelerator program.
Lessons learned: A legal support established a joint agreement between local leadership across two borders and improved women's freedom and social economic development. Of 7623 women enrolled in the program at baseline 72% and 28% were extremely poor and very poor, respectively. A total 15,869 women participated in our LegEcoAccelerator program between January 2017-December 2021. The percent of women living in extreme poverty reduced significantly from 72% to 15%, p<0.001. The percent of women who shifted from extreme poverty and poverty to any other upper wealth categories from 20% to 81%, p<0.001.Over 70 women received childcare and nutrition support. Adherence to ARV increased from 75% to 85%,*p=0.06*. The percent of women with suppressed viral load improved by 50%. Domestic violence incidents which declined by 80%.

Conclusions/Next steps: Combining legal and social economic support improve the effectiveness of HIV care and treatment. This suggest that combining a legal and economic empowerment could be a strategy to improve health outcome and accelerate the pace toward ending HIV endemic. Although cross-border programs bring about better impact, there is a need for shared accountability and responsibility among neighboring countries.

Innovations in behavioural data collection and use

PEMOE33
A community-centric study of male clients of female sex workers using respondent driven sampling

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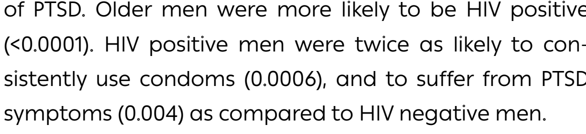
Background: In South Africa, male clients of sex workers (MCSWs) account for 40% of new HIV infections. There are currently limited understanding of the population with no interventions targeting MCSWs. Understanding their health status and risk factors for adverse health outcomes is foundational for developing evidence-based health care for this population. Describe the methodology used to successfully implement a community-centric respondent driven sampling (RDS) study of psycho-social circumstances, HIV, violence perpetration and associated factors amongst MCSWs in South Africa.
Methods: A community-centric, RDS, survey of 660 adult MCSWs in Soweto, South Africa was conducted (March–November 2021). Formative interviews and focus group discussions helped inform the RDS study design and inform the questionnaire development. Men from the sex work sector were involved in the study design and questionnaire development. Questions included: demographic, sexual behaviour, HIV testing and treatment history, and violence exposure and perpetration. HIV rapid testing, viral load, CD4 count, and HIV drug resistance genotypic testing were undertaken.
Results: 19.1% of MCSWs were HIV positive, two thirds were aged 25-34 and 35-44, the median age of purchasing sex was 21, and condoms were consistently used by 16.7%. Almost all MCSWs had experienced childhood trauma, with two thirds of men reporting some form of sexual violence in their lifetimes. Just under 30% reported perpetrating sexual violence against their intimate partner, more than half (54.1%) had raped a non-intimate parter in the past year, and almost two thirds of men had symptoms



of PTSD. Older men were more likely to be HIV positive (<0.0001). HIV positive men were twice as likely to consistently use condoms (0.0006), and to suffer from PTSD symptoms (0.004) as compared to HIV negative men.
Conclusions: This is the first study of MCSWs in South Africa, and globally, the first to use an RDS methodology for MCSWs. Data highlight the vulnerability of this population to HIV, violence and mental health. Based on the unique methodology and successful implementation, the outcome will inform tailored interventions.
Our rate of enrolment, low rate of screening failure and low proportion of missing data showed the feasibility and importance of community-centric research with marginalised, vulnerable populations.

Approaches to using data to improve programming

PEMOE34

Case-finding, linkage to antiretroviral treatment (ART), and continuity of care: findings from "Siyenza" facilities in South Africa, 2019-2021

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Background: The President's Emergency Plan for AIDS Relief (PEPFAR) and the South African National Department of Health launched *Siyenza* in February 2019 to improve retention of people living with HIV (PLHIV) on antiretroviral therapy(ART). *Siyenza* used weekly program data and site visits to provide intensive technical support to 241 public facilities comprising 45% of PLHIV on ART across the Centers for Disease Control and Prevention's twelve PEPFAR-supported districts.
Description: To assess resiliency throughout COVID-19, we compared weekly numbers of persons newly diagnosed with HIV and linked to ART, PLHIV on ART at 28 days, PLHIV with missed appointments 29-89 days after appointment dates, and index contacts tested and found positive for HIV from 142 facilities with continuous *Siyenza* participation from March 30, 2019–March 27, 2020 (Y1) to March 28, 2020–March 26, 2021 (Y2). Weekly facility means were analyzed using paired t-tests. Missed appointment data for 34 facilities in eThekwini district were excluded from the analysis due to missing data.
Lessons learned: In Y1 and Y2, 108,970 and 61,286 persons were newly diagnosed with HIV, respectively, and 104,537 (95.9%) and 59,817 (97.6%) were linked to ART; 85,486 and 122,261 PLHIV missed an appointment, respectively. The number of PLHIV on ART at 28 days increased by 2.3% between the end of Y1 and Y2, from 591,230 to 604,847. In Y1, 5,272/29,854 (17.7%) of index contacts tested positive for HIV; 8,134/49,429 (16.5%) tested positive in Y2. Weekly facility means significantly decreased between Y1–Y2 for: persons newly diagnosed (Y1:767.4 [95% Confidence Interval (CI):704.3–830.4], Y2:431.6 [CI:397.3–465.9]) and PLHIV linked to ART (Y1:736.2 [CI:675.6–796.7], Y2:421.2 [CI:387.3–455.2]), and increased for index contacts tested (Y1:210.2: [CI:179.6–240.8], Y2:348.1 [CI:296.2–399.9]) and found positive (Y1:37.1 [CI:31.7–42.5], Y2:57.3 [CI:46.4–68.1]). There were no significant differences in weekly means for PLHIV on ART at 28 days (Y1:4,163.6 [CI:3,885.9–4,441.3], Y2:4,259.5 [CI:3,980.4–4,538.5]) and missed appointments (Y1:791.5 [CI:678.8–904.2], Y2:1,132.0 [CI:685.5–1,578.6]).
Conclusions/Next steps: Despite COVID-19 challenges that caused decreases in new diagnoses,*Siyenza's* hands-on approach ensured maintenance of active PLHIV on ART, prevented increases in missed appointments, and increased index contacts tested.

Innovative uses of data to strengthen systems and programmes

PEMOE35

Evaluation of Ritshidze community-led monitoring programme in South Africa

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Background: Community-led monitoring (CLM), where civil society collects data on services for people living with HIV to advocate for improved services, is an emerging and powerful approach to improving quality healthcare. In 2019, the Ritshidze CLM programme was launched in South Africa to monitor HIV, TB and other health service delivery to advocate for improved primary healthcare services for all people in the country.
We compared CLM measures of service delivery after year 1 and year 2 of the programme to determine Ritshidze's impact.

Methods: Between July 2019 and September 2021, data were collected from 427 public health facilities in 30 health districts. Survey data taken from observation, patient and facility managers were gathered electronically by community monitors using the CommCare application. Priority indicators were analyzed, focusing on seven metrics: antiretroviral therapy (ART) collection and access; HIV treatment; tuberculosis; facility staff and attitudes; access to prevention, care, and support; infrastructure; and COVID-19 disruption. Longitudinal trends were calculated by the average of the quarter-by-quarter percentage change in each metric between October to December 2020 and the same period in 2021.

Results:

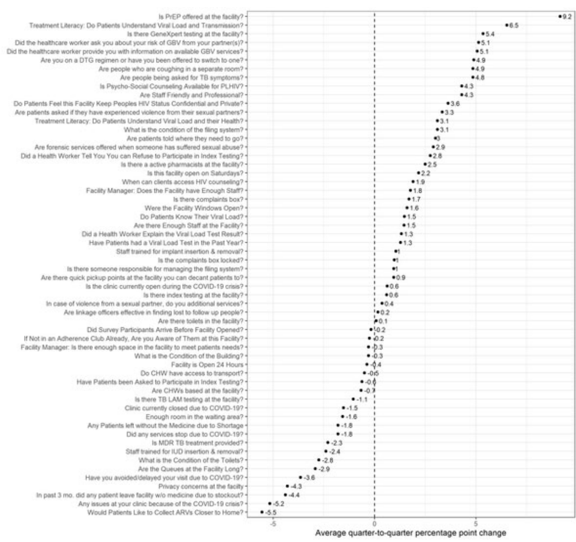

Figure 1.

Between quarter 4 (July to September) 2020 and quarter 4 2021, large changes in several indicators were observed. The largest changes were in access to PrEP (9.2% average quarter-to-quarter increase) and GeneXpert testing (5.4%), treatment literacy on viral load (6.5%), healthcare workers asking about gender-based violence (5.1%), and information on GBV services (5.1%) (Figure 1).

In this same time period, the percent of clinics reporting any COVID-19 disruption decreased an average of 5.2% each quarter.

Conclusions: Results from the Ritshidze CLM programme show early promise and suggest that CLM's can positively contribute to improving the quality, accessibility, and acceptability of HIV, TB and other health services.

Monitoring and reporting in the SDG era

PEMOE36

Effect of district ART access on young people's wellbeing in South Africa: an econometric analysis of panel data

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Background: Expanded antiretroviral therapy (ART) is associated with substantial health and economic benefits. However, evidence on the population-level effects of ART scale-up on broader Sustainable Development Goals (SDGs) such as wellbeing are scarce.

We aimed to study the effects of ART access on young people's in South Africa.

Methods: We sought to assess how temporal increases in the number on ART at a district-level affected young people's life satisfaction, a measure of wellbeing. We used panel data from South Africa's National Income Dynamics Survey, which followed participants over 5 waves (2008-2017) and collected both individual- and household-level health, social and economic data. We restricted this panel data to participants aged 15-24 years in wave 1.

We then overlaid this panel dataset with district ART count and population estimates, derived from routine national HIV laboratory and census datasets, respectively. We used individual fixed effects regression models, with time and district fixed effects, to control for unobserved heterogeneity. We assessed the sensitivity of our findings using alternate regression models and a balanced sample.

Results: We analysed data on 5685 individuals (N=27 739 observations), mean age 23 years (SD=4.30), 50% female. On average, a 1-unit increase in the number of people living with HIV and on ART, was associated a 5% increase in life satisfaction scores after controlling for observed and unobserved time-invariant confounders.

Our results were robust to alternate specifications.

Conclusions: Our findings suggest that further investments into ART scale-up programmes could yield substantial wellbeing gains for young people in this region and should be leveraged as a key SDG 3 strategy.

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Impact of COVID-19 on HIV prevention services

PEMOE37

Successful methods to ensure continuity of cervical cancer screening and pre-cancerous lesion treatment services for women living with HIV during COVID-19 in Mozambique

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Background: As a consequence of the COVID-19 pandemic, from March to September 2020 Mozambique experienced severe disruption to cervical cancer screening and treatment services. The Ministry of Health (MOH), along with its stakeholders, developed new guidelines to ensure the continuity of cervical cancer services despite lockdown restrictions. We describe the implementation of these new guidelines and their impact on ensuring access to cervical cancer services in four provinces in Mozambique.

Description: In September 2020, USAID's Efficiencies for Clinical HIV Outcomes (ECHO) project started implementing new guidelines for cervical cancer services in 148 health facilities supported by the project, including:

1. Online trainings for health providers;
2. Revisions of clinical files to identify patients eligible for cervical cancer screening at reception desks, pharmacies, and clinical consultations;
3. Improved organization of patients in waiting rooms to avoid crowding and provide better health education;
4. Escorting of screening-eligible patients from waiting rooms to consultation rooms;
5. Weekly data assessments to evaluate site-level performance;
6. Technical assistance and formative supervision at high-volume sites;
7. The provision of medical supplies and equipment for visual inspection with acetic acid (VIA), cryotherapy, and loop electrosurgical excision procedures (LEEP);
8. Service expansion to 54 additional sites, and
9. The provision of personal protective equipment to prevent COVID-19.

Lessons learned: As a result of the implementation of the new guidelines, the number of women living with HIV and on antiretroviral therapy (ART) who were screened for cervical cancer increased over time, with a monthly average of 6,967 women screened from October 2020 to September 2021, compared with a monthly average of 4,116 women screened from October 2019 to September 2020—a 69% increase.

Treatment coverage, defined as the percentage of women who were screened as positive and received treatment, grew on average from 43% to 72%. Key contributors to these achievements included collaboration between the MOH and its stakeholders and the provision of medical supplies and equipment, which helped ensure service continuity and even increased coverage.

Conclusions/Next steps: A well-coordinated effort between key stakeholders has been essential to the continuity and uptake of cervical cancer services in Mozambique during the COVID-19 pandemic.

Impact of COVID-19 on HIV testing services

PEMOE38

Impact of COVID-19 on HIV testing volume and positivity in 16 countries

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Background: The COVID-19 pandemic presents many challenges to HIV testing. We aimed to describe the impact of COVID-19 and country-level COVID-19 stay-at-home policies on HIV testing services provided by a large global HIV project.

Methods: We performed a retrospective analysis of monthly HIV testing data in 16 countries from January 2020 to September 2021. To account for differences in testing volume across countries, we calculated each county's percentage reduction/increase in testing by month compared to the average monthly country-level HIV testing volume in the first three months of 2020 (pre-COVID-19). Regression analysis was used to quantify the relationship between HIV testing volume, HIV case-finding rates, and national stay-at-home policies (from the Oxford COVID-19 government response tracker) by month.

Results: HIV testing volume declined dramatically early in the pandemic, with countries averaging 37.8% and 33.1% fewer HIV tests per month in April and May, respectively. Those months also saw the highest average case-finding rates, at 16.7% and 16.0%. In the ensuing months, programs adapted to the threats and restrictions of the pandemic and demonstrated a rebound in testing volume and an overall average case-finding rate consistent with the pre-COVID-19 comparator months.

*Figure. Change in HIV testing volume and case-finding rate during the COVID-19 pandemic in 16 countries**
**13 in sub-Saharan Africa, 2 in Southeast Asia, 1 in Latin America*

More stringent stay-at-home policies were associated with decreased HIV testing. Countries completed an average of 60.9% fewer tests during months when national

policies required not leaving the house (p<0.001). Positivity of testing increased an average of 1.7% during those months (p=0.09).

Conclusions: While initial decreases in HIV testing were observed, focused testing strategies led to rapid programmatic recovery and, ultimately, HIV testing volume was maintained above pre-COVID-19 levels.

Tighter stay-at-home orders were associated with decreases in testing, yet HIV case finding increased during these months.

These results demonstrate the resiliency of HIV programs to adapt during the pandemic and highlight opportunities for increased emphasis on innovative strategies for HIV testing.

PEMOE39

Measuring the impact of the COVID-19 lockdown on testing services in specialized HIV facilities in Mexico

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Background: Mexico's response to mitigate the spread of COVID-19 reduced the use of non-urgent health services, including those related to HIV/AIDS. This study aims to estimate the impact of the COVID-19 pandemic on HIV testing.

Methods: We used monthly data on HIV testing (2018-2021), of 78 public health facilities that provide HIV/AIDS-associated services in Mexico. We conducted a piecewise regression estimating the immediate change in HIV testing, positive test, and positivity rate. We used difference-in-difference models to measure the average impact of the lockdown in 2020 and 2021 using the average services of 2018-2019 as baseline/comparison.

We distinguished the analyses by sex, subpopulation (MSM, heterosexuals, pregnant women, transgenders, IDU, and sex workers), region, and COVID-19 mortality calculated as municipality mortality tertiles in 2020-2021.

Results: The lockdown in 2020 caused a sharp drop of 87% in testing and positive tests fell by 37%. The positivity rate, however, increased by 145%. Testing especially decreased among women, in northern Mexico and regions with low COVID19 mortality, while the positivity rate increase was highest among these same groups.

Testing practices and positivity rate among MSM changed less than in any other risk group, even though testing decreased by 55% and the positivity rate increased by 53%.

Throughout 2020, testing services remained far less used yet in 2021, the testing increased by 40% compared with 2018-2019, especially among pregnant women and people living in South Mexico.

The positivity rate decreased however in 2021, reaching a lower level compared with 2018-2019 yet the difference was not statistically significant.

Conclusions: The confinement measures negatively affected testing services during 2020, especially among those other than MSM; those who did get tested were more likely to be positive. Health facilities have increased the number of tests carried out in 2021 and even exceeded pre-pandemic values.

Despite this increase, the incidence values of HIV in 2021 seem to be lower than those recorded in 2018-2019, indicating that those most at risk might get tested less now. Research is needed to better understand these changes in positivity rate and measures must be taken to properly target at-risk populations.

Impact of COVID-19 on HIV treatment services

PEMOE40

The effects of COVID-19 on HIV care and treatment programs: a multicountry review

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Background: Since the onset of COVID-19, governments across the globe have implemented strategies to curb the spread of the pandemic. We reviewed HIV clinical cascade data to assess the effect of COVID-19 and these pandemic mitigation measures on HIV programs.

Description: We analyzed the aggregate number of individuals who received HIV testing services, number of individuals newly initiated on ART, number of individuals currently receiving ART, and the number of ART individuals who were virally suppressed (<1000 copies/ml). A relative ratio was derived by comparing EGPAF's program data from October to December 2019 (pre-pandemic period) to data from January 2020 to September 2021 (intra-pandemic period). The analysis included data from Cameroon, Cote d'Ivoire, DRC, Eswatini, Kenya, Lesotho, and Malawi.

Lessons learned: With the exception of DRC, results revealed declines across a majority of countries in the number of individuals who received HIV testing services and number of individuals who newly initiated on ART from January to September 2020 as compared to data from the pre-pandemic period (*see figure below*). While in some countries these declines showed gradual recovery starting in October 2020, in Eswatini, Lesotho, and Malawi figures for the two indicators continued falling, decreasing by an average of 55% and 37%, respectively, by September 2021 as compared to the pre-pandemic data. By contrast, the number of individuals currently on ART and the number of ART individuals virally suppressed remained steady throughout the intra-pandemic period for the majority of countries, and in some countries, these figures actually increased.

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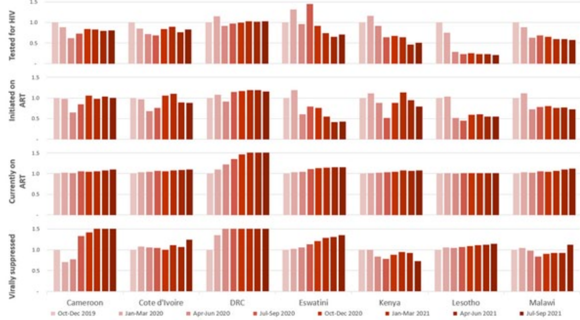

Figure.

Conclusions/Next steps: While the COVID-19 pandemic and mitigation measures have impacted HIV testing and ART initiations, there were no discernable effects on the numbers of ART patients continuing to access treatment and those who were virally suppressed. The latter finding points to utility of interventions and adaptations by HIV programs, which deserve further study and replication.

PEMOE41

Impact of COVID-19 public health measures on ART use among Ugandans living with HIV in sero-different couples

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Background: Approximately 30% of new HIV infections in sub-Saharan Africa occur among heterosexual HIV serodifferent couples. Effective antiretroviral therapy (ART) eliminates HIV transmission risk and is a priority intervention. We describe how the onset of COVID-19, which yielded restrictions to public transportation and strict curfews, impacted ART initiation and HIV viral load among people living with HIV in Uganda.

Methods: In a stepped-wedge cluster-randomized trial of an integrated PrEP and ART intervention for HIV-serodifferent couples at 12 ART clinics in Kampala/Wakiso, Uganda (ongoing at the outset of the Covid 19 pandemic), we compared ART initiation and viral suppression among participants enrolled during different time points defined by the initial COVID-19 lockdown.

Period-1 included participants who enrolled and had a 6-month viral load assessment before the first COVID-19 lockdown in Uganda on 18-March-2020.

Period-2 includes participants enrolled before 18 March 2020 with viral load measured thereafter (straddling pre-COVID and COVID times).

Period-3 includes participants enrolled with viral load quantified after 18 March 2020 (entirely during COVID-19). ART and viral load data, available through standard of care, were abstracted from clinic records.

Results: We enrolled 1,381 partners living with HIV, including 896 (64.9%) in Period-1, 260 (18.8%) in Period-2, and 225 (16.3%) in Period-3. Almost all participants (1371, 99.3%) initiated ART within 90 days of enrollment and more than half (59.2%) had CD4 >350 cells/mm3at enrollment.

Among those enrolled in Period-1, 88.8% were virally suppressed within 6-months of ART initiation, among those enrolled in period-2, 80.5% were suppressed, and among those in period-3, 88.2% were suppressed.

In a generalized estimating equation model with adjustment for clustering by clinic, the small number of clusters, and the intervention phase, no pairwise comparisons of viral suppression across periods were statistically significant.

The median time from ART initiation to VL assessment was greatest in period-2: Period-1 median time=128 days (IQR 95-173), Period-2 median time=175.5 (IQR 146-206.5), Period-3 median time=130.5 (IQR 97.8-168.3).

Conclusions: Despite COVID-19 lockdown measures, people living with HIV initiated ART and achieved viral suppression. Any potential challenges faced during the initial restricted conditions of lockdown waned and levels of ART initiation and viral suppression rebounded.

PEMOE42

Increased prevalence of depression and anxiety among adults initiating antiretroviral therapy during the COVID-19 pandemic in Tanzania

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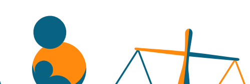
Background: Depression and anxiety are common among people living with HIV and can impair adherence to antiretroviral therapy (ART) and increase disengagement from care.

We compared the prevalence of depression and anxiety among ART initiates before and during COVID-19 in Tanzania.

Methods: We analyzed baseline data from two randomized controlled trials of adults initiating ART in Shinyanga, Tanzania between April-December 2018 (pre-COVID-19 period, n=530) and May 2021-January 2022 (COVID-19 period, n=542), respectively.

Depression and anxiety were measured using the Hopkins Symptom Checklist-25 in the pre-COVID-19 period and the Patient Health Questionnaire-2 and Generalized



Anxiety Disorder-2 scales in the COVID-19 period, respectively, and classified as binary indicators per each scale's threshold.

We also examined three mental health indicators that were similarly measured in both surveys: loss of interest, hopelessness, and uncontrolled worrying. To account for temporal differences in participant characteristics, adjusted prevalence differences (PD_a) in mental health over time were estimated using stabilized inverse probability of treatment weighting.

Propensity scores (weights) were generated from logistic regression with age, sex, primary language, education, marital status, household head, overall health, and work status as covariates.

Results: The prevalence of depression was 26.6% before and 68.6% during COVID-19 (PD_a=38.0 percentage points (pp), 95% CI: 34.1,41.9). Anxiety increased from 19.8% to 63.2% (PD_a=41.3pp, 95% CI: 37.4,45.0). Significant temporal increases were also noted in the prevalence of feeling "a lot" or "extreme" loss of interest, hopelessness, and uncontrolled worrying.

Reported Frequency	"A lot"			"Extreme" amount		
	pre-COVID-19	COVID-19	Adjusted Prevalence Difference (PD_a) (95% CI)	pre-COVID-19	COVID-19	Adjusted Prevalence Difference (PD_a) (95% CI)
Feeling little interest in things	5.3%	45.8%	38.6 (35.3,41.8)	1.3%	12.5%	9.1 (7.1,11.2)
Feeling hopeless about the future	3.8%	50.7%	46.7 (43.5,49.9)	1.7%	7.7%	4.2 (2.6,5.9)
Uncontrolled worrying	7.7%	42.9%	34.7 (31.3,38.1)	3.4%	7.7%	2.1 (0.3,4.0)

Conclusions: After applying a quasi-experimental weighting approach, the prevalence of depression and anxiety among those starting ART during COVID-19 was dramatically higher than before the pandemic.

Although depression and anxiety were measured using different, validated scales, the concurrent increases in similarly measured mental health indicators lends confidence to these findings and warrants further research to assess the impact of COVID-19 on mental health among adults living with HIV.

PEMOE43

Describing the impact of COVID-19 on AIDS Drug Assistance Program operations

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Background: In the United States (U.S.), state AIDS Drug Assistance Programs' (ADAPs) are a key part of the US HIV healthcare delivery safety net. ADAPs provide free antiretroviral therapy to people with low incomes who are uninsured/underinsured. As a public service program, ADAPs' operations were impacted by the COVID-19 pandemic. To better understand how operations were affected and what changes were implemented in response, the National Alliance of State and Territorial AIDS Directors (NASTAD) surveyed ADAPs in 2021.

The objective of this mixed methods study was to characterize the programmatic challenges and subsequent innovations.

Methods: Data about COVID-19-related challenges and innovations were collected via the 2021-2022 NASTAD National Ryan White HIV/AIDS Program Part B and ADAP Monitoring Project, a cross-sectional survey of state, district, and territorial ADAPs. Descriptive statistics were used to assess proportional differences in Likert-style responses. Qualitative responses were coded and analyzed using a thematic analysis framework.

Results: Forty-seven state and D.C. ADAPs responded to the survey (92%, response rate). The majority of ADAPs reported that maintaining client eligibility (78%) and working remotely (70%) were the most challenging aspects of the pandemic, particularly in regards to implementing new telehealth and e-certification eligibility platforms. In response to COVID-19, ADAPs introduced enrollment "grace periods" (19%) while bolstering client outreach (11%), expanded medication supply for more than 30 days (79%), and provided pharmacy home delivery for clients (80%). Figure 1 provides a situational map of themes and subthemes from open-ended questions.

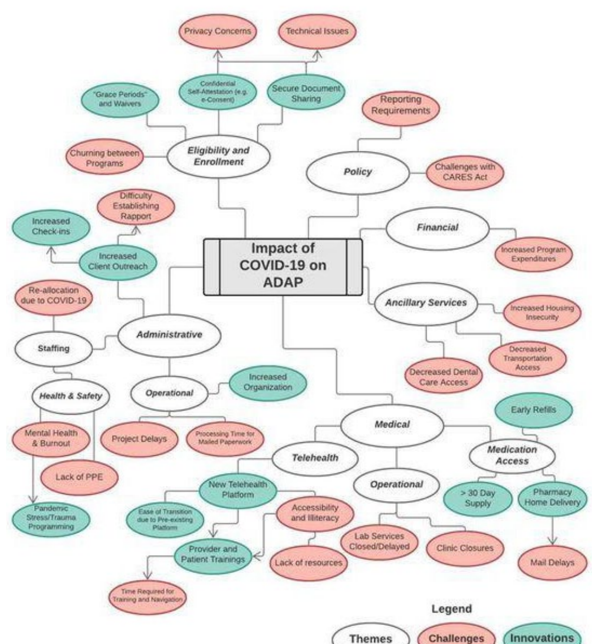
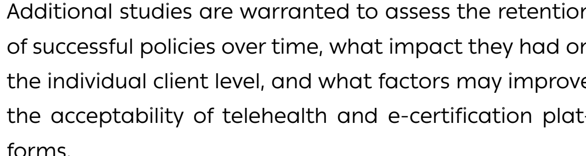


Figure 1. Situational map of themes and subthemes, describing the challenges of COVID-19 and subsequent innovations implemented by AIDS drug assistance programs in response.

Conclusions: Despite the multifaceted challenges of the COVID-19 pandemic, state ADAPs implemented several operational innovations in order to continue providing prescription drug assistance.


Additional studies are warranted to assess the retention of successful policies over time, what impact they had on the individual client level, and what factors may improve the acceptability of telehealth and e-certification platforms.

Optimizing HIV services (prevention, testing and/or treatment) in the COVID-19 era

PEMOE44

Maintaining access to HIV services to persons living with HIV amid the COVID-19 pandemic in Nepal

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Background: The surge of COVID-19 infection and subsequent lockdown resulted in closure of many public and private health facilities, including those providing HIV services. While the national prevalence of HIV was 30300 in 2020, many persons with HIV could not continue to access services from the routine health facilities.

The National Centre for AIDS and STD Control (NCASC) practiced innovative strategies with the main objective of ensuring uninterrupted access to HIV services amid the pandemic.

Description: Innovations were practised since June 2020 through May 2021 in the HIV centres of high burden districts based on key population estimates, HIV prevalence and COVID-19 hotspot mapping.

During the period of travel restrictions, risk assessment was conducted virtually to the key populations. NCASC initiated travel pass program to support organizations that provide needle syringe exchange and opioid substation therapy.

Antiretroviral drugs were delivered at home through multiple national networks of people with HIV. The targeted beneficiaries of these activities included people with HIV, pregnant women, HIV infected infants and children, and people who inject drugs.

Lessons learned: Nearly 50% of the targeted clients benefitted by the interventions. A total of 8542 virtual consultations were conducted. Through travel pass program, 2702947 syringes were distributed; benefiting 3364 people who inject drugs. Through the same program, 328 people received Methadone and 92 people received Buprenorphine. Among the 20883 people with HIV currently on ART, 9900 received home delivery of ART.

This program included 157 (73%) pregnant women with HIV, 121 (56%) mothers with HIV and 900 (71%) HIV infected infants and children. These approaches were feasible and were acceptable by the communities as they provided continuity of care while lockdown had imposed barriers to access to most HIV services.

Conclusions/Next steps: Virtual consultations, travel pass program and home delivery of medicines were effective strategies of maintaining continuity of HIV services amid the COVID-19 pandemic in Nepal. Such models can be implicated to other chronic health conditions that require long-term care in situations like the COVID-19 pandemic and related lockdowns that impose substantial barriers to access to health services. Supportive policies are needed to sustain such decentralized services in communities.

PEMOE45

Building infection prevention and control capacity across PEPFAR programs in response to the COVID-19 pandemic

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Background: Effective infection prevention and control (IPC) practices are essential for safe healthcare delivery. In low- and middle-income countries, the COVID-19 pandemic exposed ineffective IPC systems which increased healthcare worker and patient risk for infection and reduced patient access to life-saving medical care.

Therefore, the President's Emergency Plan for AIDS Relief (PEPFAR), committed to ensuring the safe delivery of high-quality healthcare, identified IPC as an urgent priority.

Description: Early in the COVID-19 pandemic, a technical working group with public health and IPC experts, from United States (U.S.) Government agencies responsible for implementing PEPFAR programs, began collaborating to improve IPC in PEPFAR programs.

In July 2021, the Office of the U.S. Global AIDS Coordinator formally identified this group as the site safety short term task team (ST3).This ST3 is responsible for defining minimum IPC standards for PEPFAR-supported facilities and developing strategies for IPC implementation and monitoring.

Lessons learned: IPC priorities identified by the ST3 were added to PEPFAR's minimum program requirements and include respiratory hygiene, standard and transmission-based precautions, and healthcare worker safety such as post-exposure prophylaxis for HIV. Recommendations to support program alignment with IPC priorities were included in PEPFAR's COVID-19 guidance and in country and regional operational plan guidance. IPC was prioritized for additional COVID-19 funds received by PEPFAR; the ST3

developed recommendations to guide rational use of these funds. In addition, the ST3 developed indicators to assess adherence to IPC standards as a mandatory component of PEPFAR's facility-level quality assurance tool, a personal protective equipment forecasting calculator, and aids to prevent infections in PEPFAR-supported surgical procedures.

Conclusions/Next steps: The site safety ST3 quickly developed IPC standards for PEPFAR programs and ensured that IPC was incorporated into PEPFAR's minimum program requirements to enforce accountability across programs and facilities. Implementation of IPC standards will improve quality of care, protect healthcare workers and patients, and strengthen the resiliency of the healthcare system beyond COVID-19.

This experience highlights a cross-agency collaboration developed to rapidly respond to a critical public health need and demonstrates how PEPFAR programs can be mobilized to respond to COVID-19-like pandemics and impact health systems and health security moving forward.

PEMOE46

A pandemic over an epidemic: surveying LGBTQI+ situation during COVID-19 pandemic in Thailand

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Background: COVID-19-related mobility restrictions have devastated the lives of PLHIV and other key populations (KPs) worldwide. After Thailand's first national lockdown in April 2020, in collaboration with eight community-based organizations (CBOs), APCOM initiated the Khormoon ("Information" in Thai) project to identify post-COVID-19 lockdown health situations and the critical needs of KPs in Thailand.

Description: From September 2020 to November 2020, the Khormoon team administered a cross-sectional online survey co-designed by APCOM, the eight CBOs, and KP representatives. The 51-item questionnaire contained four dimensions: access to HIV services and information on COVID-19, socioeconomic status, mental health status, and life challenges.

We recruited participants and distributed the online survey through both websites and service facilities of all partnered organisations.

Lessons learned: The project reached 1,323 KPs across all regions of Thailand. Of all, 69% were identified as PLHIV, 82% of whom underwent antiretroviral treatment (ART). Most (90%) of the PLHIV suffered from psychological distress, while almost all respondents (93%) reported income losses with 44% being unemployed. Affording daily expenses and accessing medicine were considered the two most urgent needs (85% and 56%, Figure).

Although 80% of respondents reported receiving combination HIV prevention/treatment and information on COVID-19, the majority (66%) worried that sexual health services (eg., ART, PrEP, and PEP) could become inaccessible if COVID-19-related travel restrictions persist.

Regarding community support, 85% agreed that organisations had ensured their access to HIV/STI care during the COVID-19 lockdown with adaptive/innovative measures (eg., online consultations, 24-hour hotlines and door-to-door ART delivery).

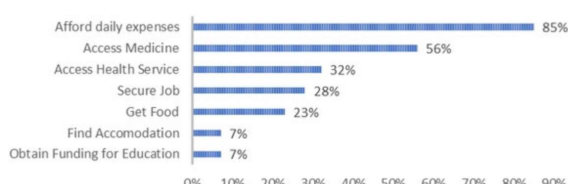

Figure.

Conclusions/Next steps:
Our Khormoon project highlights the urgent needs of KPs in Thailand, who continue requiring differentiated support to tackle socioeconomic disparities and mental distress heightened by the ongoing COVID-19 pandemic.

The findings illuminate our future projects on delivering user-centered, innovative, and comprehensive community support to people affected by HIV and COVID-19.

PEMOE47

Analyzing FY 19-21 PEPFAR PrEP uptake focusing on adolescent girls and young women and key populations

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Background: From FY 19-21, PEPFAR significantly scaled PrEP uptake, particularly for adolescent girls and young women and key populations.

Despite the impact of SARS-CoV-2 on community mobilization for, and delivery of, PrEP to these vulnerable populations, the number of individuals newly initiated on PrEP still increased across all age and sex bands from FY 19-20 and accelerated from FY 20-21 with commensurate increases in PrEP expenditures.

Description: Annual FY19-21 (October 1, 2018-September 30, 2021) PrEP expenditures and semiannual FY19-21 PrEP_NEW, the number of individuals newly enrolled on PrEP in the past reporting period, results are included for 48 PEPFAR-supported countries.

Lessons learned: From FY19-20, global PrEP uptake increased by 91% (163,452 to 312,017) while PrEP expenditures increased 112% ($16,822,939 to $35,726,992). Adolescent girls and young women drove FY 20-21 PrEP uptake. FY20-21 global PrEP uptake accelerated by 225% (312,017 to 1,015,094) and global PrEP expenditures by 189% ($35,726,992 to $103,133,294).

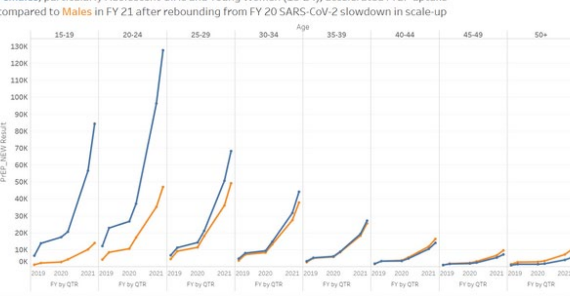

Figure.

Among key populations, female sex workers increased PrEP uptake from FY19-20 by 150% (28,018 to 69,924) and again by 185% from FY 20-21 (69,924 to 199,152). Men who have sex with men also contributed significant scale-up by 148% from FY19-20 (17,983 to 44,522) and 132% from FY20-21 (44,522 to 103,480).

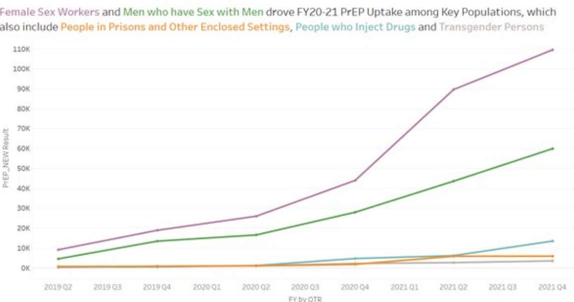

Figure.

Conclusions/Next steps: From FY19-21, PrEP uptake increased 712% from 163,452 to 1,327,111 clients on PrEP while PrEP expenditures increased 725% from $16,822,939 to $138,860,286.

Future analysis should evaluate countries with most efficient PrEP expansion by age/sex bands to determine how enabling environments to support PrEP scale-up in those countries can be replicated in other country contexts.

Legal advocacy tools and strategies

PEMOF25

Litigating against forced and coerced sterilisation in Kenya

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Background: As programs for the prevention of mother to child transmission of HIV were launched around the world, discriminatory attitudes and practices toward women living with HIV continued to emerge. There were untrue beliefs that women living with HIV could not, or should not, bear children which led to a great number of them being subjected to involuntary sterilization.

Between 2005 and 2010, there was a sustained unofficial policy that led to the forced and coerced sterilization of women.

They had several things in common. They were: living with HIV, of lower social-economic status, receiving medicine and food rations for themselves and their children, as part of programs to prevent mother to child transmission , and were threatened with withdrawal of the medical and food assistance if they did not produce evidence of permanent family planning.

They were subjected to unwanted sterilization despite the fact that science had proven that with adequate medical care and essential medication, they could bear healthy children.

Description: In 2014, KELIN assisted five of these women to file suit in court against the facilities that coerced them into undergoing forced sterilization highlighting the violations they suffered.

In their claim, they are also seeking state interventions to ensure that forced sterilization never happens again.

That litigation is still pending, now in its 8th year.

Lessons learned:

1. The factors that resulted in the vulnerability of the victims to forced sterilization must be addressed alongside litigation.
2. Litigation is a lengthy, technical and sometimes emotional process, and the likelihood of retraumatising the victims is ever-present. We must anticipate delays and the needs of the victims
3. It is only one step in the journey of redress for women who are living with consequences of forced and coerced sterilization.

Conclusions/Next steps: We are expecting the conclusion to this process in 2022. Litigation is useful to secure individual redress and social change, but does not guarantee success. We will scale up other avenues for advocacy through which women living with HIV can secure justice, including social advocacy programmes to increase education about living with HIV, economic empowerment, and availability of medical and psychosocial support.

PEMOF26

Youth-led monitoring for accountability in the HIV response

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Background: Youth-led data generation remains an underfunded yet potentially key aspect of the HIV response for young people in all our diversity. To address this, a youth-led monitoring tool (#UPROOT scorecard) was developed with youth-led organisations to measure progress on key issues that impact young people in the context of HIV at the country level.

From 2017-2020, The PACT, with support from UNAIDS, implemented the scorecard in 16 countries across five regions (LAC, EECA, WCA, ESA, AP). Youth-generated data was used to catalyse targeted advocacy at the country level to improve the legal, policy, and social landscape for young people.

Description: Qualitative and quantitative data are gathered to create a youth-generated snapshot of national HIV responses.

Data from the NCPI, GAM, and national databases are analysed and coupled with a participatory consensus-based exercise to determine the impact of laws, policies, and the effects of stigma and discrimination on young people in all their diversity.

Lessons learned: Young people reported that they felt empowered throughout the monitoring process.

National profiles that identify which areas of the HIV response for young people require more attention and where advocacy should be focused were created

Areas for improvement included putting more emphasis on supporting advocacy plans after the scorecard creation, and managing the consensus process to ensure a balance report of the situation in the country.

Funded by UNAIDS Technical Support Mechanism and managed globally by Y+ Global with support from The PACT, the revised methodology will be conducted in 7 countries in 2022. Results from the current implementation in 7 countries will be available by June 2022.

Conclusions/Next steps: Youth-led data generation and monitoring have the potential to more accurately represent the views of young people than mechanisms that are not designed by and for youth but that include them. Data are not often disaggregated enough for young people and do not focus on their specific needs, therefore the youth-led approach of the #UPROOT scorecard allows for young people to have a say on our experience of the HIV response. Scaling up of youth-led monitoring can help identify priority action areas for tackling the HIV epidemic in young people.

Stigma and key populations

PEMOF27

PLWH Stigma Index 2.0. in the countries of Central Asia

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Background: The purpose of the study is to obtain information about the problems of PLHIV related to stigmatization, discrimination and violation of their rights.

This abstract presents a comparison of study data in three countries - Kazakhstan, Tajikistan, Kyrgyzstan. These countries share the same epidemic history, HIV laws, education and public opinion. The main issues of stigma and discrimination here affect women and key populations.

Methods: The methodology of this study is based on the method developed and recommended by the GNP+, ICW, and the Joint United Nations Program on HIV/AIDS (UNAIDS).

TAJIKISTAN	KYRGYZSTAN	KAZAKHSTAN
2021	2020	2021
N=1100 PLHIV	N=664 PLHIV	N=1143 PLHIV
Dushanbe city, Khatlon region, Sughd region, GBAO, districts of republican subordination	Bishkek, Osh, Jalal-Abad region, Osh region, Chui region, Talas region	Cities of Nur-Sultan, Almaty, Pavlodar, Karaganda, Kostanay, Western, Eastern, Northern Kazakhstan, Turkestan region (Shymkent)
Venue-based sampling and chain-restricted sampling.	Non-random sample.	Venue-based sampling and chain-restricted sampling.

Table 1.

Results: Almost all PLHIV tend to hide their status from other people. About two-thirds feel devalued because of their status and many (71%) feel ashamed about it.

A large majority (87%) find it difficult to share their status with others. Women are verbally reprimanded 6 times more often than men. The majority of PLHIV are not aware of the existence of laws protecting their rights in the country, only less than a third declared their knowledge of such laws. CPs face higher levels of stigma and discrimination for reasons other than HIV.

	TAJIKISTAN	KYRGYZSTAN	KAZAKHSTAN
Woman	51,8%	44,5%	41,8%
Man	47,4%	54,6%	56,4%
Transgender	0,7% (8)	4	1% (11)
Age	30-49 years - 75%	30-50 years - 76,4%	40,2 years
Employment	68% women unemployed	Only one in six PLHIV had a full-time job.	29.05% do not work anywhere
Education	60% Secondary education	75% have no profession	49.34% Secondary education
Satisfying basic needs	Only 1/3 of those surveyed reported being able to meet their own needs most of the time	Only 13.1% of respondents indicated that they were able to basically meet their food, clothing and housing needs in the last 12 months.	46.54% can sometimes contain their basic requirements
HIV negative partners	36%	52,5%	44,25%

Table 2.

Oral abstracts

Poster exhibition

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Conclusions: In all three countries, there is a high level of internalized stigma. There is low legal literacy among PLHIV. Stigma and discrimination not related to HIV is quite high. There is a problem with the confidentiality of diagnosis and informed consent in the provision of medical services. It is necessary to change a number of legal acts.

PEMOF28

Technical Support for PLHIV leadership in implementation of the PLHIV Stigma Index 2.0

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Background: In 2022, stigma is understood as a fundamental barrier to ending the HIV pandemic by 2030, in just 8 years. The People Living with HIV (PLHIV) Stigma Index 2.0 (SI) represents an instrument to monitor HIV-related and intersectional stigma affecting PLHIV including key populations (KP). Standardizing the instrument and implementation of the SI facilitates measurement of progress in stigma mitigation over time and across geographies. The leadership of PLHIV in SI implementation and their ownership of the results is critically important and PLHIV networks need financial and/or technical support (TS) to implement.

Description: Since 2020, the International Partnership for SI (GNP+, ICW, John Hopkins University, and UNAIDS), funded through the UNAIDS Technical Support Mechanism, provides TS covering PLHIV leadership, partnership building and advocacy, as well as research protocol development, data collection, analysis, and report writing. Four data analysis toolkits and guidelines have been developed to strengthen implementation steps. TS has been provided to support PLHIV-led implementations in over forty countries, eight of which have finalized implementations. Non-negotiables of implementation emphasize PLHIV leadership, inclusion of all KPs living with HIV as respondents, and overall compliance with the approved methodology.

Lessons learned: The measurement and interventions focused on stigma remain controversial in many settings, resulting in challenges including leadership of PLHIV contested by national stakeholders, and the criminalization of KPs requiring coordinated efforts of communities, donors, and technical partners to safeguard the engagement of KPs as respondents. In response, we have learned that tailored technical support provision, capacity-building exercises for PLHIV-led organizations, and the clarification of the non-negotiables from the outset, can ensure quality implementation of the SI. Moreover, iteration of the SI has uncovered opportunities to enhance TS leading to the development of toolkits aimed at improving data analysis, report writing, and advocacy.

Conclusions/Next steps: Quality and long-term technical support provision, based on a partnership between communities, academia, and technical agencies create a strong foundation for community-led monitoring. Data from the stigma index 2.0 can inform advocacy approaches, policy, and community leadership—all of which are central in improving HIV outcomes and ultimately, responding to the HIV pandemic.

Discrimination and key populations

PEMOF29

Increased frequency of experiencing multiple forms of discrimination in healthcare settings during the COVID-19 pandemic among African, Caribbean, and Black (ACB) people across Canada

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Background: In Canada, racialized communities, including African, Caribbean, and Black (ACB) people, are disproportionately affected by HIV and COVID-19. Experiencing multiple forms of discrimination (e.g., racism, sexism, genderism, ageism, classism, ableism) in healthcare settings compromises care engagement and health outcomes. Among a national sample of ACB people, we examined changes in experiencing discrimination in healthcare settings during the COVID-19 pandemic.

Methods: Cross-sectional data were collected using an online survey co-led by the Public Health Agency of Canada, University of Ottawa, and ACB community leaders and researchers to examine COVID-19 impacts on ACB people aged 18+ (May 25-July 12, 2021). Participants reported on

experiences of discrimination when accessing healthcare services in the year prior to and during the pandemic. Descriptive statistics are provided.

Results: The 1,556 participants were diverse by age, ethnic identity (Black African (63.2%), Black Caribbean (28.3%), Black Indigenous or Black Canadian (7.3%)), gender (transgender (3.0%)), and sexual orientation (11.9% identified as LGB). Among those who accessed healthcare in the year prior to COVID-19 (n=982), participants reported that they "Often" (10.2%), "Sometimes" (32.8%), or "Rarely" (19.1%) experienced discrimination. Among those who also accessed healthcare during COVID-19 (n=902), 25.2% reported increased frequency of experienced discrimination (9.2% decreased).

During the pandemic, participants reported an increase in discrimination by race (including anti-Black racism) (31.2% reported an increase), economic status (18.7%), age (18.1%), (dis)ability (17.0%), substance use (15.9%), gender (15.3%), and sexual orientation (10.8%). Between 2.9%-13.5% reported a decrease in various forms of discrimination.

Among participants living with HIV (10.3%), 26.7% cited concerns about experiencing stigma, discrimination, or violence as barriers to accessing HIV services during the pandemic, with 20.0% reporting fear of experiencing racism.

Conclusions: A sizable proportion of ACB people in Canada often/sometimes experience discrimination while accessing healthcare services, and for many, discriminatory experiences increased during the COVID-19 pandemic. One-fifth of survey participants living with HIV cited racism as a barrier to accessing HIV services. In partnership with communities, concerted efforts are needed to address multiple forms of discrimination in healthcare settings to improve care engagement and health equity among ACB communities during COVID-19 and beyond.

Punitive laws and enforcement practices directed at or impacting on key populations)

PEMOF30

Have mandatory testing laws become a serious threat to HIV responses? Lessons learned from a civil society advocacy campaign in Australia

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Background: Since 2015, a coalition of civil society organisations has advocated against the introduction of new mandatory testing laws in Australia. Proposed by police unions, mandatory testing laws have been formally introduced by several state governments. They allow individuals to be tested for HIV and other blood borne viruses (BBV) without consent, including after low or no risk exposures (e.g. to saliva).

Description: The "Stop Mandatory Testing" campaign was conducted by a broad coalition of civil society organisations, including HIV and LGBTQ+ organisations, medical associations, legal aid organisations, health worker unions and public health researchers.

Aimed at convincing legislators to withdraw or amend the proposed laws, the campaign addressed lobbying efforts by police unions seeking the introduction of mandatory testing in jurisdictions across the country, including Australia's most populous state of New South Wales.

The campaign centred on the provision of scientific and empirical evidence and personal testimony to convince Australian decision-makers that compulsory testing violated rights, increased stigma and fear, could be misused punitively, and was proposed for situations that carried little to no risk of transmission (e.g., spitting).

The campaign highlighted that mandatory testing was in conflict with Australia's rights-based response to HIV/BBV, would hinder testing and stigma reduction targets, and that no occupational HIV transmission had ever been recorded in a police officer.

Strategies evolved over the course of the campaign and included the production of reports, submissions, appearances at parliamentary inquiries, a campaign website, media and targeted advertising.

Lessons learned: The failure of the campaign to stop mandatory testing laws offers a stark warning about the risk of backsliding and fracturing of HIV responses, and that evidence may be insufficient to prevent regressive laws. This failure offers important lessons for civil society, including the need for stronger influence over policymakers, tactics to generate public attention or shame lawmakers, and strategic multi-jurisdiction lobbying.

Conclusions/Next steps: Considering how evidence was overlooked and the threats posed by growing police powers, we need to consider renewed political and intersectional alliances, including with political parties and organisations and communities affected by police violence. After forty years of HIV responses, the need for community mobilisation remains.

Investing in regional HIV programmes and regional key population movements

PEMOF31

Dos and don'ts for community-led HIV programming in challenging contexts in Eastern Europe and Central Asia: lessons learned for funders and implementers

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Background: New HIV infections and AIDS-related deaths are growing faster in Eastern Europe and Central Asia (EECA) than any other region. The epidemic is concentrated among Key Populations (KPs), who are widely marginalised. Since 2017, international HIV funding in EECA has reduced significantly.

Elton John AIDS Foundation (EJAF) implemented the EECAKPs Fund from 2018-2021 to increase KPs' access to innovative HIV services; reduce stigma and discrimination; and collate best practices. Resources were prioritised in settings with large epidemic burdens where NGOs cannot access alternative resources.

Description: Nineteen local NGO-led projects provided direct services to 149,263 people from KP communities, including 100,302 HIV tests, and initiated 8,924 PLHIV on treatment. EJAF commissioned end-of-project mixed-method evaluations of the 12 largest projects in 2021 to assess results and inform future intervention design.

Lessons learned: Marginalisation of KPs in EECA means earning trust is crucial to programmatic success. To build clients' trust:

1. Engage clients as staff and volunteers to connect with the hardest-to-reach; projects fostering collaboration between effective peer-led NGOs and government institutions also reduce stigma;
2. Adapt harm reduction services for new stimulant users to make services relevant;
3. Integrate with services that resonate with communities' needs beyond HIV.

Implementers most effectively improve HIV outcomes by:

1. Proactively reaching hard-to-reach sub-populations, such as synthetic stimulant users, women who use drugs, and MSM practicing chemsex. This correlates with higher testing yields;
2. Providing innovative entry points, including online and home-based services. This was particularly productive during COVID-19;
3. Ensuring all staff, including in remote implementation sites, can access mental health support to prevent burnout.

To ensure sustainability:

1. Secure cost-share from government;
2. Mobilise local private donations, proven feasible even for locally controversial causes;
3. Partner with diverse government agencies, including law enforcement, proven an unlikely success;
4. Strive for system changes in initial project design;
5. Bake NGO capacity development into project design so that it happens intentionally.

Conclusions/Next steps: With the HIV epidemic growing in EECA and limited domestic resources allocated to KPs, expanded international donor support is urgently needed.

The EECAKPs Fund shows effective foreign-funded community-led HIV services for KPs in challenging EECA environments are possible, if programmes intentionally earn communities' trust, optimise service modalities, and bake in sustainability approaches.

Ethical aspects and standards in research (including clinical trials)

PEMOF32

A digital crowdsourcing open call on adolescent and young adult consent for HIV research participation in low- and middle-income countries

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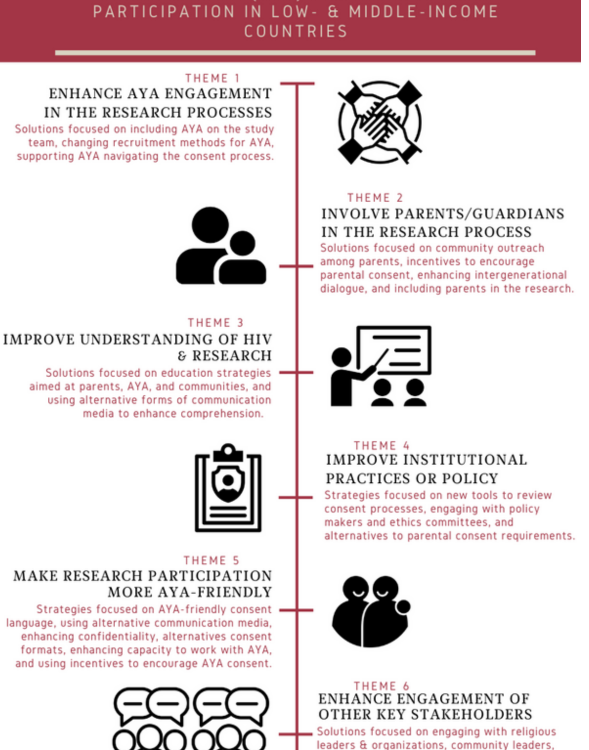
Background: Social, ethical and legal barriers to consent for HIV research participation among adolescents and young adults (AYA; 10-24 years old) can hinder AYA inclusion in research. Engaging AYA and other stakeholders in identifying solutions to these barriers is especially important in low- and middle-income countries (LMICs), where youth face high HIV morbidity and mortality.

Methods: A digital crowdsourcing open call for ideas to improve AYA consent in LMIC HIV research was held from August 23 – October 15, 2021. Crowdsourcing involves having a group contribute creative solutions to a problem, then sharing the results. Participation was open to anyone living or working in LMICs. Email and social media were used to reach AYA, parents, HIV researchers, community organizers, and ethicists. Submissions were scored on a 1-10 scale by three independent judges for clarity, relevance, feasibility, innovation, and potential impact, with $2000 USD for finalist prizes. Participants' demographic data were collected, and submissions were qualitatively analyzed for emergent themes in the proposed solutions.
Results: Of 110 total submissions, 65 submissions from 10 LMICs were eligible for judging per open call criteria (described a solution to improve AYA consent). Of these, 25 submissions scored 6/10 or greater. Fifty-eight participants submitted the 65 eligible submissions, including 30 (51.7%) participants age 18-24 years old, 26 (44.8%) cisgender women, and 5 (8.6%) members of key populations (e.g. men who have sex with men). Using thematic analysis, seven main themes were identified for solutions to improve AYA consent processes, including ways to enhance AYA and parental research engagement, increase awareness of HIV and research processes, and make research participation more AYA-friendly (see infographic).



Conclusions: Improving AYA consent processes in HIV research will require creative, community- and AYA-oriented solutions. Open calls engaging AYA and other stakeholders in LMICs on the topic of consent can identify promising ideas for developing practical guidance.

PEMOF35

Working apart and together, across and between: lessons learned from an Indigenous and non-Indigenous organizational partnership in Indigenous harm reduction research during the COVID-19 pandemic

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Background: In Canada, Indigenous (First Nation, Inuit and Metis) harm reduction (IHR) programs, policies, and practices center holistic understandings of health and well-being. Relational care and connections to kin, culture, and community are foundational in responding to disproportionate impacts of HIV, the drug poisoning epidemic, and COVID-19 on Indigenous peoples. CAAN (Communities, Alliances & Networks) and the Dr. Peter AIDS Foundation (DPAF) have brought together decades of experience in community-based research, harm reduction and knowledge translation to identify:
1. How IHR programming for Indigenous Peoples has been impacted by COVID-19,
2. Successful adaptations that frontline organizations in providing IHR programming, and
3. Resources to address service gaps that impact Indigenous Peoples.
Description: To commemorate our partnership, First Nation Elder James Quatell joined the organizations through ceremony. An exchange of copper symbolized our commitment to working towards better health outcomes for Indigenous Peoples. Framed as a one-year environmental scan, our national project is informed by an iterative and innovative state-of-the-art literature review; sharing circles and interviews with key informants. Our outputs include a Wise Practices Asset Map of culturally responsive IHR services which will form the foundation of new programming co-led by CAAN and DPAF.
Lessons learned: IHR is a critical part of the response to the HIV and Opioid epidemics in Canada. By beginning our partnership with a Copper ceremony, we made an agreement with each other and the communities that we work with, rooted in Indigenous Ways of Knowing and Doing. For our team of Indigenous and non-Indigenous researchers, this led us to adapt our research processes to mirror the context of working in a global pandemic. This included: rethinking our sequence of data collection

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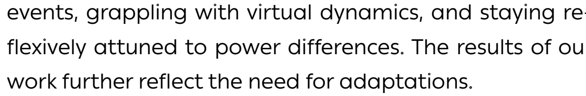

events, grappling with virtual dynamics, and staying reflexively attuned to power differences. The results of our work further reflect the need for adaptations.

Conclusions/Next steps: Building meaningful research partnerships is allyship in action between Indigenous and non-Indigenous researchers, service providers, and communities. Together we are leveraging the wisdom and relationships developed over decades of HIV and harm reduction response to strategically contribute to an evolving evidence base, and improve services over time by ensuring they are accessible, people-centered, and inclusive.

COVID-19 and politics, human rights, ethics or policy

PEMOF33

The long tail of warp speed: the politics of HIV science and the role of the AIDS pandemic in generating the COVID-19 scientific response

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Background: Humanity's control of the AIDS pandemic in the absence of a viable vaccine is one of the 20th century's greatest scientific achievements. The success of that effort is consequential in ways that go far beyond HIV itself. In fact, it is because of the decades-long effort to control AIDS that humanity is, two years into the pandemic, equipped with an assortment of vaccines, antiviral treatments, and public health protocols that have the power to stop people from dying.

Description: The profound impact of HIV science--both individual scientists and the scientific organizations created to control the AIDS pandemic--is largely unknown. Through qualitative interviews with leading HIV scientists (*n*= 29), this presentation will explore the history of HIV science and describe the key ways that this has intersected with, and driven, the scientific response to COVID-19.

Lessons learned: The scientists interviewed described three pathways by which HIV science generated the COVID-19 response. First, decades of failure on an HIV vaccine contributed to an expansion of the field of immunology, which directly led to the development and testing of mRNA vaccines. Second, the „scientific-industrial complex" created to end the AIDS pandemic—parts of which were rebranded as Operation Warp Speed, under the direction of the AIDS Clinical Trial Group—were critical to the development of antivirals and other therapies to treat COVID-19. Third, the strategy of using HIV antiviral medicines as ‚Treatment as Prevention' to end the AIDS pandemicis increasingly being considered as a way to control the impact of SARS-CoV-2 variants with escape mutations that threaten the effectiveness of vaccines.

Conclusions/Next steps: While the public discourse suggests that Operation Warp Speed brought COVID-19 science from nothing to vaccines within a matter of months, it is the continuous decades-long public funding devoted to tackling the AIDS pandemic that powered the scientific response to SARS-CoV-2. Public funding for monitoring of pandemic threats, and the continued support of scientific efforts to end the AIDS pandemic, are the most critical priority areas to protect humanity from current and future opportunistic pathogens.

PEMOF36

Assessing the impact of COVID 19 on the implementation of the HIV workplace policy in (5) organizations

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Background: The National HIV and AIDS workplace policy revision in 2012 has been disseminated to most organizations to serve as a guide in the formulation of individual organizational HIV workplace policies and programs. Since the outbreak of COVID 19 epidemic, there has not been a comprehensive study to assess the implementation of these HIV workplace policies in respective organizations. The objective are to create awareness, reduce stigma and discrimination, promote healthy and safe working environment, prevent transmission of HIV and ensure issues at the not relegated to the background amidst COVID 19

Description: The study sought to assess the knowledge of employees on their HIV workplace policy and COVID 19 Protocols, the attitudes of employees towards HIV/COVID positive colleagues, and assess the level of implementation of HIV workplace policies in organizations.

A formative research was conducted as the baseline study, and the data collection used was a semi-structured questionnaire a combination of open-ended and close –ended. An online response system was created to reach employees that were not at work due to COVID 19 staff rotation policy. Five organizations were to participate in the study. A cross-section of ten (10) employees comprising managers, senior, and junior staff were sampled to partake in the study. In total fifty (50) employees were interviewed.

Lessons learned: The result showed that, 70% of respondent had received updated information about COVID 19 and not HIV in the past 6 months, organizations had visible COVID 19 preventive informative posters and none on HIV at the workplace, 78% of respondent were more comfortable engaging with colleagues who had tested positive to COVID 19 than HIV positive, COVID 19 preventive commodities like hand sanitizers, facemasks were made available to employees with no provision made for HIV preventive commodity like condoms at the workplace,

COVID 19 referral centres have been created at the workplace with no referral point for HIV.

Conclusions/Next steps:

- The results shows that little importance is given to HIV amidst COVID 19 at the workplace therefore, the Ghana AIDS Commission must strengthen corporate management capacities in implementing HIV and AIDS workplace policies.
- Monitor the implementation of the workplace policy according national guidelines.

Impact of COVID-19 on HIV risk and HIV care among refugees, migrants, asylum seekers and internally displaced persons

PEMOF34

Post COVID increase of HIV prevalence among rural migrant population and women in India – Need to re-design migrant / rural interventions

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Background: AIDS Healthcare Foundation – India implements community based rapid HIV testing across ten states. The objective of the program is early detection and linkage to treatment and to compliment the efforts of National Program in reaching 95- 95 -95. During COVID lockdown in 2020 large numbers of male migrant labourers from Delhi and Mumbai (destination districts) returned to their native villages (source districts) due to loss of employment during lockdown.

Description: This operational study considered four source migration districts from where male migrants would travel to destination districts for employment. The Community based rapid HIV testing data (gender disaggregated) from 2019 to 2021 was analysed. The objective of the study was to compare the HIV sero positivity before and during Covid between men and women and to revisit the risk profile of the newly identified cases.

Lessons learned: The results showed that HIV sero-positivity in 2019, prior to COVID-19, in the source districts among men and women was 0.8% and 0.6% respectively. During late 2020 and 2021, when the restrictions were eased and testing resumed, the HIV sero prevalence among men was 1.3% and women 1.1%.

Based on this evidence a quick profile of the newly identified men and women was analysed, revealing that these women were wives/partners of male migrants who returned from destination districts. Most women (87%) have children and are between 19 – 30 years old. 93% of women had completed primary education only and have no knowledge about HIV.A total of 1055 (93%) of all identified HIV positives were linked to the Government ART centre for treatment and follow-up. The project initiated partner testing and as a result these women were identified.

Conclusions/Next steps: The study recommends increased access to HIV prevention, testing and treatment services to be made available at source district and FOCUS on strategies like Index Testing and Partner testing. The National program needs to re-engage and re-design rural interventions for migrants and women, especially for identifying hidden populations and linking them to care and treatment in the context of Covid 19 pandemic.

Gender equity and diversity

PEMOF37

Legal gender recognition policy briefs (Botswana and Lesotho): a guide for inclusion

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Background: In 2019, in partnership with LEGABIBO, Matrix, and WILSA, SALC developed policy briefs to inform procedures on legal gender recognition and change of gender markers for Botswana and Lesotho Governments. The two countries laws require official identification documents that reflect one's name and gender identity to access services. The states issued official identification documents are used in daily life including accessing health. Transgender and gender non-conforming persons are unable to obtain identity documents that match their gender identity and expression.

Description: The policy briefs were developed to support Governments with guidance on the interpretation of legal gender recognition. The research was informed by community consultations with members of the transgender in the two countries where participants shared daily experiences on the impacts of not possessing official identification documents. An analysis of international laws and principles that guide legal gender recognition, case lawand domestic laws were reviewed.

Lessons learned: Transgender and gender non-conforming persons are unable to change documents to reflect their gender identity. In Botswana transgender, persons cannot change their gender marker without a court order. When they present identity documents that do not

reflect their identity, they experience violence stigma and discrimination. In Lesotho, legal gender recognition is not prohibited, but trans people still face barriers. Legal gender recognition is possible in Botswana because people can change first names and surnames. The National Registration Act allows for particulars to be changed if "material change" has occurred.

Conclusions/Next steps: States can takelegislative and administrative steps to ensure that there are procedures for legal gender recognition based on self-determination. Lesotho legal frameworks recognise gender; therefore, the terms sex/gender should continue to be used interchangeably to accommodate transgender and gender non-conforming people.

In Botswana, the Government must develop regulations and procedures to change the gender marker based on the principles of self-determination.

E-Posters

Track A - Basic and translational science

Viral origins, evolution and diversity

EPA001

Single-cell sequencing of simian immunodeficiency virus DNA provides improved resolution of reservoir viral evolution and evidence of selection for long-range co-evolution

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Background: During the course of infection, human immunodeficiency virus (HIV) maintains a stably integrated and therapy-impervious reservoir of replication-competent proviruses within the host genome. Previous methods have attempted to improve HIV reservoir characterization, but lack a more complete and reliable resolution of the intra-host evolution HIV undergoes and its contribution of reservoir cells to viral rebound.
Further, currently identified co-evolving sites that may provide support during immune and/or drug selection and improve overall fitness have been strictly analyzed in sole portions of the genome rather than as a whole.
Methods: A novel single-cell sequencing platform (scDNA-seq) was optimized for sequencing of proviral and host DNA using peripheral blood mononuclear cells (PBMCs) and lymph nodes (LN) from a treatment-interrupted HIV animal model. The scDNA-seq approach comprised of targeted amplicons covering the full S[simian]IV genome, in addition to a region of the Rhesus macaque TRIM5a gene to verify platform performance. ScDNA-seq was performed on samples taken from three animals either during therapy (cART) or after (post-cART).
Phylogenetic analysis to assess signal improvement using scDNA-seq-acquired near full-length (NFL) genomes contrasted with envelope (*env*) region alone (current gold standard), was performed on collective SIV^{+} cells for individual animals with gp120 sequence data.
Additionally, a Bayesian graphical model (BGM) of covariation was utilized to evaluate interactions among sites in the SIV genome and their conditional dependence.
Results: Consensus reconstruction across all samples resulted in 1,127 SIV genomes. Phylogenetic likelihood mapping displayed significant increases in phylogenetic resolution for scDNA-seq NFL genomes when analyzed against their *env*regions, indicated by a 10-26% reduction in unresolved phylogenies.
Consequently, statistically supported branching events more than doubled for NFL genomes compared to *env*. BGM analysis revealed 12 intragenic sites shared among >1 animal, as well as several instances of intergenic co-evolution, showcasing the existence of long-range interactions. More than 50% of sites with conditional dependence (n=7) were clustered between *env*and accessory genes.
Conclusions: Taken together, adaptation of this technology to viral studies provides a mechanism for acquiring enhanced confidence in phylogenetic inferences of viral evolution, and an avenue for discovering how genes may rely on each other during the course of infection/treatment.

HIV biology (entry, replicative cycle, transcriptional expression and regulation)

EPA002

Non-canonical role of Hsp90 isoforms in HIV-1 infection

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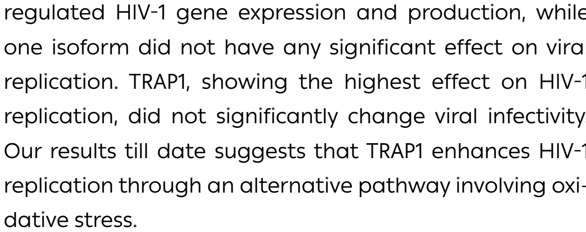
Background: Hsp90 (Heat shock protein, 90kDa) is one of the most abundant proteins in eukaryotic cells which performs a diverse range of functions due to the presence of five compartmentalized isoforms in eukaryotes. Hsp90 is well known to participate in HIV-1 replication and reactivation from latency. The pan-isoform Hsp90 inhibitors are successful in suppressing HIV-1 infection and thus Hsp90 has been suggested to be a possible host factor target for HIV-1 inhibition. While some of these isoforms exert discrete effects in other viral infections, their individual roles in HIV-1 infection remains to be studied.
Therefore, it will be interesting to also explore specific roles of Hsp90 isoforms in HIV-1 life cycle, an aspect we have tried to address in the present study.
Methods: Modulation of Hsp90 isoforms during HIV-1 infection was studied using Realtime-PCR. Over-expression and silencing of these Hsp90 isoforms were performed to test their effect on HIV-1 replication using luciferase assay and $p24^{gag}$ ELISA, and on viral infectivity by β-galactosidase assay. Since mitochondrial isoform TRAP1 showed the most significant effect on viral replication, different oxidative stress indicators were studied following HIV-1 infection to unravel further mechanism.
Results: Profiling studies revealed very low levels of one Hsp90 isoform in T cell lines, while the remaining four isoforms are differentially modulated during HIV-1 infection. Therefore, these were taken for further studies. With respect to functional relevance, three isoforms positively



regulated HIV-1 gene expression and production, while one isoform did not have any significant effect on viral replication. TRAP1, showing the highest effect on HIV-1 replication, did not significantly change viral infectivity. Our results till date suggests that TRAP1 enhances HIV-1 replication through an alternative pathway involving oxidative stress.

Conclusions: Our study indicates the functional specificity of Hsp90 isoforms during HIV-1 infection. While earlier studies have shown that Hsp90 enhances HIV-1 transcription by recruiting and stabilizing the host transcription machinery, we have shown that at least one isoform can also enhance viral replication through an alternative mechanism. These findings might help to develop novel therapeutic strategies that can target specific Hsp90 isoforms involved in HIV-1 pathogenesis.

EPA003

Characterization of novel candidate factors impacting HIV life cycle

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Background: Throughout replication, HIV interacts with host factors that can either promote (HIV dependency factors, HDF) or inhibit (HIV Inhibitory factors, HIF) viral replication. The success of HIV replication relies on the balance between HDF and HIF. Epitranscriptomics (i.e. the study of RNA modifications such as N6-methyladenosine (m^6A) and 5-methylcytosine (m^5C) methylations) provides a new layer of gene regulation and represents an additional opportunity to uncover novel cellular players involved in HIV life cycle.

Methods: We characterized the m^6A and m^5C epitranscriptomic landscape of CD4+ SupT1 cells, infected or not with an HIV-based vector. At 12h, 24h and 36h post-infection, we identified differentially methylated (DM) transcripts through bioinformatic analysis and selected candidates for further investigation using CRISPR-Cas9-mediated knock out (KO) in Jurkat cells and assessment of their impact on HIV replication.

Results: We identified 59 m^6A and 14 m^5C hypermethylated transcripts already at 12h post-infection and maintaining their modification over time (at 24h and 36h), potentially involved in the cellular response to HIV, as well as 220 m^6A and 48 m^5C present only at later stages (24h and 36h), potentially due to HIV subversion of the cell. Upon ranking according to statistical significance, we selected the top 10 DM candidates for further analysis.

Analysis of selected candidates showed an enrichment on GTPases from the GIMAP or the RGPD family. We successfully generated and validated KO Jurkat cell lines for each candidate to investigate their impact on HIV replication and evaluate their role as putative HDF/HIF.

Conclusions: Because they affect the fate of RNA molecules (such as splicing, stability or translation), epitranscriptomic modifications play an important role in cell functioning, which can be exploited by the virus to promote its own replication.

As with transcriptomics, epitranscriptomic analyses represent a new opportunity to identify novel actors modulating HIV replication, thereby improving current understanding of HIV biology and potentially providing an array of new therapeutic targets.

EPA004

Single cell imaging corroborates the link between HIV integration and transcription

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Background: Antiretrovirals fail to cure HIV infection since latent provirus resides in long-lived reservoirs, rebounding whenever therapy is discontinued. The mechanisms underlying HIV latency are complex whereby the possible link between integration site selection and the transcriptional state of the provirus is poorly understood. HIV integration is targeted towards active chromatin by the direct interaction with a host protein, LEDGF/p75. Small molecules, referred to as LEDGINs, inhibit the LEDGF/p75-integrase (IN) interaction and shift integration out of active genes resulting in residual provirus that is more latent.

Methods: We have optimized a branched DNA imaging method for simultaneous detection of viral DNA and RNA in single cells.

We investigated how LEDGIN treatment affects the location, transcription and reactivation of the provirus in cell lines and primary cells. LEDGIN CX014442 was tested and compared to equivalent concentrations of raltegravir, a clinically approved IN strand transfer inhibitor.

After infection of the cells in the presence of the compounds, the cells were kept in culture to allow silencing of the viral gene expression and were reactivated on day 7 (PBMCs) or 10 (cell lines) post infection.

Results: LEDGINs inhibited HIV infection, as shown by a decrease in the number of vDNA spots per cell.

Furthermore, the 3D nuclear location of the residual provirus after LEDGIN treatment was shifted towards the inner nucleus. LEDGIN-mediated retargeting hampered both the baseline transcriptional state and transcriptional reactivation of the provirus, as shown by a decrease in the number of vRNA spots per cell.

LEDGIN treatment reduced the vRNA expression per residual copy. Since RAL failed to reduce HIV transcription and reactivation, this effect is not merely the result of reduced infectivity.

At a higher concentration of LEDGINs, an increase in the number of vDNA spots per cell was observed in primary cells. This may reflect a positive selection of deep-latent provirus after LEDGIN treatment.
Conclusions: Retargeting integration with LEDGINs shifted the 3D location, reduced transcription and hampered reactivation of the provirus. These results corroborate the impact of integration site selection on the transcriptional state of the provirus and support block-and-lock cure strategies in which the latent reservoir is permanently silenced after retargeting.

EPA005

Barriers that limit cell-free HIV-1 entry into macrophages are overcome after cell-cell fusion with infected T cells

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Background: It is increasingly recognized that macrophages (MΦ) are involved in the dissemination and persistence of HIV-1. In persons living with HIV-1, infected MΦ are found in a wide range of lymphoid and non-lymphoid tissues. Paradoxically, cellular tropism assays indicated that HIV-1 isolates are T-tropic and only rarely M-tropic, most often due to inefficient viral entry into MΦ. However, these tropism assays, because they use cell-free viral particles, might not reflect all modes of MΦ infection *in vivo*, in particular through cell-to-cell viral transfer.
Here, we investigated whether virus isolates, previously characterized as non-M-tropic viruses in cell-free infection assays, could efficiently infect MΦ through cell-cell fusion with infected CD4+ T cells, a new mode of infection of myeloid cells we recently identified.
Methods: We investigated the capacity of a panel of CCR5- and/or CXCR4-using Env-pseudotyped viruses and infectious molecular clones to infect MΦ by a cell-free mode or through viral transfer from infected CD4+ Jurkat T cells. Envs representative of the different stages of HIV-1 infection were used, including transmitted/founder Envs known to be non-M-tropic.
Results: Single-round infection and virus-cell fusion assays showed that most of these viruses in the form of cell-free particles are inefficient to enter MΦ, whereas they can effectively infect primary CD4+ T cells.
In contrast, all viruses were efficiently transferred to MΦ after Env-dependent cell-cell fusion of MΦ with infected CD4+ T cells, ultimately leading in most cases to productively infected multinucleated giant cells. These results suggested that MΦ infection through cell-cell fusion with infected T cells overcome barriers that normally restrict entry of cell-free viruses into MΦ. In line with this, formation of infected T cell/MΦ conjugates enhanced interactions between Env and CD4 and CCR5, rendering viral entry into MΦ less dependent on expression levels of those receptors.
Conclusions: These data suggest that M-tropism of HIV-1 is more widespread than initially thought based on cellular tropism assays. They also suggest that MΦ infection may be facilitated in CD4+ T cell rich tissues. These data renew our understanding of the role of MΦ in HIV-1 transmission and pathogenesis and the formation of tissue reservoirs.

Viral fitness, persistence and resistance

EPA006

Consequences of HIV-1 Gag-protease driven replication capacity for cellular inflammation and HIV-1 cell-to-cell transmission

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Background: The replication capacity (RC) of the infecting virus strains impacts the pathogenesis and disease progression of HIV/AIDS. Higher RC has been associated with greater viral loads and faster disease progression in the absence of therapy, whereas in some circumstances, lower RC viruses may be selectively favored for transmission. Understanding the underlying mechanisms of spread of viruses with variable RCs will inform novel anti-HIV interventions.
We hypothesized that viruses differ according to their RC in their ability to modulate cellular metabolism or induce inflammation. Moreover, we postulated that RC influences viral capacity for cell-to-cell spread.
Methods: Chimeric viruses containing patient-derived Gag-protease amplicons from subtypes B and C were constructed in the NL4-3 backbone (n=29). Viral RC was determined using a GFP-reporter cell line assay, the ability to induce diverse cytokines production in GXR cells was assessed using Luminex and capacity for cell-to-cell spread as well as cellular glucose and lipid uptake was measured by flow cytometry.

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Results: The RC of the chimeric virus correlated with the amount of cell-to-cell spread at 24 and 48 hours (p=0.02, r=0.7). Also, high RC variants induced significantly higher amounts of IL-7, PDGF-bb, FGF-basic and IL-1b in GXR cells compared to low RC variants (all p<0.05). While subtype B infections were associated with higher production of IL-7 and PDGF-bb (both p=0.03) than subtype C infections, higher IL-4 (p=0.05) and IL-8 (p=0.0006) production was a signature of subtype C infections.

Moreover, glucose uptake was higher in HIV-infected cells compared to bystander cells (p=0.0002), but similar for infections propagated by either low or high RC viruses. Fatty acid uptake was also high in the infected cells regardless of the RC of the infecting virus.

Conclusions: These results indicate that virus RC positively correlates with capacity for cell-to-cell spread and ability to induce proinflammatory cytokines in T cells. Further, the data highlight potential subtype-specific differences in the induction of soluble mediators during HIV infection. Lastly, the results also show that HIV infection modulates the metabolic profile of infected T cells regardless of RC. These data have implications for understanding the mechanisms underlying differential clinical outcomes by viruses with variable RCs.

EPA007

Immune correlates of cell-associated HIV RNA levels in infected individuals undergoing long-term antiretroviral therapy

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Background: Chronic low-level immune activation in people living with HIV on suppressive antiretroviral therapy (ART) is associated with elevated morbidity and mortality. Sources or immune activation are uncertain, but may be related to ongoing HIV RNA production from persistently infected cells. To investigate the role of HIV RNA levels in immune activation during ART, we used multi-modal statistical analyses to identify cellular immune subsets associated with HIV RNA levels.

Methods: Clinical information and peripheral blood mononuclear cells (PBMC) were collected from individuals on suppressive ART ≥3 years. Cell-associated HIV DNA and RNA levels were measured by multiplexed droplet digital PCR assays that simultaneously quantified HIV LTR and *gag* regions. Levels of unspliced HIV RNA levels were quantified per total number of proviruses (normalizing *gag* RNA to levels of LTR DNA/2) and per total number of *gag*-containing proviruses (normalizing to HIV *gag* DNA. PBMC were analyzed in extended flow cytometry panels quantifying >20 lymphocyte and activation markers.

To identify immune parameters most frequently associated with HIV *gag* production, we used 24 different statistical methods, including parametric and non-parametric correlation approaches, regression, and classification methods using varying assumptions about dataset structure.

Results: PBMC samples (N=70; 90% male; median CD4=672 cells/µl) were analyzed (N=70 for DNA, N=60 for RNA). Participants had been infected for a median ≥19.75 years (range 3.9-34.2 years). All had detectable DNA (LTR 20-17327 copies/10^6 PBMC, *gag* 7-4779 copies/10^6 PBMC). HIV RNA levels were lower (LTR 5-2219 copies/10^6 PBMC, gag 0-883 copies/10^6 PBMC); HIV RNA and DNA were quantifiable in 81% of participants. For *gag* RNA:*gag* DNA levels, proportion of natural killer (NK) cells (CD16+CD56+) positively correlated in the most models (11/24 models), followed by nadir CD4 (9/24 models) and minimum duration of infection (7/24 models). When gag was normalized to LTR DNA, NK and minimum duration of infection were strongly correlated in 14/24 and 5/24 models, respectively.

Conclusions: Levels of cell associated HIV RNA were quantifiable in the majority of individuals undergoing ART. Detailed immunophenotyping revealed correlations between cell-associated HIV *gag* RNA levels and proportion of NK cells, suggesting a key role of innate immunity in proviral RNA expression.

EPA008

HIV drug resistance among female sex workers in South Africa: a cross-sectional national study

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Background: HIV drug resistance (HIVDR) threatens the success of treatment programmes. Routine surveillance for HIVDR in key populations, such as FSWs, is not undertaken in South Africa. Female sex workers (FSWs) may contain high levels of HIVDR, and further profiling HIVDR is needed.

Methods: A multi-stage, community-centric, cross-sectional survey of 3,005 FSWs linked to sex worker programmes in 12 sites across all nine provinces (February to July 2019).The sub-analysis included HIV-positive FSWs with viral load (VL) ≥ 400 copies/ml. Surveys collected demographic data and self-reported ARV-exposure. CD4 and HIVDR genotyping (protease inhibitor [PI], nucleoside reverse transcriptase inhibitor [NRTI], non-NRTI [NNRTI]) was conducted.

Frequencies and percentages were assessed for categorical variables and stratified by ARV exposure (ARV exposed and unexposed)The frequency cut-off for presenting common mutations was ≥5%.

Results: Of 675 participants, 64.44% (n=435) had HIVDR, with more than half being 25-34 years of age (363/675, 53.78%). Three quarters of women who were currently or previously on ART had HIVDR mutations (284/371,76.55% or 71/97,73.2% respectively). Amongst those with no prior exposure or prior PrEP exposure, one third had HIVDR mutations (63/174,36.21% or 2/6, 33.33% respectively).

Overall, and amongst FSWs either on ART or with prior ART exposure, the most common mutations were the N103N (266/675, 39.47%; 193/371, 52.02%; 116/371, 31.27% respectively) and M184V (126/675, 20.15%; 41/97, 42.27%; 15/97, 15.46% respectively). Amongst those with no ART exposure, PMTCT exposure or PrEP exposure, the K103N was the most prevalent mutation (24/174, 13.79%; 7/27, 25.93%; 1/6, 16.67% respectively).

Conclusions: In conclusion, our study highlights the high rates of HIVDR mutations amongst FSWs in South Africa. HIVDR amongst FSWs could cause large proportions of treatment-naïve and treatment-initiated FSWs to fail first-line ARV regimens, potentially bridging HIVDR to the general population. Routine HIVDR surveillance is critical within sex worker programmes to inform stakeholders and ensure rapid response.

Systemic immune activation and inflammation

EPA009

Extracellular vesicles as potential mechanism of chronic inflamation in HIV patients

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Background: Increased systemic inflammation, associated with different morbidities, has emerged as a main problem in the clinical management of HIV-infected patients. Extracellular vesicles (EVs) carrying HIV elements and host pro-inflammatory molecules have been recently proposed as a potential mechanism contributing to this inflammatory state.

Herein, we have analyzed several molecules associated to systemic inflammation, endothelial activation and coagulation in plasma-derived EVs from two groups of HIV patients with controlled HIV replication (spontaneously or by cART) and in a group of non-controller patients with replicating HIV.

Methods: Thirty HIV patients were included: 10 elite controllers (EC), 10 cART-suppressed (NC-TT) and 10 cART-naive with high levels of HIV plasma viremia (NC-NT). Ten uninfected volunteers (UC) were also included as reference group. Plasma EVs were isolated by Size Exclusion Chromatography and lysed with triton X100 to release its content.

Levels of fourteen different parameters related to systemic inflammation, endothelial activation and coagulation were evaluated using a Bio-Plex 200 System-Biorad and a customized kit of ProcartaPlex. Inter-group differences and potential associations were tested by non-parametric tests.

Results: Among the different markers analyzed, the endothelial activation marker ICAM1 (intercellular cell adhesion molecule 1) and the coagulation marker PAI-1 (plasminogen activator inhibitor 1) were differentially expressed between the study groups. HIV^+patients showed increased levels of ICAM1 and PAI-1 compared to HIV^- UC volunteers (ICAM1: 8869[6780-12645] vs 6620[5877-7101] pg/mL,p=0.006; PAI-1: 45[29-75] vs 32[21-44]pg/mL,p=0.054).

Compared to UC volunteers, both NC-NT (p=0.011) and NC-TT (p=0.001) patients presented the highest levels of ICAM1 (11841[7807-15260] and 8970[6998-10624]pg/mL in NC-NT and NC-TT respectively).

In contrast, PAI-1 levels in NC-NT patients were similar to those of UC volunteers but were increased in patients with controlled viral replication, especially in NC-TT group (71[25-106] vs 32[21-44]pg/mL in NC-TT and UC respectively,p=0.029).

Conclusions: Our results show the existence of increased levels of endothelial activation and coagulation markers carried by EVs in the setting of HIV infection.

This phenomenon was observed in both uncontrolled and controlled viral replication, supporting an important role of EVs as mediators in the HIV-associated persistent inflammatory state despite the control of viral replication.

EPA010

Vesicular microRNA-155 amplifies HIV-1 infection

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Background: The hallmark of HIV-1 infection is rapid and irreversible damage to the immune system. Despite efficient suppression of viral replication by antiretroviral therapy (ART), immune dysfunction persists in people living with HIV (PLWH), leading to comorbidities and vulnerability to co-infections. A strong predictor of viral rebound and immune deficiency is the enrichment of extracellular vesicles (EVs) with microRNA-155 (miR-155). EVs are intercellular messengers that influence the state of recipient cells by transferring their contents. MiR-155 is a multifunctional microRNA that regulates genes involved in many immune functions such as immune cell development, activation, and survival. We therefore hypothesized that miR-155-rich EVs directly influence the course of HIV-1 infection.

Methods: We usedtwo viral preparations (NL4.3BE without or with miR-155-rich EVs) to infect human peripheral blood mononuclear cells (PBMCs) and humanized mice. Viral load, capsid protein p24 titration, integrated DNA quantification, and CD4/CD8 ratio were monitored. Flow cytometry was used to measure the expression of two markers of immune activation: HLA-DR (cell activation) and PD-1 (cell exhaustion). RT-qPCR was used to measure the expression of key genes (SOCS1, SHIP1, Trim32 and Lamine B1) targeted by miR-155 in infected PBMCs.

Results: MiR-155 increased NL4.3BE load in infected PBMCs. Its presence was associated with higher viral load, lower CD4/CD8 ratio and increased HLA-DR and PD-1 in mice infected by NL4.3BE with miR-155-rich EVs. SOCS1, a regulator of cytokine-mediated cell activation, was found significantly downregulated in the presence of miR-155-rich EVs.

Conclusions: More than a biomarker, vesicular miR-155 modulates viral replication directly and promotes the apparition of pro-inflammatory and exhausted phenotypes in immune cells.

These observations suggest pharmacological targeting of miR-155 to restore or prevent immune impairment early in HIV-1 infection.

EPA011

Immune preservation in HIV+ Viremic Non-Progressors is associated with downregulation of type-I IFN pathway and reduced activation of cytotoxic compartments

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Background: Extreme phenotypes of infection eluding HIV-1 pathogenesis could allow the identification of novel therapeutic targets. Viremic Non-Progressors (VNPs) maintain high CD4$^+$ counts despite high-level viremia in absence of antiretroviral treatment (ART) by unknown mechanisms.

We aim to generate a comprehensive understanding of the lack of pathogenicity in VNPs.

Methods: We retrospectively selected 16 VNPs and 29 HIV progressors (control group) showing similar viral load (median logVL>4), but different CD4$^+$ decay rate (median annual CD4$^+$ count loss <10% and >10%, respectively). 43/45 total individuals are male. Patients are followed-up at Germans-Trias-Pujol University Hospital (Badalona, Spain). Experiments were conducted between 2019-2021 using cryopreserved PBMCs. Statistical differences were assessed by Wilcoxon test.

Total and intact HIV-DNA and cell-associated HIV-RNA were quantified on sorted CD4$^+$ T-cell subsets by droplet digital PCR at pre-ART and on-ART timepoints. CD4$^+$ and CD8$^+$ T-cell immunophenotype was characterized by flow cytometry. Fourteen individuals (seven matched pairs) were selected for comparative PBMCs transcriptome analysis by single-cell RNA-sequencing (scRNAseq).

Results: VNPs showed lower levels of total and intact HIV-DNA and cell-associated HIV-RNA in CD4$^+$ T-cells before ART initiation, especially among Effector Memory cells (640 vs 1928 total HIV-DNA copies/10^6cells, $p<0.05$).
However, viral reservoir size and composition were equivalent on-ART. Pre-ART CD4$^+$ T-cell subset composition and activation was similar in both groups. CD8$^+$ T-cells in untreated VNPs showed higher percentage of naive cells (24.2% vs 11.7%, $p<0.001$), lower levels of activation (HLA-DR$^+$/CD38$^+$) among memory compartments (15.5% vs 21.8%, $p<0.01$), and scRNAseq revealed lower expression of cytotoxic markers in CD8$^+$ T and NK cells.
Expression of Interferon-Stimulated Genes was significantly lower in VNPs across multiple cell types. We also found lower expression of *TGFB1* in CD4$^+$ T-cells, possibly involved in lymphoid tissue fibrosis.
Conclusions: Before ART initiation, VNPs showed lower levels of infected CD4$^+$ T-cells and lower expression of CD8$^+$ T and NK cell activation/cytotoxicity markers than HIV progressors in periphery.
However, the preservation of the CD4$^+$ compartment could be driven by downregulation of the chronic type-I IFN response and reduced damage at lymphoid tissues.
These pathways might be potential therapeutic targets for HIV$^+$ immunological non-responders that do not recover CD4$^+$ counts despite suppressive ART.

EPA012
Impact of early ART initiation on the dynamics of regulatory CD8 T-cells in acute HIV infection

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Background: Increased frequencies of immunosuppressive FoxP3$^+$ CD8 Tregs during HIV infection is associated with immune dysfunction and disease progression.
However, the dynamics of CD8 Tregs in acute HIV infection and following early ART initiation remain understudied.
Methods: Peripheral blood mononuclear cells (PBMCs) were collected from untreated acute (n=26) and untreated chronic (n=10) HIV-infected individuals, early ART-treated in acute infection (n=10, median of ART initiation: 5,5 months post-infection), ART-treated in chronic infection (n=10), elite controllers (n=18), and HIV-uninfected controls (n=21). CD8 Tregs subsets were characterized by multiparameter flow cytometry.
Results: HIV infection was associated with increased total CD8 Tregs, effector memory, and terminally differentiated CD8 Tregs in acute and chronic infection, while early ART normalized only the frequencies of total and terminally differentiated CD8 Tregs. CD8 Treg expression of CD31, a marker of recent Tregs migrating from the thymus, increased in the acute phase but declined in chronic infection, indicating the extra-thymic differentiation of CD8 Tregs in the acute infection, while normalized by early ART initiation.
We also observed an overtime increase in CD8 Treg immune activation (HLADR$^+$CD38$^+$), immune senescence (CD57$^+$CD28$^-$), and PD-1 expression during both acute and chronic infection, while early ART initiation was unable to normalize these parameters. CD8 Tregs in untreated individuals expressed higher levels of immunosuppressive LAP(TGF-β1) and CD39 compared to uninfected controls, while early ART only normalized the LAP(TGF-β1).
Additionally, the expression of gut homing markers CCR9 and Integrin-β7 by total CD8 Tregs and CD39$^+$ and LAP(TGF-β1)$^+$ CD8 Tregs increased in both acute and chronic infections and remained higher than uninfected controls despite early ART. The frequencies of CD8 Treg subsets correlate positively with plasma viral load and T-cell immune activation and negatively with CD4 count and CD4/CD8 ratio. HIV elite controllers share most of the CD8 Treg characteristics in uninfected or early ART-treated individuals.
Conclusions: Although early ART initiation resulted in normalization of total CD8 Tregs frequencies, it was unable to reduce CD8 Treg gut homing potential nor LAP(TGF-β1) production, which in turn, may contribute to gut fibrosis, disease progression, and immune dysfunction despite early ART initiation.

EPA013
Recreational marijuana normalizes genes and pathways perturbed by tobacco alone or in combination with marijuana in virally suppressed youth with HIV

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Background: Chronic Inflammation and immune activation persist despite effective antiretroviral therapy (ART) in youth with HIV (YWH). Marijuana and tobacco co-use is prevalent among YWH, and may affect inflammatory pathways and long-term clinical outcomes in YWH with optimal viral suppression on ART. Genome-wide transcriptome analysis was performed to evaluate the effect of co-use along with marijuana/tobacco single use in YWH in comparison to youth without HIV (YWOH) who used no substance.

Methods: Peripheral blood cell mRNA was extracted and sequenced using Illumina HiSeq 2500 for 25 YWH (ages 18-23 years) and 25 YWOH balanced for age, gender and race. Amongst 25 YWH with undetectable viral load after a median of 2.6 years on ART(< 50 RNA copies per ml), 15 co-used recreational marijuana and tobacco; 7 used recreational marijuana only and 3 used tobacco only. Marijuana and tobacco use was assessed by self-report and validated by plasma toxicology.

Differentially expressed genes (DEGs) were analyzed using R package LIMMA(|FC| ≥ 1.3 and FDR ≤ 0.2). Pathway analysis was performed on DEGs with Ingenuity Pathway Analysis(P< 0.001;Z-scores ≥ 1/≤ -1). Perturbed pathways were classified and visualized using R package ClusterProfiler with a gene-concept network plot.

Results: Compared to YWOH, marijuana and tobacco co-users among YWH expressed 1,145 DEGs (571 upregulated and 574 downregulated), mainly enriched for interferon signaling, natural killer cell signaling, role of PKR in interferon induction, and STAT3 signaling, indicating a molecular signature of immune activation.

Pathways, such as RAC signaling or ERK/MAPK signaling, were perturbed in marijuana and tobacco co-users, as well as tobacco only users (744 DEGs), which may stem from a dominant effect of tobacco use on inflammatory pathways.

In marijuana only users, all of these pathways and most the DEGs were normalized, signifying a potential anti-inflammatory effect of marijuana. Genes, such as IFNG, STAT1, JAK2, MAP2K1, NRAS, PDPK1 were identified as hub genes connecting multiple pathways involved in the mechanisms of immune activation in response to marijuana and tobacco co-use in YWH.

Conclusions: Recreational marijuana use attenuates inflammatory genes and pathways perturbed by tobacco use in virally suppressed YWH on ART.

EPA014

Plasma extracellular vesicles and cell-free mitochondrial DNA are associated with cognitive dysfunction in treated older adults with HIV

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Background: Extracellular vesicles (EVs) are small structures with a range of functions including cell-to-cell communication and inflammation. Neurons and microglia can secrete EVs that cross the blood brain barrier. Plasma cell-free mitochondrial DNA (cfmtDNA) has been associated with cognitive dysfunction, and urine cfmtDNA with unintentional weight loss in older adults with HIV (OAH). We hypothesized that plasma EVs would be associated with cognitive dysfunction in OAH.

Methods: A case-control study compared OAH age ≥54 with cognitive dysfunction (Montreal Cognitive Assessment [MoCA] score <23) to demographically similar OAH controls (MoCA >26). Frailty testing was conducted using the Fried Frailty Index. Participants with HIV viral load >40 copies/ml were excluded.

PlasmaEVs were measured by flow cytometry and plasma/urine cfmtDNA by PCR for NADH dehydrogenase 1 gene. EVs measured included CD4, CD14, CD16, CD19, CX-3CR1, WGA, CCR5, CD62p, CD41a, CD163, CCR2, CCR5, MAL-1, CD11b, CD200, Neurofilament, S100B, GFAP, MAP2, CD9, CD63, MHCII, GLUT-1, CD66b, and CD36.

A support vector machine learning-based model using recursive feature elimination was employed for analyses and area under the curve of the receiver operating characteristic (AUC-ROC) assessed the probability of discriminating cognitive function.

Results: The 49 participants had median age 60(IQR 57-65), were 37% female, 53% Black and 25% Hispanic, had a median CD4 T-cell count of 683(IQR: 474-877), and 61% met the criteria for pre-frail/frail. A model including urine cfmtDNA, 4-meter walk time, CCR5+ and GLUT-1+ EVs classified cognitive status with an AUC-ROC of 0.86 (95% CI 70-100 and an AUC-precision recall curve of 0.97 (0.93 - 0.99).

	Total Cohort (n=49)	Cognitively Impaired (n=25)	Cognitively Non-Impaired (n=24)	p-value (Low v High)
Age, years, median [IQR]	62 [57, 65]	63 [57, 67]	60 [57, 63]	0.311
Sex, Male, n (%)	31 (63.3%)	15 (60.0%)	16 (66.7%)	0.632
HIV Duration, years, median [IQR]	24 [22, 29]	24 [22, 27]	24 [22, 30]	0.711
CD4 T cell count, median [IQR]	683 [474, 877]	641 [485, 794]	727 [460, 1055]	0.569
Plasma cfmtDNA copies/mL, geometric mean [IQR]	5.57 [5.05, 5.90]	5.59 [5.29, 6.38]	5.30 [4.91, 5.77]	0.041
Urine cfmtDNA copies/g of urine creatinine, geometric mean [IQR]	19.25 [18.09, 20.16]	19.00 [17.76, 20.03]	19.51 [18.17, 20.41]	0.11
Not Frail*	17 (34.7%)	6 (24.0%)	11 (45.8%)	0.064
Pre-frail/Frail*	30 (61.2%)	19 (76.0%)	11 (45.8%)	0.064
4m Walk Time, seconds, median [IQR]	4.83 [3.78, 5.58]	5.21 [4.42, 5.90]	4.15 [3.57. 5.09]	0.007

Table.

Conclusions: Our machine learning model predicted cognitive dysfunction with 86% certainty (+/- 16%) using urine cfmtDNA, 4-meter walk, and CCR5+ and GLUT-1+ EVs.CCR5 and GLUT-1+ EVs may reflect inflammatory and metabolic activity respectively in the CNS.

Our findings suggest s role of EVs and cfmtDNA as potential biomarkers of cognitive dysfunction and warrant further investigation.

EPA015

People living with HIV have higher endothelial colony-forming cell frequencies: characterisation of patient-derived vascular endothelium

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Background: Cardiovascular disease, which is driven in part by endothelial dysfunction, is more prevalent among people living with HIV (PLWH). The reasons for this increased risk are unclear, but may be in part due to low grade inflammation associated with HIV seropositivity and side effects of antiretroviral therapy.

Patient-derived endothelial colony-forming cells (ECFCs) are generated from circulating progenitor cells, which after isolation, retain the donor's endothelial phenotypic characteristics. ECFCs are therefore a powerful tool to study the underlying mechanisms driving endothelial dysfunction in patient cohorts.

Although HIV acquisition and certain antiretrovirals have been shown to affect endothelial activation and are linked to increased cardiovascular risk, ECFCs have not been exploited within the context of HIV.

We therefore aimed to isolate and characterise ECFCs from PLWH.

Methods: Whole blood was obtained from PLWH on effective antiretroviral therapy (ART) (n=10) or HIV-negative people accessing Pre-Exposure Prophylaxis (PrEP, n=10). Peripheral blood mononuclear cells were isolated and monitored for ECFCs growth. Day of colony emergence, time to first split (colony establishment), and ECFC frequency were used to define isolation kinetics.

A previously isolated control group was used as a reference group. Statistical significance was determined by one-way ANOVA with Tukey's multiple comparison test.

Results: ECFCs emerged in 10/10 PLWH on ART, 8/10 PrEP users and 12/13 controls. From the first colony emerging, PLWH-ECFCs took 22.5 ±1.5 days (mean ±SEM) for colonies to establish for first split, which was significantly longer than both PrEP-ECFCs (15.4 ±2.1 days, $p<0.05$) and reference ECFCs (14.9 ±1.1 days, $p<0.01$).

PLWH also had higher ECFC frequencies (0.52 ±0.15 colonies/1x10^{6}PBCMs) compared to both the PrEP group (0.21 ±0.06 colonies/1x10^{6}PBCMs, $p<0.05$) and the reference control group (0.13 ±0.03 colonies/1x10^{6}PBCMs, $p<0.01$).

Conclusions: ECFCs from PLWH on effective therapy can be isolated and will be used to explore in detail the molecular effects of ART and HIV infection upon endothelial thrombo-inflammatory properties and cardiovascular health.

The significance of higher ECFC frequency and the longer time for colony establishment in PLWH is currently unknown, but may provide a route to defining, preventing and treating endothelial dysfunction in this population.

EPA016

IL-32γ induces the expression of a heart-homing signature on a subset of memory CD4 T-cells with increased permissiveness to HIV-1 infection: a potential role in cardiovascular disease

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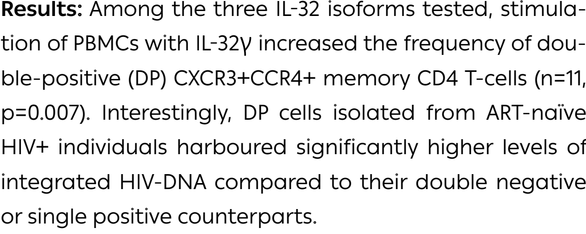
Background: Chronic inflammation in HIV infection increases the risk of cardiovascular diseases (CVD), even under antiretroviral therapy (ART). We recently demonstrated that the chronic upregulation of the multi-isoform proinflammatory cytokine interleukin-32 (IL-32) is associated with increased CVD risk in people living with HIV (PLWH) receiving ART. IL-32 isoforms exhibit diverse roles in T-cell differentiation, functions, and migration.

However, the effect of IL-32 on T-cell heart-tropism, a mechanism that contributes to plaque formation, remains unknown.

Here, we investigated the impact of IL-32 isoforms on the induction of the heart-homing signature c-Met+CCR4+CXCR3+ in memory CD4 T-cells in relationship with HIV-DNA persistence in these cells.

Methods: Peripheral blood mononuclear cells (PBMCs) and plasma samples from ART-treated PLWH and non-infected control participants (n=20/group) were obtained from the Canadian HIV and Aging Cohort Study (CHACS). PBMCs were exposed to 500ng/ml of recombinant IL-32 isoforms (α, β and γ). Expression of c-Met, CCR4, and CXCR3 was measured by flow cytometry on CD4 T-cell subsets.Hepatocyte growth factor (HGF;c-Met ligand) was quantified by ELISA in plasma.

Integrated HIV-DNA was quantified by Alu real-time PCR in sorted central memory CD4 T-cell from ART-naïve individuals (n=5, average CD4 counts: 557 cells/ml, and plasma viral load: 109,257 HIV RNA copies/ml).



Results: Among the three IL-32 isoforms tested, stimulation of PBMCs with IL-32γ increased the frequency of double-positive (DP) CXCR3+CCR4+ memory CD4 T-cells (n=11, p=0.007). Interestingly, DP cells isolated from ART-naïve HIV+ individuals harboured significantly higher levels of integrated HIV-DNA compared to their double negative or single positive counterparts.
Additionally, the DP subset was enriched in cells expressing c-met, indicative of an IL-32-mediated increase in the frequency of the heart-homing triple-positive cMet+CCR4+CXCR3+ population.
Finally, we observed that the c-met ligand HGF was significantly higher in plasma from PLWH compared to HIV-individuals (p=0.0009).
Conclusions: Our results suggest that IL-32 is contributing to heart inflammation by increasing the frequency of T-cells with heart-homing tropism that harbour proviral HIV-DNA. These cells may serve as a Trojan horse to bring HIV to the plaque-forming sites in heart arteries, which could further worsen the local inflammation. Thus IL-32 might represent a potential therapeutic target in CVD.

EPA018

Alterations in B lymphocyte subsets in virologically suppressed HIV-positive individuals did not impact 17DD yellow fever vaccine immunogenicity – ANRS 12403

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Background: HIV infection is characterized by disequilibrium in several components of cellular and humoral immune responses. In this context, alterations in B lymphocytes and T follicular helper cells (Tfh) in HIV positive individuals impairs not only immune response against HIV, but could also diminish vaccinal responses.
Methods: To assess if HIV infection blunts immune response against 17-DD yellow fever vaccine, we evaluated the pre-vaccination frequency of peripheral(pTfh) and B lymphocytes subsets (Transitional - TR; Marginal zone B - MZ; Naïve - N; Activated Memory - AM; Intermediate Memory – IM; Resting Memory – RM; Tissue-like memory – TLM) by flow cytometry in two groups of HIV positive individuals on ART and virologically suppressed – one group with T CD4 counts higher than 500 cells/mm^3 (CD4>500; n=20) and between 250-500 cells/mm^3 (CD4<=500; n=26) and a group of HIV negative individuals (HIVneg; n=18). The vaccine immunogenicity was evaluated by neutralization levels postvaccination obtained through micro plaque reduction neutralization test (µPRNT) at days 30 and 365 post-vaccination.
Results: cTfh analyses revealed similar frequencies of these cells in all evaluated groups. For B lymphocyte subsets analyses, the group CD4<500 presented lower frequencies of MZ (p=0.006) and higher frequencies of N (p<0.034) in comparison to HIVneg, while the frequencies of BTR did not differ between groups.
Regarding B memory subsets, both HIV groups presented lower frequencies of AM (p<0.014 for CD4>500; p<0.039 for CD4<500) and RM (p<0.005 for CD4>500; p<0.0001 for CD4<500), but no differences were observed for TLM and IM subsets. µPRNT neutralization levels at 30 and 365 days postvaccination did not differ between the three evaluated groups, and those levels did not correlate to any of the subsets evaluated.
Conclusions: Our data showed that B lymphocytes immune response is altered in HIV-infected individuals despite suppressed viral load and high T CD4 counts. Those individuals present disbalance in BN, BMZ, BAM, and BRM frequencies when compared to HIV-uninfected individuals. Despite that, 17DD-YFV neutralization titers were similar between HIV-infected and uninfected individuals and did not correlate with cell subsets, indicating that immunogenicity against 17DD-YFV one year after vaccination is not impaired in HIV-infected individuals.

Correlates of HIV susceptibility, and progression versus control (biomarkers and genetics)

EPA020

Penile barrier integrity and a mechanistic search for the effectiveness of medical male circumcision in preventing HIV acquisition

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Background: The biological mechanisms underlying HIV risk reduction following medical circumcision remain ill-defined. We sought to understand two aspects, whether circumcision can improve skin barrier integrity of the penis: in the absence and presence of an asymptomatic sexually transmitted infection (aSTI); the rationale being that changes in skin barrier integrity leads to lower risk of HIV susceptibility.

Objectives: We used hand-held meter devices to measure changes to skin barrier integrity in various sites on the penis of adults assigned male sex at birth. In vivo measurements of transepithelial water loss (TEWL) and skin hydration (proxies for barrier integrity) were taken directly on penile skin before and after MMC and in the absence/presence of an aSTI, the most common being Chlamydia trachomatis (approx. 11%).
Methods: Vapometers and moisture meters SC, D and EpiD were used to measure TEWL (n=155) and dermal surface hydration (n=170) of the glans, inner foreskin and penile shaft before circumcision. Follow-up measurements were made at 2, 12 and 24 weeks after circumcision in the glans and shaft (n=16). Urines were collected for aSTI screening.
Results: Compared to the shaft (16 $g/hr/m^2$), there was higher TEWL in the inner foreskin and glans in the absence of an aSTI (Medians of 27.6 and 22.3 $g/hr/m^2$; both q<0,0001 respectively).
Furthermore, the inner foreskin (Median 86,46 au) had increased hydration compared to the shaft (Median 54,61 au) q value<0,0001. Follow-up at six months after circumcision showed a significant decrease in TEWL in the glans (q=0.011) from the baseline, matching that of the shaft. Finally, prior to circumcision, the glans of participants with aSTI showed higher hydration compared to STI negative participants (97.4 vs 52.3 au; q= 0.0380).
Conclusions: Reduced TEWL after MMC in the glans without an aSTI suggests that skin barrier integrity increases after medical circumcision and may partly contribute to lower HIV-1 susceptibility. The higher glans skin moisture content in the presence of an aSTI before circumcision could create an infection-friendly niche and potentially lead to higher HIV-1 susceptibility.

Innate immunity (including NK cells)

EPA021
HIV-1 subtype C Vif transmitted/founder (T/F) variants preferentially degrade APOBEC3G over APOBEC3F

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Background: APOBEC3 proteins are a key component of innate defence against HIV but are counteracted by the viral protein Vif. The relative contribution of diverse APOBEC3 proteins to anti-HIV immunity is not fully understood.
We hypothesized that the transmitted/founder (T/F) virus Vif adapts in vivo to specific APOBEC3 proteins that mediate immune pressure.

Methods: Study participants were 24 South African women with acute HIV-1 infection. HIV-1 *vif* was cloned into an expression vector at 1-month and 1-year post-infection. HIV-1 *vif* clones were sequenced and assessed for their ability to counteract APOBEC3G (A3G), -3F (A3F) and -3H (A3H) using Western blot and single-cycle infectivity assays.*In vivo* A3G and -3F expression was measured using droplet digital PCR (ddPCR).
Results: All sequences were subtype C and *vif* clonal sequences from each patient clustered independently. Limited intra-patient diversity amongst *vif* clones were observed (0.02-0.21%). APOBEC3G, -3F and -3H binding sites on Vif were 86% conserved.
Notably, at Vif position 17, within the APOBEC3F binding site 14DRMK17, 64% of 1-month post infection (T/F) viruses were non-consensus subtype C arginine (R) which increased to 71% at 1-year post-infection. Functional assessment showed heterogeneity amongst T/F Vif variants in their ability to degrade A3G, -F and –H and to rescue infectivity. However, T/F virus Vif preferentially degraded A3G compared to A3F (p=0.0503). At one-year post-infection, Vif variants showed an increased ability to degrade and rescue infectivity against A3F, compared to T/F Vif (p=0.0160). In vivo, A3F expression was significantly higher than A3G expression during acute infection (p=0.00457).
However, both A3G (p=0.0003) and A3F (p=0.0027) expression was downregulated over one year of infection. Site directed mutagenesis at Vif position 17 showed no functional impact on anti-APOBEC3 activity in selected study participants.
Conclusions: These data, show that T/F HIV-1 Vif preferentially degrades A3G, however its capacity to degrade A3F increases over one-year of infection, suggesting that Vif preferentially targets the most potent APOBEC protein (A3G) and may adapt to target other APOBEC proteins over time.
Understanding the contribution of diverse cytidine deaminases to the immune control of HIV-1 may inform the design of therapies to target the interaction between APOBEC and Vif proteins.

EPA022
Impact of chronic HIV infection on NK cell response through the HLA-E/NKG2x axis

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Background: Previous studies reported functional unresponsive and exhausted NK cell profiles in HIV infected individuals compared to uninfected ones. We hypothesized that an increased HLA-E surface expression in untreated, chronically viremic HIV-infected individuals leads to a continuous NK stimulation through the HLA-E/NKG2X axis, causing a disruption of the NKG2A/NKG2C balance and inducing an impaired NK cell response.

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Methods: HLA-E expression was assessed by RT-PCR in PBMC from HIV infected individuals not receiving cART with high (HIV-high, n=8) or low viral loads (HIV-low, n=8) and HIV seronegative (SN=12) individuals. The expression of CD57, NKG2A and NKG2C was assessed in NK sub-populations (CD16 and CD56) by flow cytometry. K562 cells lacking HLA-E expression were used as target cells in *in-vitro* functional assays to determine NK cytotoxicity, degranulation and cytokine secretion. NK effector functions were then related to the clinical parameters, NK phenotypic markers and levels of HLA-E expression.
Results: The abundance of $CD56^{bright}$ NK cells was significantly decreased in HIV-high compared to HIV-low and SN. NKG2A/NKG2C ratios in total NK cells, $CD56^{bright}$ and adaptive NK cells were reverted in chronic HIV infection, especially in HIV-high compared to SN.
The expression of NKG2A in total and adaptive NK cells, as well as the abundance of $CD56^{bright}$ cells, correlated negatively with plasma viral load and positively with CD4 count. NK cells from chronically HIV infected individuals showed a significant decrease in cytotoxic capacity and IFN-γ secretion, especially in the $CD56^{bright}$ and adaptive subsets. Of note, HLA-E expression correlated negatively with cytotoxic capacity, degranulation and IFN-γ secretion.
Conclusions: Our data suggest that chronic, viremic HIV infection drives high HLA-E expression, continuously stimulating NK cells through the NKG2X receptors. This, in turn, may cause changes in NK subpopulations and a profound disruption in the regulation of the NK activation pathway through the HLA-E/NKG2X axis.

EPA023
Immunotherapeutic blockades targeting LAG-3 and PD-1 immune checkpoint inhibitors on invariant Natural Killer T cells: implications in chronic HIV infection

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Background: Invariant Natural Killer T (iNKT) cells are innate lymphocytes critical in combatting viral infection by bridging the innate and adaptive immune systems. Our lab showed in HIV infection, expression of lymphocyte activation gene 3 (LAG-3), an inhibitory immune checkpoint marker, is increased on iNKT cells and correlated with decreased functionality.
Another checkpoint molecule, program cell-death-1 (PD-1), is shown to be increased on iNKT cells in HIV infection, correlating to decreased function. LAG-3 and PD-1 expression kinetics and relationship to iNKT cellular function is not well characterized, and we hypothesize that blocking LAG-3 alone, or in conjunction with PD-1 via immunotherapeutic blockades, will restore iNKT function and immune effectiveness.
Methods: Utilizing peripheral blood mononuclear cells from HIV-uninfected donors (n=4), iNKT expression of LAG-3 and PD-1 was assessed via a multi-day *in vitro* stimulation (24hr, 48hr, 4, 7, 10 day). Efficacy of anti-LAG-3 and anti-PD-1 antibody blockades were assessed via a 10-day assay, with enhanced proliferation as the main outcome monitored.
Results: Percent and median fluorescence intensity (MFI) of both LAG-3 and PD-1 peaked at Day 7 (LAG-3: 88.5%, 6163.8 MFI; PD-1: 80.5%, 7731.8 MFI), with a steep decrease by Day 10, when iNKT proliferation was at its peak.
In the presence of the anti-LAG-3 or anti-PD-1 antibody blockades, there was a 14-fold increase and 17-fold increase of the iNKT population, respectively. Combining anti-LAG-3 and anti-PD-1 blockade systems resulted in a 22-fold increase in proliferation.
Conclusions: This study is the first to report the kinetics of LAG-3 and PD-1 expression on iNKT cells, and it also provides proof-of-concept for LAG-3 and PD-1 as immunotherapeutic targets, by restoring iNKT cellular proliferative ability.
This blockade system will be applied *in vitro* to HIV-positive samples to assess if HIV-mediated dysregulation of iNKT function can be reversed and thereby ameliorate immune responses to various opportunistic infections, as well as boost viral control in a functional HIV cure approach.

EPA024
The effects of *in utero* HIV and anti-retroviral therapy exposure on infant T-cell and monocyte activation, function and regulation of immune-modulatory pathways

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Background: The growing number of HIV-exposed-but-uninfected (HEU) infants suffering from immune dysfunction, inflammation, and cognitive as well as metabolic abnormalities is a great cause for concern. The underlying mechanisms involved are still unclear. Chronic immune activation is a distinct feature of HIV, which might result in increased T-cell and monocyte/macrophage activation and exhaustion in HIV-infected mothers and potentially in their infants. Several studies have investigated immunological changes in pregnant HIV-positive mothers and their infants, but few have included the effect of these changes on clinical outcomes.
This study assessed whether maternal HIV status impacts infant T-cell activation and regulation as well as monocyte activation, regulation, and responsiveness to stimu-

lation at birth and early infancy. It further investigated whether immunological changes impact early infant growth, development, and susceptibility to infection in the first six months of life.

Methods: Pregnant women with singleton pregnancies (69 HIV-positive, 83 HIV-negative) were recruited from antenatal clinics in Southwest Tshwane, South Africa. Maternal blood samples were taken at 28 weeks of pregnancy and paired maternal-infant samples taken at birth, ten weeks, and six months postpartum. Women with co-morbidities, e.g. diabetes mellitus and obesity, were excluded. All infants tested HIV-negative. Key maternal, fetal, and post-partum clinical data were also captured on standardized and validated forms.

Multicolor flow cytometry was used to characterize markers of CD4+ and CD8+ T-cell, and monocyte activation. Whole blood stimulation (WBS) testing with lipopolysaccharide and polyinosinic:polycytidylic acid was performed to assess monocyte function. Dimension reduction analysis was used to analyze multicolor flow cytometry using Cytobank software (Beckman Coulter, CA, USA).

Results: Preliminary data analysis demonstrated decreased CCR7 and increased CD27 expression in CD8+ T-cells from HIV-positive mothers at birth. HEU infants had increased CCR2 and CD86 expression on monocytes at ten weeks; CD86 differences persisted at six months. Currently, WBS data is being analyzed andimmunological findings are assessed for relevant clinical associations.

Conclusions: Preliminary analysis shows differences in T-cell and monocyte subsets in HIV-positive mothers and HEU infants. Understanding the impact of these immunological changes on clinical endpoints may contribute to development of targeted interventions, potentially improving health outcomes in HEU.

EPA025

HLA-B*46 associates with rapid HIV disease progression in Asian cohorts and prominent differences in NK cell phenotypes

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Background: Human leukocyte antigen (HLA) associations with HIV-1 disease outcomes have been reported in antiretroviral therapy (ART)-naïve cohorts from populations of European and African ancestry but remain understudied in Asia.

Consequently, we investigated associations of HLA alleles with HIV-1 acquisition, disease progression, and reservoir size in 1318 individuals from three independent Thai cohorts including a high incidence natural history study, a vaccine efficacy trial, and a study of people who initiated ART during acute HIV infection (AHI).

Methods: HLA class I alleles were genotyped using next-generation sequencing and alleles with frequencies >5% were tested for the following associations: HIV acquisition was tested in a cohort of high HIV incidence of men who have sex with men (N=678); disease progression outcomes included time to decline of CD4+T cells (<350 cells/mm³), time to ART initiation and levels of VL (copies/ml) in two cohorts with long term follow-up prior to treatment (N=321); reservoir size was assessed in an AHI cohort (N=526).

Mechanistic effects of HLA alleles were examined by investigating cellular responses to overlapping HIV peptides by ELIspot assays, transcriptomics by RNA-seq in sorted cell subsets and single cell mRNA and surface protein expression using CITE-seq.

Results: We identified reproducible significant associations of HLA-B*46:01, the most frequent class I allele in Thailand, with lower absolute CD4 counts (p=0.001-0.05), accelerated CD4 decline (HR=5.01-1.5, p=0.0001-0.048, q=0.004-0.07) and increased VL (Geometric Mean Ratio =2.74-2.09, p=0.007-0.044, q=0.2-0.07) in ART-naïve samples in independent cohorts. We detected no effect of B*46 as-

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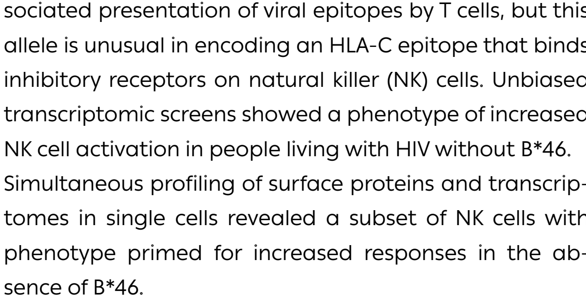

sociated presentation of viral epitopes by T cells, but this allele is unusual in encoding an HLA-C epitope that binds inhibitory receptors on natural killer (NK) cells. Unbiased transcriptomic screens showed a phenotype of increased NK cell activation in people living with HIV without B*46. Simultaneous profiling of surface proteins and transcriptomes in single cells revealed a subset of NK cells with phenotype primed for increased responses in the absence of B*46.

Conclusions: These findings demonstrate contemporaneous cohorts can display host genetic effects in HIV infection, and support a role for NK cells in HIV pathogenesis revealed by unique properties of the B*46 allele which is commonly present only in Asia.

EPA026

Characterizing the effect of intracellular storage pools of RANTES/CCL5 on HIV infection in macrophages

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Background: Under inflammatory conditions, monocytes can extravasate from circulation into tissues and differentiate in monocyte-derived macrophages (MDMs), a process accompanied by transcriptomic and proteomic reorganizations that give MDMs their macrophage phenotypes. Moreover, the primary (CD4) and secondary (CCR5) entry receptors for HIV-1 are upregulated upon monocyte differentiation, making MDMs more susceptible to HIV infection than their precursors.

Our research recently reported a novel phenomenon, whereby human monocytes have the capacity to store large amounts of RANTES/CCL5 in resting state, a significant finding since CCL5 is natural ligand for CCR5 and an inherent inhibitor of R5-mediated HIV entry.

Methods: Primary human monocytes were isolated from whole blood donations of healthy donors and differentiated into macrophages via adherence protocols *in vitro*. Macrophages were infected with R5-tropic HIV-1 isolates and levels of RANTES/CCL5 and CCR5 were be monitored by confocal microscopy, ELISA, and flow cytometry.

We also characterized CCL5 and CCR5 levels at different stages of infection, including attachment and entry, after multiple rounds of virus replication.

Results: Our preliminary data indicates that the intracellular pool of CCL5 in resting monocytes is retained upon differentiation into MDMs *in vitro,* highlighting a novel mechanism for CCL5 regulation in macrophages. The mobilization of CCL5 from intracellular stores appears to have differential kinetics depending on the monocyte/macrophage stimulus used, and the biology of these storage vesicles is under ongoing investigation. We are currently characterizing the intracellular storage pools of CCL5 and its receptor (CCR5) upon HIV infection, in an effort to determine the impact of intracellular CCL5-CCR5 interactions on HIV infection.

Conclusions: We anticipate that there may be chemokine ligand-receptor interactions (i.e., CCL5-CCR5 interactions) occurring intracellularly that may sequester these proteins into specific subcellular compartments (or vesicles), which may divert from their canonical functions. Given the respective roles of CCL5 and CCR5 in HIV infection, we believe this work will characterize new mechanisms of HIV control and restriction.

Humoral immunity (including broadly neutralizing antibodies), Antibodies and B cells

EPA027

HIV-1 Vpu limits Fc-mediated effector functions in vivo

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Background: Non-neutralizing antibody (nnAb) functions, such as the elimination of HIV-1-infected cells by antibody-dependent cellular cytotoxicity (ADCC), were associated with the protection observed in the RV144 vaccine trial. While the antibody specificities and effector functions underlying this protection have not been clearly defined, Fc-mediated effector functions of nnAbs were shown to alter the course of HIV-1 infection in vivo (Horwitz et al., Cell 2017).

Methods: To better understand the capacity of nnAbs at eliminating HIV-1-infected cells, we infected primary CD4+ T cells with the virus used in the Horwitz study (HIV-$1_{NL4.3}$YU2) and evaluated the capacity of nnAbs to recognize and eliminate infected cells by ADCC *in vitro*. We also used a humanized mouse model to confirm our findings *in vivo*.

Results: In agreement with the Horwitz study, we found good recognition of infected cells by the panel of nnAbs tested. Antibody recognition of the infected cells and FcγR

engagement strongly correlated with their capacity to mediate ADCC. However, since the HIV-$1_{NL4.3}$YU2 does not express the accessory protein Vpu, due to a mutation in the start codon of the *vpu* gene, we asked whether the observed recognition by nnAbs and susceptibility of infected cells to ADCC was linked to the lack of Vpu expression in this virus.

We re-established the *vpu* open reading frame, verified Vpu expression and its capacity to downregulate several of its substrates including CD4 and BST-2 by flow cytometry. Primary CD4+ T cells infected with the HIV-$1_{NL4.3}$YU2 Vpu+ virus downregulated all these substrates efficiently but the HIV-$1_{NL4.3}$YU2 (Vpu-) did not. Strikingly, cells infected with the Vpu+ virus were less efficiently recognized by nnAbs and became resistant to ADCC responses.

Using small CD4 mimetics to "open" Env, we were able to sensitize infected cells to nnAbs, indicating that the observed ADCC resistance was linked to the lack of nnAb epitope exposure on cells infected with a Vpu+ virus.

Finally, therapeutic administration of a nnAb decreased plasma viral loads (PVLs) in humanized mice infected with the Vpu- but not the Vpu+ virus.

Conclusions: This study highlights the critical role of Vpu in limiting humoral responses and maintaining viral replication *in vivo*.

Cellular immunity; T cell vaccines

EPA028

Metabolic gene profiling of activated, terminally differentiated effector memory and exhausted CD8+ T cells in people living with HIV

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Background: Chronic human immunodeficiency virus (HIV) infection often results in CD8+ T cell exhaustion, which is associated with cellular metabolic alterations. A comprehensive study of metabolic changes at the genetic regulatory level can provide insights to potential targets to overcome T cell exhaustion in chronic HIV infection.

In this study, we investigated the differential expression of the genes encoding metabolic pathway proteins in the exhausted CD8+ T cells, compared to the naïve, activated and terminally differentiated effector memory (T_{EMRA}) CD8+ T cells, from people living with HIV (PLWH).

Methods: A total of 62 PLWH were recruited from the University of Malaya Medical Centre, Malaysia between September and December 2019. There were two arms: aviremic ART-treated (viral load < 20 copies/ml) and viremic treatment-failure or treatment-naïve (viral load > 20 copies/ml). Peripheral blood mononuclear cells (PBMCs) were immunophenotyped and sorted by the following subsets: naïve (CCR7+ CD45RA+), T_{EMRA} (CCR7- CD45RA+), activated (PD1- CD107a+) and exhausted (PD1+ CD107a-). RNA was extracted from each subset and gene expression for metabolic pathways was characterised using NanoString technology.

Results: Our results demonstrated that several genes in the activated subsets were significantly upregulated (log_2 fold change >1), including *LAG3*, *TBX21*, *TYMP*, *PDK2*, *IDH2* and *NDUFA2*, which are involved in T cell signalling, transcriptional regulation, nucleotide biosynthesis and mitochondrial pathways.

In contrast, these pathways were suppressed in both T_{EMRA} and exhausted subsets, as shown by the downregulation of*PDPK1*, *HSF2*, *AMPD2*, *AMPD3*, *NFS1*, *PDK2*, *NDUFS7* genes (log_2 fold change < -1).

Of note, the expression of *SOD2* gene that responds to oxidative stress in mitochondria, was significantly increased in the exhausted cells (log_2 fold change = 0.719). This was complemented by an observed decrease in expression of genes involved in mitochondrial electron transport chain, indicating high levels of reactive oxygen species contributing to the mitochondrial dysfunction.

Conclusions: Higher levels of CD8+ T cell exhaustion and mitochondrial impairment were found in viremic vs aviremic PLWH. Metabolic defects in the mitochondria could be potential targets for novel therapies to restore the CD8+ T cell function.

Future evaluation could combine different strategies including, but not limited to immune-metabolic reprogramming and anti-retroviral treatment.

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EPA029

BNT162b2 vaccine elicits impaired B cell and CD8 T cell responses combined with skewed CD4 T responses in patients receiving hemodialysis

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Background: People receiving hemodialysis (HD) are vulnerable to COVID-19 and have low antibody responses after vaccination. The underlying immune defects are poorly understood.

Methods: We followed 27 HD patients who received two doses of BNT162b2 mRNA vaccine four weeks apart and studied their immune responses before vaccination, 4 weeks after first dose (priming), 4 weeks after second dose (boost), and at 12 weeks (memory). Health-care workers (HCW) who received two BNT162b2 doses 16 weeks apart served as controls.

All participants were confirmed as SARS-CoV-2 naïve. To examine different arms of immunity, we characterized:

i. Humoral responses by receptor-binding domain (RBD) ELISA and cell-based assays

ii. RBD-specific B cell profiles by flow cytometry;

iii. Spike (S)-specific CD4 and CD8 T cell phenotypes identified by activation-induced marker (AIM) assays;

iv. Effector functions of S-specific CD4 and CD8 T cells by intracellular staining (ICS).

Results: Compared to HCW, in HD patients antibody and B cell responses were weaker after priming, increased more sharply after boost, and showed similar decline at the memory timepoint. These responses were significantly lower at each timepoint in HD than in HCW. In contrast, longitudinal CD4 T cell responses were quantitatively equivalent in both cohorts, with both AIM and ICS data showing robust increases after priming and maintenance after boosting.

However, T-helper immunity differed qualitatively in HD. Unsupervised clustering analyses identified fine qualitative differences such as dominance of some TNFα clusters observed in HD participants as well as CD4 T responses skewing toward IFNγ upon boosting in HCW. Those results were confirmed by univariate analyzes. Qualitative differences waned as the responses declined toward the memory timepoint. Also, CD8 T cell responses remained insignificant in HD while elicited in HCW after each dose.

Conclusions: Humoral, B cell and CD8 T responses are quantitatively impaired after BNT162b2 vaccination in HD patients, while CD4 T responses are qualitatively skewed. These data suggest that HD patients have defects in all arms of immunity after vaccination, which may increase their vulnerability to COVID-19 breakthrough infections.

EPA030

HIV-1-specific T-cells in an HIV-1-infected but HIV-1 antibody negative patient on long-term antiretroviral therapy

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Background: HIV-1-specific antibodies usually develop about 3 weeks after infection and persist on antiretroviral therapy (ART). Here, we report on a vertically HIV-1 infected patient presenting with negative HIV-1 antibody tests after 13 years on ART.

Methods: Vertical HIV-1 infection with high HIV-1 viremia was diagnosed in the male patient at the age of 15 months during an episode of gastroenteritis. Since then, he has been treated with varying antiretroviral drug combinations. The patient presented in our clinic for the first time at the age of 14 years on therapy with raltegravir, abacavir and lamivudine. HIV-1-specific antibodies were measured by ELISA and immunochromatographic assays. Proviral PCR was performed using specific primers for gag and RT/protease. HIV-1-specific T-cells were analysed by g-IFN-ELISpot assays using synthetic peptides and both freshly isolated PBMC and peptide stimulated T-cell cultures.

Results: HIV-1 antibodies were undetectable in an HIV-1/2-screening ELISA (Abbott Architect) and an HIV-1/2-specific immunochromatographic test (Geenius HIV 1/2 Confirmatory Assay). HIV-1 viral load in plasma was negative as well as Gag-specific proviral PCR in whole blood.

Analysis for resistance in Protease/RT using proviral DNA demonstrated infection by HIV-1 subtype A6 with no resistance-associated mutations. Normal CD4 T cell count of 750 cells/µl and CD4/CD8-ratio of 1.0 were measured. There was no evidence of humoral immunodeficiency as B-cells were slightly elevated (800 cells/µl) and serum levels of total IgG, IgA and IgM were within normal range. In addition, specific IgGs for several other pathogens (EBV, CMV, hepatitis B virus, mumps virus) were detected in se-

rum. G-IFN-ELISpot analyses for HIV-1 specific T-cells were negative using freshly isolated PBMC, however, peptide stimulation assays revealed a polyclonal T-cell response with recognition of at least 6 CTL epitopes in RT, Nef and Gag.

Conclusions: HIV-1-specific antibody tests may be negative in HIV-1-infected patients on long-term antiretroviral therapy initiated in early childhood.

In addition to proviral PCRs for different HIV-1 targets, the detection of HIV-1 specific T-cells can confirm the presence of HIV-1 infection in seronegative subjects.

EPA031

Pomalidomide drives expansion of HIV-specific CD8+ T cells and enhances NK cell cytotoxicity to augment anti-HIV immunity

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Background: Chronic HIV infection is characterised by CD8+ T cell and NK cell dysfunction that persists despite suppressive ART.

We investigated the capacity of pomalidomide, a well-tolerated immunomodulatory drug licensed for the treatment of multiple myeloma and Kaposi's Sarcoma, to augment anti-HIV immune responses.

Methods: We stimulated peripheral blood mononuclear cells (PBMCs) from uninfected donors and ART-suppressed people living with HIV with therapeutically relevant concentrations of pomalidomide. HIV-specific CD8+ T cell cytotoxicity assays were performed against HIV-peptide loaded autologous CD4+ T cells, and NK cell killing assays were performed against the K562 cell line, 8E5 cell line (for antibody dependent cellular cytotoxicity (ADCC)), and against *in vitro* HIV-infected CD4+ T cells. Cytotoxic and phenotypic profiles were measured by multiparameter flow cytometry.

Results: In the presence of HIV peptide stimulation, pomalidomide compared to DMSO significantly expanded absolute numbers of HIV-specific CD8+ T cells by 2.97-fold (P=0.0234). This expansion of HIV-specific CD8+ T cells resulted in an overall 29.3% (P=0.0011) increase in specific lysis of HIV peptide-presenting CD4+ T cells (targets) in CD8 T cell effector:target co-cultures, compared to DMSO.

Following the addition of pomalidomide, we observed a significant decrease of PD-1 and TIGIT compared to the DMSO control, and an increase of TIM-3 expression on expanded HIV-specific effector memory CD8+ T cells, suggesting these cells have transitioned from an exhaustive state to an activated state.

In addition, pomalidomide significantly reduced the frequency of the "dysfunctional" NK cell subset (CD56-CD16+), whilst expanding the "cytotoxic" subset (CD56dimCD16+) with reduced TIGIT expression and greater degranulation (CD107a) and TNFα production. NK cell killing of K562 cells was significantly enhanced with pomalidomide with 34.7% (P=0.0002) greater killing capacity relative to DMSO. Pomalidomide also significantly enhanced direct NK-mediated killing of *in vitro* HIV-infected autologous CD4+ T cells (p=0.0164) but showed no effect on anti-HIV ADCC *ex vivo*.

Conclusions: These data demonstrate that pomalidomide can enhance HIV-specific CD8+ T cell and NK cell cytotoxicity in samples from ART-suppressed people living with HIV. Given the favourable safety profile of pomalidomide clinically, it may be of great benefit in therapeutic strategies to eliminate or control the persisting HIV reservoir.

EPA032

Virtual memory CD8+ T-cells exhibit highly cytotoxic profiles in people with HIV, and are expanded by N-803

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Background: Virtual Memory CD8$^+$ T (T_{VM}) cells express markers of immunological memory yet remain antigen-inexperienced[1,2]. T_{VM} respond to cells expressing stress ligands and participate in the innate immune response to some viral infections, but their role in HIV remains poorly defined. In mice, T_{VM} develop from naïve CD8$^+$ T-cells (T_N) in the periphery from exposure to IL-15, and proliferate robustly in response to IL-15 treatment[3]. N-803, an IL-15 superagonist, is under investigation in clinical trials - including in people with HIV (PWH).

We aimed to characterize T_{VM} phenotypes in PWH, and investigate the impact of N-803 treatment on T_N, with the hypothesis that N-803 may induce T_{VM} phenotypes from human T_N.

Methods: CD8$^+$ T-cell subsets were characterized by flow cytometry in *ex vivo* PBMCs from PWH (n=12), including T_N, T_{VM}, effector memory that reverted to an RA$^+$ phenotype (T_{EMRA}), central memory (T_{CM}), and effector memory (T_{EM}). T_N were isolated by negative immunomagnetic selec-

tion and left unstimulated or treated with N-803 (4.4nM) for two weeks. T_{VM} were defined as previously described[4]: $CD3^+CD8^+CD45RA^+$ plus $PanKIR^+$ (KIR2D/KIR3DL1) and/or NK-$G2A^+$.

Results: In PBMCs, T_{VM} comprised a median 9.1% (IQR:7.6-17%) of total $CD8^+$ T-cells and expressed greater levels of cytotoxic granules than T_{CM}, T_{EM}, or T_{EMRA} (for each comparison Friedman test p<0.0001 for perforin, granzyme A [GZMA], and granzyme B [GZMB]).

In isolated T_N, N-803 drove significant increases in the frequencies of cells with the T_{VM} phenotype defined above (7.9FC, p=0.002), indicating either expansion of the very small pool of existing T_{VM} (T_N isolation removed the majority of T_{VM} and all T_{EMRA}) or N-803-mediated differentiation from T_N.

Compared to unstimulated T_N, these resulting T_{VM} had significantly higher GZMA (mean 0.7% expression vs 71%; p=0.0007) and GZMB (0.07% vs 26%; p=0.03), perforin (mean FC of MFI 2.1; p=0.05), IL-15Rb (2.5FC; p=0.006), NKG2D (2FC; p=0.0003), and CD16 (2.3FC; p=0.001) expression.

Conclusions: T_{VM} were present in PBMC of PWH, exhibiting highly cytotoxic profiles. N-803 treatment altered the phenotype of $CD8^+$ T-cells and induced and/or drove proliferation of T_{VM} *ex vivo.* These results provide both rationale and guidance for assessing the potential impact of N-803 on T_{VM} in clinical trials in PWH.

EPA033

Persistent dysregulation of Vδ1 T lymphocytes in ART-suppressed people living with HIV

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Background: Major human gammadelta (γδ) T cell populations, Vδ1 and Vδ2 cells, are critical components of immunity both as potent cytotoxic effectors and modulators of adaptive responses. Our previous study suggests factors such as age, biological sex, and race may account for interpersonal differences in Vδ2 cells in people living with HIV (PLWH). During early HIV infection, Vδ1 cells expand and Vδ2 cells are depleted, preceding the inversion of the CD4/CD8 T cell ratio. The consequences of these events and whether the phenotype or functionality of Vδ1 cells remain intact after prolonged suppressive antiretroviral therapy (ART) is unknown.

Methods: TCR repertoire, phenotype, and cytotoxic function of both γδ T cell subsets was compared in PLWH on suppressive ART (HIV RNA <50 copies/mL for >1 year) and uninfected individuals. Demographic information such as race and age was available for 15 PLWH. Immune repertoire sequencing (Illumina) was used to assess TCR diversity. Cytotoxic (CD56/CD16) and exhaustion (PD-1/TIGIT) markers were analyzed by flow cytometry and direct cytotoxic function of Vδ1 and Vδ2 cells was measured in cytotoxic assays by target Daudi cell death after in vitro coculture.

Results: Vδ1-TCR, but not Vδ2-TCR in PLWH showed more diversity than controls. Higher CD56 and CD16 expression in Vδ1 cells from PLWH than in uninfected individuals did not translate into increased Daudi cell killing. PD-1 and TIGIT expression was comparable in both subsets between donor groups suggesting the reduction in cytotoxic function may not be due to immune exhaustion. Vδ1 cells from Caucasian donors expressed higher levels of CD56, but not CD16 compared to African Americans.

Conclusions: Higher Vδ1 cell TCR repertoire diversity and cytotoxic marker expression in the absence of increased killing capacity may indicate selection or expansion of a dysfunctional subset of Vδ1 cell clones in PLWH.

These results suggest that ART may reverse some, but not all γδ T cell dysregulation with greater implications towards restoring the complete immune response in PLWH.

Mucosal immunity

EPA034

Characterization of tissue-resident CD8 T-cells in the pulmonary mucosa of people living with HIV on long-term ART

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Background: Despite the success of antiretroviral therapy (ART), people living with HIV (PLWH) suffer from a high burden of infectious and non-infectious pulmonary diseases, suggesting that their lung immunity is not fully restored. Cytotoxic CD8 T-cells are essential in controlling chronic viral infections. However, excessive CD8 T-cell activation during HIV infection can contribute to lung mucosal tissue damage.

Furthermore, tobacco smoking is part of the lifestyle of many PLWH and smoking changes the lung environment, thus promoting pulmonary inflammation.

Herein, we characterize the effects of HIV and smoking on cytotoxic tissue-resident memory (Trm) CD8 T-cell dynamics in the human lung.

Methods: Bronchoalveolar lavage (BAL) fluid and matched blood were obtained from asymptomatic ART-treated PLWH (median undetectable viral load: 8 years) smokers and non-smokers, and, HIV-uninfected smokers and non-smokers (n=4-7/group). Lymphocytes were isolated and CD8 subsets were characterized by multiparameter flow cytometry. Naïve CD8 T-cells (CD45RA+/CCR7+) were excluded from the analysis. The remaining memory cells were stratified based on expression of CD103 (E-cadherin receptor), CD69 (S1P1 signaling inhibitor), and CD49a (collagen IV receptor). CCR7- memory CD8 T-cells expressing at least one of these markers were defined as Trm. Memory CD8 Non-Trm were defined as CD103-CD69-CD49a-CCR7+/- cells.

Results: Both smoking and HIV infection were independently associated with a significant increase in total CD8 T-cell frequencies in BAL. Within all study groups, CD69+ CD8 T-cell subsets were the most abundant (CD103+CD69+CD49a+: median = 55.8%; CD103-CD69+CD49a+: median = 13.8%; CD103+CD69+CD49a-: median = 4.7%; CD103-CD69+CD49a-: median = 8.2%), while the CD69- subsets were the least abundant.

Furthermore, smoking, but not HIV status, was associated with a significant reduction of CD103-CD8 Trm subsets (CD103-CD69+CD49a+; CD103-CD69+CD49a-).

Moreover, CD103-CD8 T-cells from HIV+ *versus*HIV- study participants displayed higher levels of cytotoxic effector molecules granzymes A/B, with memory Non-Trm cells also showing increased perforin expression.

In all study groups, CD8 non-Trm *versus* CD8 Trm showed significantly lower frequencies of CXCR6+/CXCR3+ cells.

Conclusions: Despite long-term ART,chronic pulmonary inflammation caused by HIV infection may dysregulate mucosal CD8 T-cell cytolytic functions. Lack of CXCR6/CXCR3 co-expression by CD8 non-Trm cells suggests their origin from the circulation. Smoking could promote CD8 T-cell retention in the lung via upregulation of CD103.

EPA035

HIV clade C gp140-SIV-Gag/Nef protein vaccine adjuvanted with NE/AS01B enhanced antibody-mediated effector function and reduced viral loads in SHIV-infected macaques

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Background: More than 90% of HIV infections are transmitted across mucosal tissues, signifying the importance of effective mucosal vaccines. We tested the hypothesis that combining AS01B and nanoemulsion (NE) adjuvants (enhanced gut homing properties) with HIV-1 env-gag-nef antigens, will elicit robust immune responses in macaques.

Methods: Four female rhesus macaques (Macaca mulatta) were immunized with clade C HIV gp140 envelope glycoprotein and SIVmac239 P55 Gag and Nef antigens delivered in 3xNE Pure Soybean oil-nano emulsion and AS01B mucosal adjuvants via intranasal primes and subsequent intramuscular and subcutaneous boosts. Vaccinated macaques and three control monkeys were challenged at week 26 with a weekly intrarectal low dose of SHIV-4MTF and followed for 28 additional weeks. Blood, Cerebrospinal fluid, and rectal biopsies were collected longitudinally to quantify viral loads and measure intracellular cytokine staining (ICS), antibody-mediated phagocytosis (ADCP) complement deposition (ADCD), and antibody neutralization ability.

Results: Immunization did not protect against SHIV infection. However, vaccinated animals had significantly reduced viral loads in the plasma (P=0.003) and CSF (P=0.001) compared to the unvaccinated controls. In vaccinated macaques, we observed:

1. Gag specific CD107a+ responses in lymph node CD4+ T cells (all P>0.05 but <0.07);
2. Gag specific IFNγ or TNFα+ responses in lymph node CD8+ T cells (P<0.05);
3. Gag specific CD107a+ responses in PBMCs CD8+ (P=0.057), compared to unvaccinated animals.

While vaccine-mediated antibodies were not neutralizing, they elicited a robust ADCP and ADCD activities against gp140 (P<0.01) compared to control animals.

Additionally, vaccination protected against acute Roseburia depletion (dysbiosis biomarker) (Controls: .85% to .16%; P=0.03).

Conclusions: AS01B and NE adjuvanted with HIV-1 env-gag-nef antigens is immunogenic and safe in macaques. This vaccine strategy generated polyfunctional CD4+ and CD8+ T-cell virus-specific responses within the periphery and lymphoid tissue.

Further, vaccine-mediated antibodies elicited robust ADCD and ADCP responses and preserved barrier-protecting butyrate-producing bacteria. These combined immune responses were accompanied with enhanced virologic control throughout the infection. The gut-homing properties of the NE adjuvants could aid in improving cellular and humoral-mediated immunity in the context of an HIV vaccine and may be pursued as a mucosal adjuvant in future HIV vaccine design studies.

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EPA036

Interplay between the lung microbiome, pulmonary immunity and HIV reservoirs in people living with HIV

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Background: Pulmonary dysbiosis renders individuals susceptible to infectious and non-infectious lung diseases. While the composition of the lung microbiome differs in people living with HIV (PLWH) versus uninfected individuals, the interplay between the lung microbiome, HIV reservoir size and pulmonary immunity has not been previously explored.

Here, we assessed whether intrapulmonary HIV reservoir size and immune disruption are associated with a reduction in bacterial lung diversity in PLWH, which may predispose PLWH to chronic lung disease.

Methods: Bronchoalveolar lavage (BAL) fluid was obtained from 19 individuals (8 smokers, 11 non-smokers) with well-controlled HIV on suppressive antiretroviral therapy (ART) (undetectable viral load for ≥3 years) and 9 HIV-negative controls (4 smokers, 5 non-smokers). Bacterial DNA was extracted and PCR-amplified from cell-free BAL fluid, targeting the bacterial 16S rRNA gene. Multiplexed amplicon libraries were sequenced. Data sets consisting of amplicon sequence variant (ASV) relative abundances and taxonomic identities were analyzed using joint species distribution modeling. HIV-DNA was quantified from FACS-sorted pulmonary CD4 T-cells using ultra-sensitive PCR. Multiparameter flow cytometry was used to characterise subsets of activated (HLA-DR$^+$), exhausted (PD1$^+$) senescent (CD28$^-$CD57$^+$) T-cells.

Results: The bacterial phyla *Actinobacteria* and *Proteobacteria* are more abundant in smokers, while several other taxa including *Bacteroidetes, Fusobacteria,* and *Patescibacteria* were less abundant in smokers. For PLWH, microbiome diversity (Shannon index of relative abundance of amplicon sequence variants [ASVs] per sample) was lower in smokers than non-smokers (p<0.001).

Frequencies of effector memory BAL CD4 T-cells were positively correlated with abundance of bacterial families. Meanwhile, frequencies of BAL CD4 T-cells expressing HLA-DR+ and CD38+HLA-DR+ were negatively correlated with the abundance of most bacterial families in the lungs. Higher HIV-DNA levels in pulmonary CD4 T-cells and greater proportions of senescent CD8 T-cells were correlated with reduced bacterial diversity (p=0.02 and p=0.02, respectively) in PLWH.

Conclusions: While bacteria community composition deviated between smokers and non-smokers for HIV- individuals, this was not observed in PLWH. This finding suggest that HIV infection may weaken the response of the lung microbiome to smoking.

For the first time, we show that lung reservoir size and immune activation status may impact the lung microbiome, predisposing PLWH to pulmonary comorbidities.

Novel vectors, adjuvants and strategies

EPA037

MVA/Protein HIV-1 vaccine protects against heterologous SHIV infection by modulating IgG glycosylation and T helper response in macaques

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Background: Current global HIV-1 burden, in particular the prevalence of clade C infections across the world has defined an urgent need for the development of a clade C focused preventive HIV-1 vaccine providing heterologous protection.

Methods: Here, we developed and compared the protective efficacy of a clade C HIV-1 vaccine consisting of priming with modified vaccinia Ankara (MVA) and boosting with cyclically permuted trimeric gp120 (CycP-gp120) protein delivered either orally using a needle-free injector or through parenteral injection against intrarectal challenges with a pathogenic heterologous clade C SHIV infection in male rhesus macaques.

All experiments involving rhesus macaques were conducted at Yerkes National Primate Research Center in compliance with Emory University Institutional Animal Care and

Use Committee (IACUC) protocol YER2003491, under USDA regulations and *Guide for the Care and Use of Laboratory Animals* guidelines.

Results: Both routes of vaccination induced a strong envelope-specific IgG in serum and rectal secretions directed against V1V2 scaffolds from a global panel of viruses with polyfunctional activities. Envelope-specific IgG showed lower fucosylation compared to total IgG, and the majority of vaccine-induced proliferating blood $CD4^+$ T cells did not express CCR5 and a4b7, markers associated with HIV target cells. Following SHIV challenge, both routes of vaccination conferred significant and equivalent protection at the end of six weekly repeated challenges with an estimated efficacy of 68% per exposure.

Induction of envelope-specific IgG with G1FB profile correlated positively and G2S2F linked to decreased ADCVI activity correlated negatively with protection. Vaccine-specific mucosal poly-functional $IFNg^+TNFa^+$ $CD8^+$ T cells and TNFa producing $CD4^+$ T cells expressing low levels of CCR5 at pre-challenge were associated with decreased risk of SHIV acquisition.

Additionally, animals that generated high frequencies of proliferating circulating $CD4^+$ T cells during vaccination showed early acquisition of infection.

Conclusions: Thus, the results demonstrate that the clade C MVA/CycP-gp120 vaccine provides heterologous protection by inducing distinct humoral and cell-mediated immune responses that are resistant to HIV infection.

The effectiveness of an HIV-1 vaccine depends on its ability to elicit multidimensional balanced immune responses.

Immune mechanisms of natural or post-treatment control

EPA038

Genetic polymorphism of toll-like receptors (TLRs) in HIV-I infected patients with and without tuberculosis (TB) co-infection

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Background: TLRs are identified as one of the key components of innate immune system due to their ability to sense conserved molecular motifs associated with several pathogens. It has been implicated from several evidences that mutations in genes encoding TLRs are associated with increased or decreased susceptibility to various infectious diseases.

Methods: The study was prospective, cross sectional as well as longitudinal in nature which includes 223 HIV-positive patients, 150 HIV-positive patients with latent tuberculosis infection, 150 HIV-positive patients with active tuberculosis, 200 HIV negative newly diagnosed sputum smear positive pulmonary tuberculosis patients and 205 healthy subjects.

Results: Statistically significant difference was observed in allelic frequencies of TLR4 between healthy subjects and HIV+TB patients ($p<0.001$), healthy subjects and PTB Cat I patients ($p<0.01$), and between healthy subjects and HIV+TB patients ($p<0.001$). TLR4 genotype frequencies were also significantly different between healthy subjects and PTB Cat I patients ($p<0.001$), HIV+ and HIV+TB patients ($p<0.01$).

Statistically significant difference was also observed between HIV+ and PTB Cat I patients ($p=0.04$), HIV+LTBI and HIV+TB patients ($p=0.01$) and between HIV+TB and PTB Cat I patients ($p<0.01$).

Conclusions: This study implicates that Asp299Gly polymorphism in TLR4 gene is associated with increased susceptibility to active TB in HIVseropositive patients. Increased frequency of A allele in TLR9 gene was also discovered at the time of active TB development in ART naïve HIV+ patients, who developed active TB on follow-up.

EPA039

Spontaneous HIV control is associated with concentrations, and not the biophysical characteristics, of polyfunctional anti-Env specific antibody responses

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Background: A small subset of people living with HIV (PLWH), called elite controllers (EC), sustain undetectable viral loads (VL) while viremic controllers (VC) maintain VLs at <3000 copies of HIV RNA/ml of plasma without

treatment. Understanding immunological mechanisms behind this spontaneous control may inform how to extend this functional cure phenotype to non-controllers. The RV144 vaccine trial, which showed modest protection against HIV found that anti-HIV gp120-specific antibody dependent (AD) cellular cytotoxicity (ADCC) was as an immune correlate of protection from infection.

Here we investigated whether AD functions play a role in HIV control. If so, then ECs and VCs would be expected to have more potent AD functions compared to PLWH who are untreated (UTP) or treated progressors (TP).

Methods: Plasma from 18 UTPs, 24 TPs, 37 ECs, and 16 VCs was tested for anti-Env specific antibody (Ab) concentrations and AD functions. Target cells were an in-house generated, novel HIV-infected target cell line expressing closed conformation Env (siCEM). Four AD functions were tested: monocyte-mediated phagocytosis (ADCP) and trogocytosis (ADCT), NK cell-mediated ADCC and activation of the complement cascade (ADCD).

The size of HIV reservoir was measured in HIV controllers (ECs and VCs) by integrated HIV DNA PCR. Anti-Env Ab biophysical characteristics were measured by capillary electrophoresis.

Results: Anti-Env-specific Abs from EC, VC and UTP had similar AD function levels that were higher than those in TP. ECs differed from all the other groups by having a more strongly correlated, polyfunctional anti-Env-specific AD response. Multivariate dimensionality-reduction tools could not distinguish the four subject groups based on IgG subclass and glycosylation.

Between-group differences in AD functions were lost when normalised by anti-Env Ab concentrations, suggesting that quantity, rather than Ab potency drove AD function levels. ADCC function was significantly higher in controllers who maintained an undetectable versus a detectable HIV reservoir size.

Conclusions: Env-specific AD functions were dictated by the quantity, and not the quality of anti-Env Abs. As compared to any other study group, ECs demonstrated highly correlated polyfunctional AD responses. ADCC response levels were associated with HIV reservoir size.

EPA040

Investigating mechanisms of antigen-independent CD8+ T cell enforcement of HIV latency

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Background: Recent research supports the possibility that non-canonical behaviors of CD8⁺ T-cells can reduce HIV expression in infected cells in an antigen-independent noncytolytic manner, paralleling observations from other pathogenic infections. We aimed to confirm this behavior using a precise antigen-independent experimental system by:

1. Abrogating surface expression of MHC Class I so that HIV-infected $CD4^+$ T-cells cannot present antigen to HIV-specific CD8+ T-cells, and by;
2. Ruling out common death-receptor pathways of $CD8^+$ T-cell mediated killing that may otherwise function without MHC I recognition.

Methods: To investigate the antigen-independent impact of $CD8^+$T-cells on HIV expression in $CD4^+$ T-cells, we established a system to abrogate surface expression of MHC I (HLA-A/B/C/E) using CRISPR/Cas9 and two guide RNAs against beta-2-microglobulin (b2M). MHC I KO was performed in HIV-JRCSF-infected $CD4^+$ T-cells from people with HIV and exposed overnight to autologous primary unstimulated or TCR-stimulated $CD8^+$ T-cells (n=6), including $CD8^+$ T-cells with CRISPR KO of cytotoxic granules including Perforin, Granzyme A and B, the TCR, and death receptor ligands including FasL, TRAIL, and NKG2D (n=2).

Results: CRISPR/Cas9 targeting b2M abrogated MHC I surface expression in up to 98% of cells within 48hrs. In HIV-JRCSF-infected $CD4^+$ T-cells, co-culture with unstimulated primary CD8+ T-cells resulted in a median of 5% reductions in Gag+ cells within the MHC-I^{pos} cells (not significant), while co-culture with anti-CD3/28-stimulated $CD8^+$ T-cells drove a 29% reduction (Friedman test; p<0.01).

In MHC-I^{neg} cells (which cannot present antigens to CTLs), medians of 4% (ns) and 17% (Friedman test; p<0.01) reductions in the proportions of $CD4^+$T-cells expressing Gag were observed when exposed to unstimulated and TCR-stimulated $CD8^+$ T-cells, respectively (Friedman test; p<0.001 for both). The reduction in Gag occurred in the absence of cell death.

Although these studies are ongoing, thus far, knocking out cytotoxic effector molecules or death receptors/ligands has not impaired this effect.

Conclusions: These results add to the evidence suggesting that an antigen-independent noncytolytic activity contributes to $CD8^+$ T-cell-mediated suppression of HIV. This provides further impetus to study underlying mechanisms, which may reveal potential therapeutic targets to either augment viral suppression or enhance latency reversal.

Host cellular factors and viral mechanisms of HIV/SIV persistence and latency

EPA041

Higher levels of RNA and protein in plasma-derived exosomes of elite controllers

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Background: Extracellular vesicles (EVs) have recently been proposed as agents involved in the HIV pathogenesis and latency. EVs may contribute to an anti-viral response by carring HIV restriction factors (mRNAs, miRNAs and proteins) to nearby cells or by presenting viral antigens. Moreover, EVs could play a relevant role in the reactivation of HIV reservoir.
Herein, we have analyzed abundance and cargo of EVs derived from plasma of patients with different degrees of virologic control.
Methods: Thirty HIV patients were included: 10 elite controllers (EC), 10 non-controllers under successful cART (NC-TT) and 10 non-controllers cART-naïve with replicating HIV (NC-NT). Ten uninfected controls (UC) were included. Plasma EVs were purified by Size Exclusion Chromatography-SEC. EVs size and abundance were measured by Nanoparticle Tracking Analysis. Size was confirmed by microscopy-TEM. Quality and concentration of isolated total EVs-RNA were evaluated by Bionalyzer 2100 system. EVs-protein was quantified by BCA. HIV-DNA content was assessed in purified CD4 resting memory cells by ddPCR. Inter-group differences and potential associations were tested by non-parametric tests.
Results: SEC allowed to purify exosomes since EVs size (nm) was 117[108-130] for HIV^+ and 120[113-124] for HIV^- (p=0.68) volunteers, verified by TEM. There were no differences (p=0.18) in abundance (EVs/mL) of EVs between HIV^- ($6.30x10^{11}$[$3.89x10^{11}$-$7.11x10^{11}$]) vs HIV^+ ($7.15x10^{11}$[$4.27x10^{11}$-$1.11x10^{12}$]) volunteers. Interestingly, level of EVs-RNA (fg/10^6EVs) was significantly higher in EC (92.65[45.42-271.64]) vs NC-TT (49.7[38.47-65.96])(p=0.05).
Similarly, level of EVs-protein (pg/10^6EVs) was higher in EC (346.44[224.81-637.08]) vs NC-TT (256.46[179.67-308.91]) (p=0.06). Of note, a significant and positive correlation was found between HIV-DNA levels and EVs-protein levels (rho=0.661,p=0.038) only in NC-NT group.
Conclusions: Our results show that the relevance of EVs, specifically exosomes, in HIV infection does not lie in their abundance but in their content. Higher levels of RNA and protein in plasma EVs of elite controllers compared to cART-patients suggest an anti-viral role of EVs in HIV infection. Moreover association between HIV-DNA levels and EVs-protein cargo in NC-NT patients suggests that non-controlled HIV may induce protein factors packaging in EVs to enhance HIV reservoir.
Further analysis of the EVs cargo regarding the type of RNA molecules and proteins are necessary to confirm the anti-viral role of EVs in EC subjects.

EPA042

Nef expression promotes persistent HIV-1 in effector memory CD4+ T-cells

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Background: The expression of the Nef protein contributes to the persistence of HIV-1 by downregulating cell-surface MHC-I and antigen presentation which allows the virus to evade clearance by CD8 T-cells. However, the expression of Nef across memory T-cell subsets and its contribution to the maintenance of defective HIV-1 proviruses which make up the majority of the persistent reservoir is unclear.
To address this issue, we determined the expression of Nef within memory T-cell subsets and whether proviral sequences containing large internal deletions can express Nef.
Methods: Central (T_{CM}), transitional (T_{TM}), and effector (T_{EM}) memory CD4+ T-cells were sorted from four HIV-1 negative HLA-A*02 donors and infected with HIV-NL4-3 containing green fluorescent protein introduced into the *nef*open reading frame (HIV GFP-Nef). This allows for the quantification of Nef expression within these T-cell subsets. Cell surface MHC-I (HLA-A*02) molecules were quantified using flow cytometry.
In addition, seven viral constructs based on participant sequences that contained large internal deletions, but genetically-intact *gag* and *nef*, were introduced into the HIV GFP-Nef molecular clone. HEK-293T cells were transfected with these viral constructs containing the defective proviruses. Gag and Nef expression was assessed by western blot and flow cytometry. MHC-I (HLA-A*02) molecules on the surface of the HEK-293T cells were quantified using flow cytometry.
Results: We observed significantly higher levels of Nef expression in T_{EM} cells compared with T_{CM} cells (p<0.05). The MHC-I downmodulation on the surface of T_{EM} cells was also more pronounced compared to T_{CM} (p<0.05). Moreover, MHC-I expression in T_{EM} cells was negatively correlat-

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ed with Nef expression (Spearman r=-0.8040, p=0.0026). The transfection of HEK-293T cells with defective proviruses containing genetically-intact *gag* and *nef* led to the expression of Gag and Nef proteins. The expression of Nef from these defective proviruses caused the downmodulation of MHC-I.

Conclusions: Nef-mediated MHC-I downmodulation observed in T_{EM} cells supports the role of Nef in protecting these HIV-1-infected cells from clearance by CD8 T-cells. Furthermore, cells infected with defective proviruses containing immunogenic genes such as *gag*, may be protected by Nef expression. This suggests targeting Nef would enhance immune clearance of HIV-1 infected cells during effective therapy.

EPA043

Retinoic acid boosts HIV-1 replication in Monocyte-Derived Macrophages

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Background: While the persistence of viral reservoirs (VR) in long-lived CD4⁺T-cells of people living with HIV (PLWH) receiving viral-suppressive antiretroviral therapy (ART) is well-established, the contribution of myeloid cells, such as tissue resident macrophages (MFs), remains a subject of debate.

Our previous studies demonstrated that, in the colon of ART-treated PLWH, CD4⁺T-cells carry high levels of integrated HIV-DNA, while integrative infection in MFs is rarely observed.

Noteworthy, the intestinal environment is rich in retinoic acid (RA), a booster of HIV replication in CD4⁺T-cells. Thus, we investigated the impact of RA on HIV replication in monocyte-derived MFs (MDMs).

Methods: Monocytes isolated by negative selection from the blood of HIV-uninfected individuals were differentiated into MDMs by culturing in the presence of M-CSF for 6 days and in the presence or the absence of*all-trans*RA (ATRA). MDMs were infected with replication competent CCR5-tropic (NL4.3BaL, transmitted/founder (T/F) THRO), or single-round VSV-G-pseudotyped HIV (HIV_{V-SVG}). Phenotyping was performed by flow cytometry.

Levels of early (RU5) and late (Gag) reverse transcripts and integrated (Alu/LTR) HIV-DNA levels were quantified by nested real-time PCR. HIV replication was measured by HIV-p24 ELISA. Protein expression was measured by western blot. Differentially expressed genes were identified by RNA-sequencing.

Results: ATRA significantly increased CCR5 but not CXCR4 expression in MDMs. ATRA also increased CCR5 tropic $HIV_{NL4.3BaL}$ and HIV_{THRO} replication. Single-round infection with VSV-G-pseudotyped HIV demonstrated that ATRA increases HIV permissiveness in MDMs by acting at post-entry levels, between reverse transcription and integration. The INK128, an inhibitor of the mTOR pathway can counteract the effect of ATRA by reducing CCR5 expression, HIV integration and HIV replication.

Finally, RNA-sequencing revealed that ATRA transcriptionally reprograms MDMs for increased HIV replication through the TCF4/Wnt/β-catenin pathway, a mediator of HIV transcription.

Conclusions: These results support a model in which MDMs in a RA rich environment, such as the intestine, are important HIV infection targets, especially when exposed to highly virulent T/F HIV strains.

Therefore, the rarity of VR in colon-infiltrating MDMs of ART-treated PLWH is likely not due to their resistance to infection but may be rather explained by their rapid turnover*in vivo*.

EPA044

Cross-sectional analysis reveals limited genetic diversity in genes that affect integration site targeting (Integrase and Capsid) in acute HIV-1 subtype C infection in South Africa

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Background: Despite its many benefits, antiretroviral therapy (ART), is lifelong and is not curative because it does not eliminate the latent reservoir of integrated provirus. Understanding the factors that may determine landscape of the reservoir such as the size, cellular distribution and reactivation potential may lead to novel curative strategies.

We performed a cross-sectional analysis of HIV-1 subtype C genetic diversity in the integrase (IN) and capsid (CA) gene loci that are known to affect integration site targeting to elucidate some of the factors affecting HIV integration.

Methods: Study participants were 33 women with acute HIV-1 infection in South Africa. Bulk PCR and Full-Length Individual Proviral Sequencing (FLIP-Seq) using PACBIO and Illumina platforms were used to describe both the

integrated DNA and circulating RNA isolated from transmitted/founder HIV-1 subtype C infection. The resultant sequences (n=215 (IN) and 238 (CA)) were subjected to phylogenetic and population genetic diversity analysis.

Results: In both IN and CA, there was limited phylogenetic diversity in the transmitted/founder virus with sequences clustering independently for each participant. The data also showed relative sequence conservation in both IN and CA (C=0.31 and 0.56 respectively). Low nucleotide diversities were observed at both the inter participant (ϖ=0.0568 (IN) and 0.0602 (CA)) and intra participant (ϖ=0.00-0.0428 (IN) and 0.000-0.0365 (CA)) level. Both IN and CA showed negative selection (Tajima's D=-2.21831, p<0.01 and -0.97528, p>0.10 respectively).

There was amino acid variation in 25% of the genotypes at positions S119 and R231 in IN, previously shown to affect integration site targeting.No notable amino acid variation was observed in CA at position N74, which affects virus-host interactions and integration localization.

Conclusions: Both IN and CA regions of the HIV-1 were relatively conserved with low nucleotide diversity between and within participants. Negative selection was also observed in both genes, consistent with the population bottleneck of transmitted/founder HIV-1 virus seen in early infection.

We identified variants within IN which have been previously associated with viral retargeting of integration sites as well as disease progression in chronic infection.

Understanding the factors governing the integration of the persistent, replication-competent provirus could provide key insights into targeting and eliminating the reservoir.

EPA045

Multi-modal statistical analysis strategies identify biomarkers of cell-associated Gag RNA expression levels during ART

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Background: The forces responsible for persistence and clonal expansion of HIV-infected cells during ART are not well characterized. Levels of several immune activation markers are reported to correlate with levels of cell associated HIV-DNA or RNA (caDNA and caRNA, respectively) and are potential drivers of persistence.

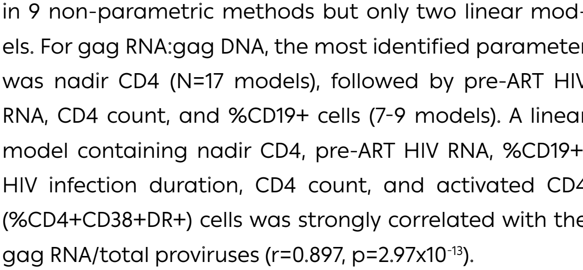
In general, these correlations have been identified via statistical methods using assumptions, including normal distribution of biomarker levels, which may not be appropriate for all factors. New approaches using more comprehensive analyses are necessary.

Here, we evaluated 24 different statistical methods to investigate relationships between HIV caRNA levels and cellular immune markers.

Methods: Clinical data and peripheral blood mononuclear cells were collected from 35 adults (86% male) on ART for >3 years (mean=16yrs). Proportions of cells in T-cell subsets or expressing activation markers were measured with flow cytometry. caRNA and caDNA levels were determined using multiplexed droplet digital PCR, simultaneously targeting HIV LTR and gag DNA or RNA. Levels of caRNA were expressed as levels of gag RNA normalized to total number of proviruses, (LTR DNA copies/2), or to total number of gag-containing proviruses (gag DNA copies).

We investigated correlations between caRNA and clinical/immune characteristics using 24 different methods, including parametric and non-parametric correlation approaches, regression, and classification methods using varying assumptions about dataset structure.

Results: Few characteristics were consistently associated with HIV caRNA. gag RNA:total proviruses was strongly associated with nadir CD4 and pre-ART HIV RNA by 11 different methods; pre-ART HIV RNA was strongly associated



in 9 non-parametric methods but only two linear models. For gag RNA:gag DNA, the most identified parameter was nadir CD4 (N=17 models), followed by pre-ART HIV RNA, CD4 count, and %CD19+ cells (7-9 models). A linear model containing nadir CD4, pre-ART HIV RNA, %CD19+, HIV infection duration, CD4 count, and activated CD4 (%CD4+CD38+DR+) cells was strongly correlated with the gag RNA/total proviruses (r=0.897, p=2.97x10^{-13}).

Conclusions: Nadir CD4 and pre-ART RNA levels have long-lasting effects on levels of HIV caRNA, even after prolonged ART. Linear models incorporating these pre-therapy characteristics with proportions of activated CD4 cells and B cells are strong predictors of HIV caRNA levels during ART.

Results: Our data show HIV-1C P21A mutant had significantly lower transactivation (p = 0.0004) compared to wildtype Tat. Co-immunoprecipitation revealed that this mutant formed a complex with CycT1 and CDK9. Moreover, results from EMSAs showed that the TatP21A mutant is able to bind to the TAR element.

Taken together, our data suggest that HIV-1C Tat P21A mutant significantly reduced its transactivation activity but does not affect its ability to bind to the TAR element and recruit P-TEFb during HIV replication.

Conclusions: Further investigation is required to elucidate other possible mechanisms by which HIV-1C P21A mutant results in lower transactivation activity and whether it plays a role in the development or reversal of HIV latency.

EPA046

Effect of human immunodeficiency virus type 1 (HIV-1) subtype C transactivator of transcription (Tat) P21A variant on nuclear levels of active positive transcription elongation factor b (P-TEFb)

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Background: Although combination antiretroviral therapy (cART) effectively suppresses human immunodeficiency virus type 1 (HIV-1) replication, it is not curative due to the existence of latent viral reservoir. However, mechanisms that govern viral latency are unknown. The HIV-1 transactivator of transcription (Tat) enhances viral gene transcription and is important for HIV-1 pathogenesis. Inter- and intra-subtype Tat genetic variation that translate to functional differences has been reported. Specifically, HIV-1 subtype C (HIV-1C) Tat P21A mutant was reported to be associated with reduced Tat transactivation activity. Although it is well established that Tat binds to the transactivator RNA (TAR) element of the 5' long terminal repeat (LTR) and subsequently recruits the host positive transcription elongation factor b (P-TEFb) for efficient viral gene transcription, the effect of Tat variation on its ability to recruit P-TEFb is unknown.

Therefore, this study aimed to determine the effect of HIV-1 subtype C Tat P21A mutant alone and/or in combination with other Tat mutations on the ability of Tat to recruit P-TEFb to 5' LTR to enhance viral gene transcription.

Methods: To this effect, site-directed mutagenesis was performed to introduce Tat P21A mutation alone or together with other mutations to a pcTat plasmid. Following this, transactivational activity of Tat mutants was measured using Tat transactivation assay. Co-immunoprecipitation was performed using mutant P21A Tat protein and CycT1 and CDK9 proteins, components of P-TEFb. Lastly, electron mobility shift assays (EMSAs) were performed using radioactively labelled P21A mutant.

EPA047

Identification and characterization of novel chromatin regulators involved in HIV transcription and latency

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Background: HIV transcription depends on the assembly of multiple cellular transcription factors and RNA polymerase II (RNAPII) at the HIV-1 5' long terminal repeat (LTR). Furthermore, HIV transcription is heavily influenced by the site of integration and the chromatin environment surrounding the HIV promoter. Current HIV cure approaches, such as the block-and-lock and shock-and-kill strategies, depend on a complete understanding of the regulation of HIV transcription and the surrounding chromatin environment.

There are approximately 320 chromatin remodeling enzymes and readers, writers and erasers of the histone code, which alter chromatin structure in a complex process involving multiple factors.

Characterization of host factors involved in HIV-1 transcription and latency, and how these interact with viral factors, will potentiate development of multiangled approaches towards HIV-1 transcriptional regulation.

Methods: We performed a pooled RNAi screen utilizing short hairpin RNAs embedded in a microRNA backbone (shRNAmirs) to probe all human chromatin regulatory factors (CRFs) simultaneously in the J-Lat 10.6 T cell model of latency. The goal was to identify factors which RNAi loss resulted in either spontaneous reactivation or inhibition of HIV-1 transcription.

Results: We identified 20 top candidate CRFs whose RNAi-effects promote HIV latency and 20 CRFs that promote HIV reactivation, many currently unrecognized factors that could be important. Based on multiple criteria, we are prioritizing identified CRFs and are validating their functions using CD4+T cells from PLWH and *ex vivo* HIV-infected primary CD4+ T cells. Data from RNA-seq, ChIP-seq and ATAC-Seq analyses will inform mechanism of action of these novel host regulators of HIV transcription.

Conclusions: Through a pooled RNAi screen of all human chromatin regulators, we have identified ~40 candidate CRFs with potentially important roles in HIV latency.
Using combinatorial approaches, we will be able to correlate with high-resolution nucleosome architecture data with their binding to chromatin and develop a comprehensive picture of the signals and factors that drive chromatin activity at the latent provirus.

EPA048

Proviral populations persisting in galt during long-term art are highly decayed

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Background: Antiretroviral therapy (ART) controls but does not cure HIV infection. Understanding persistence and clonal expansion of HIV infected cells in tissue compartments is essential to developing ART-free HIV eradication and control strategies. The total level of proviruses remains stable over time while the proportion of proviruses presenting a loss of HIV genes (deletion/decay) increases relative to complete proviruses in peripheral blood. The dynamics of HIV decay in tissues, and the relationship to peripheral blood HIV decay, is not well understood.
To investigate HIV proviral decay in lymphoid tissue we characterized levels of total and decayed proviruses in blood, ileum, and colon from HIV-infected individuals undergoing long-term ART.
Methods: Volunteers (N=6) undergoing suppressive ART for >3 years underwent concurrent phlebotomy and research colonoscopy for sampling of ileum and colon. Peripheral blood mononuclear cells (PBMC) were obtained by ficoll separation; single cell suspensions of colon and ileum were obtained using collagenase digestion procedures.Integrated HIV genes were quantitatively measured using a multiplexed droplet digital PCR assay for HIV LTR and *gag*.LTR represents cells containing HIV provirus and the presence or lack of *gag*represents intact or decayed provirus, respectively.
The proportion of decayed proviruses was quantified by determining LTR/gag ratio; CCR5 copy number was used to normalize HIV copy numbers per million host cells,(Anderson et al., 2020).Levels of HIV DNA species and LTR/*gag* ratios were analyzed using Pearson correlation and wilcoxon non-parametric analyses.
Results: Approximately 30 biopsies from each volunteer were obtained from ileum and colon. As expected, median levels of HIV LTR and *gag* DNA in PBMC (320 copies/million PBMC and 39 copies/million PBMC, respectively) were 3.5-34-fold higher than that detected in colon or ileum samples, which contain a majority of non-lymphoid tissue cells. Proportion of decayed proviruses, measured by ratio of LTR/gag, was significantly higher in ileum or in colon than in PBMC: median LTR/gag 7.0 (ileum), 6.3 (colon), 3.4 (PBMC, Wilcoxon $p<0.025$ for each PBMC comparison).
Conclusions: HIV proviruses persisting in GALT during long-term ART are more highly decayed than those detected in peripheral blood, suggesting a role for tissue-specific factors in enrichment in the proportion of decayed proviruses.

EPA049

Endogenous retrovirus expression distinguishes latent from actively infected cells in novel dual-reporter HIV latency model

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Background: While current antiretroviral drug therapies effectively inhibit the progression of HIV to AIDS, elimination of the virus is complicated by reservoirs of HIV in latently infected cells. Many studies have attempted to discern low levels of transcripts in cells which could both help identify a latent cell and inform on mechanisms which could be therapeutically targeted. Yet humans already have retroviruses in all their cells, which are normally silenced.
The full effect of human endogenous retroviruses (HERV) that are transcribed during HIV infection of CD4+ T-cells is unknown but analysis of the retrotranscriptome under these infection modalities could help uncover answers about HIV latency or infection.
Methods: Here, we utilize published bulk RNA-seq data from a novel dual-reporter HIV latency model and a bioinformatic tool, Telescope, to compare the differential expression of HERVs of peripheral blood mononuclear cells (PBMC) from donor-derived CD4 T-cells infected with HIV*in vitro*and fluorescently labeled and sorted as latently infected or actively infected cells.
Results: We show that HIV latent cells in this model have a unique retrotranscriptomic expression profile compared to actively infected cells, with a higher expression of diverse HERV families in latency. The HERVL, HERVE, HERVH and ERV316A3 families were enriched among upregulated HERV transcripts in latent cells and, specifically, HERVL74_17q12 was significantly upregulated in latently infected cells compared to actively infected.
Only three HERV transcripts were significantly upregulated in the actively infected cells in comparison to latent cells.
Conclusions: This endogenous retrovirus expression signature in latent cells may aid in efforts to identify a unique marker of an HIV infected latent cell, and better understand the mechanisms by which integrated retro-

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viruses are contained, silenced, or activated. Identification of the exact HERVs involved could aid in the potential elimination of the latent reservoir.

Identification, characterisation and Quantification of HIV/SIV reservoirs and rebounding virus

EPA050
Tissues as tools in HIV-1 cure research

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Background: Persistent HIV reservoirs that reside within human tissues are a major hurdle in the fight against HIV. Although peripheral blood analysis and animal models are highly utilized and necessary, human tissues and organoids may provide a more physiological model to study HIV and bridge classic *in vitro* experiments to human HIV-1 clinical trials.

Methods: We have developed several tissue explant and iPSC-derived organoid models that can be productively infected with HIV-1 and suppressed with ART to model latency. Human tonsil explants, iPSC derived CNS, hepatocyte, and colon organoids were each infected with HIV-1 and Gag p24 protein production was measured over time.

In addition to our tissue modeling of HIV latency, we used the 10X Visium platform to spatially characterize the transcriptomic profile of persistent HIV reservoirs in two primary human lymph nodes from ART-suppressed PLWH.

Results: We have been able to establish productive HIV-1 infection and latency in four human tissue explant or iPSC-derived organoid models representing lymphatic, central nervous system, colon, and hepatocyte tissues. Colon organoids were found to be infectable without monocyte coculture, while the CNS organoids required either microglia or monocyte incorporation to establish productive infection. HIV-1 infected hepatocyte + monocyte cocultures showed an altered response to ARVs when compared to the mock infected condition.

In the spatial transcriptomic analysis of primary human lymph nodes, checkpoint inhibitors were upregulated in younger participants regardless of HIV status, while pro-inflammatory markers were upregulated in lymph nodes from the older participant.

Conclusions: Our novel human organoid and tissue explant models show productive HIV-1 infection and ARV-induced latency. Our future direction for these models are to test HIV-1 Cure strategies and characterize the latent reservoir in greater detail using these models. Molecular characterization and biomarker identification of persistent HIV reservoirs that reside within human tissues has been a major hurdle in the fight against HIV.

To address this, we analyzed human lymph nodes using the novel 10X Visium platform to spatially characterize the transcriptomic profile of persistent HIV reservoirs in human lymph nodes. Future directions for this project include adding HIV-1 DNAscope to pinpoint cells with integrated provirus.

EPA051
A new in-vitro model to monitor HIV-1 proviral transcription by Timer-fluorescence protein

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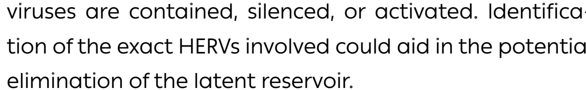
Background: HIV-1 persistence under umbrella of ARTs is linked to its ability to integrate and maintain transcriptional silence which is not permanent; reactivation can occur spontaneously or by drug induction. Fluorescent reporters so far weren't able to explain the heterogenic nature of latent reservoir which hinders its elimination.

In this study, we utilized the unique fluorescent features of Timer protein; which spontaneously shifts its emission spectrum from blue to red; to capture the real-time dynamics of provirus silencing and reactivation.

Methods: We infected Jurkat and THP-1 cell lines with HIV-NL4-3 single-round construct equipped with Timer under 5'LTR control and quantified expression by flow cytometry. We performed limiting dilution to obtain single clones. Provirus integration and genetic environment were identified in clones and bulk infected cells by DNA-cap-seq and LM-PCR library high throughput sequencing respectively. We further utilized single clones to demonstrate provirus response to LRAs/LPAs.

Results: In Bulk infection, we were able to separate infected populations with de novo virus expression (Blue+), sustained expression (Blue+ Red+); from populations with arrested provirus transcription (Red+). By obtaining single clones, we observed strong heterogeneity in provirus expression by timer pattern both within and between clones. By provirus sequence and integration characterization, we identified one clone with provirus integrated in an active transcribed gene but with low basal timer expression and other clone with high basal expression



and a provirus integrated in silenced gene. This encouraged us to further employ them for visualizing provirus response to LRAs/LPAs. With LRAs, besides expected provirus reactivation in both clones, we observed accumulation of (Red+) population across time, which may denote the generation of transiently inducible population.
With LPAs treatment, we observed clear suppression of provirus expression by loss of (Blue+) and appearance of (Red+) populations before reaching final provirus silence. To better characterize (Red+) population, we analyzed integration characteristics for this peculiar population from bulk infection. A tendency of provirus integration in low expressing genes was noticed and under further confirmation.
Conclusions: In summary, we describe a distinctive HIV-1 latency model which can precisely address the heterogenous nature of latent reservoir and offers a new scope for evaluating eradication strategies.

EPA052
HIV genetic diversity and compartmentalization in lung and blood of individuals onlong-term ART

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Background: Comprehensive understanding of archived HIV proviral DNA in different cellular reservoirs is essential to durable HIV eradication. The lung remains an understudied site of HIV persistence. We characterized proviral diversity and compartmentalization in blood and broncheoalveolar lavage (BAL) during long-term ART.
Methods: Subgenomic single-genome HIV sequences (*nef*) were collected from matched blood, BAL, and plasma (where available) from 9 individuals with suppressed viremia on ART. Markov chain Monte Carlo methods were used to infer 7500 within-host phylogenies/participant. Diversity metrics were calculated from the highest-likelihood phylogeny.
Genetic compartmentalization was assessed using Hudson, Boos and Kaplan's nonparametric test(K_{ST}), Analysis of Molecular Variance (AMOVA), and the Slatkin-Maddison (SM) test, with the latter conditioned over all trees.
Results: We isolated1025 proviral (*nef)*sequences from blood (N=788) and BAL (N=237). Of these, 882 (86%) were genetically intact and non-hypermutated, yielding medians of 78 (Q1-Q3=58-90) and 14 (Q1-Q3=6-37) intact sequences/individual for blood and BAL, respectively. Consistent with clonal expansion, 331/882 (38%) intact sequences were identical to another collected, where 7/9 individuals harbored at least one shared sequence across blood and BAL. Identical sequences represented ≥50% of 3 participants' proviral pools; for others, most sequences were unique.
Overall, diversity of unique proviral sequences in blood reflected that in BAL (Spearman's r=0.85, p=0.006). Considering unique sequences/compartment, strong evidence for compartmentalization, defined as statistically significant support in 2/3 tests, was observed for one participant.
Considering all sequences, the number of participants with compartmentalization rose to four. For two participants we also isolated 164 unique HIV RNA (*nef)*sequences from longitudinal historic off-ART plasma samples. Unique plasma and on-ART proviral (blood/BAL) sequences were strongly compartmentalized in both participants, with opposing trends.
For one participant, plasma viruses constituted a subset of proviral diversity, whereas for the other, for whom plasma was sampled over a >12-year period, proviruses predominantly interspersed with more recent plasma sequences.
Conclusions: Results reveal limited genetic compartmentalization between proviruses persisting in blood and lung during long-term ART. Presence of shared HIV sequences in blood and lung is consistent with migration of clonally-expanded reservoir cells between sites. Eradication strategies will need to contend with genetically diverse HIV in blood and tissues.

EPA053
The impact of CoVID-19 on the proviral landscape of ART-treated individuals

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Background: Anti-retroviral therapy (ART) suppresses HIV replication but is unable to eliminate HIV-infected cells harboring chromosomally-integrated proviruses. Immune activation may induce HIV-1 transcription and increase the vulnerability of infected cells to host immune effects.
CoVID-19 can be associated with profound immune activation and may possibly affect the frequency or composition of the HIV-1 reservoir cell pool.
Methods: Five HIV-1 patients from whom PBMC samples were available before and after documented, mild-to-moderate CoVID-19 infection were included in the study.
The average interval between both sampling timepoints was 1.6 years. Proviral sequences were identified by single-genome, near full-length next-generation sequencing (FLIP-seq). Chromosomal integration sites of proviruses were determined using matched integration site and proviral sequencing (MIP-Seq), according to a previously described protocol.

Results: In total, 306 sequences were analyzed from pre-CoVID-19 timepoints and 358 sequences from the post-CoVID-19 timepoints. An average of 867.49 and 1382.54 total copies of HIV-1 DNA/million PBMCs were detected before and after CoV2-infection, respectively.
Moreover, 32.62 intact HIV DNA copies/million PBMCs were detected at the pre-CoVID-19 timepoint and 38.82 intact HIV DNA copies/million PBMCs were detected at the post-CoVID-19 timepoint. 9.35% of proviruses were genome-intact before infection and 6.32% were intact after infection.
Similarly, the proportion of proviruses with defined structural defects did not significantly change during the two study timepoints. Proviral integration sites were detected for n=37 proviruses before infection and n=21 proviruses detected after infection. 13.5% of proviruses were integrated into non-genic genomic areas before CoV2-infection and 14.29% were integrated into non-genic areas after infection.
Among intact sequences, 20% integrated into non-genic areas before infection and 37.50% integrated into non-genic areas after infection (p = n.s.).
Conclusions: We do not find evidence that moderate COVID-19 infection influences the viral reservoir in a significant way. The results emphasize the longitudinal stability of the HIV-1 reservoir and suggest that immune activation associated with CoVID-19 does not notably influence the HIV-1 reservoir profile.

EPA054

Memory CD4 T cells from the liver are infected during SIV infection in Rhesus Macaques

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Background: Despite the introduction of highly active antiretroviral therapy, HIV infection continues to be a major global public health issue as a chronic disease. The liver has been shown to be an HIV-infected organ causing liver disease and co-morbidity in HIV-infected individuals.
We have established a model of Rhesus Macaque infected with SIV, taking the opportunity to analyze more in deep the nature of infected cells in the liver. Herein, we specifically assessed the role of CD4+ T cells.
Methods: Rhesus Macaques (RMs) were infected with the SIVmac251 (20 AID50). RMs were sacrified at different times post-infection and cells from the liver were recovered. CD4+ T cells were stained with specific antibodies and analyzed by flow cytometry. Cell sorting was used to isolate CD4 T cells and to quantify the frequency of viral DNA and RNA.
Results: First, we observed that the frequency of CD4T cells was lower in SIV-infected RMs (12%) in comparison to healthy RMs (31%). After cell staining, we found that more than 40% of CD4 T cells expressed CCR5, a chemokine receptor used by SIV to infect the cells, in comparison to 8% in the blood. The majority of these cells are memory CD4 T cells (CD45RAneg and CD62Lneg). The phenotype of these cells indicated a specific phenotype of CD4 liver cells and not only a contamination from blood CD4 T cells.
After cell sorting, we found that liver CD4+ T cells are infected cells. In comparison to CD4 T cells from the blood, the levels of viral DNA in the liver are similar.
Conclusions: Altogether, our results indicated that CD4 T cells from the liver of SIV-infected RMs could be a possible viral reservoir. Further analyses are in progress to assess the extent of viral infection of CD4 T cells under ART.

EPA055

Characterization of Hiv-1 intact and near-full length defective proviral populations during long-term suppression on antiretroviral therapy

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Background: The persistence of the HIV-1 reservoir is a barrier to cure. The differential decay rate of replication-competent (intact) and -incompetent (defective) proviruses during antiretroviral therapy (ART) suggests selective pressures of therapy and the immune system on the reservoir.
To investigate the role of ART in shaping the proviral landscape, we performed a comparative analysis of intact and near-full length (NFL) defective proviruses using samples obtained prior to and following long-term ART.
Methods: Peripheral mononuclear blood cells were collected longitudinally from 9 participants at pretherapy (n=8) and multiple timepoints during ART (n=17, 0.5-20 years on ART). We amplified single genomes of near full-length (NFL) proviruses and sequenced fragments > 7kb by Illumina MiSeq.
Viral population structure of intact vs NFL defective proviruses from pretherapy and long-term ART samples was assessed by phylogenetic analysis, average pairwise distance (APD), tests for population subdivision (panmixia, p <10^-6 and Slatkin Maddison, p<0.05). Hypermutated sequences were removed, and identical sequences were collapsed prior to the above analyses.
Results: We obtained 950 NFL proviruses (348 intact, 602 defective) from all participants. The median proportion of intact/total PCR-amplified proviruses was 17.56% at pretherapy and 1.63% during ART. Identical intact proviruses were detected in 0-12.50% of the proviral populations at

pretherapy and 0-73.68% on ART while identical NFL defective proviruses were present in 0-11.11% of the populations at pretherapy and 0-50.00% on ART.
No significant differences in diversity were found between intact and NFL defective populations at pretherapy vs long-term ART in any participant; median APD was 1.66% at pretherapy vs 0.63% on ART for intact proviruses while it was 1.87% vs 0.71% for defective proviruses.
Comparing the structure of proviral populations between pretherapy and during ART, two participants harbored distinct intact populations while two others harbored distinct NFL defective populations.
Conclusions: We observed similar frequencies of identical sequences in intact and NFL defective HIV-1 proviruses at pretherapy and during ART; distinct intact and NFL defective proviral populations from pretherapy to long-term ART were present in several participants.
The differential decay rate of intact and defective proviruses is not explained by either the composition of the viral genome or by ART alone.

EPA056
An ultrasensitive planar array p24 Gag ELISA to detect HIV-1 in diverse biological matrixes

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Background: Human Immunodeficiency virus-1 (HIV-1) persistence in the presence of antiretroviral therapy (ART) has halted the development of curative strategies. Most available assays to measure HIV persistence are nucleic acid-based, however they are limited in measuring translational competent viral reservoirs.
We have developed an ultrasensitive p24 ELISA assay that can aid in the detection of translational competent viruses in HIV cure approaches.
Methods: We used a homebrew planar array ELISA to optimize an ultrasensitive p24 ELISA. We used two HIV p24 antibodies and a p24 antigen standard to optimize the assay in different biological matrixes, including Quanterix assay diluent; commercially available human breast milk, cerebrospinal fluid (CSF), tissue culture media, and plasma with six different anticoagulants; and cell lysates from HIV-infected primary CD4T cells. We validated the assay using cells isolated from people living with HIV (PLWH)
Results: Our results demonstrate that the homebrew p24 ELISA has a limit of detection (LOD) for HIV p24 of 2.3+/-1.9 fg/ml in assay diluent. The assay can be performed directly in breast milk (LOD=2.5+/-1.9 fg/ml), CSF (LOD=5.9+/-4.9 fg/ml), RPMI plus 10%FBS (LOD=8.1+/-6 fg/ml) or RPMI plus 10%hiFBS (LOD=6+/-4.5 fg/ml) without major loss of sensitivity or reproducibility. Human serum can influence the sensitivity of the assay both alone (LOD=144+/-125 fg/ml) or when in tissue culture media (LOD=251+/-259 fg/ml). Among the plasmas tested, K2EDTA plasma has the lowest LOD of 12+/-14.4 fg/ml.
Using cell lysates, the assay could detect an individual infected cell expressing p24 in 500,000 uninfected CD4T cells. Finally, this assay also detects p24 in supernatants and cell lysates from cells isolated from PLWH.
Conclusions: The homebrew p24 ELISA allows the detection of HIV p24 in different biological matrixes, including breast milk, CSF, tissue culture media, plasma and cell lysates with limited amount of sample (50 ml/sample).
The results also show that this assay can detect as low as a single HIV viral particle in these biological matrixes. As such, this assay could be used to evaluate cure strategies such as "shock-and-kill" to measure HIV-1 Gag expression in diverse biological fluids and cell lysates after LRA administration when limited sample is available.

EPA057
Viral genome-intactness bioinformatics for subtype A1 and D HIV-1

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Background: To determine whether a HIV-1 DNA genome is intact, automated bioinformatics pipelines such as HIVSeqinR were previously developed using subtypes B and C data (Lee GQ Nat Comm 2019). Here, we evaluate this pipeline for subtype A1 and D HIV-1 DNA genome-intactness determination.
Methods: Blood samples were collected from 23 Ugandans with chronic HIV-1 infection, representing subtypes A1, D, and recombinant forms. DNA extracted from CD4$^+$ cells was limiting diluted, subjected to HIV-1-specific nested PCR (HXB2 638-9632) and Illumina sequenced.
Four components in HIVSeqinR that had subtype-sensitive parameters were evaluated: NCBI BLAST+, an in-house adaptation of web tool Hypermut 2.0, definition of premature stop codons, and definition of psi defects.
Results: We evaluated 1022 *de novo* assembled PCR-derived sequences. BLAST+ was used to screen out non-HIV-amplicons: The use of reference HXB2 (subtype B, default) identified 721/1022, whereas subtype A1 and D references identified 731 and 709 as HIV-1 respectively. Discordant cases were 144-5055 nucleotides in length, contained

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large truncations, and were not candidates for genome-intactness. An in-house adaptation of Hypermut 2.0 was used to identify APOBEC-3G/3F-associated hypermutations. Regardless of the reference used (A1, B default or D), genomes identified as hypermutated were 100% concordant.

At default settings, a genome was defined as defective with premature stop codons if the translated amino acid sequences of *gag*, *pol* and/or *env* were <95% of the expected length of the subtype B reference. In subtype A1 and D, the consensus translated lengths of *gag*, *pol* and *env* were >=95% of the subtype B reference, suggesting this cut-off was appropriate.

Also at default settings, a psi region is considered defective if it contains >=15 nucleotides insertion/deletion relative to HXB2. The use of both A1 and D psi reference sequences produced results 100% concordant with B after subtype-matched manual evaluations.

Conclusions: HIVSeqinR achieves bioinformatics automation for genome-intactness determination. This study provides evidence that this pipeline previously optimized for subtype B and C is compatible with subtype A1 and D. Future studies should apply this pipeline, which is freely available in GitHub, to evaluate reservoir characteristics of subtype A1 and D infections to inform HIV cure research.

Strategies to reduce/eliminate viral reservoirs

EPA058

Rufinamide-induced autophagy cell death in HIV-1-infected macrophages

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Background: The major barrier to HIV cure is the HIV-1 reservoir. Macrophage reservoirs contribute to HIV-1 persistence including reservoir reactivation and reseeding, disease progression, and comorbidities in people living with HIV, including HIV-associated neurocognitive disorders, and cardiovascular disease. Unlike dividing CD4+ T cells, which experience rapid cell-death due to accelerated viral replication, macrophages experience slow viral replication kinetics, and do not die upon HIV-1 infection.

We hypothesized that accelerating HIV-1 replication in macrophages would result in cell-death of only infected macrophages, decaying the reservoir.

Methods: We launched a screening campaign of > 2700 agents (FDA approved/Phase 3) to identify agents that increase viral replication kinetics and confer cell-death only to infected macrophages (flow-cytometry). Data were confirmed using a replication competent HIV-1 (89.6).Toxicity across relevant human uninfected cells were measured (flow-cytometry). Measure of effect of identified agents on SAMHD1 and dNTP were measured (western blots). Death markers were measured (flow-cytometry). Autophagosomes were visualized (electron microscopy; EM).

Results: We identified rufinamide, a blood-brain-barrier penetrant, FDA approved agent that specifically kills only infected macrophages, including newly established infection and already-existing infection, without toxicity to uninfected macrophages or other relevant human cells. Rufinamide does not increase dNTP levels or SAMHD1/pSAMHD1, implying the phenotype is not related to increase in dNTP pools. Impact of HIV-1 accessory protein *Vpr* was evaluated due to known role in toxicity/cell-death. A *Vpr* deletant HIV-1 replication kinetics were not affected by rufinamide, indicating *Vpr* plays a role in the cell-death phenotype induced by rufinamide. Autophagosomes were observed via EM in rufinamide-treated HIV-vector treated macrophages, as were autophagy markers including Beclin-1, demonstrating autophagy as a contributing cell-death mechanism.

Conclusions: Rufinamide induces cell-death specific to HIV-1 infected macrophages, independent of SAMHD1 or dNTP levels. Autophagy is a mechanistic contributor.

These data are promising towards eventual human trials to purge the myeloid reservoir, given its repurposed status and existing body of safety in humans.

EPA059

Effect of novel latency reversal agents on transposable element expression profile in T-cell memory subsets of HIV clinical samples

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Background: A wide spectrum of drugs has been assessed as latency reversal agents (LRA) to reactivate HIV-1 from cellular reservoirs. However, LRAs can also affect expression of other genes. Therefore, we analyzed differential expression of transposable element (TEs) in CD4+ T-cells treated with LRAs.

Methods: We evaluated the effect of canonical and non-canonical NF-kB activation on TE expression through LRA treatment (PKC agonist (Bryostatin and Ingenol B) and SMAC mimetic (AZD5582)).

Briefly, we analyzed public datasets from studies using ex-vivo memory CD4 T-cell subsets, such as central memory (CM), transition memory (TM) and effector memory (EM) memory, from ART suppressed HIV infected individuals treated in vitro with LRAs. After 24h of LRA-treatment, RNA

was isolated and sequenced through Illumina platform. Datasets were downloaded from Gene Expression Omnibus and filtered for length and quality. Filtered reads were aligned to the human genome using Bowtie2 and analyzed for TE expression using Telescope.
Differential expression analysis was performed with DESeq2 and TE with adjusted p-values <0.05 and absolute log2FoldChange > 1.5 were considered differentially expressed.
Results: EM cells were more affected by Bryostatin compared to other T-cell subsets, with 121 (107 upregulated and 14 downregulated) differentially expressed (DE) TEs. Of these, 31% (n=37) were HERVs, and 69 % (n=84) were LINE-1 (L1) sequences. In contrast, we found three full-length HERV (HML2_14q11.2, HML3_5p15.33b and HML3_Xq13.3 loci) exclusively upregulated in CMcells treated with Bryostatin.
In addition we also analyzed memory CD4 T-cell treated with AZD5582 and Ingenol B. Treatment with Ingenol B induced a total of 39 DE TEs (21 L1 (55%)and 17 HERV (45%)). About AZD5582 treatment, we found a total of 753 DE TEs (406 HERV (54%) and 347 L1 (46%)). Eight HERV families (Harlequin, HERVE, HERVI, HERVL, HERVS, HUERS, LTR, PAB) were exclusively regulated by AZD5582 treatment. PRIMA41_19q13.2a and PRIMA41_19q13.2b loci were upregulated in both AZD5582 and Ingenol B treatment.
Conclusions: Our findings suggest that new LRAs may have off-target effects on the expression of TEs and impact the T-CD4 phenotype, which may be used as a biomarker to eliminated target HIV reservoir.

EPA060
Off-target effects on retroelement expression in T-cells Treated with Histone deacetylase inhibitors

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Background: A wide spectrum of drugs have been assessed as latency reversal agents (LRA) to reactivate HIV-1 from cellular reservoirs and aid in viral eradication strategies. Histone deacetylase inhibitors (HDACis) have been studied *in vitro* and *in vivo* as potential candidates for HIV-1 latency reversion. Suberoylanilide hydroxamic acid (SAHA) and romidepsin (RMD) are two HDACis able to reverse HIV latency, however studies of potential off-target effects on retroelement expression have been limited.
Methods: In this study, we analyzed differential expression of retroelements using public RNA-seq datasets obtained from uninfected CD4+, and HIV-1 latently infected CD4+ T-cells treated with HDACis (SAHA and RMD). Datasets were downloaded from the Gene Expression Omnibus and filtered for length and quality. Filtered reads were aligned to the human genome using Bowtie2 and analyzed to retroelements expression using Telescope. Differential expression analysis was performed with DESeq2 and retroelements with adjusted p-values < 0.05 and absolute log2FoldChange > 1.5 were considered differentially expressed.
Results: We found a total of 712 and 1,380 differentially expressed retroelements in HIV-1 latently infected cells following a 24-hour SAHA and RMD treatment, respectively. Furthermore, we found that 531 retroelement sequences (HERVs and L1) were differentially expressed under both HDACi treatments, while 1,030 HERV/L1 were exclusively regulated by each drug.
Furthermore, we analyzed the link between differentially expressed retroelements and nearby immune genes. TRAF2 (TNF receptor) and GBP5 (inflammasome activator) were upregulated in HDACis treated samples and their expression was correlated with nearby HERV (MERV101_9q34.3) and L1 (L1FLnI_1p22.2k, L1FLnI_1p22.2j, L1FLnI_1p22.2i).
Conclusions: Our findings suggest that HDACis have an off-target effect on the expression of retroelements and on the expression of immune associated genes in treated CD4+ T-cells.
Furthermore, our data highlights the importance of exploring the interaction between HIV-1 and retroelement expression in LRA treated samples to understand their role and impact on "shock and kill" strategies and their potential use as reservoir biomarkers.

EPA061
Nanoparticle delivery of romidepsin to reverse HIV latency

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Background: One strategy to eliminate latently infected CD4+ T cells in people living with HIV on antiretroviral therapy (ART) is to reactivate virus expression using latency-reversing agents (LRAs). However, this strategy (often called „shock and kill") has demonstrated limited efficacy both *in vitro* and *in vivo* based on high toxicity combined with low potency and the failure to reduce reservoir size. One approach to increase the potency and reduce toxicity of LRAs is to use a nanoparticle (NP) delivery system.
Methods: We developed a biopolymer nanocarrier system using polymethacrylic acid (PMA_{SH}) to encapsulate the hydrophobic LRA romidepsin (RMD) (RMD-NPs). The

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latency reversal potential and toxicity profile of RMD-NPs was compared to free RMD in T cell-line models of HIV latency, including J-Lat A2 and J-Lat 10.6. Activation of the LTR was measured by green fluorescent protein (GFP) expression using flow cytometry. Cell viability was quantified using an ATP-based chemiluminescent assay.

Results: In the J-Lat A2 cell line, RMD-NPs compared to free RMD displayed a similar potency [mean GFP expression = 73 and 82% respectively] and toxicity profile [mean viability = 36 and 29% respectively].

In contrast, in the HIV J-Lat cell line 10.6, which contains near full length HIV, RMD-NPs compared to free RMD significantly enhanced potency of LTR activation [mean GFP expression = 53 and 22% respectively, p= 0.0253 unpaired t test] and markedly reduced toxicity [mean viability = 100% and 1.4%, respectively, p= 0.0001 unpaired t test].

Conclusions: We have demonstrated in a T cell line model of HIV latency that encapsulation of the LRA romidepsin can lead to enhanced latency reversal with reduced toxicity.

Further studies are necessary to investigate the mechanism behind this effect and whether similar results are found in CD4+ T cells from people living with HIV *ex vivo.*

EPA062

Gamma/Delta T cells target latently HIV-infected non-T cell reservoirs

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Background: The "shock and kill" strategy for HIV cure requires approaches to induce immune responses against reactivated latently HIV-infected cells. The most abundant peripheral gamma/delta (γδ) T cell population (Vδ2 cells) can be expanded *in vitro* using aminobisphosphonates that induce their specific activation.

We previously demonstrated Vδ2 cell ability to recognize and kill reactivated CD4 T cell reservoirs. HIV-infected monocytes may exhibit an intrinsic resistance to apoptosis, although their susceptibility to Vδ2 cells killing is unknown. We hypothesized that *in vitro*expanded Vδ2 cells will clear non-T cell reservoirs.

Methods: We used aminobisphosphonate and IL-2 to expand Vd2 cells from 6 uninfected donors for 14 days. Cells were then FACS-sorted to high purity (>99%). Cytotoxic phenotype of expanded Vδ2 cells (CD16 and CD56) and Granzyme production was analyzed.

U1 cells (Latently HIV-infected monocytic cell line) were exposed to phorbol myristate acetate (PMA) to reverse latency and were cocultured with or without expanded Vδ2 cells at 1:1 and 1:5 [Effector:Target] ratios for 18 hours. Vδ2 cell-mediated U1 cell killing was analyzed by measuring intracellular HIV-p24 production and viability by flow cytometry.

Results: Mean basal CD3+Vδ2 cell frequency was 2.3% compared to 26.8% post-expansion (p=0.002). Expanded Vδ2 cells displayed increased expression of cytotoxic markers CD16 and CD56 and GrzB production. Upon reactivation, mean HIV-p24 in U1 cells cultured alone was 68.3% and was reduced to 34.6% when Vδ2 cells were co-cultured at a 1:1 ratio (p=0.004). Viability of U1 cells was 81.9% and was reduced to 42.1% in the presence of Vδ2 cells (p=0.004). No difference was detected at 1:5 ratio (Mann Whitney U-test). The decrease in HIV-p24 production from reactivated U1 cells (%DHIVp24 (U1 alone - U1+Vδ2 cells) inversely correlated with the frequency of Vδ2+CD16+ cells (r=-0.9, p=0.02, Spearman's correlation).

Conclusions: *In vitro*expansion of Vδ2 cells induced expression of cytotoxic markers and increased Granzyme B production. Vδ2 T cells targeted and killed reactivated U1 cells, as demonstrated by decrease in both intracellular HIV-p24 production and survival.

Our study shows the capacity of Vδ2 cells to clear non-T cell HIV reservoirs and expands on their role as an alternative immunotherapy option for HIV cure.

Immunotherapy (including broadly neutralizing antibodies)

EPA063

Enhanced functional cytotoxic cell populations in PBMCs from individuals with HIV on treatment with ART and dasatinib

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Background: Immune exhaustion is a major cause for the failure of Shock & Kill strategy in people with HIV (PWH). In vivo treatment with tyrosine kinase inhibitors (TKIs) induce functional cytotoxic populations that are able to control residual cancer cells in individuals with chronic myeloid

leukemia (CML). PWH with CML on ART and dasatinib or imatinib show a very small reservoir size. Our objective was to determine whether TKIs may induce the development of responsive cytotoxic cell populations in PWH.

Methods: 34 PWH on ART and 6 PWH with CML on ART and dasatinib (n=3) or imatinib (n=3) were recruited for this study. Ten healthy donors were also recruited as controls. Cell proliferation was measured with CFSE for 6 days with or without dasatinib (75nM) or imatinib (10µM). Direct cellular cytotoxicity (DCC) was measured using K562 as target. IFNγ, TNFα, and granzyme-B (GZB) secretion was measured after Hsp70 (NK) or CD28/CD49D (CD8) stimulation.

Results:

1. Most PWH were males in ART and ART+TKI groups (78.6% and 100%, respectively).
2. Dasatinib in vitro induced a potent cytostatic effect on CD4 from PWH on ART and healthy donors, whereas NK cells were expanded and large granular cell populations with cytotoxic phenotype (CD3±CD56+; CD3+CD8±TCRgd+) were developed after 24h in both groups. Imatinib did not modify cell proliferation in vitro.
3. PBMCs from PWH on ART+TKI showed CD56+ NK cells increased 1.7-fold, whereas the expression of inhibitory receptors KIR2DL5 and NKG2A was reduced 7.4-(p=0.0005) and 2.7-fold (p=0.0350), respectively, in comparison with PWH on ART. NK cells with memory phenotype (CD56+CD57+) were also increased (1.3-fold;p=0.0047).
4. DCC against NK-target K562 cells was increased (1.4-fold;p=0.0424) in PWH on ART+TKI.
5. IFNγ, TNFα, and GZB secretion was increased 14.0-(p=0.0043), 1.3-(p=0.043), and 1.2-fold, respectively, in NK from PWH on ART+TKI, whereas TNFα secretion by Hsp70-stimulated NKT cells was increased 3.0-fold (p=0.0476) in PWH on ART+TKI

Conclusions: Despite immune exhaustion characteristic of chronic HIV infection, PWH on ART+TKI showed increased levels of functional cytotoxic cells with NK and TCRgd phenotypes that support using TKIs as adjuvants of ART during Shock & Kill to advance towards an HIV cure.

EPA064

Broadly neutralizing HIV-1 antibodies as a PrEP modality among young sexual minority men: a conjoint experiment

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Background: End-user perspectives are vital to the design and implementation of emergent Pre-Exposure Prophylaxis (PrEP) modalities. ATN 141a (Next Choices) used a conjoint experiment to evaluate young men who have sex with men's (YMSM; ages 15-24) hypothetical acceptability of broadly neutralizing HIV-1 antibodies (bnAb) as a PrEP formulation.

Methods: We enrolled 150 HIV-negative YMSM in the U.S. into in an online conjoint experiment. YMSM completed the bnAb experiment, selecting between random sets of product profiles using 6 features (delivery time: 30 minutes, 1 hour, 2 hours, and 3 hours; duration of protection: 1, 2, 3, 6 and 12 months; prevention efficacy: 50%, 65%, 80%, 95%, and 99% efficacious; potential side effects: none, soreness at injection site, fever, fatigue, nausea, and weight gain; cost per month in US dollars: $0, $25, $50, $100, $150). A subset of participants completed a follow-up in-depth-interview (IDI; n=10) to discuss their product preferences.

Feature	Level	Preference Share
Time for Delivery	3 hours	14%
	2 hours	24%
	1 hour	30%
	30 minutes	33%
Duration of protection	1 month	3%
	2 months	3%
	3 months	8%
	6 months	21%
	12 months	66%
Efficacy	50%	1%
	65%	1%
	80%	4%
	95%	23%
	99%	71%
Side Effects	None	46%
	Soreness at injection site	13%
	Fever	10%
	Fatigue	17%
	Nausea	9%
	Weight gain	6%
Average cost per month (in $US)	$0	64%
	$25	21%
	$50	9%
	$100	4%
	$150	2%

Table 1. YMSM preference for PrEP bnAb by feature.

Note. Preference share indicates the probability of choosing a level of the feature over another, after adjusting for all other components in the conjoint model.

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Results: YMSM's most desired bnAB package would be delivered in 30 mins, confer 12 months of protection and have 99% efficacy, and result in no side effects. However, when asked to assign value across attributes, participants rated efficacy as the most important feature in a PrEP bnAb (40%), followed by cost (20%), side effects (19%), duration of protection (18%), and delivery time (3%). We then estimated YMSM's preference within each feature (see Table 1).

In IDIs, participants' assessment of PrEP bnAb acceptability was informed by the aforementioned features, personal considerations (e.g., income), and social context (e.g., access to care, stigma).

Conclusions: YMSM weighed the features of a bnAb differentially, offering insights into how product characteristics may affect its potential as a PrPE formulation for YMSM. While efficacy is the most valued component for bnAb, behavioral considerations regarding cost and side-effects should inform bnAb development given their potential impact on acceptability and future uptake.

ARVs, small molecules and immunomodulating agents - pharmacodynamics and pharmacokinetics

EPA065

Ex vivo **HIV suppression in foreskin tissue after oral dosing of F/TDF and F/TAF in young African males**

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Background: On demand pre-exposure prophylaxis (PrEP) in msm has not been evaluated in Africa and the dosing requirement for insertive sex is unknown. The CHAPS trial (NCT03986970) aims to optimize on-demand PrEP dosing for insertive sex for young men.

Methods: Phase 2 open-label, randomised controlled trial (RCT) in Uganda and South Africa of 144 HIV negative men aged 13-24yrs, randomized to one of 9 arms receiving F/TDF, F/TAF or no PrEP at 1 (2 tablets) or 2 (2+1 tablets) consecutive days, with final dose 5 or 21h prior to voluntary medical male circumcision. Foreskins explants were exposed to HIV-1_{BaL} at a high (HVT) or a more biological relevant, low viral titre (LVT); and dosed using the same oral PrEP drug 20h post-challenge. Infection was assessed in culture supernatants by p24 ELISA. TFV-diphosphate (TFV-DP) and emtricitabine-triphosphate (FTC-TP) levels were measured using LC-MS methods. Parallel PK/PD evaluation was performed in isolated PBMCs at VMMC. PrEP effect on foreskin tight junctions was assessed by western blot evaluation of claudin-1, occludin and zonula occludens-1. We present data from South Africa.

Results: Tissue TFV-DP concentrations were ~2-fold higher with F/TAF vs. F/TDF dosing (p=0.02). FTC-TP levels were ~10-fold higher than TFV-DP, and no significant differences were seen between regimens. TFV-DP levels were ~40% higher with 2+1 vs. 2 tablets F/TDF dosing. No TFV-DP dose accumulation was evident for F/TAF. Following *ex vivo* HIV-1_{BaL} challenge, greater decrease of p24 relative to control arm was observed with 2+1 than with 2 PrEP tablets dosing (F/TDF dosing: p=0.24 for HVT; 0.62 LVT; F/TAF dosing: p=0.12 for HVT; 0.39 LVT).

Further decrease was observed in PBMCs (F/TDF dosing: p=0.20 for HVT; 0.57 LVT; F/TAF dosing: p=0.07 for HVT; 0.57 LVT). Protection against LVT with F/TDF and F/TAF was similar. Tight junction proteins were not significantly affected.

Conclusions: Oral on demand PrEP dosing with 2 tablets of F/TDF or F/TAF from 5-21h before HIV-exposure provides *ex vivo* protection of foreskin tissue which increases with 2+1 dosing. PrEP efficacy should be evaluated in blood and mucosally. *Ex vivo* challenge studies in human foreskin explants may facilitate dosing requirements and evaluation of new drugs for PrEP.

EPA066

Mode of interaction of CD4-CD4i antibody hybrids to HIV-1 envelope glycoproteins

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Background: The human-immunodeficiency virus-1 (HIV-1) envelope glycoprotein (Env) trimer [$(gp120/gp41)_3$] is the only viral protein expressed on the surface of infected cells and virions. Env is a metastable complex sampling multiple conformations – the ground state, State 1, is a "closed" conformation resistant to antibodies (Abs) commonly present in infected individuals. Interaction with its

primary receptor CD4, present on the surface of host cells, triggers an intermediate conformation (State 2), which allows downstream rearrangement for engaging the co-receptors to "open" the Env (State 3) and mediate viral fusion. A conformation outside of the entry pathway (State 2A) has been recently described.

This conformation is susceptible to antibody-dependent cellular cytotoxicity (ADCC) and is stabilized in the presence of small molecule CD4 mimetics (CD4mc) together with two families of non-neutralizing Abs (nnAbs) recognizing CD4-induced (CD4i) epitopes of Env: the co-receptor binding site (CoRBS) and the Cluster A families.

We recently developed single Ab-based molecules using prototypic Abs from these families of CD4i Abs and extracellular domain of CD4 receptor (d1d2 domains), which recognize the "closed" Env and have neutralizing activity against different HIV-1 clades; but most importantly, they mediate potent ADCC against HIV-1-infected cells.

Methods: To gain a better understanding on how these conjugates engage the "closed" trimer, we used a "trimer mixing" approach by combining wild-type (wt) subunits with subunits impaired for CD4 or CoRBS Ab binding. Env recognition by Ab-CD4 hybrids was evaluated by flow cytometry.

Results: We found that the soluble-CD4 moiety of the hybrid molecules is responsible for triggering the conformational changes, which allows the subsequent exposure of the otherwise occluded vulnerable epitopes. These new molecules mediate ADCC against infected primary CD4+ T cells and are more potent than the combination of the different moieties (i.e. sCD4 and the respective CoRBS or Cluster A Abs).

Conclusions: Our study provides valuable information on the mode of action of this new family of molecules that represents a promising avenue for eradication strategies.

EPA067

Small-molecule CD4-mimetic compounds expose vulnerable HIV-1 Env epitopes and contact the highly conserved aspartic acid 368

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Background: The HIV-1 envelope glycoprotein (Env) trimer mediates virus entry into cells. The "closed" conformation of Env is resistant to non-neutralizing antibodies (nnAbs). Small-molecule CD4 mimetics (CD4mc) such as BNM-III-170 and MCG-IV-210 sensitize HIV-1-infected cells to antibody-dependent cellular cytotoxicity (ADCC) mediated by nnAbs present in plasma from infected individuals.

Structural studies revealed that the new family of MCG-IV-210 CD4mc derivatives bind within the CD4 receptor-binding, Phe43 cavity in close proximity to the highly-conserved Asp^{368} residue in HIV-1 Env but without establishing a direct contact to the α-carboxylic acid group.

We speculated that further optimized MCG-IV-210 analogs capable of forming H-bonds with Asp^{368} could gain breadth and ADCC potency.

Methods: We optimized MCG-IV-210 piperidine nitrogen substituent to develop new CD4mcs. High resolution structures of complexes formed by new analogs and a $gp120_{CRF01_AE}core_{e}$ were solved by X-Ray crystallography to provide insight into interactions within the CD4-binding cavity and Asp CD4-binding cavity in close proximity to the highly-conserved Asp^{368}. Their capacity to neutralize viral particles or sensitize infected cells to ADCC was measured.

Results: A set of CD4Mc analogs was developed and tested for neutralization and ADCC activities. The best performing analogs were subjected to structural analyses that confirmed their binding within the Phe43 cavity in a manner similar to MCG-IV-210.

In addition, several modifications of the piperidine core improved the position of the new CD4mcs in the Phe43 pocket and surrounding vestibule.Interestingly, two analogs (ZXC-I-090 and ZXC-I-092) exhibitdirect H-bonding with the α-carboxylic acid group of Asp368. This enhanced proximity to Asp368 resulted in improved neutralization and ADCC activities.

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Conclusions: This new family of CD4mc have promise to neutralize and eliminate HIV-1-infected cells *in vivo* and therefore represent a new tool for HIV-1 eradication strategies.

EPA068

Metformin acts on HIV reservoirs to facilitate their recognition by the immune system

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Background: The persistence of viral reservoirs in people living with HIV (PLWH) receiving antiretroviral therapy (ART) is associated with chronic inflammation and non-AIDS comorbidities. Our group demonstrated that Th17 cells are selectively targeted by HIV-1 for infection and viral persistence *via* Mechanistic Target Of Rapamycin (mTOR)-dependent mechanisms. Others groups reported that mTOR positively regulates HIV-1 reactivation from latency.

Given this knowledge, we aimed to explore the molecular mechanisms by which metformin, an indirect mTOR inhibitor commonly used to treat type 2 diabetes, interferes with Th17 functions, HIV replication and viral outgrowth in memory $CD4^+$ T cells from ART-treated PLWH.

Methods: Memory $CD4^+$T cells from HIV-uninfected donors were stimulated with anti-CD3/CD28 antibodies in the presence/absence of metformin and infected with NL4.3Bal HIV-1. HIV release in supernatant was measured by HIV-p24 ELISA.

The frequency of productively infected cells (HIV-$p24^+CD4^{low}$) was measured by flow cytometry. HIV reactivation was assessed by viral outgrowth assay (VOA) in memory $CD4^+$ T cells from ART-treated PLWH in the presence/absence of metformin.

The recognition by broadly neutralizing antibodies (bnAbs) of HIV-$p24^+CD4^{low}$cells from ART-treated PLWH was measured by flow cytometry.

Results: As expected,metformin reduced mTOR pathway activity. Also, metformin reduced HIV-p24 level in the supernatant after *in vitro* infection (Fold Change: 0,69). Surprisingly, it increased the frequency of productively infected HIV-$p24^+CD4^{low}$ cells, as well as the frequency of HIV-$p24^+$ $CD4^{high}$cells after *in vitro* infection (FC: 5,15 and 5,2 respectively) and HIV outgrowth assay (FC: 1,55 and 1,38 respectively).

At the single-cell level, metformin, upon*in vitro* infection, amplified intracellular HIV-p24 accumulation (FC: 1,76) and upregulated the expression of CD4 (FC: 4,24) and BST2 (FC: 1,47), two molecules typically downregulated by HIV. Most importantly, metformin, upon HIV reactivation, enhanced the recognition of productively infected cells by bnAbs, particularly by PGT126 (FC: 2.41) and 101074 (FC: 1.15).

Conclusions: Despite a robust inhibitory effect on HIV release/outgrowth, metformin caused intracellular accumulation of HIV-p24 and facilitated the recognition of infected cells by neutralizing HIV antibodies.

Future clinical trials should explore whether metformin acts on HIV reservoirs *in vivo* to reverse latency and facilitate their recognition by the immune system.

EPA069

Dual antiretroviral loaded nanoparticles for long-acting suppressive HIV therapy

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Background: Viral persistence in secondary lymphoid tissues (SLTs) in patients on combination antiretroviral therapy (cART) has been linked to low SLT penetration of antiretrovirals (ARVs).

Furthermore, commitment to daily antiretrovirals causes poor adherence that can lead to drug failure and rapid viral rebound from these SLTs. Therapeutic strategies that enhance ARV concentrations in SLTs are essential.

Hence, we have designed membrane-wrapped poly-lactic acid nanoparticles (GM3-NPs) expressing the CD169 ligand, GM3 ganglioside, to achieve selective targeting of CD169+ macrophages in SLTs.

We constructed long-acting rilpivirine (RPV) and cabotegravir (CAB) loaded GM3-NPs and hypothesized that NP retention within CD169+ CD81+ non-degradative compartments in macrophages will lead to establishment of long-term cell-associated drug-depots for sustained antiviral potency in SLTs.

Methods: GM3-NPs were formulated by one-step nano-precipitation of lipids, poly-lactic acid, RPV and CAB. Intracellular ARV retention in CD169+ monocyte-derived macrophages (MDMs) was quantified by liquid chromatography (HPLC).

Intracellular trafficking of GM3-NPs in MDMs was determined by confocal microscopy. Antiviral efficacy of GM3-NPs (IC_{50}) was determined in single cycle HIV-infected TZM/bl cells by quantifying luciferase expression in cell lysates.

Long-acting antiviral potency of GM3-NPs was assessed in $CD169^+$ MDMs pre-treated with ARV containing GM3-NPs or NP-free ARVs and maintained in culture for 35 days. MDMs were infected at 7-day intervals with luciferase expressing single cycle HIV-1, and antiviral potencycy was determined by quantifying luciferase expression in infected cell lysates.

Results: IC_{50} of GM3-NPs was comparable to that of free ARVs, suggesting that ARVs retained antiviral potency upon encapsulation in GM3-NPs. Temporal HPLC analysis of MDM lysates revealed that exposure to GM3-NPs, but not NP-free ARVs, resulted in maintenance of inhibitory intracellular ARV concentration (mean ng ±SEM for RPV, 10.4 ± 0.8 and CAB, 14.6 ± 3.7) at day 28 post drug treatment, which correlated with persistent localization of GM3-NPs in non-degradative CD169+ CD81$^+$ compartments.

Importantly, GM3-NPs retained sustained efficacy in MDMs, with robust viral suppression up to 35 days post NP addition.

Conclusions: These results suggest that GM3-NPs maintain ARV-depots and continued suppression of HIV-1 in CD169+ macrophages. Ongoing *in vivo* studies will confirm their antiviral potency in SLTs and potential as a long-acting platform for HIV treatment and prevention.

HIV and co-morbidities

EPA070

High adaptive NK cell frequencies reduce the risk of developing coronary atherosclerotic plaque in cytomegalovirus infected people living with HIV

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Background: People living with HIV (PLWH) have a higher risk of cardiovascular disease (CVD) compared with age-matched HIV uninfected persons. Most PLWH are also human cytomegalovirus (CMV) co-infected. CMV infection drives the expansion of a population of adaptive NKG2C$^+$CD57$^+$natural killer (adapNK) cells. We questioned whether the frequency of adapNK cells was associated subclinical CVD.

Methods: This cross-sectional study included194 participants aged ≥40 yrs enrolled in the Canadian HIV and Aging Cohort Study (CHACS). Of these, 128 were CMV$^+$PLWH, 8 CMV$^-$PLWH, 37 CMV mono-infectedand 21 were negative for both HIV and CMV infection.

All participants were free of clinical CVD. All underwent a cardiac computed tomography (CT) scan to measure total coronary atherosclerotic plaque volume (TPV) in mm^3. Participants were classified as free of or having coronary atherosclerosis if their TPV was "0"and >"0", respectively. The frequency of NKG2C$^+$CD57$^+$adapNK cells were categorized as low, intermediate, and high if they constituted <4.6%, between 4.6% and 20% and >20%,respectively, of the total frequency of CD3$^-$CD56^{dim}NK cells.

The association between adapNK cell frequency and TPV was assessed using an adjusted Poisson regression analysis. The concentration of plasma anti-CMV-specific antibodies was assessed in a subset of 76 CMV$^+$PLWH and 28 CMV mono-infected individuals.

Results: A greater proportion of CMV$^+$PLWH had high adapNK cell frequencies in those with TVP=0 than TPV>0 (61.90% versus 39.53%, p = 0.03, Chi-square) with a similar non-significant trend in CMV mono-infected participants [46.15% versus 34.78%]. In the adjusted Poisson regression analysis, ahigh frequency of adapNK cells had a relative risk of 0.75 (95% CI 0.58, 0.97, p= 0.03) for presence of coronary atherosclerosis.

The concentration of anti-CMV-specific antibodies and frequency of adapNK cells was positively correlated in CMV$^+$individuals (p=0.04, Spearmans).

The concentration of these antibodies positively correlated with TPV in CMV$^+$PLWH and negatively correlated with TPV in CMV-mono-infected persons, though neither correlation achieved statistical significance.

Conclusions: High frequencies of adapNK cells was associated with a reduced risk of atherosclerosis in CMV$^+$PLWH and CMV mono-infected individuals. This observation suggests that adapNK cells protect against the development of coronary atherosclerotic plaques.

EPA071

Scaling-up HPV testing for cervical cancer screening in WLHIV in Zambia

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Background: Zambia has an estimated cervical cancer (CaCx) incidence rate of 66.4/100,0000. CaCx remains the most common cancer accounting for nearly 25% of all cancers diagnosed and causing more cancer deaths

in Zambia. The Ministry of Health (MOH) established the national CaCx screening program in 2006 using Visual Inspection with Acetic Acid (VIA) enhanced with digital cervicography. Recently, WHO made a call to eliminate CaCx through the 90-70-90 approach. The 70 target demands that 70% of eligible women are screened with a high-precision test at 35 and 45 years of age. We present Zambia's progress in scaling-up HPV testing for CaCx screening in WLHIV.

Methods: Through PEPFAR funding, the Ministry of Health procured 50,000 HPV test kits and were distributed across the country in 2021. Through the support of Hologic, we held a country-wide orientation in September 2021 to improve the uptake of HPV testing for CaCx screening in WLHIV.

Results: A team of 24 facilitators, distributed across 8 of the 10 Zambian provinces trained a total of 133 health care workers. This included 38 staff from the laboratory, 82 nurse providers, and 13 medical doctors. The orientation included basics of CaCx and available screening methods and why the country was moving towards HPV testing. Other key topics included sample correction, courier systems, and testing on the Hologic Panther.

This orientation showed an immediate increase in the utilization of HPV testing from a monthly average of 531 to 2,765 before and after the training respectively. The HPV positivity rate was 31% (4,762/15,303).

Month	Tests Done	Negative	Positive	Positivity Rate
Jan	216	161	55	25%
Feb	74	49	25	34%
Mar	64	48	16	25%
Apr	-	-	-	0%
May	618	383	235	38%
Jun	1,272	913	359	28%
Jul	270	190	80	30%
Aug	1,730	1,209	521	30%
Sep	3,700	2,719	981	27%
Oct	1,996	1,304	692	35%
Nov	2,922	1,896	1,026	35%
Dec	2,441	1,669	772	32%
Total	15,303	10,541	4,762	31%

Table 1. HPV testing & positivity rate among WLHIV

Conclusions: These orientations are expected to improve the utilization of HPV testing for CaCx screening. Support from PEPFAR and HPV testing kits manufacturers such as Hologic is key in the integration of HPV testing in Low- and Middle-Income Countries.

EPA072

Association of HIV viremia with pro-inflammatory fatty acid signatures in pregnancy

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Background: Omega-6 (n-6) and omega-3 (n-3) polyunsaturated fatty acids (PUFAs) are vital for fetal metabolic programming and immunomodulation. Arachidonic acid (AA), an n-6 PUFA, is a precursor of pro-inflammatory eicosanoids. The n-3 PUFAs eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) are precursors to anti-inflammatory eicosanoids. Higher n-6:n-3 ratios are harmful to human health.

We assessed associations of HIV immune status and viremia with PUFA signatures in pregnant persons living with HIV (PLHIV).

Methods: We included pregnant PLHIV enrolled from 2009-2011 in the Nutrition sub-study of the Pediatric HIV/AIDS Cohort Study's Surveillance Monitoring for ART Toxicities Study.

We measured 3rd trimester plasma PUFA levels (6 n-6 PUFAs, AA; 4 n-3 PUFAs, EPA, DHA), each as a percent of total fatty acid content, via esterification and gas chromatography. PUFA ratios (n-6:n-3, AA:EPA+DHA) were calculated to evaluate PUFA inflammatory signatures.

Exposures assessed were 1st/2nd trimester CD4 count (<200 vs. ≥200 cells/mm^3) and HIV viral load (VL≥400 vs. <400 copies/mL).

We fit linear regression models using generalized estimating equations to evaluate differences (95% confidence intervals [CI]) in n-6:n-3 and AA:EPA+DHA ratios by each exposure.

Results: Of 264 eligible pregnant PLHIV, 69% were Black, 69% had used antiretroviral therapy (ART) prior to pregnancy, and 94% received ART by the 2nd trimester, predominately protease inhibitor (PI)-based (84%). In the 1st/2nd trimesters, 12% had CD4 counts <200 cells/mm^{3}and 56% had VL ≥400 copies/mL. PUFA concentrations and ratios were similar by CD4 count. VL ≥400 was associated with lower median n-3 concentrations (2.8% vs. 3.0%, p<0.01) and EPA+DHA (1.8% vs. 2.0%, p<0.01). Median PUFA concentrations were 37.9% vs. 36.5% (p=0.09) for n-6 and 6.8% vs. 6.4% (p=0.23) for AA (VL ≥400 vs. <400, respectively).

In models adjusted for age, education, tobacco use, body mass index, and PI vs. non-PI based ART, VL ≥400 was associated with higher n-6:n-3 and AA:EPA+DHA ratios (mean difference in ratio: 1.6 [95% CI 0.79-2.5] for n-6:n-3 and 0.51 [95% CI 0.26-0.76] for AA:EPA+DHA ratios).

Conclusions: PUFA signatures in viremic pregnant PLHIV exhibit a pro-inflammatory milieu. Future studies should evaluate effects of pro-inflammatory PUFA signatures on adverse maternal, neonatal, and childhood outcomes in pregnant PLHIV.

EPA073
MiRNAs as cardiovascular risk biomarkers in people living with HIV (PWH)

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Background: PWH have higher cardiovascular (CV) risk than healthy population (HP), associated with chronic inflammatory processes linked with HIV infection. miRNAs have been studied in HP as biomarkers to facilitate earlier detection of diseases.
The aim of this study was to ascertain if miRNAs could be associated with CV risk in PWH, allowing their use as biomarkers.
Methods: Atherosclerosis, evaluated by the presence of atheroma plaque (AP) as surrogate marker was assessed by eco-doppler ultrasonography (2010 and 2018). PWH with and without AP were considered as high CV (HCVr) and low CV risk (LCVr), respectively. Demographic, clinic-epidemiological and viro-immunological data were collected as well as peripheral blood, stored as peripheral blood mononuclear cells (PBMCs). 72 PBMCs samples were selected for the exploratory assay (N=36 HCVr and N=36 LCVr in 2010). miRNA array was performed to ascertain miRNAs differentially expressed (DE) between groups. Data was normalized and adjusted and DE analyses were performed. Six miRNAs were selected for replication (N=289) and follow-up (N=124) using qRT-PCR. Non-parametric test was applied and results were reproduced by limma.
Results: DE analyses were performed between both groups (HCVr-LCVr). 44 miRNA were identified fulfilling the fold change cutoff ([FC>1.2]) and pvalue < 0.05 (not adjusted) (Fig1). 4 miRNAs were selected, based upon functional/pathway enrichment analysis (miR-140-5p, miR-4668-3p, miR-3613-5p and miR-638) and 2 based in current literature (miR-146a and miR-27b). Replication phase -N=289- and follow-up -N=124- of miRNAs expression was assessed by RT-qPCR. None of them showed significant differences among HCVr and LCVr groups and no association with clinical variables was found.

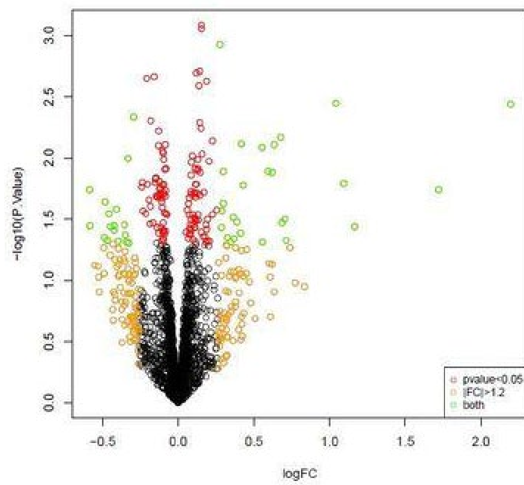

Figure 1. Results of miRNA array normalized by RMA. In green, those 44 miRNAs candidates with p-value <0.05 and |FC|>1.2 (not adjusted).

Conclusions: Although miRNAs can be involved in numerous pathologies based on sequence analysis, data published to date appear contradictory. Our results corroborate the assumption, into a well characterized HIV longitudinal cohort, that miRNAs are not reliable biomarkers for CV risk. More stable biomarkers should be explored in this setting.

EPA074
Youth HIV-associated neurocognitive disorders: a longitudinal cohort study

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Background: Milder forms of HIV-associated neurocognitive disorders (HNCD) remain of major concern even with ART, but there are few longitudinal data in changes in subdomains of cognition during adolescence.
This exploratory study investigates if there are significant changes in cognitive performance across a 36-month follow-up period among a sample of South African youth living with HIV (YLH).
Methods: A subset of 151 participants (121 YLH + 30 controls) of the Cape Town Adolescent Antiretroviral Cohort (CTAAC) completed the same comprehensive neuropsychological test battery for baseline and 36-month follow-up. Cases were perinatally HIV-infected adolescents well-established on ART; controls were age matched HIV-uninfected adolescents from similar communities.
Fluid cognition was assessed across 8 composite cognitive domains and General Intellectual Functioning was assessed as a measure of crystalized cognition. To determine mean differences between YLH and controls for each composite cognitive domains we performed a series

of Mann-Whitney U tests for baseline data and follow-up data separately. To determine if there were any changes in cognitive impairment between baseline and follow-up, we performed a series of Kruskal-Wallis tests for the YLH and control groups separately.

Results: YLH and controls did not differ significantly with regards sex, age, home language, ethnicity, education and repeated grades. With regards to crystalized intelligence, YLH were significantly more impaired than controls at baseline (U=961.5, p=0.000) and follow-up (U=851.5, p=0.000). Regarding change in cognitive impairment between baseline and follow-up, YLH and controls both show significant improvement in the domains of attention (YLH: H=7.308, p=0.007. control: H=5.509, p=0.019), language (YLH: H=74.295, p=0.000. control: H=16.369, p=0.000) and executive function (YLH: H=16.458, p=0.000. control: H=12.804, p=0.000). YLH also significantly improved in the domains of visual memory, visual spatial ability, and motor coordination. Controls also significantly improved in the domain of verbal memory.

Conclusions: YLH showed significant improvement in six cognitive domains and showed no significant improvement or deterioration in the other domains. Cognitive changes as a function of age are well-documented, however, in the context of YLH questions remain regarding the rate of maturation as compared to controls.

Further to this exploratory study, our next steps will include in-depth statistical models to investigate the HIV-time-cognition interaction.

EPA075

What can we learn from the 2021 Aids Healthcare Foundation-Eswatini mortality profile after meeting the UNAIDS 95-95-95 target?

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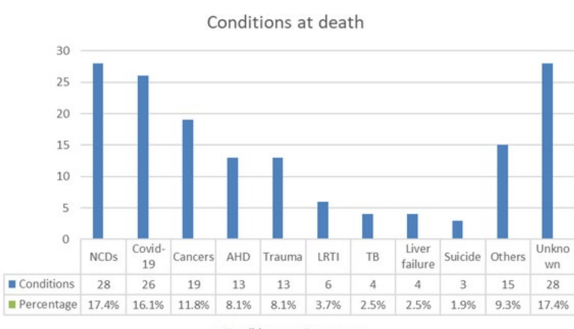
Background: Eswatini has one of the world's highest adult HIV prevalence rates at 27%. Around 200,000 people were living with HIV in 2019. AIDS-related deaths in Eswatini dropped from 400/100,000 in 2010 to about 200/100,000 in 2019. This coincided with the introduction of universal ART coverage.

Additionally, Eswatini is one of the first countries to meet the UNAIDS 95-95-95. We give a descriptive analysis of mortality in a post-UNAIDS 95-95-95 target attainment at AIDS Healthcare Foundation (AHF)-Eswatini from January to October 2021.

Methods: We performed a retrospective data analysis on HIV positive patients whose death was reported between January 2021 and October 2021 at five AHF facilities in Eswatini. Data from the Antiretroviral therapy Patient Monitoring and Reporting system and physical files were analysed using an Excel spreadsheet.

Results: A total of n = 161 patients died in the period under review. The average age was 47.1 (6-87), majority were 40-59 years. 54% had a CD4 count > 350 cells/mm3, 34.1% had a CD4 count < 350. Of the 161 deaths, only 4 (2.5%) had a Viral load > 1000. Majority (64.6%) of the deaths had spent > 36 months on Antiretroviral therapy (ART) while 1.2% died before ART initiation.



The known conditions at death were mostly Non-Communicable Diseases (NCDs) (Diabetes, Hypertension, related complications including chronic kidney diseases) at 17.4%, next was Covid-19 accounting for 16.1% and all types of cancers at 11.8%. 9.3% of clients (n=15) died with Advanced HIV Disease (AHD) related conditions.

Conclusions: Our study shows that while the introduction of universal ART coverage has contributed to reducing AIDS-related mortality, non-AIDS causes of death such as NCDs, cancers and new epidemics (Covid-19) are becoming more frequent. These figures highlight the importance of further efforts and resources towards prevention and early diagnosis of those conditions.

HIV and co-infections (TB, viral hepatitis, SARS-CoV2, other)

EPA077

Active tuberculosis co-infection is associated with broad HIV-1 antibody responses

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Background: Mycobacterium tuberculosis (TB) has been shown to enhance antibody responses against diverse viruses in animal models. Thus, we hypothesized that active TB co-infection enhances the development of HIV-1 specific neutralizing antibodies (nAbs).

Methods: We compared humoral responses among plasma samples from 15 HIV-1 participants with TB (HIV-1/TB) and 16 HIV-1 participants without TB. Neutralization and antibody-dependent cellular cytotoxicity (ADCC) against

12 and 10 HIV-1 isolates were used to estimate breadth and potency scores. HIV-1 envelope diversity was compared among 341 single genome amplified sequences. Plasma cytokines and antibody levels were measured using the flow and Luminex-based assay respectively.

Results: HIV-1/TB and HIV-1 infected participants had similar baseline plasma virus levels (p= 0.3) and CD4 counts (p= 0.4). Anti-HIV-1 neutralization (p = 0.02), but not ADCC (p = 0.7) was broader and more potent in HIV-1/TB group than in HIV group. Plasma IgG titer, CD4 count, viral load, and envelope diversity did not associate with plasma neutralizing and ADCC capacity. Some plasma markers, such as APRIL and IL-6, were higher in HIV-1/TB individuals and associated with enhanced HIV-1 neutralizing antibody (nAb) responses.

Conclusions: Tuberculosis co-infection enhances HIV-1 nAbs but not ADCC, and this may be due to changes in pathways important for antibody production but not increased virus level or antigen diversity. Dissecting mechanisms that account for the enhanced HIV-1 neutralization in HIV-1 individuals with active TB could be used to boost immune responses as part of a functional cure approach in chronic HIV-1 infection.

EPA078

Role of PD-1, TIGIT and TIM3 on NK cell exhaustion and function in HIV/HCV coinfection, and the impact of HCV elimination in the long term

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Background: NK cells negatively modulate liver fibrosis (LF), therefore, playing an important role in liver pathologies. Previously, we demonstrated that NK cells from cirrhotic HCV/HIV-coinfected individuals (HCV/HIV+) displayed impaired functionality and high PD-1 expression.

Here, we aimed to study PD-1, TIGIT and Tim3 as potential exhaustion markers in NK cells from HCV/HIV+ with mild and advanced LF. Also, to evaluate the role of PD-1 on NK cell function in HCV/HIV+ after HCV clearance by direct-acting antivirals (DAA).

Methods: PBMCs were isolated from 37 HCV/HIV+ under ART (20 METAVIR F0/F1, 55% Females and 18 F4, 39% Females, evaluated by transient elastography), 6 HIV-monoinfected (HIV+, 67% Females) and 8 HCV-monoinfected (HCV+, 38% Females) individuals. In 24 individuals, samples were collected before (BSL), end (EOT) and 12 months (12MPT) after successful DAA treatment. NK-cell percentage, immunophenotype (PD-1, TIGIT and Tim3 expression) and degranulation capacity (CD107a assay) were determined by flow cytometry. Non-parametric tests were used to analyze data.

Results: Mean CD4 count: 740±293, 577±339, 944±274 cells/µL for F0/F1, F4 and HIV+, respectively; all with undetectable VL. Unlike PD-1, neither TIGIT nor Tim3 were expressed differently in F0/F1 and F4.

Degranulation of NK/PD-1+ cells was reduced in F4 (p=0.039), while NK/TIGIT+ cells showed diminished CD107a expression in both groups (F0/F1: p=0.016/F4: p=0.023). Tim3 did not affect NK cell degranulation.

After DAA, F4 NK cell frequency was improved between BSL-12MPT (p=0.039) reaching similar levels of HIV+ and HCV+, %NK/PD-1+ diminished at EOT and 12MPT (p=0.015, p=0.03), with no change in CD107a expression.

In F0/F1, no changes in NK cell frequency or %NK/PD-1+ were observed, however, CD107a expression increased between BSL and 12MPT (p=0.03).

Conclusions: PD-1 was the only exhaustion marker expressed differentially between F0/F1 and F4 groups. TIGIT emerged as a marker of lower NK cell functionality.

Although DAA improved exhaustion and frequency of NK cells in cirrhotic individuals, functionality was only reverted in mild LF, remarking the importance of an early DAA treatment.

Results suggest that addition of biological agents (eg. anti-PD-1) might boost this effect and modify LF progression.

EPA079

Maternal HIV status and risk of infant *M. tuberculosis* infection

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Background: The effect of maternal HIV on infant *M. tuberculosis* (Mtb) infection risk is not well-characterized. Young children with Mtb infection are at high risk of developing active tuberculosis (TB).

Methods: Pregnant women with and without HIV and their children were enrolled in a longitudinal cohort in western Kenya. Mothers had interferon gamma-release assays (IGRA, QFT-Plus) and tuberculin skin tests (TST) during enrollment in pregnancy; children underwent TST at 12 and 24 months of age (TST+ = ≥5mm for HIV+, ≥10mm for HIV-). We estimated incidence and correlates of 24-month cumulative infant Mtb infection (TST positivity) using Cox proportional hazards regression.

Results: Among 322 infants with TST, 170 (53%) were HIV-exposed and 152 (47%) were HIV-unexposed. Median infant age at enrollment was 6.6 weeks (IQR 6.1-10.0); most received BCG vaccination (320, 99%). Thirty-nine (12%)

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mothers were TST+ and 102 (32%) were QFT-Plus+. Among 170 HIV-exposed infants, 154 (95%) received ARVs for PMTCT and 141 (83%) of their mothers had ever received isoniazid preventive therapy (IPT).

Twenty-two (6.8%) infants had at least one positive TST for a 24-month cumulative Mtb infection incidence of 3.6/100 PY (95%CI 2.4-5.4/100 PY). Ten percent (17/170) of HIV-exposed and 3.3% (5/152) HIV-unexposed children had at least one positive TST for a 24-month cumulative incidence of 5.3 among HIV-exposed vs. 1.7/100PY for unexposed children (HR 3.1 [95%CI 1.2-8.5], p=0.024).

The majority of TST conversions occurred in the first year of life (12 months 5.1 vs. 12-24 months 2.0/100 PY, HR 2.5 [95%CI 0.9-8.8], p=0.06). Infant Mtb infection was associated with maternal TST positivity (HR 2.9 [95%CI 1.1-7.4], p=0.03), but not QFT-Plus positivity (HR 1.2 [95%CI 0.5-2.7], p=0.74).

Among HIV-exposed children, Mtb infection incidence was similar regardless of maternal IPT (IPT 4.5 vs. no IPT 6.3/100PY, HR 0.7 [95%CI 0.2-2.1], p=0.48).

Conclusions: Infant Mtb infection incidence (as measured by TST) by 24 months of age was ~3.1-fold higher among HIV-exposed children, despite high levels of maternal IPT. Overall, there was a trend for higher incident TST conversions in the first compared to the second year of life, which was similar among both HIV-exposed and unexposed infants.

EPA080

Impact of chronic HCV infection on CD4-T cells permissiveness to HIV infection and viral reservoir persistence

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Background: Hepatitis C virus (HCV) co-infection is a serious co-morbidity in people living with HIV (1), as reflected by higher HIV-DNA reservoir size in CD4-T cells in HCV/HIV co-infected individuals as compared to HIV mono-infected subjects (2).

Reports that HCV cure with Directly Acting Antivirals (DAA) leads to an increase in HIV-DNA/RNA levels raised new questions on the relationship between the two viruses (3).

Methods: We aim to investigate the permissiveness of CD4-T cells from chronic HCV patients to HIV infection *in Vitro and*to characterize changes in the HIV reservoir in HCV/HIV co-infected patients receiving antiretroviral therapy (ART) for HIV, before and after DAA-induced HCV cure. Memory CD4-T cells from chronic HCV patients and negative controls (n=20 per group) were infected with HIV-1 (NL4.3BaL, THRO) *in vitro*. HIV integration and replication were measured by real-time nested PCR and HIV-p24 ELISA/flow cytometry analysis, respectively.

The Carboxy Fluorescein Succinimidyl Ester (CFSE)-based T-cell proliferation assay was used to examine the susceptibility of HCV-specific CD4 T-cells to HIV infection; *Staphylococcus aureus* lysates, CMV-pp65 peptide, and Staphylococcal Enterotoxin B (SEB) were used as controls.

Results: We observed that CD4-T cells from chronic HCV-infected individuals compared to HCV-negative controls are more susceptible to NL4.3BaL HIV-1 infection *in vitro,* as demonstrated by intracellular (p = 0.0332) and soluble HIV-p24 expression (p = 0.0298), and integrated HIV-DNA levels (p = 0.0559). These high levels of HIV-1 replication coincided with superior expression of the HIV co-receptor CCR5 (p=0.007) and positively correlated with HCV plasma viral loads (r= 0.5; p= 0.046). The CFSE-based T-cell proliferation assay combined with HIV exposure *in vitro* indicated that a fraction of HCV-specific CD4 T cells supports productive HIV infection.

Real-time nested PCR and RT-PCR are currently used to examine HIV-DNA reservoir size and the HIV-RNA/DNA ratio in CD4+ T-cells of HCV/HIV co-infected patients (n=10) before DAA,at the end of DAA, and three months post-DAA.

Conclusions: Our data support a model in which chronic HCV infection is associated with increased CD4-T cells activation and permissiveness to HIV infection and that HCV-specific CD4 T-cells are targeted by HIV for infection *invitro*thus, supporting their potential contribution to viral reservoir persistence during ART.

EPA081

HPV circulating tumoural DNA as a potential biomarker to monitor anal lesions in HIV-infected men who have sex with men (MSM)

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Background: Human papillomavirus (HPV) is the principal cause of anal squamous cell carcinomas (ASCC). Recent studies have already showed the prognostic value of HPV circulating tumoral DNA (HPVctDNA) to monitor treatment response in advanced ASCC. Recently, our team has reported the potential interest of HPVctDNA to monitor post-treatment high grade anal intraepithelial neoplasia in HIV infected patient.

No study has been conducted to evaluate HPVctDNA as a non-invasive biomarker to monitor patients with low grade/high grade anal intraepithelial neoplasia (LGAIN/HGAIN) potentially at risk to develop ASCC particularly in exposed HIV infected MSM. We proposed to evaluate HPVctDNA as a predictive and prognostic biomarker in HIV MSM patients with LGAIN/HGAIN or ASCC.

Methods: A cohort of 55 HIV MSM with anal lesion has been enrolled (16 LGAIN, 32 HGAIN and 7 ASCC) in European Georges Pompidou Hospital. First of all, oncogenic HPV genotype was characterized in anal lesion biopsies. Specific HPVctDNA detection and quantification by droplet-based digital PCR (ddPCR) was performed on plasma samples collected at the time of diagnosis. So far, we have developed ddPCR to detect the most prevalent oncogenic HPV namely HPV16, -18, -31 and -33.

Results: As expected HPV16 was the most prevalent (27/55, 49.09%) in all biopsies tested. Multiple infections have been detected for about half of the patients (27/55).

Finally, regarding HPV16/18/31/33 genotype, corresponding HPVctDNA could have been performed on 30 plasmas. No HPVctDNA was detected in plasma of LGAIN/HGAIN patients. For 7 patients presenting ASCC, 5 have undetectable HPVctDNA.

For the 2 other positive patients, a longitudinal retrospective analysis corresponding to plasma collected before and after diagnosis has been performed. In one case, HPVctDNA was already detected in anterior plasma before ASCC diagnosis and in both, HPVctDNA became negative following treatment, correlating with a clinical cure.

Conclusions: Our result confirmed the capacity of HPVctDNA as a non-invasive biomarker to detect ASCC and its specificity regarding anal lesion stages.

Moreover, the possibility to early detect HPVctDNA before anal cancer diagnosis leads the way for specific HPVctDNA as a complementary tool to monitor ASCC development and to optimize medical care of such at risk population of HIV MSM.

Neuropathogenesis

EPA082

Machine learning prediction and phyloanatomic modeling of viral neuroadaptive signatures in the macaque model of human immunodeficiency virus-mediated neuropathology

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Background: In human immunodeficiency virus (HIV) infection, virus replication in the brain can result in HIV-associated neurocognitive deficits in approximately 25% of patients with unsuppressed viremia and is thought to be characterized by evolutionary adaptation to this unique microenvironment. While no single unique mutation has distinguished this neuroadapted population from virus in patients without neuropathology, earlier studies have demonstrated that a machine learning approach could be applied to identify a collection of mutational signatures that can be used to predict this disease.

Methods: The translatability of a machine learning approach to the widely used animal model of HIV neuropathology – the SIV-infected macaque – has not yet been tested, however. We applied a similar machine learning approach to predict simian immunodeficiency virus (SIV)-mediated encephalitis (SIVE) using envelope gene sequences obtained from the central nervous system (CNS), as well as various tissues when available from rhesus macaques infected with the SIVmac251 viral swarm. CNS tissues from four distinct macaque cohorts were used as training datasets, comprised of varying models of neuropathology (e.g., virus- and immune-mediated progression).

Results: The model presented 83% of accuracy in SIVE prediction. SIVE signatures were present at earlier time points of infection and in non-CNS tissues, though not distinguishing SIVE from SIVnoE animals. Lung macrophages in particular were observed to harbor a large proportion (35-100%) of SIVE-classified sequences in both SIVE and SIVnoE animals regardless of time point, suggesting an association between the neuroadaptive signature and macrophage tropism.

Further phyloanatomic analysis corroborated hypothesis, revealing the source of virus in the brain of SIVE animals to be lung macrophages and T cells in SIVnoE animals.

Conclusions: Additional studies investigating model specificity for entry versus replication in the brain are underway, though results also encourage additional studies of the role of lung macrophages as the potential driving force behind neuroAIDS and of a solution for prevention of colonization of the CNS by neurovirulent HIV strains.

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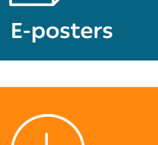
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SARS-Cov2 Viral origins, evolution and diversity

EPA083

Evidence of recurrent selection of mutations commonly found in SARS-CoV-2 variants of concern in viruses infecting immunocompromised patients

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Background: SARS-CoV-2 novel variants emerge throughout the COVID-19 pandemic and represent a public health problem. Recent reports have shown that prolonged SARS-CoV-2 infections in immunocompromised patients lead to viral diversification and cancer patients have a higher intrahost viral genetic diversity compared to non-cancer subjects. These viral changes could play an important role in the emergence of SARS-CoV-2 variants.

Here we report a case of a subject with acute myeloid leukemia and persistent SARS-CoV-2 infection after a bone marrow transplantation and characterize the viral genome over time.

Methods: SARS-CoV-2^{+} swabs from a 31-yr old male patient were collected at six different timepoints during SARS-CoV-2 infection between 18 May and 01 July, 2020. Complete viral genomes were amplified using ARTIC-network primers and sequenced in a MiSeq platform. Viral genomes were assembled using Geneious R11. Nucleotide variations identified between the genomes from different timepoints were evaluated for minor nucleotide frequency using LoFreq.

Results: The first SARS-CoV-2^{+} test was on day 53 post bone marrow transplant when the patient reported respiratory symptoms, fever and a ground-glass profile chest tomography. The following positive tests were performed 14, 22, 28, 37 and 44 days after the first SARS-CoV-2^{+}test. Three genome variations were found comparing the longitudinal samples.

All three changes were in low or no frequency in the first timepoint, S:144del was first detected at the second timepoint and increased in frequency overtime. The nsp6:L37F and nsp6:del106-108 mutations fluctuated over time and in the last timepoint, L37F was predominant and the deletion was not detected. Nsp6 is involved in immune evasion, while L37F has been associated with reduced activation of inflammasomes and pyroptosis and with asymptomatic SARS-CoV-2 infections. Nsp6:del106-108 is found in multiple variants of concern (alpha, beta and gamma) and its impact is unclear. S:144del is present in alpha and omicron variants, is located in the NTD antigenic-supersite and is associated with immune evasion.

Conclusions: Our data suggest that immunocompromised hosts are central to the genesis and emergence of SARS-CoV-2 genomic variations that impact viral immune evasion and are present in VOCs throughout the COVID-19 pandemic, a phenomenon that requires continuous monitoring.

Immune responses to SARS-Cov2

EPA084

Effects of COVID-19 on the cytokine background in chronic controlled HIV infection

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Background: Although the available retrospective studies have not reported an increased COVID-19 prevalence and mortality among HIV+ individuals with undetectable HIV viral load (VL), the possible effects of SARS-CoV-2 co-infection on immune restoration and low-level immune activation in those patients are still scarce.

Aim: To evaluated plasma cytokine balance as a major indicator of immune response potential in HIV+ART+ patients after convalescence from COVID-19, in comparison to non-coinfected controls.

Methods: Two groups of HIV+ART+ patients with undetectable HIV VL were studied: A, n=20, aged 44 (28-68), 40 (11 - 91) days after mild/moderate COVID-19 and B, n=18, aged 37.8 (22 - 74), without data of previous SARS-CoV-2 infection. Peripheral blood samples were collected during the routine follow-up.

Ex vivo plasma cytokine concentrations (IFNγ, TNFα, IL-12p70, IL-13, IL-1α, IL-1β, IL-5, IL-6, IL-18, IL-10, IL-17A, IL-21, IL-22, IL-23, IL-15, IL-1RA, IL-7) were measured with Luminex technology (ProcartaPlex, ThermoFischer Scientific). CD4 T-cell absolute counts (CD4AC), and CD4/CD8 ratio were determined by flow cytometry using lysis-no-wash procedure and TRUCount tubes (BD Biosciences).

Results: CD4AC and CD4/CD8 ratio in group A did not change significantly after SARS-CoV-2 infection (826 vs. 894 and 1.03 vs. 0.96, p>0.05 for both), and were not significantly different from group B (894 vs.753 and 1.03vs.1.04, p>0.05 for both). However, the post-COVID19 cytokine background was characterized with an important decrease of: (mean,

pg/ml) IFNγ (2.8 vs. 19, p<0.001), IL-18 (14.3 vs. 531, p<0.001), IL-13 (2.6 vs. 8.6, p<0.05), IL-10 (0.23 vs. 6.9), and IL-1RA (672 vs. 10581, p<0.05). The total Th1 (IFNγ+TNFα+IL-2) production was also significantly lower in group A (12.1 vs. 53.5, p<0.01), while the sum of pro-inflammatory (IL-1α, IL-1β, IL-6) cytokines remained comparable (8.9 vs. 13.4, p>0.05).

Conclusions: Although CD4AC and residual inflammation do not seem to be affected in HIV+ART+ patients immediately after SARS-CoV-2 infection, the significant decrease of IL-18, IL-13 and Th1 cytokine levels may impact both the effector and immuno-modulatory potential of those patients in the long term.

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EPA085

Vitamin D supplementation enhances cytotoxic response in patients with severe COVID-19

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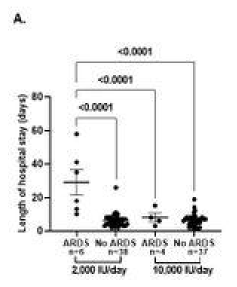
Background: Main cause of severe illness and death in patients with COVID-19 is an excessive inflammatory response derived from a massive cytokine storm.

The objective was to evaluate the effect of high doses of vitamin D on the exacerbated immune response during COVID-19.

Methods: Multicenter, randomized clinical trial with 85 patients hospitalized with respiratory failure due to COVID-19 and serum levels of 25-hydroxyvitamin D [25(OH) D] <30ng/mL. Patients were assigned randomly (1:1) to receive one daily dose of 10,000IU (n=41) or 2,000IU (n=44) of cholecalciferol for 14 days. Peripheral blood samples and clinical data were collected at baseline, 7 and 14 days.

Results: Median age of participants was 65.2 years (IQR 53.0-74.0), most patients (70.6%) were men and mean baseline serum 25(OH)D level was 15ng/mL (SD:6.0). Vitamin D levels increased 1.5-fold in the group receiving 10,000IU/day (p<0.0001) after 14 days, in comparison with 2,000IU/day group. Mean length of hospital stay (LOS) in patients with acute respiratory distress syndrome (ARDS) was significantly different between 10,000IU/day group (8.0 days [SD:4.4]) and 2,000IU/day group (29.2 days [SD: 17.1]) (p<0.0001) *(Figure 1A)*. No significant overall benefit was observed for reducing the inflammatory response, but high doses of vitamin D increased plasma levels of the anti-inflammatory cytokine IL-10 and antiviral cytokine IFNγ. After 14 days of supplementation, cytotoxic response was increased 4.3-fold (p=0.0205) in the 10,000IU/day group, in comparison with the 2,000IU/day group *(Figure 1B)*.



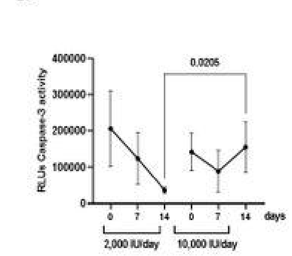


Figure 1.

Conclusions: This is the first study that describes the effect of high doses of vitamin D on the inflammatory and cytotoxic response in patients with severe forms of COVID-19. Due to the exacerbated but ineffective inflammatory response that occurs in some patients, the administration of vitamin D could shorten LOS and prevent the progression to ARDS and the most critical forms of the disease, mostly by increasing the cytotoxic response against the infected cells.

EPA086

T cell immunity to natural SARS-CoV2 infection in virally suppressed HIV infection

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Background: Immune response to SARS-CoV2 among Persons with HIV (PWH) have not been described in details. In this cross-sectional study, we investigated the SARS CoV2 antigen (Ag)-specific T cell responses in a group of PWH after COVID-19, and the association with age, humoral immunity, and T cell immune activation.

Methods: Participants with documented SARS-CoV2 infection: 17 virally suppressed PWH (4F/13M, median age 55 years and 17 HIV-uninfected (9F/8M, median age 39 years) were included. All had mild/moderate symptoms without hospitalization.

Median days from COVID-19 diagnosis to study entry was 44 days in both groups. Ag-specific CD4, CD8 and pTfh responses were analyzed by flow-cytometry using activation induced marker (AIM) assay after 24 hrs stimulation of PBMC with SARS-CoV2 peptides. Spike IgG response was

analyzed by COVID-SeroIndex Kantaro Quantitative IgG ELISA. Results compared by non-parametric Kruskal-Wallace test and by Spearman correlation.

Results: Days from diagnosis to study entry inversely correlated with total Ag-specific CD4 (p=0.02; r= -0.57) and pTfh (p=0.001; r= -0.75) response. CD4 T cell immune activation (IA) measured as frequencies of HLA-DR+CD38+ cells did not differ by HIV status while CD8 IA was significantly higher in HIV+ (p = 0.012).

Age did not correlate with total CD4 and CD8 responses in both groups. Spike IgG responses at study entry did not differ by HIV status (HIV+,12,789±9567 AU/ml: HIV-, 10,341.5±9142 AU/ml). Ag-specific CD4 and pTfh responses analyzed as frequencies of AIM+ (CD40L+CD69+) cells specific to spike (S), non-spike (R) peptides and total response calculated as S+R responses were not significantly different by HIV status.

Frequencies of AIM+ CD8 (CD69+CD137+) were also not different between groups. Spike IgG response directly correlated with AIM+ CD4 (HIV+: p=0.03; r=0.52, HIV-: p=0.027; r=0.52) and pTfh (HIV+: p=0.01; r=0.62, HIV-: p=0.02; r=0.52) in both groups.

Conclusions: Ag-specific CD4 and pTfh responses are associated with humoral response to SARS-CoV2 in HIV following COVID-19. Humoral and cell mediated immunity to SARS-CoV2 were not compromised in PWH and age and T cell IA did not influence the response.

How COVID vaccination in PWH influences these immune determinants and whether vaccine specific immunity is different than the natural infection needs investigation.

SARS-Cov2 vaccines

EPA087

Limited immunogenicity of SARS-CoV-2 vaccine in people living with HIV (PWH) and low nadir CD4 counts

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Background: Data regarding SARS-CoV-2 vaccine immunogenicity among PWH is conflicting. We assessed immune responses to a primary immunization schedule among PWH compared with healthcare workers (HCWs) and individuals with cancer (CA).

Methods: Blood samples from PWH, HCWs, and CA participating in a single-center cohort study were collected 21-30 days after the second SARS-CoV-2 vaccine dose. SARS-CoV-2-spike-specific IgG (IgG-S) was measured using CLIA, and percentages of SARS-CoV-2-spike INF-γ-producing CD4/CD8 were measured using *in vitro* stimulation of PBMCs and flow cytometry.

Results: Overall, 231 individuals (83 PWH, 60 HCWs, and 88 CA) were included. Mean age was 52 years (range, 26-80), and 114 (49.4%) were females. Among PWH, median nadir and current CD4 counts were 226 (interquartile range, IQR, 55-379) and 605 (IQR 466-981) cells/mm3, all were on ART, and 79 (95.2%) were virologically suppressed. Median time since HIV infection diagnosis was 15 (IQR 8-22) years, and 28 (35%) had prior AIDS.

Ninety-five and 89% of PWH developed humoral and cellular responses after second dose, respectively. Compared with HCWs and CA, PWH had significantly lower titers of IgG-S. CD4/CD8 responses among PWH with nadir CD4<=200 cells/mm3 were comparable to that of CA (Figure).

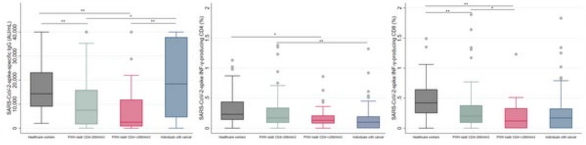

*Figure. SARS-CoV-2-spike-specific IgG titers (AU/mL), and percentages (%) of SARS-CoV-2-spike INF-γ-producing CD4 and CD8 T-cells after vaccination by groups of participants. *p<0.05; **p<0.001.*

In multiple linear regression analysis adjusted by age and sex, nadir CD4<=200 cells/mm3 was significantly associated with lower IgG-S titers and cellular responses (Table).

Multivariate analysis adjusted by age and sex	SARS-CoV-2-spike IgG titers Coef. (95% CI) p-value		SARS-CoV-2-spike INF-γ-producing CD4 Coef. (95% CI) p-value		SARS-CoV-2-spike INF-γ-producing CD8 Coef. (95% CI) p-value	
PWH, nadir CD4 <=200 cells/mm3	reference		reference		reference	
PWH, nadir CD4 >200 cells/mm3	4490.10 (-1387.15-10367.30)	0.134	0.12 (0.01-0.24)	0.037	0.15 (0.00-0.30)	0.056
Healthcare workers	7222.40 (1283.09-13161.65)	0.017	0.17 (0.05-0.28)	0.005	0.34 (0.19-0.49)	<0.001
Individuals with cancer	9796.50 (4083.49-15509.57)	<0.001	-0.04 (-0.15-0.07)	0.475	0.07 (-0.07-0.22)	0.327

Table.

Conclusions: Humoral and cellular immune responses were elicited in almost all PWH after SARS-CoV-2 vaccination, whereas the magnitude was affected by nadir CD4 counts. Blunted cellular immunogenicity was observed in PWH with nadir CD4<=200/mm3 and CA, which may impact vaccine effectiveness.

EPA088

Adverse events following COVID-19 vaccination among people with HIV: review of available vaccine safety literature

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Background: Vaccines used in national immunization programs undergo scientifically rigorous, multi-stage randomized clinical trials and robust post-licensure studies for safety and efficacy. However, they are not risk-free, and adverse events following immunization (AEFI) may occur. While people with HIV (PWH) have an increased risk for severe COVID-19 disease, there are limited COVID-19 vaccine safety data among this population.

We conducted a literature review to summarize published safety data and describe reported AEFIs of COVID-19 vaccinations among PWH.

Methods: This systematic review included published literature from January 1 2019–December 3, 2021. We searched MEDLINE, Embase, CINAHL and Global Health without any geographic restrictions. Grey literature sources including medRXIV were also reviewed. The keywords and search terms included HIV and COVID-19 and vaccine.

Eligibility criteria included vaccine safety outcomes among PWH published in English in peer-reviewed journals. Data on vaccine platforms, products, study design, sample size and AEFIs were compiled. AEFIs were classified into serious or non-serious: non-serious AEFIs could be local (e.g., pain or swelling) or systemic (e.g., fatigue, headache). Serious adverse events (SAEs) were defined as events that were life-threatening or resulted in hospitalization or death.

Results: A total of 3,005 unduplicated articles were identified. After title and abstract screening, 52 were further assessed for full-text review. A total of 12 articles met the inclusion criteria. The majority of the included articles (75%) described randomized controlled trials or prospective cohort studies using mRNA, inactivated vaccine, and adenovirus vector COVID-19 vaccine platforms. The reported AEFIs were predominantly non-serious (99%) local and systemic adverse events. SAEs were rare (0.1%–0.4% of recipients), and included Bell's palsy, myocardial infarction, thrombocytopenia; 4 SAEs were among PWH. Overall, there was a lack of reported AEFI data stratified by special populations, including PWH.

Conclusions: A small number of studies reported on COVID-19 vaccine safety among PWH. Most of the reported AEFIs were non-serious and few occurred among PWH. Potential contributing factors to AEFIs, such as immunosuppression and antiretroviral drug interactions may be considered for future reviews. COVID-19 vaccines and other newly introduced vaccines should continue to be monitored for safety among general and special populations, including PWH.

EPA089

Potent cytotoxic activity against SARS-CoV-2 of CD8+ T cells from individuals with HIV who received complete schedule of COVID-19 vaccines

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Background: COVID-19 vaccination is recommended for people with HIV (PWH) but low CD4 count and immune system exhaustion may affect the quality of the immune response.

Our objective was to evaluate the humoral and cellular immune responses in PWH after receiving complete schedule of currently approved vaccines against SARS-CoV-2.

Methods: Blood samples of 23 PWH who did not have passed COVID-19 were collected before and 4-6 weeks after receiving two doses of COMIRNATY or Spikevax, or one dose of Ad26.COV2-S. Fourteen healthy donors with similar vaccination patterns were recruited as controls. Direct cellular cytotoxicity (DCC) was analyzed by measuring caspase-3 activity in Vero E6 cells infected with pseudotyped SARS-CoV-2_Renilla after co-culture with PBMCs (1:1). DCC against HIV-1 was analyzed in NL4.3_Renilla-infected TZM cells. Cell subpopulations were analyzed by flow cytometry. IgG titers were quantified by Euroimmun-Anti-SARS-CoV-2.

Results: 1. Most participants (78%) were vaccinated with COMIRNATY. CD4 count in PWH was 864 (IQR 631-1035) cells/mm3 and CD4/CD8 ratio was 0.97 (IQR 0.69-1.2).

2. DCC against SARS-CoV-2 increased 3.86-fold (p=0.0255) in PBMCs from PWH before vaccination and 1.65-fold (p=0.0434) after vaccination, in comparison with healthy donors. Viral replication was reduced 1.67- (p=0.0229) and 1.53- (p=0.0251) fold after co-culture with PBMCs from PWH before and after vaccination, respectively.

3. CD8 count increased 1.43-fold (p=0.0408) in PWH before vaccination and it was maintained after vaccination. CD8+CD107a+ subpopulation increased 1.3-fold (p=0.0408) in PWH but remained unchanged in healthy donors.

4. CD3+CD8-TCRγδ+ subpopulation increased 6.55-fold (p<0.0001) in PWH after vaccination, with CD107a expression increased 8.84-fold (p=0.0016). CD3+CD8+TCRγδ+CD107a+ subpopulation increased 2.08-fold (p=0.0050) in PWH.

5. We found no differences in NKs or NKTs between groups.

6. The response against HIV-infected TZM monolayer was not modified after vaccination.

7. IgG levels against SARS-CoV-2 increased 43.78-fold ($p<0.0001$) after vaccination, similarly to healthy donors ($p=0.0156$).
Conclusions: PBMCs from ART-treated PWH with >500 CD4/mm3 showed a good cellular and humoral response to SARS-CoV-2 one month after receiving complete schedule of COVID-19 vaccines. DCC was higher than in PBMCs from healthy donors and it was mostly based on a potent memory CD8±TCRgd+ response. Vaccination did not modify the immune response against HIV.

EPA090

Factors associated with SARS-CoV2 vaccination acceptance in people with HIV participating in the SCAPE-HIV study

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Background: The high prevalence of comorbidities and social inequity, coupled with regular contact with heath care services experienced by people with HIV (PWH), are likely to influence vaccine uptake as well the risk of SARS-CoV2 infection and severity. This analysis aims to determine factors associated with SARS-CoV2 vaccine uptake.
Methods: The SCAPE-HIV study (SARS CoV2 Antibody PrevalencE in a London HIV cohort) is an ongoing cross-sectional study within a London HIV clinic outpatient adult cohort. Interim analysis was performed on 515 participants recruited between July-September 2020. Participants completed questionnaires about their sociodemographic, clinical and SARS CoV2 vaccine status.
Results: 493/515 (89.6%) reported they had been offered a SARS-CoV2 vaccine. Median age offered vaccination was 53 years, 18.1% self-identified as female, 72.4% white, 17.3% black.Over half (57%) had a university degree, 62.5% were in employment (24.6% as keyworkers), but 95/483 (19.7%) reported they did not always have enough money to cover basic needs.
All were on antiretroviral therapy (ART), median CD4 627 (IQR 471, 802; range 20-1969); median nadir CD4 237 (IQR 111, 372; range 2-1048); 96.4% had an undetectable HIV viral load (<50 copies/ml). Almost all (95.7% (472/493)) participants accepted the vaccination offer.
Acceptance of SARS-CoV2 vaccination offer among PWH was not associated with age, education, employment status, numbers living in household or any HIV related factors (see table). Those more likely than others to refuse SARS-CoV2 vaccination included women, PWH who did not identify as white or black ethnicity (OR 3.12 (95%CI 1.05-9.25)), those did not always have enough money to cover basic needs (OR 2.65 (95%CI 1.07-6.60)), and those who do get seasonal influenza vaccinations (OR 4.32 (1.77-10.51)). History of COVID19 was also associated with vaccine refusal (OR 3.46 (1.43-8.38)).
Conclusions: SARS-CoV2 vaccine acceptance in this cohort of PWH was extremely high. Although participation in the study may be more likely in those accepting vaccination, the study recruited a substantial proportion of people with social disadvantage.
These findings suggest a history of declining influenza vaccination may be a marker of SARS-CoV2 vaccine hesitancy. Better understanding of the psychosocial factors influencing vaccination uptake will enable effective intervention.

EPA091

Immunogenicity of mRNA-1273 COVID-19 vaccination in PLWH after inadequate primary vaccination response

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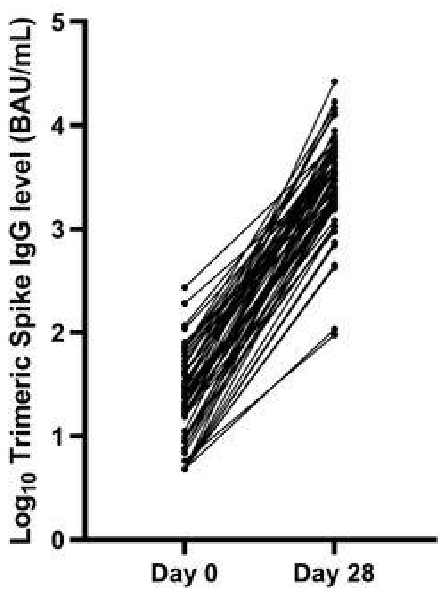
Background: A single prime-boost COVID-19 vaccination cycle led to lower antibody levels in people living with HIV (PLWH) compared to healthy controls, with a substantial proportion of inadequate responders. Here, we evaluated whether an extra vaccination could induce measurable immune responses in this population.

Methods: In a nationwide prospective cohort study (COVIH, n=1148) all PLWH with inadequate antibody response to primary vaccination (≤300 BAU/mL Trimeric Spike IgG, Liaison) were invited for an mRNA-1273 (100mcg) vaccination (n=165). The anti-SARS-CoV-2 Trimeric Spike IgG response 4 weeks later was assessed as primary endpoint. Secondary endpoints include clinical biomarkers for antibody responses, reactogenicity and the induction of SARS-CoV-2-specific neutralizing antibodies and T-cell responses targeting circulating variants.

Results: Seventy PLWH with inadequate antibody responses (41 after primary vaccination with ChAdOx1-S, 25 after BNT162b2, 4 after Ad26.COV2.S) were included. The mean antibody level directly pre-vaccination was 34.2 BAU/mL (95% CI 24.0-77.5), including 7 with undetectable serological responses. Their median age was 64 years [IQR 61-67], 87.1% was male, median current and nadir CD4+ T-cells were 650/µL [IQR 454-933] and 230/µL [IQR 160-350], and 94.3% had HIV-RNA <50 copies/ml on cART. Median time between completing the primary vaccination schedule and the extra vaccination was 170 days [IQR 153-187].

In total, 97.1% (66/68) of the PLWH responded well to extra vaccination (>300 BAU/ml). The mean increase in antibody level was 4428 BAU/ml (95% CI 3369-5487). The responses were comparable after primary vaccination with ChAdOx1-S and BNT162b2, 3890 BAU/ml (95% CI 2974-4806) and 4939 BAU/ml (95% CI 7384-2493) respectively, p=0.36. We found no significant differences in antibody responses in relation to baseline CD4+ T-cell count (<500, >500/mm3), age groups (<65, >65 years) or time post-primary vaccination.



Conclusions: An additional mRNA-1273 vaccination substantially increased antibody levels in PLWH with inadequate antibody response to primary vaccination, regardless of initial vaccine type or HIV characteristics.

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EPA092

SARS-CoV-2 Omicron Spike recognition by plasma fromindividuals receiving BNT162b2 mRNA vaccination with a 16-weeks interval between doses

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Background: Continuous emergence of SARS-CoV-2 variants of concern (VOC) is fueling the COVID-19 pandemic. Omicron (B.1.1.529) is rapidly spreading worldwide. The large number of mutations in its Spike raised concerns about a major antigenic drift that could significantly decrease vaccine efficacy and infection-induced immunity. A long interval between BNT162b2 mRNA doses was shown to elicit antibodies that efficiently recognize Spikes from different VOCs.

Here we evaluated the recognition of Omicron Spike by plasma from a cohort of SARS-CoV-2 naïve and previously- infected individuals that received their BNT162b2 mRNA vaccine 16-weeks apart. These responses were compared to those elicited in individuals receiving a short dose interval regimen (4-weeks).

Methods: Plasma binding to the full-length Spike from different VOCs (D614G, Alpha, Beta, Gamma, Delta and Omicron) expressed at the cell surface was evaluated by flow cytometry. The capacity of plasma to neutralize the different VOCs was evaluated with a well-established pseudoviral assay.

Results: The Omicron Spike was recognized less efficiently than D614G, Alpha, Beta, Gamma and Delta Spikes. Plasma from individuals of the long interval cohort recognized and neutralized significantly better the Omicron Spike compared to those that received a short interval.

Conclusions: In summary, our results suggests that the delayed boosting in naïve individuals facilitates antibody maturation resulting in enhanced breadth able to provide detectable levels of recognition and neutralization against Omicron. Epidemiological studies will determine if the vaccine interval advantage, as measured by these*in vitro*parameters, confers any clinical benefit against Omicron.

EPA093

Detection of pre-existing neutralizing antibodies against Ad26 in HIV-1-infected Individuals not responding to the Ad26.COV2.S vaccine

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Background: The Ad26.COV2.S COVID vaccine is a replication-incompetent human adenovirus type 26 vector encoding the SARS-CoV-2 spike protein. In clinical trials, a single dose of AD26.CoV2.S induced SARS-CoV-2-neutralizing antibodies in 96% of healthy adults. In the Erlangen HIV cohort, failure to develop SARS-CoV-2 specific antibodies was observed in 9 out of 13 HIV-1-infected subjects after vaccination with Ad26.COV2.S.

To investigate pre-existing anti-vector immunity as a potential cause for poor vaccine response towards Ad26.COV2.S, we analyzed neutralizing antibodies against the Ad26.COV2.S vaccine in stored serum and plasma samples obtained from time points before and after vaccination with Ad26.COV2.S.

Methods: Investigation for pre-existing A26-antibodies could be performed in 6 of 9 HIV-1-infected subjects who did not develop SARS-CoV-2 specific antibodies after Ad26.COV2.S vaccination.

Furthermore, 8 subjects (4 HIV-1-infected, 4 HIV-1-uninfected) with antibody responses after Ad26.COV.2.S vaccination were included as controls. Serum or plasma samples were collected 33-738 days before and 18-147 days post Ad26.COV2.S vaccination. SARS-CoV-2 specific antibodies were measured by IgG ELISA.

Anti-Ad26 neutralizing antibody responses were investigated by flow cytometric evaluation of spike and adenoviral protein expression in co-cultures of HEK293T cells, Ad26.COV2.S and serial dilutions of pre- or post-vaccination sera. The ChAdOx1-S vaccine that is based on a chimp adenovirus served as control.

Results: Both Ad26.COV2.S and the ChAdOx1-S vaccines induced high expression rates of up to 98% of spike and adenoviral protein in HEK293T cells 24h after *in-vitro* transduction. Of the 6 vaccine non-responders 3 showed strong neutralizing activity towards Ad26 in 1:50 diluted pre-vaccination sera that significantly decreased the Ad26.COV2.S-induced spike expression and even more pronounced the expression of the adenoviral protein. In contrast, the spike and adenoviral protein expression stayed at high levels in the group of vaccine responders. All but two subject developed neutralizing antibod-

ies after vaccination. Neutralizing activity towards the ChAdOx1-S vaccine could not be observed except for one of the vaccine responders.

Conclusions: Ad26.COV2.S vaccination was associated with a high failure rate in HIV-1- infected patients in our cohort. Pre-existing immunity against Ad26 could be an important reason for poor vaccine efficacy in a subgroup of patients.

EPA094

Characterization of serum and mucosal SARS-CoV-2-antibodies in HIV-1 infected subjects after BNT162b2 mRNA vaccination or SARS-CoV-2 infection

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Background: Limited data are available regarding the immunogenicity of the BNT162b2 mRNA vaccine in HIV-1 infected patients. Here, we report on the humoral immune responses to BNT162b2 mRNA vaccination. In HIV-1 infected patients on antiretroviral therapy (ART) in comparison to HIV-1-uninfected subjects.

Methods: For this study, 27 HIV-1 infected patients on ART and 23 HIV-1 uninfected subjects were recruited. Of the total cohort consisting of 50 subjects, 27 subjects were vaccinated with the BNT162b2 mRNA SARS-CoV-2 vaccine (12 HIV-1 infected, 15 HIV-1-uninfected).

17 of the 50 study participants had recovered from asymptomatic to severe COVD-19 infection (9 HIV-1 infected, 8 HIV-1 uninfected). 6 HIV-1 infected subjects served as SARS-CoV-2 non-immune controls. Serum and saliva samples were collected 8-119 days after the second BNT162b2-mRNA vaccination or 38-119 days after SARS-CoV-2 infection and analyzed using SARS-CoV-2 spike-specific IgG and IgA ELISAs and a surrogate neutralization assay.

Results: While all subjects showed anti-spike IgG and IgA in serum after two doses of BNT162b2 mRNA vaccine, HIV-1 infected subjects displayed significantly less anti-spike IgG and lower serum neutralizing capacity compared to HIV-1 uninfected subjects. Serum levels of anti-spike IgG and IgA as well as neutralizing activity were significantly higher in vaccinees compared to SARS-CoV-2 convalescents irrespective of HIV-1 status.

Among SARS-CoV-2 convalescents, there was no significant difference in the spike-specific antibody response between HIV-1 infected and uninfected subjects. In saliva, anti-spike IgG and IgA antibodies were detected both in vaccinees and convalescents albeit at lower frequencies compared to serum and only rarely with detectable neutralizing activity.

Conclusions: In summary, our study demonstrates that the BNT162b2 mRNA vaccine induces SARS-CoV-2-specific antibodies in HIV-1 infected patients on antiretroviral therapy. However, lower vaccine induced IgG and neutralization activity indicate a lower functionality of the humoral vaccine response in HIV-1 infected patients.

Track B - Clinical science

Impact of co-factors (e.g., viral clade, tropism, genetic factors) on disease progression

EPB001

Factors influencing immune restoration in people living with HIV/AIDS

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Background: Immune restoration is a key clinical aspect that is pursued in the care of human immunodeficiency virus (HIV)-infected patients. Despite effective antiretroviral treatment and undetectable viremia, immune recovery is often incomplete.

Furthermore, it may be influenced by an array of clinical and genetic factors. Patients lacking immune recovery, despite the suppression of viral replication, have a higher risk of cardiovascular diseases; acquired immunodeficiency syndrome-defining events, including malignancies; and severe infections due to persistent immune activation and inflammation.

The aim of this study was to assess the impact of selected genetic variants and clinical variables on immune reconstruction in HIV-positive individuals.

Methods: Longitudinal data were collected from 311 Caucasian patients followed up at Pomeranian Medical University, Szczecin, Poland. Single nucleotide polymorphisms in *CCR2* (rs1799864), *CX3CR1* (rs3732378), *HLAC-35* (rs9264942), and *CCR5* (promoter, rs1799988); a 32 bp deletion (Δ32) in *CCR5*; and *HLA-B**5701 genotypes were correlated with clinical data and selected endpoints reflecting immune reconstruction (increase in $CD4^+$ lymphocyte count to > 500 cells/µL and > 800 cells/µL and the reconstitution of the $CD4^+/CD8^+$ cell ratio to > 0.8 and > 1.0). Kaplan-Meier and Cox proportional hazards models were used to analyze the effects of genetic factors over time.

Results: A notable influence of genetic variants, *HLA-B**5701, *CCR2*, and *CCR5*-Δ32, on immune reconstruction was observed for the first year from the initiation of cART. These effects were lost within 1-4 years. For *HLA-B**5701, the effect on the $CD4^+/CD8^+$ cell ratio was lost within 48 months (hazard ratio [HR]=2.04, 95% confidence interval CI:1.04–4.03) and the effect on $CD4^+$cell count was lost within 12 months (HR=2.12, CI:1.11–4.04).

The effect of *CCR2*-GG on the $CD4^+/CD8^+$ cell ratio was lost within 36 months (HR=1.7, CI:1,05–2,75). For *CCR5*-wt/Δ32, the effect on the $CD4^+/CD8^+$ cell ratio was lost within 24 months (HR=2.0, CI:1.08–3.69) and the effect on $CD4^+$cell count was lost within 18 months (HR=1.98, CI:1.14–4.73).

Conclusions: Selected genetic polymorphisms, namely *CCR2*-GG and *CCR5*-Δ32, and the presence of the*HLA-B**5701 allele positively influenced immune restoration in cART-treated patients with HIV/AIDS. These results indicate that host genetics plays an important role in early immunological treatment responses.

EPB002

Reduced selection of unfavourable HLA-I in mother-to-child HIV transmission in KwaZulu Natal, South Africa

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Background: Combination antiretroviral therapy (cART) has transformed HIV disease outcomes and reduced transmission risk. In addition, in the pre-cART era, HLA class I genes associated with high viraemia and rapid disease progression were more prevalent in infected children and their mothers. Now in the cART era, mother-to-child-transmission (MTCT) arises principally in association with maternal seroconversion during pregnancy, and not with poor maternal immune control of HIV. Using MTCT as a model, we examine whether cART has altered the specific transmission pairs most at risk of transmission.

Methods: We studied HLA-I types in a current cohort of mother-child pairs enrolled in the setting of cART availability in 2015-2020 in KwaZulu-Natal, South Africa, and compared these with a historical (2000-2005) cohort enrolled in the same locality, when cART was unavailable to mothers during pregnancy.

Results: In the historical cohort, the frequency of HLA-I alleles associated with high viraemia (HLA-B*18/45:01/58:02) was higher in HIV-infected mothers and children than in non-transmitting mothers (43.9% and 47.4%, respectively, versus 26.5%; p=1.3x10-5 and p=0.0003) whilst the frequency of HLA-I alleles associated with low viraemia (HLA-B*27/57/58:01/81:01) was lower (16.8% and 17.5%, respectively, versus 30.7%; p=0.002 and p=0.002).

By contrast, in the current cohort, high viraemia-associated HLA-I alleles (HLA-B*18/45:01/58:02) are not significantly more frequent than in non-transmitter mothers but are significantly less frequent than in the historical cohort of transmitter mother-child pairs (31.9% and 33.3% versus 43.9%;47.4%, in mothers and children, respectively; p=0.01, comparing current with historical children).

Similarly, protective HLA-I alleles (HLA-B*27/57/58:01/81:01) are more frequent in the current than the historical cohort of transmitter pairs and do not differ significantly in frequency from the historical non-transmitter mothers.

Conclusions: It has been proposed that the best opportunity to achieve functional cure may be in early-cART-treated children. The data here suggest that children,

no longer burdened by unfavourable HLA-I, may benefit particularly from cure interventions such as therapeutic vaccines that aim to boost immune control of HIV.

Morbidity, mortality and life expectancy in clinical research

EPB003

Sex-stratified analyses of trends and risk of all-cause mortality among patients living with HIV with different at-risk populations in a country with a universal health-care system and free access to cART

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Background: We aim to assess at-risk population differences in the trend and risk of all-cause mortality of patients living with HIV (PLWH) by sex in Taiwan from 1984 to 2016.

Methods: We performed a retrospective, nationwide cohort from a nationwide HIV/AIDS database. We used Cox proportional hazard models to assess the effect of the different at-risk populations on all-cause mortality overall and by each sex. We also tested for interactions between HIV acquisition and sex in separate Cox proportional hazard models.

Results: We enrolled 33,142 PLWH: 61.25% in MSM, 14.37% in men who have sex with women (MSW), 18.32% in male intravenous drug users (M-IDU), 3.30% in women who have sex with men (WSM), and 2.74% in female IDU (F-IDU).

The overall reduction of all-cause mortality from 1984-1996 to 2012-2016 for MSM, MSW, M-IDU, WSM, and F-IDU was 91.1%, 87.5%, 34.2%, 71.8%, and 80.9%, respectively.

The trends in all-cause mortality evolved distinctly in different HIV acquisition populations: the all-cause mortality substantially decreased from 1984-1996 to 1997-2006, and then declined slowly to 2007-2011; between 2007-2011 and 2012-2016, the mortality decreased by 33.6% for MSM, 34.0% for MSW, 24.3% for WSM, and increased by 54.8% for M-IDU and 25.8% for F-IDU.

Among male PLWH, MSM (aHR 0.35, 95% CI 0·32-0.39) and MSW (aHR 0.51, 95%CI 0.45-0.57) had a lower risk of all-cause mortality compared to M-IDU. In female PLWH, WSM had a lower risk of all-cause mortality (aHR 0.45, 95% CI 0.33-0.62) compared to F-IDU. We found no significant interaction between sex and HIV acquisition on all-cause mortality.

Conclusions: A better understanding of the differences in all-cause mortality for each mode of HIV acquisition across each sex, could help enhance investigation into the different etiologies of mortality, and thus more precisely address the disparities or health inequities for patients with each mode of HIV acquisition.

EPB004

The relationship between infant mortality, survival rates, and HIV status among Ethiopian infants born to HIV-positive mothers within their first year

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Background: Few studies have been conducted on the survival of newborns delivered to HIV-positive mothers. The goal of this study was to find out what variables impact infant survival in HIV-infected and HIV-exposed but infected newborns.

Methods: At birth and 2, 6, and 12 months of age, z-scores in body mass index, weight, age, and head circumference were calculated using data from 400 babies (50 HIV-infected and 350 HIV-exposed but uninfected) and their HIV-infected mothers.

Mixed-effects models were used to examine how z-scores changed over time due to HIV infection status, maternal age, co-morbidities, maternal HIV disease status, and other variables.

Results: From birth to 6 months, age, BMI, weight, and head circumference all increased, but after eight months, they all decreased significantly. Infant HIV infection was associated with significant weight, age, and head circumference losses, but not with body mass index. In HIV-exposed but uninfected newborns, repeated diarrhea episodes were related to reduced weight (-0.40) and body mass index (-0.75).

Mixed-fed infants regularly weighed less than breastfeeding infants. Lower z-scores have also been linked to premature births and low birth weight.

Infants born to mothers with less than a high school diploma (vs. college degrees), who were 18-22 years old (vs. 35+), and who had a viral load at delivery of >100,000 copies/ml (vs. 100,000) had worse z-scores at all periods. The mother's viral load at the time of birth was a significant

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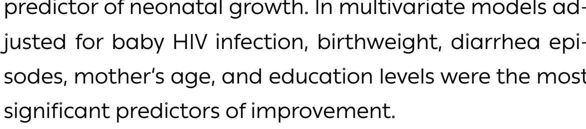

predictor of neonatal growth. In multivariate models adjusted for baby HIV infection, birthweight, diarrhea episodes, mother's age, and education levels were the most significant predictors of improvement.

Conclusions: The findings on the negative impact of diarrhea episodes and mixed feeding on infant development suggest that HIV-positive mothers exclusively breastfeed their kids. Early infant growth is significantly predicted by HIV infection in the newborn, mother's age, education, and viral load.

EPB005

The CIHR Canadian HIV Trials Network: 32 years strong in improving prevention, treatment and management for people living with HIV in Canada through the implementation of high-quality research

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Background: Since 1990, The CIHR Canadian HIV Trials Network (CTN) has been a partnership of researchers, people living with HIV, governments, health advocates, and industry committed to advancing prevention, treatment, and management of HIV, HCV, and STTBIs. We will provide an overview of CTN's successes, lessons learned, challenges and future opportunities as Canada works diligently to reach all of our 90-90-90 targets.

Description: By conducting trials on the treatments of HIV, the Network developed research cores to address immunotherapy and vaccines; comorbidities; coinfections; and HIV prevention. This includes community-based and culturally appropriate treatment.

The CTN address research gaps and priorities by: funding pilot studies; developing research with community; scientific and community review of studies; accountable resource allocation; meeting semi-annually; an international External Advisory Committee; providing research support services; and employing virtual technologies.

Lessons learned: Lessons learned include:

1. Training: The Postdoctoral Fellowship Program has now trained over 100 fellows, many of whom lead the Network and continue to conduct research.
2. Community Engagement: The Community Advisory Committee is an embedded that became a model for community engagement for other networks. We have community led Community Engagement Teams.
3. Funding Innovation: An inclusive research agenda to develop and Supporting investigator-initiated studies.
4. Funding for Pilot Studies: We provide junior investigators with funding for high-risk, preliminary studies to build skills, generate data, and make them more competitive in national funding competitions.
5. Guidelines and Long-Term HIV Management: The Network supports guideline development (e.g. PrEP) and studies focused on managing comorbidity, coinfections, and aging.
6. Enhancing Infrastructure: As studies complexity increases, the Network supports investigators with experts to file Health Canada trials and trial monitors.

Conclusions/Next steps: Next steps include:

1. Embracing international collaborations for larger sample size clinical trials and building expertise in implementation science particularly around coinfections, comorbidities, and a broader STBBI mandate.
2. Concentrate populations with less favourable outcomes, such as Indigenous communities, people who use drugs, and people aging with HIV to reach our 90:90:90 goals.
3. Using decentralized trials, virtual appointments, and in-home procedures introduced by COVID-19 to co-create participant-centric and trauma-informed research studies.
4. A commitment to anti-racism/anti-colonialism Network policies and structures.
5. Increasing support to investigators to eliminate study administrative burden.

EPB006

Improving short-term mortality of people living with HIV admitted to the intensive care unit: a 20-year study (2000-2019)

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Background: Intensive care unit (ICU) survival outcomes have markedly improved in people living with HIV (PLWH), due to the widespread use of effective combination antiretroviral therapy (cART), critical care advances and changing reasons for ICU admission.

We retrospectively reviewed records of PLWH admitted to ICU in an HIV-referral centre to study trends in short-term mortality between 01/01/2000 and 31/12/2019.

Methods: Short-term outcomes were in-ICU and in-hospital mortality. The odds of in-ICU/in-hospital mortality were modelled using logistic regression, considering only a patient's first ICU admission.

Univariable models including ICU admission calendar year as a linear term were used to explore trends in in-ICU/in-hospital mortality over the study period.

Multivariable models were fitted to further explore the calendar year effect adjusting for sex, age, APACHE-II score and CD4+ T-cell count.

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Results: There were 221 PLWH (71% male, median [Interquartile range (IQR)] age 45 years [38-53]) admitted to ICU with median [IQR] ICU-stay length of 5 days [2-12], APACHE-II score 19 [14-25] and CD4+ T-cell count 122 cells/mm3 [30-297]; 46% (94/221) had an undetectable viral load (<50 copies/mL).

Of admission diagnoses, 48% (106/221) were advanced HIV-related; the most common admission diagnosis category was lower respiratory tract infection (30%).

Overall, in-ICU mortality was 29% (64/221) and in-hospital mortality was 38% (85/221); median [IQR] time to death from ICU admission was 4 [1-12] and 7 [2-19] days, respectively.

The odds of in-ICU and in-hospital mortality significantly decreased over the 20-year period, with an estimated decrease of 11% per year (95% Confidence Interval (CI): 0.84-0.94, p<0.001) and 14% per year (95% CI: 0.82-0.91, p<0.001), respectively.

After adjusting for patient demographics and clinical factors, there was no evidence of a decreasing trend in ICU mortality (adjusted Odds Ratio: 0.96, 95% CI: 0.89-1.04, p=0.36), however, there was evidence of a decreasing trend in in-hospital mortality, with an estimated decrease of 10% per year (95% CI: 0.84-0.97, p=0.008).

Conclusions: Our study found that short-term mortality of critically ill PLWH admitted to ICU has continued to decline in the cART era; this may partly be due to changing reasons for ICU admission as well as improvements in critical care.

EPB007

Mortality disparities by gender and sexual behavior in PWH in Rio de Janeiro, Brazil

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Background: The introduction of combination antiretroviral therapy (cART) has been associated with a decline in HIV-related mortality. However, mortality hazard may differ by gender and sexual behavior.

In this study, we estimated mortality hazards in people living with HIV (PLWH) according to gender and sexual behavior in Rio de Janeiro, Brazil, over the past 33 years.

Methods: In this observational cohort study, we included PLWH ≥18 years enrolled at INI/Fiocruz between 1986-2019. Study population was categorized according to self-report gender and sexual behavior as cis-women, trans-women, cis-men who have sex with men (cis-MSM), cis-men who have sex only with women (cis-MSW), and cis-men with unknown sexual behavior (cis-Munk). Vital status information was complemented through linkage with Rio de Janeiro State Death registry. Cox proportional hazards models assessed risk factors for death since HIV diagnosis. Covariates were gender and sexual behavior, age, CD4 count and viral load at HIV diagnosis, education, race, cART use, year of HIV diagnosis and history of opportunistic illnesses.

Results: Among 7,185 PLWH, 30% were cis-women; 43% cis-MSM, 23% cis-MSW, 5% trans-women and 5% cis-Munk. Median age at HIV diagnosis was 32 years (interquartile range 26-40), 19% were black and 34% mixed race; 47% had <12 years of education.

A total of 1508 deaths occurred in 76,110 persons-year of follow-up. Cis-Munk had the highest mortality adjusted hazard ratio (aHR 2.24, 95%CI 1.80, 2.79), followed by cis-MSW (aHR 1.31, 95%CI 1.14, 1.51), cis-MSM (aHR 1.10, 95%CI 0.96, 1.26), cis-women (reference) and trans-women (aHR 0.59, 95%CI 0.36, 0.97) (Figure).

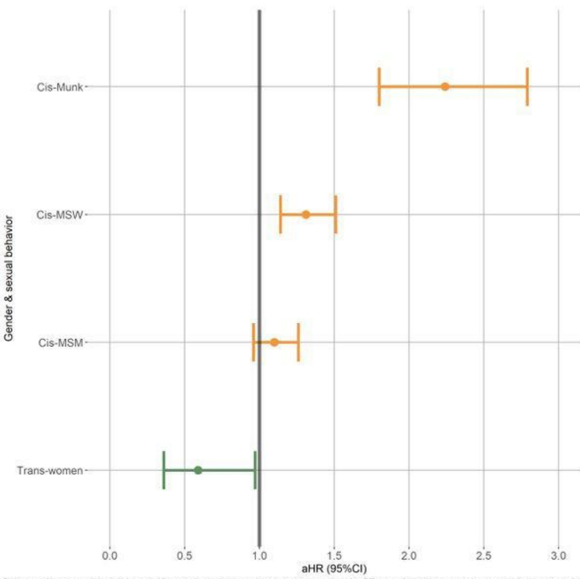

Figure.

Conclusions: We observed existing disparities in mortality hazard by gender and sexual behavior in PLWH. Trans-women had the lowest mortality hazard ratio, which may be explained by trans-specific strategies implemented in our service to reach, engage, retain and support trans-women. Further studies are needed to better understand cis-Munk and their morality hazard.

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Novel assays of immune responses

EPB008
DHIVAx: a novel HIV-1 antibody test unaffected by vaccine-induced seroreactivity

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Background: HIV vaccine development faces multiple challenges. For most investigational HIV vaccines, antibodies are produced in vaccine recipients, and these antibodies are often detectable by currently available HIV infection screening and confirmatory assays. Hence, vaccinees may be misclassified as seropositive, a condition known as vaccine-induced seroreactivity (VISR).
Nucleic acid testing (NAT) allows discrimination of a true HIV infection in vaccinees but is not always part of diagnostic algorithms and may not always be available, accessible, or affordable in resource-limited countries.
Methods: We investigated whether internal HIV proteins could be used to overcome VISR and discovered a set of 4 proteins (gp41 endodomain, p31 integrase, p17 matrix protein, and Nef) that are recognized by antibodies produced in HIV-infected individuals but not in vaccinated individuals. The 4 proteins were recombinantly produced in *E. coli*, and a multiplex double-antigen bridging ELISA based on these 4 markers was developed.
Results: The DHIVAx prototype assay was tested in a cohort of 600 treatment-naïve HIV-infected individuals and 109 vaccine trial participants, sampled pre- and 12 weeks post-vaccination. Specificities of 98.1% and 97.1% were observed pre- and post-vaccination, respectively, demonstrating the assay is minimally impacted by vaccine-induced antibodies (Chi^2 p=0.61). A sensitivity of 98.5% was observed, further increasing to 99.7% when p24 antigen testing was included.
The analysis of seroconversion and longitudinal follow-up panels of HIV-infected individuals demonstrated reactivity in the DHIVAx assay as soon as or before p24 antigen became undetectable and showed the signal further increased over time.
Additional assay accuracy testing using the WHO HIV specimen reference panel (450 HIV-positive and 736 HIV-negative samples) demonstrated a specificity of 93.5% and sensitivity of 94.9% (increasing to 95.3% when p24 antigen testing was included).
Conclusions: Despite the need for more technical advancements, our work has provided the groundwork for the development of new fourth-generation HIV tests unaffected by VISR. The proteins that were used in the ELISA can readily be transferred to established platforms, such as lateral flow assays and electro-chemiluminescence immunoassays. A novel HIV serological test insensitive to VISR is essential for the rollout of future HIV vaccines.

EPB009
Comparison of different methods for the detection of HLA 57:01 allele in people living with HIV (PLWHIV) Easter Uttar Pradesh, India

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Background: Abacavir (ABC) is known to cause fatal hypersensitivity reactions (HSR) in 5-8% patients. This HSR is linked to the HLA-B*57:01 allele. The current gold standard methodology for detecting the HLA-B*57:01 allele is the sequence-based method, which is difficult and expensive in programmatic conditions. HLA complex P5 gene (HCP5) shows single nucleotide polymorphism (SNP) (T/G). In different populations HCP5-G (minor) allele has been shown to be 99.9% predictive of the presence of the HLA-B*57:01 allele, with a perfect linkage Disequilibrium (LD).
Therefore, in this study we have compared different methods like direct PCR followed by nested PCR, HCP-5 PCR and a sequence-based method to develop simple and cost-effective method for detection of HLA-B*57:01 allele.
Methods: We collected whole blood cells from 366 PLHIV in the EDTA vials and buffy coat was separated by centrifugation followed by DNA isolation by QIAamp DNA Blood Mini Kit (QIAGEN, Hilden, Germany). Direct PCR followed by nested PCR and HCP5 PCR were used to detect HLA-B*57:01 allele and a sequence-based technique was used to confirm the results.
Results: Out of 366 samples, 25 (6.83%) were found positive for HLA-B*57 gene by direct PCR. All positive samples were subsequently analysed for HLA-B*57:01 using Nested PCR and sequenced and were found to be positive. All 366 subjects were also tested for the T/G Polymorphism (rs2395029) by PCR.
25 patients were found to be positive for (T/G) heterozygous (mutant) and they were also positive by nested PCR and Sequencing and suggests 100% LD between HCP5 and HLA-B*57:01 allele.
Conclusions: Although nested PCR followed by direct PCR was a reliable and easy procedure for the detection of HLA-B*57:01 allele but it requires two PCR steps, which is time consuming.
So, we concluded that detection of HCP5 gene by PCR is a simple and cost-effective way for identifying the HLA-B*57:01 in Indian population.

Novel approaches to assess viral load and ARV resistance/tropism

EPB010

"I feel drug resistance testing was giving us an informed decision": qualitative insights on HIV drug resistance testing among children and pregnant women living with HIV in western Kenya

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Background: Achievement of viral suppression (VS) is critical in both pregnant women and children living with HIV. While many factors contribute to virologic failure, the acquisition and development of HIV drug resistance mutations (DRMs) are a contributing factor. Drug resistance testing (DRT) is, unfortunately, limited, particularly in resource-limited settings. However, optimal ways to operationalize, from provider and participant perspectives, and scale up DRT in such settings remain open questions.

Methods: We conducted a mixed methods study, with qualitative data collection focused on attitudes, facilitators, and barriers towards current DRT approaches, among children and pregnant women on antiretroviral therapy (ART) in five HIV treatment facilities in western Kenya. We conducted 68 key informant interviews (KIIs) from December 2019 to December 2020 with adolescents and pregnant women living with HIV, child/adolescent caregivers, and other stakeholders such as providers, laboratory/facility leadership, and county- or national-level policy makers. Our KII guides addressed the following domains pertaining to DRT:

1. Experiences with DRT in routine care and
2. Experienced or anticipated barriers and facilitators regarding routine and point-of-care (POC) DRT scale up.

We used inductive coding and thematic analysis to identify dominant themes with convergent and divergent subthemes.

Results: We highlight the following three main themes emerging from our analysis.

1. DRT and DRT counselling were valuable to providers for optimal clinical decision-making and participants for reassurance, respectively.
2. Providers strongly desired an amended DRT process that incorporates quicker sample-to-results turn-around-time, less burdensome protocols to request DRT, interpret results, and make clinical decisions, and greater participant and provider "empowerment" to feel more comfortable with current national DRT protocols.
3. Lastly, facility-level delays, deriving from overworked staff and the mishandling of DRT results,were highlighted as areas of improvement.

Conclusions: Providers and participants desired a more simplified, time-efficient, and potentially decentralized DRT process that builds provider comfort and confidence with DRT protocols.

Further investigating the implementation, endurance, and effectiveness of DRT training are critical to DRT scale-up, as DRT has the potential to considerably improve patient health outcomes and longevity of existing ART options.

HIV testing, self-testing and retesting (e.g., point-of-care diagnostics)

EPB011

HIV self-test: high acceptability and diagnostic performance among key populations in Argentina

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Background: In Argentina, 17% of PLHIV do not know that they are infected; and HIV prevalence is high among key populations (KP) such as cisgender men who have sex with men (MSM) transgender women (TGW) and sex workers (SW). Implementation of HIV self-test in testing programs is recommended by the WHO.

The aim of this study was to explore the acceptability and diagnostic performance of an HIV self-test in KP.

Methods: This is a pilot cross-sectional study, eligible individuals aged ≥18 years self-identified as transgender men(TGM), TGW, MSM and/or SW with unknown HIV status who attended the local community-based testing centers in 3 districts in Argentina were offered a finger-prick HIV self-test (SURE CHECK® HIV 1/2 Assay, Chembio Diagnostics), in addition to the standard POC HIV tests (Alere Determine® HIV-1/2).

A survey was used to assess HIV infection risk and self-test acceptability. The study had the technical cooperation of the PAHO and was approved by local IRBs. Funding: National Ministry of Health.

Results: Recruitment was affected by COVID-19 pandemic. A total of 321 individuals with a median age of 29 years were included (66.4% cisgender men, 14.3% cisgender women, 14.3% TGW,2.2% TGM, 2.8% non-binary/other), 30% were SW. Global HIV prevalence was 3.7%; 22% of the study population had not been tested for HIV ever before. Concordance between HIV self-test and conventional POC test was 97.8%, acceptability among the participants was high (Table).

The main advantages of the self-test mentioned by the participants included: privacy(42%), easiness(33%) and possibility to do it accompanied or alone(16%); 54% did not find any disadvantages and 91% would seek medical attention if the test was positive.

The self-test was easy to perform —N (%)	311 (96%)
I felt that the waiting time to get the self-test result was too long—N (%)	63 (20%)
I found easy to interpret the self-test result —N (%)	283 (88%)
I consider the self-test results reliable/trustworthy —N (%)	285 (89%)
I would definitely use the self-test again if it available free of charge (i.e. pick it up from a clinic or pharmacy) —N (%)	303 (94%)
I would test for HIV more often if self-test were available at pharmacies and/or clinics. —N (%)	295 (92%)
I would recommend the HIV self-test to others (i.e. friends, partners) —N (%)	302 (94%)
I would prefer to get the self-test done with someone else (i.e. a friend) rather than alone/by myself —N (%)	167 (52%)

Table.

Conclusions: In this study, a finger-prick HIV self-test was highly accepted by KP in a LMIC and showed good diagnostic performance. Implementing this strategy could significantly contribute to improve access to HIV diagnosis among KP (particularly hard-to-reach KP) and closing the gap towards UNAIDS 95-95-95 targets.

EPB012

"After viral load testing, I get to know which path my life is taking me": qualitative insights on routine and point-of-care viral load testing in western Kenya

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Background: Viral suppression (VS) is a vital goal of effective HIV therapy, and viral load (VL) testing is critical for treatment monitoring, especially in high-risk groups such as children and pregnant/postpartum women.

Although routine VL testing, via centralized laboratory networks, was implemented in Kenya starting in 2014, optimal approaches to scale up VL testing remains unclear.

Methods: We conducted a mixed methods study to evaluate the impact of point-of-care (POC) VL testing in optimizing VS among children and pregnant/postpartum women on antiretroviral treatment (ART) in five HIV treatment facilities in western Kenya in the Opt4Kids and Opt4Mamas studies.

We conducted 68 key informant interviews (KIIs) from December 2019 to December 2020 with adolescents and pregnant women living with HIV, child/adolescent caregivers, providers, laboratory/facility leadership, and county- or national-level policy makers.

Our KII guide covered the following domains:

1. barriers and facilitators to ART use and VS,
2. literacy and experiences with VL in routine care and via study, and
3. opinions on how to scale up VL testing for optimal programmatic use.

We used inductive coding and thematic analysis to identify dominant themes with convergent and divergent subthemes.

Results: Three main themes regarding VL testing emerged from our analysis.

1. Participants uniformly contrasted POC VL testing's faster results turnaround, higher accessibility and likely cost-effectiveness against routine VL testing.

2. Key informants also identified areas of improvement for POC VL testing in Kenya, such implementing robust quality control measures, better human resource allocation, and integrating POC VL testing into existing VL monitoring systems.
3. To enable successful scale-up of VL testing, including for POC, participants proposed conducting quality checks and validations, training more staff, and developing strong partnerships between key stakeholders.
Conclusions: The more accessible, decentralized model of POC VL testing was deemed capable of overcoming critical challenges associated with routine VL testing and was considered highly desirablefor optimizing VS for children and pregnant/postpartum women living with HIV.
While POC VL testing has the potential to improveVS rates among these populations, additional research is needed to develop strategies for ensuring the sustainability of POC VL testing programs.

Diagnosis of HIV disease in paediatric and adolescent populations

EPB013

Performance evaluation of home-based caregiver-assisted oral HIV screening of children compared to facility-based confirmatory testing using the national algorithm in Uganda

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Background: Uganda has an estimated 26,727 children living with HIV (CLHIV) not on treatment. CLHIV depend on caregivers facing logistical and societal barriers, limiting testing uptake. Caregiver-assisted oral HIV self-testing (HIVST) offers a convenient and timely opportunity to expand pediatric testing options.
This analysis aims to identify factors associated with discrepant results between reactive at-home caregiver-assisted oral HIVST and subsequent facility-based HIV-positive confirmatory testing.
Methods: This investigation focused on caregiver-assisted HIVST among children 18 months-14 years, using OraQuick Advance© Rapid HIV-1/2 Antibody screening from April-October 2021. Counselors received pre-study and refresher trainings on how to instruct caregivers to correctly conduct HIVST screening and report results. Children with reactive HIVST results received blood-based confirmatory testing following the national testing algorithm. Firth's logistic regression was used to explore factors associated with the discrepant results, including counselor trainings/refreshers and background characteristics of HIVST reactive cases.
Results: A total of 2,318 index parents/caregivers of 4,865 children were recruited and 4,766 were screened with caregiver-assisted HIVST with 4 (0.1%) invalid and 98 (2.1%) reactive results. All 98 children (100.0%) received confirmatory testing with 32 (32.7%%) confirmed HIV-positive and 66 (67.3%) HIV-negative (HIV prevalence, 0.67%). Assuming all nonreactive HIVST results (n=4,664) were true negatives, HIVST specificity was 98.6% (positive predictive value, 32.7%).
Discrepant reactive HIVST and HIV-negative confirmatory results were associated with a period between full site activation and the second refresher training [OR=2.75, 95% CI: 2.75 (1.10-6.87)], but did not vary by rural/urban residence, child's biological status, or age/sex of child or caregiver.

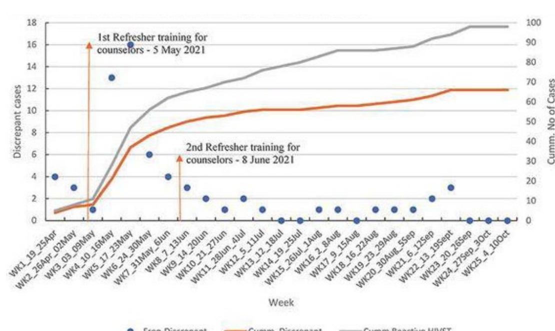

Figure 1. Time and distribution of discrepancy test results by week.

Conclusions: Caregiver-assisted HIVST performed well and is an effective pediatric screening tool. The lower positive predictive value and number of false-positive results were not unexpected in this low prevalence population. Intensive counselor training on how to instruct caregivers to correctly administer HIVST and read results are critical for reliable caregiver-assisted pediatric oral HIVST.

Viral load and CD4 monitoring

EPB014

Performance evaluation of the point-of-care m-PIMA HIV-1/2 Viral Load assay in two South African clinics

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Background: The m-PIMA HIV-1/2 Viral Load (VL) (Abbott, Chicago, USA) is a point-of-care assay that provides quantitative VL results between 800 and 1,000,000 copies/mL, and could help increase VL testing coverage.

We aimed to assess its performance in a clinic-based setting.

Methods: We compared the analytic performance of the m-PIMA in two South African clinics with the reference laboratory Cobas 6800 (Roche, Basel, Switzerland) assay, using plasma samples.

We determined accuracy to detect viraemia ≥1000 copies/mL, agreement using Bland-Altman plots, and Pearson correlation co-efficients.

Results: We tested 118 samples from 92 participants receiving antiretroviral therapy (ART) between July 27, 2020 and September 13, 2021. 63/92 (68.4%) were women, with median age 38.5 (interquartile range [IQR] 35-43.5) years, median time on ART 4.6 years (IQR 2.9-6.0) and median CD4 count 502 (IQR 311-744) cells/mm^3.

After excluding two invalid m-PIMA results, 116 valid paired results were compared. The m-PIMA was 92% (95%CI 72 to 99) sensitive and 99% (95%CI 93 to 100) specific to detect a viral load ≥1000 copies/mL (Table). When restricted to the 25 paired samples that were both quantifiable ≥800 copies/mL, the mean difference between m-PIMA and Cobas 6800 was -0.26 log copies/mL (95% limits of agreement -0.83 to 0.31), and the Pearson correlation co-efficient was 0.93 (95%CI 0.85 to 0.97, p <0.001, Fig 1).

Trained nurses conducted 23 of the m-PIMA tests and results were broadly similar (Table).

		m-PIMA HIV 1/2 VL: technician & nurse testing			m-PIMA HIV 1/2 VL: nurse testing only		
		<1000	≥1000	Total	<1000	≥1000	Total
Roche Cobas 6800	<1000	90	1	91	16	0	16
	≥1000	2	23	25	1	6	7
	Total	92	24	116	17	6	23
		Sensitivity: 0.92 (0.72-0.99)			Sensitivity: 0.86 (0.42-0.99)		
		Specificity: 0.99 (0.93-1.00)			Specificity: 1.00 (0.76-1.00)		

Table: Sensitivity & specificity of the m-PIMA HIV 1/2 VL

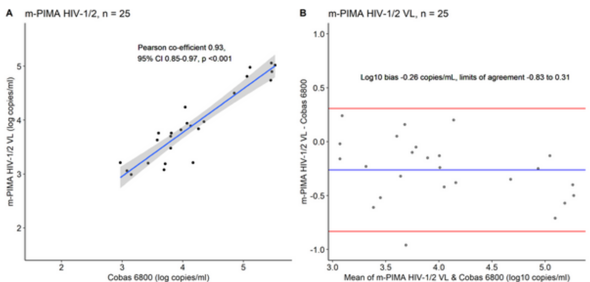

Figure 1. Correlation & Bland Altman plot of m-PIMA HIV-1/2 VL vs Cobas 6800

Conclusions: The analytic performance of the quantitative m-PIMA HIV-1/2 VL was good in these South African clinics.

EPB015

Effectiveness of Dried Blood Spot in achieving optimal viral load coverage for Key Populations in hard-to-reach areas of North-East Nigeria

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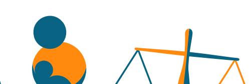
Background: Despite efforts invested towards optimizing viral load coverage, performance has remained suboptimal for Key Populations in hard-to-reach terrains where client movement for viral load sample collection and sample movement have been greatly hindered by poor, inaccessible roads networks. Long-distance journeys are made routinely to hard-to-reach areas with no cold chain facilities and access to electricity to ensure viral load testing of Key Populations. The plasma samples which are time-sensitive and temperature-dependent for separation are collected at the communities and transported to the pre-analytical labs for separation under harsh conditions. The integrity of the samples is compromised, and samples lysed with resultant increased sample rejection at PCR laboratories. This often leads to longer analytical turn-around-time (TAT) and delayed initiation of client treatment plans.

Due to challenges associated with plasma method, the viral load coverage for the USAID-funded HIV KP project for KPs, KP CARE-2, has since remained suboptimal.

Description: In July 2020, the Dried Blood Spot method of viral sample collection was introduced to mitigate the challenges associated with sample collection in hard-to-



reach terrains. Following its introduction, the program recorded the highest number of sample collections since inception in 2019.

A total of 1,890 samples were collected in the post-intervention period (July-Sept 2020) as against 967 samples collected in three months pre-intervention (April-June 2020). DBS sample collection method allowed community workers room to extend viral load services to the Key Populations in hard-to-reach terrains and collect a large number of samples without fear of sample compromise.

Lessons learned: A significant improvement in viral load coverage using the DBS method, prior(April-June 2020) to which the viral load coverage rate was 34% with a 28-day TAT. However, the viral load coverage performance skyrocketed to 100% between July-September 2020 after deployment of this strategy with a significant reduction of the TAT to 9 days.

Conclusions/Next steps: DBS for viral load has shown to improve coverage rates for viral load in hard-to-reach geographical terrains because it requires less equipment for the pre-analytic processing and can stay potent for days at room temperature.

This method should be scaled up in resources-constrained settings as part of efforts towards achieving HIV epidemic control by 2030.

EPB016

Improved HIV viral load suppression among Tanzanian children attending caregiver support groups

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Background: Viral suppression in children living with HIV (CLHIV) in Tanzania is a challenge due to multiple factors including complex treatment regimens and difficult socioeconomic environments. Since the majority of CLHIV are reliant on treatment support from caregivers (CG), we strengthened the Caregiver Support Group (CSG) model to combat the issue of viral failure.

Description: A program review was performed involving all CSGs held between January to December, 2021. Inclusion criteria included CLHIV below 14 years old who had a failing HIV viral Load (VL) (≥1000 copies/ml).

Each CSG involved 20 CGs, and included three sessions, held over 3 months. During the sessions, CGs shared their challenges and had opportunities to provide their own experiences to help their peers. Clinic staff were available to add information or answer any technical questions.

Lessons learned: Three CSGs were completed with a total of 52 CLHIV (29 (56%) were female). The median age of CLHIVs was 7 years old and those <5 years numbered 19 (37%). Two (3.8%) CLHIV were malnourished and 36 (69%) were classified as WHO stage III/IV. Fifty (96.3%) of the CLHIV were active in care, one (2%) transferred out during the intervention, and one (2%) died. One (2%) CLHIV had TB and one (2%) had a CD4 count <200 cells/mm^3.

Per enrolment criteria, 52 (100%) CLHIV had VL >1000 copies/ml at baseline. On post-CSG VL, 48 (92%) VLs were suppressed with 34 (65%) <50 copies/ml and 14 (27%) 50-999 copies/ml, and 4 (8%) continued to be unsuppressed. However, among the four unsuppressed, 3 (75%) demonstrated a significant log drop (average=1.09) and the fourth died between the first and second sessions.

Conclusions/Next steps: This study shows that our CGS model is successful with 92% of participants achieving viral suppression and 98% having a significant reduction in their VL.

The program will be enlarged to reach more CLHIV with high VLs at the clinic and eventually expanded to outreach sites as well. To better address CG challenges, CSG will be split into two groups, <5 and 5-13 years old.

EPB017

Near point-of-care HIV viral load testing: an essential tool to combat HIV/AIDS in Myanmar

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Background: Access to viral load (VL) testing is critical to control HIV. In Myanmar, VL testing was centralized in two cities from late 2012-2017. In January 2017, Medical Action Myanmar (MAM), a medical organization, introduced near point-of-care (near-POC) VL testing in 3 clinics in sub-urban Yangon: testing close to, but not inside, clinics to improve VL testing and adequate VL management in adults (≥15years) living with HIV (PLHIV).

Methods: Blood samples were collected at the clinics and sent daily to a laboratory at 30 minutes' drive, where trained lay workers performed VL testing. Same-day results were sent by phone. WHO guidelines were used for VL monitoring. We performed cross-sectional analysis for annual VL uptake among PLHIV enrolled on anti-retroviral therapy (ART) between 2009-2019. VL management after near-POC VL testing was analysed among PLHIV enrolled on ART between 2009-2018. Predictors of confirmed virological failure were assessed using logistic regression.

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Results: VL uptake increased significantly after 2017 (chi-squared, p<0.001) (Fig-1). Among 3205 patients, eligible for first VL testing after near-POC VL, 99% were between 15-59 years and 50% were male. 2945/3205 (92%) patients received a first VL test. 2796/2945 (95%) had VL ≤1000 copies/ml. Among 149/2945 (5%) with VL >1000 copies/ml, 125 (84%) received enhanced counselling and second VL testing. 84/125 (67%) had confirmed VL failure, of whom 69 (82.1%) were switched to second-line ART.
Among those with a second VL after a first high VL, having a first VL of ≥5000 copies/ml was significantly associated with confirmed VL failure (adjusted odds ratio 2.75, 95% confidence interval: :1.11-6.79).

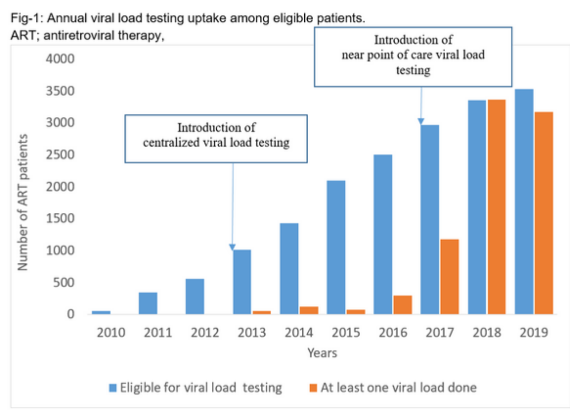

Figure 1. Annual viral load testing uptake among eligible patients. ART; antiretroviral therapy.

Conclusions: Near-POC VL testing increased VL uptake significantly and allowed adequate VL management. The stakeholders should be advocated to scale up near-POC testing for better patients care in resource limited settings. A first VL of >5000 copies/ml was a positive predictor for confirmed virological failure.

EPB018

Evaluation of low-level viraemia detection across three automated HIVVL assays in Johannesburg, South Africa

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Background: Virological suppression indicates a successful response to anti-retroviral therapy. Generally determined by the lower limit of detection (LLOD) of HIV viral load (HIVVL) assays, suppression is currently defined at <50 copies/ml. However, HIVVL assays demonstrate increased variability at the low-level viraemia (LLV) range (50 -999 copies/mL) which may misdiagnose of failure or suppression. We evaluated the variability of LLV detection on the Abbott *m*2000 and Alinity m, and Roche cobas 6880/8800 HIVVL assays in Johannesburg, South Africa
Methods: Five replicates of a fresh panel of HIV Subtype C viral supernatant serially diluted to concentrations of 50, 200, 500, 1000 and 10000 copies/ml were tested on all three instruments including on an older and an upgraded version of the cobas software. T
he mean, standard deviation (SD) and percentage coefficient of variation (%CV) were calculated. Ninety frozen remnant clinical plasma samples of low HIVVL were tested on the cobas in an inter-laboratory comparison following significant differences in clinical suppression rates between the laboratories. The samples underwent one freeze-thaw cycle in both laboratories. Bland-Altman and correlation analyses were performed.
Results: For the 50 copies/mL, the lowest mean concentration was 60 copies/ml (Alinity m), the highest was 108 copies/mL (cobas new software). The means for the m2000 and the older cobas software were 80 and 89 copies/mL, respectively.
The *m*2000 reported two samples as <40 copies/mL and one undetectable result for the <50 copies/mL samples and consistently reported means lower than the nominal value for all other dilutions, including reporting one 100 copies/ml as undetected.
The highest SD was 0,13 (Alinity m) and %CV was 5.61% (cobas). For the inter-laboratory comparison, the mean bias was 0.04 copies/mL and R^2= 0.96.
Conclusions: There is variability in the detection of low-level viraemia amongst assays but acceptable precision. The *m*2000 under-detected all dilutions which has implications for laboratories upgrading from this assay. The acceptable inter-laboratory comparison indicates the need for investigating non-assay related reasons for variability.
Guidelines may need to take assay variability into account when determining strict cut-offs for more intensive interventions at LLV.

EPB019

Adherence and resistance to ART among postpartum women with HIV in KwaZulu-Natal, South Africa

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Background: Postpartum women with HIV (WWH) are at increased risk for antiretroviral therapy (ART) interruptions, virologic failure, and development of HIV drug resistance. To explore the impacts of adherence on viral suppression in postpartum WWH, we assessed ART adherence and drug resistance patterns in a subset of women enrolled in a cohort study examining factors associated with postpartum attrition from HIV care.

Methods: Pregnant WWH aged 18-45 and currently accessing ART were enrolled in the parent study between August 2019 and February 2021 in KwaZulu-Natal, South Africa. At 12 months post-enrolment, self-reported adherence was measured using a visual analogue scale (VAS), and HIV Viral Load testing was conducted.

Tenofovir-diphosphate (TFV-DP) levels in dried blood spots (DBS) and HIV drug resistance mutations were assessed in participants with HIV-RNA ≥ 1000 copies/mL.

Results: At enrolment, participants (N=170) had a mean age of 28.9 years, 164 (96%) had a suppressed viral load, and most were taking TDF/FTC/EFV (99.4%). At 12 months post-enrolment, 20 (12%) had an unsuppressed VL of which 4 (2%) remained unsuppressed from enrolment, and 16 (9%) were virally suppressed at enrolment. None of the participants with unsuppressed VL switched ART regimen from baseline to 12 months.

Of the 20 unsuppressed WWH at 12 months, 16 (80%) reported no missed doses and rated their adherence to be > 95% on a VAS. Four (20%) of the 20 WWH with unsuppressed viral loads had detectable TFV-DP levels (> 0.1ng/ml), while 16 (80%) had no detectable TFV-DP. Drug resistance mutations were detected in 13 (65%) of the 20 samples.

Characteristics	Total (n=20)	TFV-DP detected (>0.1ng/ml) (n=4)	TFV-DP not detected (n=16)
Self-reported adherence*			
> 95%	16	2	14
60 – 90%	3	2	1
HIV Drug Resistance pattern			
No resistance detected	7	0	7
NNRTI resistance	10	1	9
NNRTI + NRTI resistance	3	3	0

Table 1: ART adherence and drug resistance patterns
**self-report data not available for 1 participant*

Conclusions: While self-reported adherence was high, TFV-DP levels, an objective measure of adherence, demonstrated that 80% of women with viremia had undetectable tenofovir. Adherence to ART needs to be addressed to prevent failure of newer first line regimens, including Dolutegravir containing regimens, and second line regimens. Self-reported adherence tools may have limited benefit in assessing adherence to ART showing the need for early treatment support for all WWH.

EPB020

Know your numbers: a catalyst to improve viral load coverage in Western Region of Ghana

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Background: A critical pillar in achieving HIV epidemic control is ensuring patient-centered services to all clients on ART Yet, as of 2019, viral load (VL) coverage for persons on ART was only 48%, with 68% of those clients achieving viral suppression, according to the Global AIDS Monitoring 2019 report.

Challenges faced nationally include frequent breakdown of VL testing machines, reagent shortages, low demand generation, poor access to VL tests, VL sample transportation and delays in receiving test results.

Description: The USAID Strengthening the Care Continuum Project (Care Continuum), led by JSI Research & Training Institute, Inc., implemented enhanced VL demand generation activities in the Western Region to increase VL testing. These include the "Know Your Numbers" campaign where VL literacy messages were developed promoting Undetectable=Untransmittable (U=U) messaging.

The Project trained case managers (CMs) to support newly-diagnosed clients with HIV to navigate and start ART treatment. CMs provide motivational counselling on adherence to PLHIVs, track clients due for VL testing using Google calendar reminder alerts prompted by the client monitoring mechanism in GHS DHIS2 eTracker at all sites providing ART services.

Additionally, a VL Monitoring System (VLMS) was piloted to interface with the Laboratory Information Management System (LIMS) to enable electronic transmission of VL results to facilities. Advocacy meetings with key stakeholders were also held to discuss practical solutions to addressing the VL testing gaps.

Lessons learned: VL coverage, which includes clients receiving timely results, increased from 59% (6331 /10,663) in December 2019 to 92% (13,995 / 15282) by September 2021. Western Region has reduced VL result turnaround time by integrating the LMIS and VLMS so that VL requests and VL test results are electronically transmitted to health facili-

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ties through the public sector eTracker system. Stakeholders suggested synchronizing dates of VL samples collection and ART refill appointments dates. This approach enhanced VL sample collection.

Conclusions/Next steps: VL literacy and demand creation efforts should be replicated in other regions of Ghana to improve VL coverage. Greater involvement of PLHIV as champions advocating U=U campaign in their communities will catalyze improving the third 95. Ensuring reliable logistics for VL testing is also critical.

EPB021
Pilot of HIV viral load testing using plasma samples in poor resources settings in Malawi: challenges and lessons learned

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Background: Plasma viral load (VL) testing is the recommended method for monitoring treatment in people living with HIV. However, dried blood spot (DBS) remains the most used sample for VL testing in low-resource settings, including Malawi. The detection threshold of DBS VL testing on m2000 Abbott machine is 839 copies/ml, as such classifying clinically-relevant low-level viremia as "below detection limit".

In response, the University of Maryland (UMB), collaborated with the Ministry of Health and Centers for Disease Control and Prevention Malawi to implement a pilot to identify the feasibility and challenges of switching to plasma VL testing.

This abstract aims to describe the experience of this pilot, the challenges identified and lessons learned.

Description: First, we established a readiness baseline assessment of facilities, where facilities located closer to molecular laboratories with Hologic VL machines were the first to be considered.

Second, we mapped sample transportation routes and added additional routes and pick-ups to improve efficiency. UMB supported plasma sample collection training, provided sample collection materials and a dedicated transport system. From April 2020 to October 2021, 20 facilities from Lilongwe and Blantyre started collecting VL plasma samples, collecting a total of 38,400 samples.

Lessons learned: The process has led to a reduction in turn-around time. The pilot also identified implementation barriers, including:

1. the lack of dedicated phlebotomists to avoid relying on nurses and physicians;
2. limited stock of materials and equipment necessary to collect, store and process plasma samples;
3. lack of timely sample transportation that maintains cold chain; and
4. lack of or intermittent electricity.

In response, UMB and MoH are collaborating with the government health teaching institution to offer short trainings for phlebotomists. UMB is also procuring plasma separation tubes and refrigerators to facilitate plasma separation and storage.

Conclusions/Next steps: UMB has demonstrated that plasma VL testing is feasible to implement in limited-resource settings; however, it is necessary to address the identified challenges.

The pilot will continue to expand to facilities further away from the molecular labs, developing a sample transportation strategy and VL testing network across Malawi.

Adherence testing

EPB022
Molecular epidemiologic characteristics of HIV-1 cases diagnosed in Mongolia between 1997 and 2016

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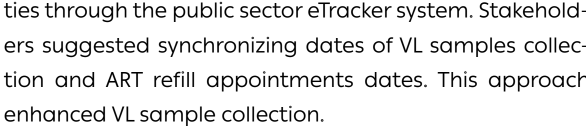
Background: Information on molecular epidemiology of Mongolian HIV cases only available for 1997-2009 and 2005-2016 timeframe. There is no specific information available for 1997-2016 on HIV-1 molecular epidemiology.

Methods: Thus, we investigated subtype distribution and population group involvement and did phylogenetic tree analysis on the information of 160 HIV-1 cases diagnosed between 1997-2016 in Mongolia. Subtype distribution was compared between cases diagnosed in 1997-2012 and those in 2013-2016.

Results: Subtype B was dominant with 66.6%. CRF51_01B was 13.8% and CRF02_AG was 10.1%. CRF01_AE, A, C and G subtypes also present in Mongolia. On phylogenetic tree, two main clusters determined, one for subtype B – Cluster 1, another one for subtype CRF51_01B – Cluster 2. Among



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gay and bisexual male participants, 83% had subtype B infection and 16% had subtype CRF51_01B infection. This related higher percentage of this population group in the clusters (79.6% in Cluster 1 and 81.8% in Cluster 2).

Prevalence of subtype CRF51_01B is significantly higher among 2013-2016 cases with 23.4% than among 1997-2012 cases which is 5.5% while subtype B was lower. Despite that, previously identified cluster of subtype B continues to grow. HIV-1 subtype distribution differs by sexual orientation groups and the difference is statistically significant (X2= 134.20 6a df=7; p<0.0005).

Conclusions: In this investigation, most prevalent HIV-1 subtypes were B followed by CRF51_01B among people who were diagnosed between 1997-2016. HIV-1 subtype distribution varies by sexual orientation of people with HIV. Majority of CRF51_01B cluster members were bisexual men. It may be a key factor for further increase in percentage of heterosexual men and women in the cluster.

Diagnostics of co-infections and co-morbidities

EPB023

Global availability of skin biopsy for the diagnosis of Kaposi sarcoma in HIV treatment settings

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Background: Kaposi sarcoma (KS) remains one of the most common HIV-associated cancers with high burden in sub-Saharan Africa. Accurate diagnosis of KS requires tissue confirmation; clinical exam alone is insufficient. However, capacity for tissue-based diagnosis is often limited. In this study, predictors of tissue biopsy availability at HIV treatment centers were identified using the 2020 site assessment survey of the International epidemiology Database to Evaluate AIDS (IeDEA).

Methods: The IeDEA site assessment data were collected through a cross-sectional survey conducted among 238 HIV treatment facilities across 43 countries in 7 geographic regions in 2020. For 226 facilities that completed the KS survey, descriptive statistics were used to characterize availability of KS diagnostics. Multivariable logistic regression was used to identify predictors of KS biopsy capacity, defined as availability to perform punch biopsy

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or surgical wedge/excision. We excluded 31 sites in low-KS-incidence countries (incidence rate <0.21/100,000 person-years, GLOBOCAN 2020) that did not diagnose KS in the previous year and did not answer follow-up questions on diagnostics.

Results: Of 195 (86%) included sites, 68(35%) had biopsy capacity. Of the sites in sub-Saharan Africa, 20% reported tissue biopsy availability compared to 82% of sites in Asia-Pacific and 61% of sites in North America. Multivariable logistic regression showed that predictors of tissue biopsy availability were regional/provincial/university hospital (RR 1.70; 95%CI [1.13-2.57], p=0.011), and high or upper-middle income World Bank country income status (RR 3.46; 95%CI [1.53-7.84], p=.003 and RR 2.61; 95%CI [1.08–6.29], p=0.032, respectively).

Characteristic (n)	n (%) with available tissue biopsy†	Unadjusted Risk Ratio (95% CI)	Unadjusted P value	Adjusted* Risk Ratio (95% CI)	Adjusted* P value
Setting					
Rural (64)	4 (6)	Ref.		Ref.	
Urban (127)	63 (50)	7.94 (3.02 - 20.83)	<0.001	2.51 (0.92 - 6.82)	0.072
Clinic Level					
Health center (109)	24 (22)	Ref.		Ref.	
District hospital (15)	3 (20)	0.91 (0.31 - 2.65)	0.861	1.42 (0.72 - 2.79)	0.315
Regional, provincial, or university hospital (63)	38 (60)	2.74 (1.83 - 4.11)	<0.001	1.70 (1.13 - 2.57)	0.011
Country income designation					
Low-income (51)	8 (16)	Ref.		Ref.	
Lower-middle-income (80)	17 (21)	1.35 (0.63 - 2.91)	0.436	1.34 (0.57 - 3.16)	0.499
Upper-middle-income (24)	14 (58)	3.72 (1.81 - 7.64)	<0.001	2.61 (1.08 - 6.29)	0.032
High-income (40)	29 (72)	4.62 (2.38 - 8.98)	<0.001	3.46 (1.53 - 7.84)	0.003

*The adjusted model included all other variables in the left-most column.
†Percentage represents portion of sites with that characteristic who have available tissue biopsy, for example, 4/64 (6%) rural sites had tissue biopsy available.

Figure 1: Unadjusted and adjusted logistic regression factors associated with availability of tissue biopsy for the diagnosis of Kaposi sarcoma in HIV treatment settings.

Conclusions: In a global sample of ambulatory HIV treatment centers, skin biopsy was not routinely available for diagnosis of KS. This was most pronounced in lower-income countries, rural settings, and lower-level facilities. Investment in cancer diagnostics in HIV care settings, de-centralization of biopsy capability, and investment in point-of-care diagnostics may reduce the global burden of advanced-stage cancers.

EPB024

Evaluation of a rapid multiplex assay based digital screening strategy in Canada: what's the verdict?

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Background: During the COVID-19 pandemic, screening for human immunodeficiency virus (HIV) and associated sexually transmitted blood-borne infections (STBBIs) has fallen behind. To fill screening gaps and meet STBBI elimination objectives, rapid multiplex point-of-care (POC) tests/assays can help screen/detect multiple HIV/STBBIs and triage to confirmatory testing and treatment, with a short turnaround time and ideally within one-two visits. However, real-life diagnostic accuracy of these promising tests, against lab-based confirmatory standard assays, has not yet been determined.

We evaluated the diagnostic performance of two assays for HIV, hepatitis C virus (HCV) and syphilis in a digitally App-connected rapid multiplex screening strategy. The AideSmart! app, designed for health aide use, facilitates training, result documentation and communication, and pre/post-test counselling.

Methods: We report results from an ongoing cross-sectional study, conducted during the COVID-19 pandemic, in key at-risk Canadian populations (injection drug users, immigrants, and MSM) in Quebec and New Brunswick.

This interim analysis focuses on the diagnostic accuracy of two multiplex POC tests against lab-based test protocols:

(i) Chembio's Dual Platform Pathway (DPP) test that screens for HIV/syphilis using a reader, and

(ii) an investigational MedMira test for HIV/HCV/syphilis screening.

Results: This interim analysis presents diagnostic accuracy results of 184 participants (Table 1).

1. Specificity remained high (>98.0%) for both tests and for all pathogens (HIV, syphilis, HCV).

2. Sensitivity was higher for Chembio's DPP test, that screens for HIV and syphilis. While for MedMira, the sensitivity was high for HIV [100.0 (95% CI: 76.8-100.0)%] and HCV [95.2 (83.8-99.4)%], though lower for syphilis [77.3 (54.6-92.2)%].

3. Due to the antibody-based nature of these POC tests, past HCV or syphilis infections were occasionally detected where there was no active infection, though they were confirmed with lab tests.

POC Test	Measure	Human Immunodeficiency Virus	Syphilis	Hepatitis C
Chembio	Sensitivity, % (95% CI)	100.0 (76.8-100.0)	95.5 (77.2-99.9)	Not applicable
Chembio	Specificity, % (95% CI)	98.8 (95.8-99.9)	100.0 (97.7-100.0)	Not applicable
MedMira	Sensitivity, % (95% CI)	100.0 (76.8-100.0)	77.3 (54.6-92.2)	95.2 (83.8-99.4)
MedMira	Specificity, % (95% CI)	100.0 (97.9-100.0)	100.0 (97.7-100.0)	99.3 (96.1-100.0)

Table 1: Diagnostic Accuracy of Chembio and MedMira POC Tests

Conclusions: During this COVID-19 pandemic, rapid multiplex assays offer a high potential to rapidly screen and triage participants to confirmatory testing and treatment pathways.

These tools are essential in our diagnostic repertoire to screen/treat and prevent transmission of undiagnosed HIV/STBBIs in the community.

EPB025

Syndemics in people newly diagnosed with HIV in Manitoba, Canada. Importance of coinfections and comorbidities

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Background: The demographic composition of persons who are newly diagnosed with HIV (PLHIV) infection in Manitoba has changed dramatically in recent years.

This study aims to describe the drivers of new HIV infections in Manitoba, the associated comorbidities of newly diagnosed PLHIV, and identify gaps in routine testing for co-infections.

Methods: Retrospective cohort study. Clinical charts of all PLHIV in Manitoba, Canada between 2018 to 2021 are being reviewed. Variables collected include sociodemographic data (race, gender, age, housing status, sexual orientation), past medical history clinical and laboratory findings at the time of admission into the HIV program concurrent sexually transmitted infections and blood borne infections (STBBI) and substance use. This abstract contains preliminary results, and the full results will be presented at the conference.

Results: In the preliminary results (n=82), 57.8% were male, and the median age was 37 years (P25: 30, P75: 48). 62.2% reported substance use: 45.8% were people who inject drugs (PWID), with intravenous methamphetamine use reported by 96.7% of PWID, either alone or in combination with opioids. Sixty two percent reported alcohol consumption, 47.6% were current smokers, and 84% reported to have at least one additional comorbid condition or infection at the time of entry into HIV care. Mental health conditions, cardiovascular disease, and STBBI were the most common concurrent conditions. 61.9% had prior history of STBBI and 51.2% had an additional STBBI diagnosed at presentation to the HIV program: 61.9% had positive syphilis serology, 33% had HCV antibodies or RNA detected. Opportunistic infection was identified in 18.2% at entry. Only 52% were screened for latent tuberculosis and only a half of cis-female and trans-male were screened with pap smear. The most common HIV clades were B (55.1%) and C (29.5%).

Conclusions: Improved linkage to primary care may allow for opportunities to improve diagnosis and management of concurrent conditions, as well as decreasing missed opportunities for early diagnosis of STBBIs by application of routine testing. Substance use is overrepresented with crystal methamphetamine identified as the most common injected substance.

This preliminary study also highlights the need for improved harm reduction programming to prevent further amplification of HIV in Manitoba.

EPB026

Low utilization of TB-LAM for TB screening among children under five with advanced HIV disease in Uganda: a descriptive analysis of surveillance data

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Background: WHO classifies all children living with HIV (CLHIV) aged <5 years, at diagnosis, as having advanced HIV disease (AHD). CLHIV with AHD and/or those with CD4 counts of 100 – 200 cells/mm^3 are eligible for TB screening using lateral flow urine lipoarabinomannan assay (TB-LAM).

We analyzed data on TB screening using TB-LAM (Determine™ TB LAM Ag) in CLHIV <5 years in Uganda to understand TB-LAM utilization in relation to current WHO recommendations on AHD.

Description: We determined the number and proportion of CLHIV aged <5 years active in care (new and old) with: baseline CD4 counts, 'confirmed' AHD (CD4 count <200 cells/mm^3), and TB-LAM tests conducted, deaths during treatment and reported causes of death, during October 2020–September 2021, from Uganda's District Health Information Software (DHIS2). There was no data on patient history and chest X-rays in DHIS2.

Lessons learned: There were 9,840 CLHIV aged <5 years in HIV care, and 33% (3,304/9,840) newly initiated ART. Of the 3,304 newly ART initiated, 40% (1,310/3,304) were designated as AHD and 29% (946/3,304) had baseline CD4-counts. TB-LAM results were available for 11% (105/946) of children with baseline CD4 counts (105 had CD4<200cells/mm^3) of whom 30% (32/105) tested positive and 88% (28/32) started TB treatment.

There was no significant difference in TB-LAM positivity between children aged <1 year (8/18, 44%) and children aged 1–4 years (24/87, 28%) (P=0.113).

Mortality was 3% (301/9,840) of all CLHIV aged <5 years in care. TB contributed 20% (20/100) to reported causes of death, and TB-related mortality was higher in children aged <1 year compared to children aged 1– 4 years (35% versus 13%) (P=0.009).

Conclusions/Next steps: Two-fifths of CLHIV <5 years initiating ART were designated as AHD despite guidance that all should be AHD. This, coupled with low baseline CD4-

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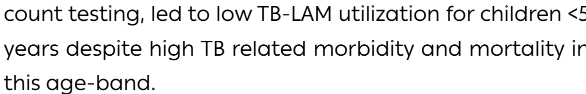

count testing, led to low TB-LAM utilization for children <5 years despite high TB related morbidity and mortality in this age-band.
Considering the high yield on TB-LAM testing, explicit guidance on TB-LAM screening for TB in AHD for children aged <5 years newly tested HIV positive is critical to improve TB indicators in this age-band.

EPB027

Diagnostic performance of HbA1c, fasting blood glucose, and the oral glucose tolerance test among people with HIV

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Background: Rates of diabetes have risen sharply including among people with HIV but how screening for and management of diabetes should be done is unclear. We compared the diagnostic accuracy of HbA1c, FBG and OGTT among patients with HIV and on anti-retroviral therapy.

Methods: A cross sectional study of 975 patients with HIV was done between November 2019 and July 2020 in 4 hospitals in Tanzania. Patients were eligible if aged ≥18 years, on antiretroviral therapy for ≥6 months, did not have a prior diagnosis of diabetes, or ongoing acute illness, liver or renal conditions. OGTT was measured 2-hours after drinking a 75g anhydrous glucose solution.
Tests used point of care devices (Haemocue HbA1c 501 system, Hemocue Glucose 201 RT-Hemocue AB, Angelholm-Sweden). Diagnostic accuracy of HbA1c and FBG were compared to OGTT using sensitivity, specificity and ROC-AUC. Youden's Index determined optimal cut-points.

Results: Among the 971/975 patients who completed screening, 728 (75.0%) were female and median age was 47.0 years (IQR 42.0-54.0). Using WHO OGTT 6.7% of patients were diabetic and 25.1% prediabetic (Table 1).
Both FBG and HbA1c prevalence for diabetes were more than double OGTT, prevalence for prediabetes were comparable. Both FBG and HbA1c had low sensitivity for both diabetes and prediabetes, specificity high for both and comparable. For diabetes ROC-AUC was higher for FBG (0.89) than HbA1c (0.81, p 0.025). ROC-AUC for prediabetes was low for both FBG and HbA1c (0.44 and 0.48, respectively).

		Diabetes Thresholds			Prediabetes Thresholds		
		OGTT ≥11.1 mmol/L	FBG ≥7.0 mmol/L	HbA1c ≥ 6.5%	OGTT 7.8 - <11.1 mmol/L	FBG 6.1-<7.0 mmol/L	HbA1c 5.7 - <6.5%
Prevalence n/N (%)		65/971 (6.7)	142/971 (14.6)	129/971 (13.3)	244/971 (25.1)	267/971 (27.5)	232/971 (23.9)
Diagnostic Accuracy compared to OGTT	Sensitivity (95% CI)	Gold Standard	31.0 (23.5,39.2)	27.1 (19.7,35.7)	Gold Standard	47.9 (41.8,54.1)	31.0 (25.1,37.4)
	Specificity (95% CI)	Gold Standard	95.5 (96.2,98.4)	96.4 (95.0,97.6)	Gold Standard	83.5 (80.6,86.2)	76.7 (73.5,79.7)
	ROC AUC (95% CI)	Gold Standard	0.89 (0.83,0.94)	0.81 (0.75,0.87)	Gold Standard	0.44 (0.40,0.47)	0.48 (0.44,0.52)
Optimal cut-point analysis	Optimal cut-point	Gold Standard	6.3	5.9	Gold Standard	5.5	5.5
	Sensitivity	Gold Standard	87.7	73.8	Gold Standard	73.8	55.3
	Specificity	Gold Standard	26.7	24.9	Gold Standard	24.9	47.5

Table 1: Results of Diagnostic Accuracy Tests for FBG and HbA1c compared with OGTT

Conclusions: Compared to OGTT, FBG performs better on sensitivity, specificity and ROC-AUC than HbA1c. Our study indicates further research is needed to establish optimal thresholds for FBG and HbA1c for people living with HIV.

EPB028

Health related quality of life is impaired in people living with HIV and hepatic steatosis

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Background: People living with HIV (PLWH) show a high prevalence of hepatic steatosis and non-alcoholic fatty liver disease (NAFLD). NAFLD has been linked to impaired health-related quality of life (HRQL) and therefore could be an aggravating factor in PLWH.
The aim of this study was to determine differences in HRQL between PLWH presenting with and without hepatic steatosis and to identify predictors associated with impaired HRQL.

Methods: A total of 245 PLWH were prospectively enrolled at an outpatient clinic. Hepatic steatosis was assessed using vibration controlled transient elastography (VCTE) and defined as a controlled attenuation parameter (CAP) of > 275 dB/m. The cohort was then divided into two groups: no steatosis and steatosis. The generic EQ-5D-5L questionnaire was used to determine differences in the HRQL. It consists of an overall value (UI-value) and five dimensions, each addressing different aspects of an individual HRQL. Univariable and multivariable linear regression models were applied to identify predictors with impaired HRQL in both groups.

Results: In this cohort of PLWH, the prevalence of hepatic steatosis was 35% (n = 85) of whom 76.5% (n = 65) had NAFLD and 16.5% (n = 14) alcoholic liver disease. The median age was 52 years (IQR 42; 58) and the majority

of PLWH were male (n = 174, 71%). The mean UI-value in the total cohort was 0.90 (± 0.15). The HRQL (UI-value) was significantly lower in PLWH and steatosis in comparison to no steatosis (p = 0.013). The most strongly affected dimensions were mobility (p = 0.016) and pain/discomfort (p = 0.012) in the steatosis group, and the dimension anxiety/depression was equally impaired in both groups (p = 0.629) (Figure 1).
Unemployment (p = 0.025) and waist circumference (p = 0.017) remained independent predictors of a poor HRQL in the steatosis subgroup.
In turn, age (p = 0.045), female sex (p = 0.030), BMI (p = 0.010) and arterial hypertension (p = 0.025) were independent predictors of a low HRQL in the subgroup without steatosis.
Conclusions: Hepatic steatosis and metabolic comorbidities negatively affect HRQL. Addressing these factors may improve patient reported and liver-related outcomes in PLWH.

EPB029
Improved tuberculosis case finding among patients with Advanced HIV Disease in Nigeria through the deployment of a point of care tuberculosis diagnostic test

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Background: Nigeria recently rolled out a package of care (PoC) to manage Advanced HIV Disease (AHD) among people living with HIV (PLHIV). The AHD PoC recommends screening for opportunistic infections and use of tuberculosis lateral flow urine lipoarabinomannan assay (TB-LAM), a point of care test, to complement the Xpert MTB/RIF test for prompt identification of Tuberculosis (TB) in AHD patients. We documented early lessons from the deployment of TB-LAM in Nigeria.
Description: Facility implementation of AHD PoC commenced in February 2021 and involved 28 health facilities across 4 high-burden states (Lagos, Akwa-Ibom, Rivers and Anambra). Healthcare workers (HCWs) conducted TB-LAM tests for AHD patients regardless of TB symptoms, and those with positive results were referred for Xpert MTB/RIF, the gold standard for TB diagnosis in-country. Diagnosed TB patients were managed for TB and commenced on antiretroviral therapy after 2-weeks of TB treatment.

Lessons learned: By September 2021, 80% (1719 of 2160) of newly enrolled PLHIV with AHD received TB-LAM test and 35% (606 of 1719) tested positive. Of those positive, 70% (426 of 606) had a documented Xpert MTB/RIF result. 75% (320 of 426) of confirmed TB cases commenced treatment.
The proportion of AHD patients who received TB-LAM test increased across the quarters with 56%, 81% and 90% recorded in Q1, Q2 and Q3 2021 respectively. In Q3 2021, 78% (166 of 214) of TB-LAM positive patients received an Xpert MTB/RIF, and 55% (91 of 166) of these patients tested positive with Xpert MTB/RIF.
Some HCWs did not conduct Xpert MTB/RIF for TB-LAM positive patients without TB symptoms and also did not treat Xpert negative TB-LAM positive patients as there was no clear guidance from the TB program. Limited availability of urine sample cups in Q1 impacted TB-LAM testing. Ensuring availability of all commodities required for TB-LAM testing and enhanced collaboration between TB and HIV programs at facility and national levels will improve AHD patients' outcomes.
Conclusions/Next steps: Introduction of TB-LAM test as part of the AHD PoC has improved TB case identification among PLHIV. Using these lessons, clear guidance recommending treatment for TB-LAM positive patients was developed for use across the HIV and TB programs

Biomarkers for the prediction of morbidity and mortality

EPB030
Adopting a Continuous Quality Improvement (CQI) platform as a real-time performance tracker for improving HIV care and treatment outcomes in Botswana

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Background: In Botswana, there was a lack of a formal electronic real-time platform for documenting and sharing quality improvement initiatives geared towards closing the performance gaps identified from the generated data. Botswana-University of Maryland School of Medicine Health Initiative (Bummhi) in collaboration with Botswana Ministry of Health and Wellness (MoHW) and support from PEPFAR has since adopted the use of the Continuous Quality Improvement (CQI) Digital Platform which tracks CQI projects for clinical HIV/TB pathways and provides users real-time tracking data. The CQI projects

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captured electronically seek to improve health care and performance gaps through the Plan-Do-Study and Act (PDSA) approach which has been adopted in the Botswana CQI Framework.

Description: CQI teams across 53 Bummhi supported facilities and all other government facilities within the 12 districts were trained on the use of CQI digital platform. A total of 332 log-in credentials were created.

Additionally, teams were also trained on conducting HIV Site Assessments to identify a baseline for performance improvement.

Lessons learned: As of September 2021, 9 months of use of the CQI digital platform a total of 204 projects across the HIV cascade have been initiated, including projects on increasing HIV testing among elicited partners, improving patient management and retention, increasing viral load coverage and critically on new indicators like Determined Resilient Empowered AIDS-Free Mentored and Safe (DREAMS), HIV self-testing and Pre-exposure Prophylaxis (PrEP) implementation.

Conclusions/Next steps: The successful implementation of the CQI digital platform provided Botswana an opportunity to capture, monitor, and virtualize CQI initiatives from one centralised and standard place. The CQI digital platform provides an archive which is easy to use, flexible, expandable, and interoperable with other existing systems, e.g., The District Health Information Software 2 (DHIS2) and can be optimized through digitalised processes. Intensified mentoring and support to users is ongoing for expanded utilization, ownership, and sustainability by the MoHW. We are currently collecting user feedback on acceptability and feasibility to use to further enhance development of the CQI platform.

EPB031

Soluble CD27 predicts progression of kidney dysfunction in people living with HIV

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Background: Chronic kidney disease (CKD) is a considerable global public health issue that disproportionately impacts people living with HIV. Biomarkers can provide information on the mechanisms of kidney disease, improve clinical practice, and/or predict cardiovascular and renal endpoints in CKD patients. We investigated whether biomarkers detect the progression of kidney dysfunction in the Miami Adult Studies on HIV (MASH) cohort.

Methods: Available data on 30 biomarkers of oxidative stress, immune activation, pro-inflammation, interleukins, cytokines, growth factors and tumor necrosis factors were analyzed.The receiver operating characteristic (ROC) curve confirmed the ability of the serum biomarkers to predict an outcome of a 30% loss or more of estimated glomerular filtration rate (eGFR). Binary logistic regression analyses were performed to determine predictors of a 30% loss of eGFR at 24 months.

Results: The analysis included 481 HIV-infected (HIV+) on HAART and 549 HIV-uninfected (HIV-) participants from the MASH cohort. HIV+ participants were more likely than HIV- to suffer a 30% loss in eGFR over 24 months (7.3% vs. 3.1%, P=0.049). The area under the ROC curve (auROCc) showed that, from the analyzed battery of serum biomarkers, only serum tissue inhibitor of metalloproteinase 1 (TIMP-1; auROCc 0.68, 95% CI 0.55-0.80, P=0.005, cut-off point 53.25 ng/mL) and soluble CD27 (sCD27; auROCc 0.75, 95% CI 0.65-0.86, P<0.001, cut-off point 8.4ng/mL) were able to predict 30% loss of eGFR in 24 months.

Multivariate analyses revealed that after adjustment for covariates only sCD27 (>8.4ng/mL) remained an independent risk factor for the progression of kidney dysfunction (relative risk [RR] 3.93, 95% CI 1.05-14.74, P=0.042). Among HIV+ participants, sCD27 >8.4 ng/mL remained a significant risk factor for a 30% loss of eGFR at 24 months (RR 4.59, 95% CI 1.29-16.27, P=0.018) after adjustments.

Conclusions: Higher circulating levels of sCD27 at baseline stand out as an independent predictor of a 30% loss of kidney function during a 24-month period. Soluble CD27 may be particularly useful as a predictor of eGFR decline among people living with HIV.

Tuberculosis: Prevention, diagnosis, treatment

EPB032

Integrating 3HP-based tuberculosis preventive treatment (TPT) into Zimbabwe's fast track HIV model: aligning TPT and HIV visits, multi-month dispensing, and telephone follow-up were feasible and acceptable

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Background: Tuberculosis (TB) causes one-third of HIV-related deaths worldwide, making TB preventive treatment (TPT) a critical element of HIV programs. Approximately15% of people living with HIV (PLHIV) on antiretroviral therapy (ART) in Zimbabwe are enrolled in the Fast Track (FT) differentiated service delivery model, which includes multi-month dispensing (MMD) of ART and quarterly health facility (HF) visits.

We assessed the feasibility and acceptability of utilizing FT to deliver 3HP (three months of once-weekly rifapentine and isoniazid) for TPT by aligning TPT and HIV visits, providing MMD of 3HP, and using phone-based monitoring and adherence support.

Methods: We recruited a purposive sample of 50 PLHIV enrolled in FT at a high-volume HF in urban Zimbabwe. At enrollment, participants provided written informed consent, were seen by a HF-based provider, completed a baseline survey, and received counseling, education, and a three-month supply of 3HP and vitamin B6. A study nurse called participants at weeks two, four, and eight to assess and support adherence and monitor side effects.

When participants returned for their routine three-month FT visit, they completed another survey and study staff conducted a structured medical record review.

Results: Participants were enrolled between April and June 2021 and followed through September 2021and were in FT for a median of 1.83 years (IQR0.75,2.67); median age=32 years (IQR24,41); 50% were female. Forty-eight participants (96%) completed 3HP in 12 weeks; one completed in 16 weeks, and one stopped due to jaundice. Most participants (94%) reported always or almost always taking 3HP correctly. All reported they were very satisfied with the counseling, education, support, and quality of care they received from providers. Almost all (98%) said they would recommend it to other PLHIV.

Challenges reported include pill burden (12%) and tolerability (24%), but none had difficulty with phone-based counseling or wished for additional HF-based visits.

Conclusions: Using the FT model to deliver 3HP was feasible and acceptable to participants. Some reported tolerability challenges but 98% completed 3HPand all appreciated the efficiency of aligning TPT and HIV HF visits, MMD, and phone-based counseling. Scaling up this approach could expand TPT coverage in Zimbabwe.

EPB033

Tolerability of Isoniazid and 3HP among opioid dependent people in a Malaysian prison

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Background: Prisons are high-risk environments for TB transmission, yet data on the feasibility of TB preventive treatment (TPT) is lacking. We report on early findings of TPT completion rates and tolerability from a randomized control trial comparing 26-week daily isoniazid (26H) and 12-week 3HP in people in prison with opioid use disorder (OUD) and LTBI.

Methods: People with OUD living with and without HIV and/or Hepatitis C (HCV) entering Kajang men's prison in Kuala Lumpur, Malaysia August 2017-January 2022, underwent screening for active TB. Individuals with latent TB (negative chest-X-ray, negative sputum culture and GeneXpert, and a positive Tuberculin Skin Test (TST) (HIV negative, TST≥10mm, HIV+, TST≥5mm) were randomized to receive 3HP (900 mg Rifapentine, 900 mg Isoniazid, 50 mg Pyridoxine weekly for 12 weeks) or 26H (300 mg Isoniazid, 50 mg Pyridoxine daily for 26 weeks).

All received medications via directly observed therapy, monthly liver function tests (LFTs) and clinical evaluation at 3 and 6 months. Treatment tolerability and completion were assessed. Grade 2, 3, 4, hepatotoxicity was defined as <2.5-5, 5-10x, and >10x upper limit of normal (ULN).

Results: Among 103 participants, the median age was 43 (IQR 37-50), all were men, 55 (53.4%) had HCV, 28 (27.2%) had HIV with 18 (64.3%) taking ART, and 20 (19.42%) had both HCV and HIV.Among the 26H group (n=50), 25 (50%) completed TPT to date, and 26 (52%), 17 (34%), and 6 (12%) participants experienced grade 2, 3, and 4 toxicity, respectively. Among 53 randomized to 3HP, 38 (71.7%) completed treatment to date, and 19 (35.8%), 7 (13.2%), and 1 participant experienced grade 2, 3, and 4 toxicity, respectively.

Overall hepatotoxicity was significantly greater in the 26H group compared to the 3HP group (p<0.001). One (1.9%) participant did not complete TPT due to hepatotoxicity, from the 26H group. HIV and Hep C were not associated with hepatotoxicity.

Conclusions: TB preventive therapy for people in prison with OUD in a highly Hepatitis C and HIV prevalent context is feasible and well tolerated. People in prison should be prioritized for TB preventive therapy.

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EPB034

Incidence and risk factors for liver enzyme elevation in HIV-1 infected patients treated for tuberculosis: a secondary analysis of the multi-country ANRS 12300 REFLATE TB2 trial

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Background: There are limited data describing the incidence and risk factors associated with Liver Enzyme Elevation (LEE) among patients co-infected with HIV and tuberculosis (TB) receiving antiretroviral therapy (ART).
This study aimed to describe the incidence, severity and risk factors associated with LEE in patients enrolled in Reflate TB2 trial.

Methods: ANRS 12300 Reflate TB2 was a multicenter, open-label, phase 3, non-inferiority randomized trial where ART-naïve adult HIV1-infected patients on standard TB treatment received either raltegravir 400 mg BID or efavirenz 600 mg QD both in association with tenofovir and lamivudine. Alanine aminotransferase (ALT) levels were assessed at weeks 0, 2, 4, 8, 12, 24, and 48. LEE was defined as any grade 2 or more ALT [≥2.5 upper limit of normal (ULN)] during follow-up visits.
The Overall incidence of LEE [per 100 persons-year (PY)] over the trial duration and baseline risk factors for LEE using univariate and multivariate cox proportional-hazards models [HR (95%CI)] were assessed.

Results: A total of 453 patients [median age=35 years (IQR: 29-43), median baseline CD4 count=102 /µL (IQR: 38-239), median ALT level=24 IU/L (IQR: 15-38), 31% with disseminated Extrapulmonary TB were included in the analysis.
Overall, 11% of patients (n=48) experienced LEE, corresponding to an incidence of 13.42 (95% CI: 9.89-17.79) events per 100 PY. Of 48 patients with LEE, 63% (n=30) were male, 58% (n=28) were from Vietnam, 65% (n=31) were younger than 35 years, 40% (n=19) had ALT elevation grade ≥3. Additionally, among those, 34 subjects (71%) had a baseline Karnofsky score above 80%, 32 (67%) declared current or past alcohol consumption, 35 (75%) had baseline CD4 counts ≤100/µL and their median baseline HIV RNA was 5.6 $\log_{10}$ copies/mL, 23 individuals (48%) had baseline ALT≥ 40 IU/L. Inclusion in Vietnam [vs Ivory Coast, HR=3.16 (95%CI: 1.51-6.61), ALT≥ 40 IU/L [vs <40 IU/L, HR=2.35 (95%CI: 1.27-4.37)] and Neutrophils ≤ 1500/mm3 [Vs Neutrophils >1500. mm3, HR= 1.901 (95%CI: 1.002-3.605)] at baseline were independently associated with LEE.

Conclusions: The incidence of LEE was relatively high in HIV/TB co-infected patients receiving anti-TB treatment and ART, particularly among those from Vietnam and those with higher baseline ALT levels.

EPB035

Early culture conversion among people with HIV and drug resistant tuberculosis in Uganda

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Background: Culture conversion is useful in evaluating the efficacy of drug resistant tuberculosis (DRTB) regimens. We determined associations of early (≤ 2 months) culture conversion among people with HIV (PWH) and DRTB in Uganda. We further compared the frequency of early culture conversion among PWH and people without HIV.

Methods: This was a countrywide retrospective cohort of people with bacteriologically confirmed DRTB at 16 centres in Uganda between 2013 – 2019. Data were abstracted from treatment files and unit DRTB registers. Monthly sputum cultures were performed using the Lowenstein-Jensen medium.
The month of culture conversion was determined to be the first of two months with consecutive negative sputum cultures following a positive baseline culture. Associations of early culture conversion were determined using logistic regression analysis.

Results: There were 664 people with DRTB and a positive baseline culture of whom 353 (53.4%) were PWH. Among the PWH, 225 (63.7%) were male, 331 (94.3%) were on antiretroviral therapy and the median (interquartile range, IQR) age was 36.0 (30.0 – 43.0) years. The median (IQR) month of culture conversion was 2 (1 – 3). Early culture conversion was observed among 226 PWH (64.0%, 95% confidence interval (CI) 58.9 – 68.9%). In a multivariable model, a DRTB treatment regimen of >5 drugs was associated with early culture conversion among PWH (adjusted odds ratio (aOR) = 3.82, 95% CI 1.06 – 13.82, p = 0.041).
Cure and overall treatment success were observed among 232 (65.7%) and 269 (76.2%) PWH respectively. However, early culture conversion was neither associated

with cure (odds ratio (OR) = 0.97, 95% CI 0.61 – 1.54, p = 0.901) nor overall treatment success (OR = 1.29, 95% CI 0.78 – 2.13, p = 0.326) among PWH. The frequency of early culture conversion was higher among PWH than people without HIV (226 (64.0%) vs. 177 (56.9%), p = 0.061) although this was not statistically significant.

Early culture conversion was not associated with cure or treatment success among people without HIV as well.

Conclusions: Majority of PWH and DRTB achieve early culture conversion. However early culture conversion does not predict cure or treatment success. Moreover, it may require ≥6 drugs to achieve early culture conversion.

EPB036

Evaluating two tuberculosis preventive therapy treatment modalities in an HIV treatment program: 3HP versus 6H

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Background: Tuberculosis preventive treatment (TPT) can reduce the risk of individuals developing Tuberculosis (TB) by treating latent tuberculosis infection (LTBI). This study was conducted to evaluate completion rates for 2 different TPT modalities in HIV infected patients.

Methods: This was a retrospective cohort study conducted at Newlands Clinic, Harare, Zimbabwe. Patients were either receiving 6 months of daily isoniazid (6H) or 3 months of weekly rifapentine/isoniazid (3HP) for LTBI treatment. Routinely collected patient level data, for patients receiving TPT was abstracted from an electronic medical record. Descriptive statistics were used to evaluate the data.

A marginal structural model analysis using inverse probability weight estimators to assess the causal relationship between prophylaxis regimen (6H or 3HP) and completion of treatment was conducted.

Results: A total of 502 patients received 3HP whilst 1672 patients received 6H. All patients were HIV infected. The median ages for patients receiving 3HP and 6H were 37 (IQR: 22-49) and 24 (IQR: 16-46) years respectively.

One hundred and eighty (35.9%) and 774 (46.3%) participants on 3HP and 6H respectively were male. Discontinuation rates were 3.4% for 3HP and 5.7% for 6H.

Of the discontinuations in the 3HP arm 7(1.6%) were caused by an adverse reactions (2 developed a rash, 2 developed nausea and vomiting, 1 developed facial oedema, 1 developed impaired renal function and 1 of the adverse reactions was undocumented) and one discontinued as a result of a drug interaction. Of the 95 discontinuations in the 6H arm, 64(3.8%) were as a result of an adverse reaction (AR) or drug interaction.

Variable	6H, N = 1,672	3HP, N = 502
Age, Median (IQR)	23.5 (14.0-45.0)	37.0 (22.0 - 48.8)
Gender, n(%)		
Male	774 (46.5)	180 (35.9)
Female	898 (53.5)	322 (64.1)
Completed, n(%)	1,053 (63.0)	483 (96.2)
Still on treatment, n(%)	386 (23.1)	2 (0.4)
ARs leading to discontinuation, n(%)	**64 (3.8)**	**7 (1.4)**
Liver toxicity	47 (2.8)	0 (0)
Rash	6 (0.4)	2 (0)
Other	11 (0.7)	5 (1.0)
Developed TB whilst on TPT, n(%)	4 (0.2)	0 (0)
Deceased/Lost to follow up/ Transferred out	16 (1)	0 (0)
Median Time to discontinuation, weeks(IQR)	10 (4 - 15)	2 (0 - 6)

Table.

In a marginal structural model analysis regression analysis between treatment regimen and completion of treatment, using 6H result in lower completion of treatment compared to isoniazid alone (RR=0.974, CI: 0.957 - 0.991, p < 0.003).

Conclusions: Completion rates were higher with 3HP compared to 6H. Use of 3HP had better retention in TPT whilst having less toxicity.

EPB037

Traditional healers are "part & parcel" on fight against TB". Lesson learnt, Ruvuma region, Tanzania

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Background: Worldwide, TB is the leading cause of death among people living with HIV. Tanzania ranks 6th among 30 highest TB burdened countries in the world and in Africa. The 2020 WHO model estimates that the incidence of TB in Tanzania is 237 cases per 100,000. TB case detection rates is at 59%. Reports show that most of the TB cases remains undiagnosed in the community. MDH through support from Global Fund have been working with the government to implement TB services in the communities in 7 regions including Ruvuma using different approaches such as engagement of traditional healers (THs).

Description: MDH engaged THs through local authorities responsible for regulating their activities and through their unions. We mapped and identified 70 THs in the region. They were oriented on TB screening and how to

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identify and refer individuals with TB symptoms to diagnostic facilities. In addition, they were linked with trained CHWs for sputum sample collection and transport to nearest facility with GeneXpert. CHWs also supported referrals and ensured results are returned to TH clinic site. The District TB & Leprosy Coordinators were contacted for initiating TB treatment to all confirmed cases. TH were also involved to supervise their patients' treatments.

Lessons learned: From January to November, we observed a steady increase in TB case detection largely contributed by THs. Out of 1,458 TB cases in the region during this period, 25 (1.3%) came from THs.

Interestingly among the 25 cases, 10 including 2 MDR TB came from one champion TH clinic site. Four patients tested HIV+ and were initiated on ART.

Conclusions/Next steps: Community TB identification strategy with involvement of TH has shown positive impact whereby TB presumptive cases are now notified from TH clinics. This minimizes possibilities of missing cases in the community. MDH proved that TH are the important group who plays a great role on TB case notification on its implementation regions. Engagement of THs have been scaled up in other regions where similar support is provided.

EPB038

Integration of TB-LAM and Xpert MTB/RIF (Xpert) testing to improve TB case detection and shorten time to treatment initiation among People Living with HIV (PLHIV) in Harare City, Zimbabwe

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Background: The Abbott Determine TB LAM Ag (TB-LAM) assay is a urine-based point of care diagnostic test. In October 2020 the Zimbabwe Ministry of Health and Child Care (MOHCC) introduced TB-LAM test for concurrent use with Xpert among asymptomatic PLHIV with advanced disease (CD4<200cells/mL or stage 3 or 4 disease) and symptomatic PHLIV regardless of CD4 cell count or stage of disease at selected high-volume sites.

We describe TB case detection, time-to-treatment before and during implementation of TB-LAM testing and acceptability and value of TB-LAM testing at 2 sites in Harare.

Description: Prior to implementing TB-LAM testing, we conducted on the job training for laboratory technicians and sensitized clinicians on identification of eligible clients for testing, sample collection and client management. We reviewed TB program records from October 2020 to September 2021 for two high-volume sites in Harare. We abstracted data from MoHCC registers and patient files using Excel. Health workers were interviewed to determine acceptability and ease of administration of the test.

Lessons learned: Health workers described TB-LAM as acceptable, simple to administer and shortens results turnaround time. Prior to LAM implementation (duration 8 months),161 symptomatic clients were tested using Xpert and 12% (20) were positive.

Post implementation (duration 4 months), 82 clients were tested with TB-LAM and 22% (18) were positive. In the absence of TB-LAM testing 15 cases of asymptomatic TB would have remained undiagnosed among 72 PLHIV who were considered negative based on question-based symptom screening alone.

Before implementation of TB-LAM testing median time from diagnosis to initiation on treatment was 2 days (IQR:1-6) and during implementation median time was 1 day (IQR:1-2).

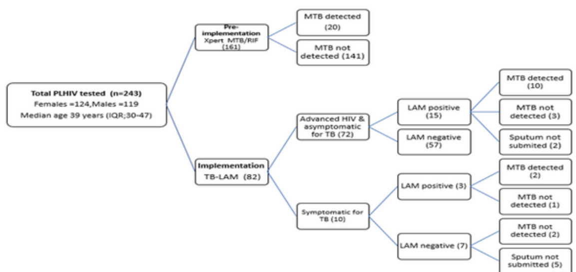

Figure. TB testing at facilities implementing TB LAM in Harare City, October 2020 - September 2021

Conclusions/Next steps: Our experience demonstrates TB-LAM testing as an acceptable and simple tool to integrate into routine HIV care. Scale-up of TB-LAM can improve TB diagnosis among PLHIV co-infected with TB and may facilitate timely treatment initiation.

EPB039

Safety and pharmacokinetic of daily isoniazid/rifapentine (1HP) in adults with HIV on standard dose of dolutegravir

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Background: People living with HIV (PLWH) has 20 times greater risk of developing active TB than those without HIV infection and tuberculosis preventive therapy (TPT) is recommended. A 28-day regimen of daily isoniazid (H) 300mg and rifapentine (P) 450-600 mg (1HP) is a novel, effective, ultra-short regimen for TPT. Rifapentine may decrease dolutegravir (DTG) concentrations via inducer of drug-metabolizing enzymes. We evaluated the effect of 1 HP on DTG exposure among PLWH in Thailand.

Methods: Adult PLWH on DTG-based ART with undetectable HIV viral loads were recruited at HIV-NAT, Thailand during 2021. All received DTG 50 mg once daily (TDF/3TC/DTG: TLD 1 pill a day) for at least 4 weeks, then 1 HP (300/600mg) was initiated on Day 1. All participants were followed until week 24, and HIV-1 RNA, liver, and renal function tests were monitored.

Intensive PK for DTG was performed at Day 0 (before 1HP) and at day 28 (last dose of 1HP). Plasma samples were collected pre-dose, 1, 2, 4, 8, 12 and 24 hours post-DTG dose. DTG concentrations were determined by validated LC-MS/MS. PK parameters were estimated (nonparametric; WinNonLin).

Results: Thirteen participants (84.6% males) completed 24 hours intensive PK. The median age was 32 years, and the median body weight was 70.5 kg. The geometric mean (GM) with 95%CI of DTG (with HP) of maximum concentration (C_{max}), area under curve ($AUC_{0-\tau}$), and minimal concentration (C_{min}) were 3 (2.4-3.8) ug/mL, 25.1 (19.7-32) ug.hr/mL, and 0.2 (0.1-0.5) ug/mL, respectively.

Overall, HP decreased DTG C_{max}, AUC and C_{min} concentrations by 8%, 51.2%, and 24.9%, respectively. Only 1 participant had C_{min} less than protein-binding-adjusted IC_{90} of DTG (0.064 ug/mL). Median ALT changed during 1 HP was 27 (23-34) U/L. At week 24, 92% of participants had HIV-RNA <40 copies/mL. The study regimen was well-tolerated, only 1 participant had mild rash and 1 HP was prematurely terminated. No serious adverse events were reported.

Conclusions: Although there were substantial reductions in DTG concentrations when co-administered with 1HP, C_{min} levels were still above the protein-binding-adjusted IC_{90} of 0.064 µg/mL and majority of them (>90%) remained virologically suppressed. Future large studies are warranted to confirm the findings.

EPB040

Treatment outcome of rifampicin-resistant tuberculosis among people with HIV in South Africa: a nested prospective cohort study

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Background: South Africa has high rates of rifampicin-tuberculosis (RR -TB), which disproportionately affects people living with HIV (PWH). Treatment outcomes in PWH are poorer with death and loss to follow-up (LTFU) consistently greater. Newer all-oral RR-TB treatment regimens offer hope to improve outcomes, yet may require ART substitution.Little is known about whether real-world use of oral regimens and their impact on outcome in PWH.

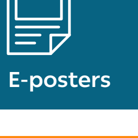
Methods: We evaluated a prospective, nested cohort of PWH within the control arm of a cluster randomized nurse case management trial in 10 public hospitals, 2013-2020. Baseline demographics, RR-TB regimen type, and HIV clinical data were included. Multinomial logistic regression models were used to compare treatment success against failure, LTFU and death.

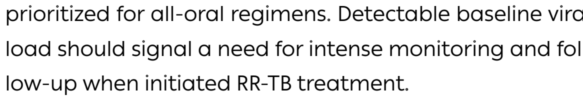
Results: Among 603 participants, 426 (70.6%) were PWH whose mean age was 36.6 years, 53.1% female, 68.8% did not complete high school, 61.7% unemployed. On intake, median CD4 was 192; 61.2% on ART with 66.4% with a detectable viral load. Of those starting oral regimens (n=78), 39.7% required ART substitution. Outcomes remain poor with 55.2% success; 5.2% failure; 23.5% LTFU; 16.2% death. Oral regimens reduced odds of LTFU by 90% and death by 67%. Those without viral suppression at intake had 2.7-fold greater odds of death. Increased household number increased odds of failure by 25%, while living in town increased odds of LTFU 3-fold and death 3.4-fold. For each unit increase in BMI, odds of death decreased 22% and completing high school decreased failure by 85%.

	Failure a(OR)	95% CI	LTFU a(OR)	95% CI	Death a(OR)	95% CI
Oral regimen (ref. injectable)	0.33	0.06 – 1.68	**0.10**	**0.04 – 0.28**	**0.33**	**0.13 – 0.85**
BMI	0.93	0.81 – 1.06	0.98	0.92 – 1.04	**0.88**	**0.80 – 0.98**
Baseline viral load > 50 (ref. undetectable)	0.53	0.14 – 2.02	1.218	0.60 – 2.47	**2.67**	**1.02 – 6.99**
Peri-urban hospital site (ref. Rural Hospital)	0.33	0.09 – 1.15	**0.31**	**0.16 – 0.61**	**0.27**	**0.11 – 0.65**
Living in town/city/suburb (ref. village)	0.96	0.20 – 4.63	**2.95**	**1.44 – 6.03**	**3.37**	**1.38 – 8.26**
Number in household	**1.25**	**1.07 – 1.46**	1.06	0.97 – 1.16	1.01	0.90 – 1.14
Completion, high school (ref. primary school)	**0.15**	**0.03 – 0.77**	0.71	0.37 – 1.36	0.99	0.43 – 2.25
Legend: a(OR), adjusted odds ratio; CI, confidence interval; LTFU, loss to follow-up; ref., reference; BMI, body mass index (continuous); adjusting for sex, government financial assistance, employment, CD4 categorical < 200 and > 200.						

Table 1. Predictions of negative RR-TB treatment outcomes among people with HIV (N=426)

Conclusions: PWH receiving all oral regimens demonstrated dramatic improvements in LTFU and death compared to older injectable-based regimens and should be





prioritized for all-oral regimens. Detectable baseline viral load should signal a need for intense monitoring and follow-up when initiated RR-TB treatment.
Treatment adherence programs should target patients who travel outside of town for treatment, crowded homes and those with lower education.

EPB041
Clinical and virologic outcomes of TB/HIV co-infected patients treated with dolutegravir-based HIV antiretroviral regimens: programmatic experience from Nigeria

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Background: Globally, there has been concerns about clinical and virologic outcomes of TB/HIV co-infected patients on Dolutegravir based (DTG) antiretroviral therapy (ART) as rifampicin reduces dolutegravir bioavailability.
This study hopes to assess HIV and TB treatment success among TB/HIV patients on DTG-based HIV drug and rifampicin-based TB drugs.
Methods: Retrospective analysis of data of TB/HIV co-infected patients managed between October 2017 and December 2021 in 96 ART sites in Nigeria. TB data were extracted from the presumptive TB register and TB treatment register in DOTs unit, while HIV data were extracted from facility ART electronic monitoring records. Data were analyzed using SPSS. Association between exploratory variables and study outcomes "TB treatment outcome and viral load suppression status" were examined using binary logistic regression at p value of 0.05.
Results: The mean age of respondents was 39.0 ± 13.0 years. About half (53.8%) were on DTG-based antiretroviral drug, Viral load suppression rate was 89.1%. Major site for tuberculosis (TB) presentation was pulmonary (98.0%). A larger percentage of the respondents had favorable TB outcome i. e completed or TB cured (84.7%). There was statistically significant association between DTG-based therapy and favourable TB treatment outcome (Crude OR = 1.383, Adjusted OR = 1.600).
Other findings included lower likelihood of favorable TB outcome among patients with extrapulmonary TB (AOR = 0.114), and higher likelihood of favorable TB outcome in patients with CD 4 count more than 500 cells/ml (AOR = 1.925) and those who commenced INH before TB diagnosis (AOR = 1.689). No significant association was found between DTG-based therapy and patient viral load suppression.
Conclusions: Use of DTG-based antiretroviral therapy with rifampicin based anti-TB drugs in TB/HIV patients has better TB treatment outcome than non-DTG based therapy. Effort should be geared towards transitioning all TB-HIV co-patients to DTG-Based ART except if contra-indicated.

EPB042
Identifying gaps in the tuberculosis care cascade in sub-Saharan Africa

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Background: People living with HIV (PLWH) who do not have active tuberculosis (TB) are candidates for TB preventive treatment (TPT), which reduces TB-associated mortality. TB screening in PEPFAR-supported countries suggests about 2.3% of PLWH have active TB, although literature suggests screening positivity should be closer to 5%., TPT has been initiated in only 12% while the goal is to ensure all PLWH have had TPT.
Methods: The African Cohort Study (AFRICOS) enrolls PLWH who are engaged in care at 12 PEPFAR-supported clinics in Uganda, Kenya, Tanzania and Nigeria.Semiannual evaluations include medical examinations, medical history-taking, and TB symptom screening. Self-report of any fever, night sweats, weight loss or cough in the past week is considered a positive TB screen.
Molecular testing, smear and/or chest x-ray were used to confirm or exclude active TB. TPT is administered according to World Health Organization guidance.
Results: Of 3077 PLWH enrolled from January 2013 through August 2021, 698 (23%) were newly engaged in HIV care (≤1 month). Of these, 296 (42%) screened positive for TB and 26 (8.8%) were confirmed cases.
An additional 8 were confirmed without symptoms. Of 2379 PWLH engaged in care for >1 month prior to enrollment, 760 (32%) screened positive and 25 (3.3%) were confirmed cases.
An additional 41 were confirmed without symptoms. Of 2977 without active TB, 1693 (57.0%) initiated TPT, of whom 1430 (83.9%) (n=1430) completed treatment, and 26 (1.5%) were still on treatment. (Figure).

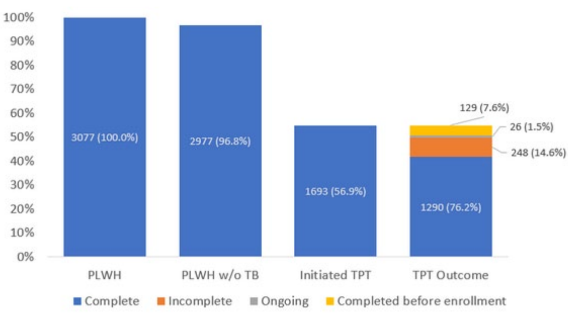

Figure. TPT care cascade among those enrolled PLWH in AFRICOS, 2013-2021

Conclusions: A structured cohort setting with routine TB symptom screening yielded higher TB screening positivity than program data, even in participants who had previously been engaged in HIV care.

These data underscore the importance of symptom screening at every visit and demonstrate opportunities to optimize TB screening and TPT administration to improve TB/HIV outcomes.

EPB043

Trends in QGIT positivity among newly diagnosed people living with HIV in South Africa: results from the TEKO trial

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Background: In South Africa, TB preventive therapy (TPT) is recommended for people living with HIV (PLHIV) regardless of TB infection (TBI) status, partially because tests are a barrier to maximizing TPT implementation. The intervention arm of the TEKO trial utilized QuantiFERON-TB gold in-tube (QGIT) testing linked to the baseline blood draw among newly diagnosed PLHIV to identify TBI status. Here we describe TBI prevalence as QGIT positivity among PLHIV in TEKO.

Methods: 1,365 newly diagnosed PLHIV were enrolled across seven QGIT clinics between November 2014 and May 2017, with 1,166 included in this analysis.

Participants were excluded if they had a missing or out-of-date CD4 count or were retrospectively found ineligible for study participation. We present crude TBI prevalence stratified by age (18-24, 25-34, 35-44, 45+ years) and baseline CD4 count (≥500, 499-350, 349-200, <200 cells/mm^3).

Results: The median (interquartile range [IQR]) age at enrolment was 32 years (26,39), 33% were men, and the median (IQR) baseline CD4 count was 321 cells/mm^3 (172,506). Overall TBI prevalence was 40% (n=468/1,166). Ninety (8%) indeterminate results were recorded; most (n=51/90; 57%) among individuals with a CD4 <200 cells/mm^3. We observed little variability in TBI prevalence across age categories (18-24: 49%; 25-34: 43%; 35-44: 39%; 45+: 45%). However, TBI prevalence increased with increasing CD4 count: (CD4 <200: 34%, 200-349: 39%, 350-499: 48%, ≥500: 54%). Increasing QGIT positivity by age was observed only in the 350-499 cells/mm^3 group (Fig 1).

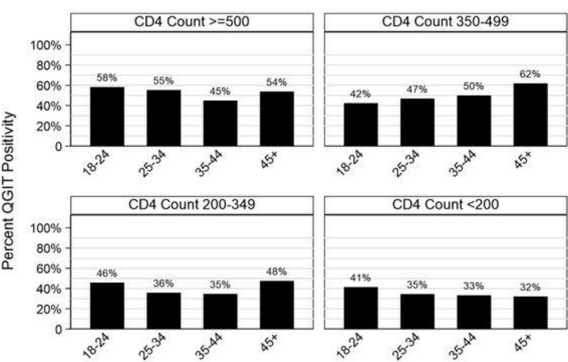

Fig 1. QGIT positivity by age and CD4 count

CD4 count is measured as cells/mm^3, age as measured in years at date of enrollment

Conclusions: Our results show that less than half of newly diagnosed PLHIV in NW province have TBI. Although those without documented TBI are eligible to receive TPT under current guidelines, data are limited regarding the benefit of TPT for PLHIV who are TBI negative by QGIT.

Thus, an integrated strategy of TBI testing via CD4/viral load-linked QGIT could be a cost-effective way to target TPT.

EPB044

Applying Quality Improvement methodology using DMAIC for process-based strengthening of TB case finding among PLHIV at ART clinic in the University of Nigeria Teaching Hospital, Enugu, Nigeria

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Background: Tuberculosis (TB) continues to be the highest cause of mortality from infectious diseases among PLHIVs. Between 10% and 20% of already on treatment and new PLHIV are expected to be presumptive TB cases. Poor implementation of provider-initiated TB symptom screening, incomplete documentation of findings, and poor transmission of results have been identified as significant contributors to the low TB case-finding gap in ART clinics. Using the Diagnostic Cascade Evaluation (DiCE) entry assessment tool, baseline analysis shows that 10% of GeneXpert MTB/RIF positive results were returned between February and April 2021.

This project uses the quality improvement principle to understand the bottle-necks and improve GeneXpert result documentation from the baseline to at least 70% by November 2021.

Methods: A multi-disciplinary team applied the DMAIC (Define, Measure, Analyze, Improve and Control) methodology using fishbone analysis to identify issues affecting the poor transmission of results from laboratory to clinic. Issues identified include low clinical screening, poor knowledge of best practices, incomplete documentation, and poor tracking of GeneXpert results.

Proffered change ideas were prioritized for implementation in Plan Do Study Act (PDSA) cycles between May and November 2021. Implemented solutions included capacity training, the constitution of TB champions, and job aids provision. Monthly reports of TB screening and cases were collected from TB registers. Monthly meetings after each PDSA cycle to review the intervention and record possible improvement were held.

Results: There was a significant improvement in result transmission rate from the baseline of 10% to a median of 93% during the implementation. Within the period of this intervention, 26 active TB cases were identified and placed on treatment

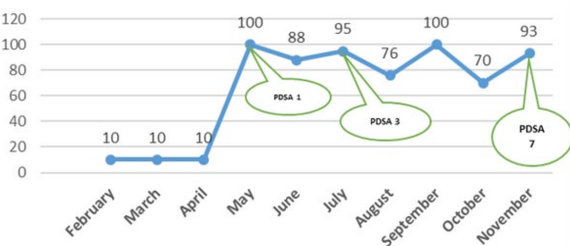

Figure. Trends analysis of transmitted results.

Conclusions: The project successfully increased TB screening and results documentation among PLHIV from a baseline of 10% to 89% within seven months of implementation. The successes have been integrated into routine operations and will be monitored for sustainability.

Opportunistic infections (excluding TB): Bacterial, non-TB mycobacterial, viral and parasitic infections

EPB045

An estimate of the global burden of HIV-associated cryptococcal infection in adults in 2020

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Background: In 2014, an estimated 223,100 persons developed cryptococcal meningitis globally, resulting in 181,100 deaths and accounting for 15% of AIDS-related deaths. Since the last estimate of the global burden of HIV-associated cryptococcal infection in 2014,[1]

Global AIDS-related deaths among adults have decreased from 950,000 in 2014 to 580,000 in 2020. By 2020, ART coverage had increased to 27.5 million adults, up from 15 million in 2014, and integrase inhibitors are now first-line therapy in many large HIV programs.

Here we present an updated estimate of the global burden of HIV-associated cryptococcal infection (antigenemia), cryptococcal meningitis, and cryptococcal-associated deaths using data through 2020.

Methods: We used Joint UN Programme on HIV and AIDS estimates (2019 to 2020) and population-based HIV impact assessment (PHIA) surveys from 2016 to 2018, conducted by the International Center for AIDS Care and Treatment Program (ICAP) and Centers for Diseases Control and Prevention (CDC) to estimate the number of adults with CD4 <200 cells/mcL at risk for cryptococcal infection, by country and region. Secondly, we summarized cryptococcal antigenemia (CrAg) prevalence in CD4<200 by reviewing published literature.

Thereafter we calculated the number of CrAg-positive people by country and region by multiplying the number with advanced HIV disease at risk for cryptococcal infection by the CrAg prevalence of the respective country or region.

We estimated progression from CrAg-positive status to meningitis and/or death based on estimates from the published literature.

Results: We estimate an average global cryptococcal antigenemia prevalence of 4.4% (95%CI 1.6% to 7.4%) among people with CD4 counts of <200 cells/mL, corresponding to 182,000 (95% CI 67,000 to 292,000) cases of cryptococcal antigenemia globally per year.

Annually, we estimate 152,000 (95% CI 55,000 to 247,000) cases of cryptococcal meningitis, resulting in 112,000 cryptococcal-related deaths (95% CI 38,000 to 183,000).

Globally cryptococcal disease results in 19% (95%CI, 6 to 38%) of AIDS-related mortality. Sixty-two percent of deaths occur in sub-Saharan Africa.

Conclusions: Although there has been a reduction in the absolute global burden of HIV-associated cryptococcal infection, likely due to ART expansion, cryptococcal disease still accounts for 19% of AIDS-related deaths.

EPB046

Hematological toxicity of amphotericin B deoxycholate-based induction therapy in patients with HIV-associated talaromycosis

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Background: This study's objective was to investigate the predictors for severe anemia, severe leukopenia, and severe thrombocytopenia when amphotericin B deoxycholate-based induction therapy is used in HIV patients with talaromycosis.

Methods: This was a prospective, multi-center, observational study. A total of 170 HIV patients with talaromycosis were enrolled at 11 hospitals located in 9 cities from January 1st, 2019 to September 30th, 2020. Patients received treatment for 14 days with amphotericin B deoxycholate at a dose of 0.5 to 0.7 mg per kilogram per day. Multivariate logistic regression was used to analyze.

Results: Among these 170 patients, 24 (14.1%) were female. Approximately 42.9%, 20.6%, and 10.6% of the enrolled patients developed severe anemia, severe leukopenia, and severe thrombocytopenia, respectively.

Baseline lower hemoglobin levels (OR=0.938, 95% CI: 0.913~0.965), higher serum creatinine levels (OR=1.023, 95% CI: 1.003~1.044), higher AST/ALT ratios (OR=1.543, 95% CI: 1.170~2.036), lower sodium levels (OR=0.922, 95% CI: 0.855~0.995), and a dose of amphotericin B deoxycholate >0.58 mg/kg/d (OR=2.504, 95% CI:1.066~5.882) were independent risk factors associated with the development of severe anemia.

Co-infection with tuberculosis (OR = 3.313, 95% CI:1.052 ~ 10.439), and lower platelet levels (OR = 0.995, 95% CI: 0.990 ~ 0.999) at baseline was shown to be independent risk factors associated with the development of severe leukopenia. A lower platelet level (OR = 0.991, 95% CI: 0.984 ~ 0.998) at baseline was the independent risk factor found to be associated with the development of severe thrombocytopenia.

Conclusions: The preceding findings reveal risk factors for severe anemia, severe leukopenia, and severe thrombocytopenia, which will favor prevention and timely treatment of hematological toxicity, improvement of patient outcomes, shorter hospital stays, and a reduction of the requirement for blood transfusion.

EPB047

Voriconazole or amphotericin B deoxycholate: which is the preferred induction therapy in HIV-infected patients with talaromycosis?

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Background: To compare the efficacy and safety of voriconazole and amphotericin B deoxycholate as induction therapy for talaromycosis in people living with HIV.

Methods: In this open-labelled, multicenter, prospective controlled trial, we enrolled patients at 15 hospitals in China from 2019 to 2020. Participants received treatment with either intravenous amphotericin B deoxycholate or voriconazole.

The primary endpoint was all-cause mortality during the first 2 weeks after baseline. Secondary endpoints were mortality at week 48, clinical resolution of talaromycosis, and fungal clearance at week 2.

Results: We observedno difference in the risk of death at weeks 2, at weeks 24 or at week 48 after multivariable logistic regression and multivariable Cox proportional-hazards modelling. Logistic regression analysis revealed a significantly lower odds ratio of clinical resolution (aOR=0.543, 95% CI: 0.338-0.872) and fungal clearance (aOR= 0.605, 95% CI: 0.377-0.972) over the course of 2 weeks in voriconazole users than in amphotericin B deoxycholate users.

A significantly lower odds ratio of hemoglobin levels <74 g/L (aOR= 0.507, 95% CI: 0.310-0.828) over the course of 48 weeks in voriconazole users than in amphotericin B deoxycholate users.

Conclusions: Induction therapy using voriconazole had a similar efficacy in terms of all-cause mortality rate to induction therapy using amphotericin B deoxycholate in HIV-infected patients with talaromycosis over a 48-week observation period. Amphotericin B deoxycholate contributed to earlier fungal clearance and clinical resolution of symptoms but was more likely to induce myelosuppression.

EPB048

Immunogenicity and safety of yellow fever vaccination in people living with HIV

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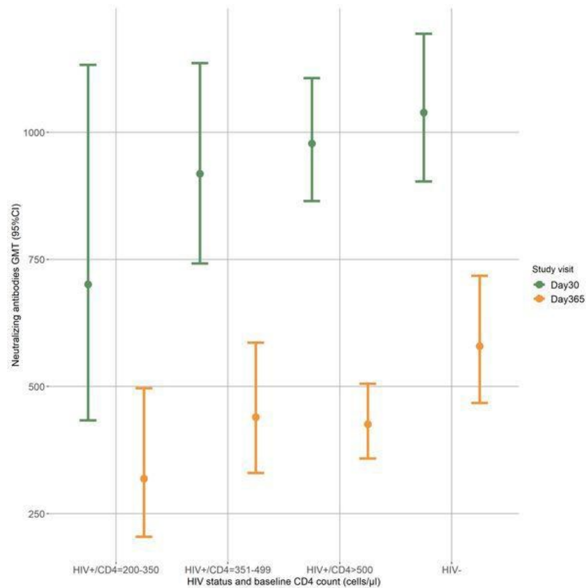
Background: There is a paucity of information regarding immunogenicity and safety of Yellow Fever (YF) vaccine in people living with HIV (PLWH). We evaluated the immunogenicity and safety of YF vaccine in PLWH compared to HIV-negative participants.

Methods: A prospective study enrolled PLWH with CD4 ≥200 cells/µl and HIV-negative participants, without previous YF vaccine.Participants received a standard dose of 17DD vaccine at baseline and were evaluated at Days 5, 30 and 365 after vaccination.

Immunogenicity was measured at Days 30 and 365 using micro plaque reduction neutralization test (µPRN50%, cut off ≥1:100); geometric mean titers (GMT) were calculated according to HIV status and baseline CD4. Adverse events (AE) and serum YF virus detection (PCR and plaque-forming units [PFU]) were measured at Days 5 and 30.Linear regression evaluated factors associated with neutralization titers.

Results: 218 PLWH and 82 HIV-negative were included. All PLWH were using antiretroviral therapy (ART); at baseline, 93% had undetectable viral load (VL); median CD4 was 630 cells/µl (IQR 463-888). Seroconversion was observed in 99% (95%CI 97%-100%) and in 95% (95%CI 91%-97%) of the participants at Days 30 and 365, respectively, with similar between PLWH and HIV-negative.

Figure shows neutralization GMT at Days 30 and 365. Among PLWH, longer use of ART, undetectable VL and higher CD4 were associated with higher neutralization titers. YF vaccine was safe and there was no serious AE. AE incidence was 6% in PWH vs. 12% in HIV-negative (p=0.05). YF virus was detected in 18% and 6% of PWH and 7% and 5% of HIV-negative, by PCR and PFU, respectively.



Conclusions: YF vaccine is immunogenic and safe in PLWH using ART. Neutralization titers were lower among PLWH with CD4 < 350 cells/µl and decreased over time.

Studies with longer follow-up are required to evaluate vaccine immunogenicity duration and the need for a booster dose in PLWH.

EPB049

Epidemiology of pneumonia in a multicenter cohort of people living with HIV

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Background: Pneumonia is an important cause of infection in people living with HIV. The aim of our study is to define characteristics and outcome of hospitalized people living with HIV with pneumonia in modern antiretroviral therapy era.

Methods: We conducted a two-centre retrospective study between January 01 2015 and December 31 2020 in San Martino Hospital and Borea Hospital in Liguria region, Italy. Patients were selected using hospital database through ICD-9 discharge codes of HIV and pneumonia. Patients' demographic, clinical and microbiological records were collected through analysis of clinical charts and online regional database "Liguria HIV Network".

Results: We registered 90 cases of pneumonia during the study period. Study participants had median age of 51 years (IQR 44-58), 71.1% (64/90) were male, the main risk factor for HIV transmission was intravenous drug use (41/90, 45.6%), 25.6% (23/90) had HCV co-infection.

Median T CD4+ cell count was 100 cells/mmc (IQR 33-360), 53.3% (48/90) people living with HIV had HIV-RNA>50 copies/ml, 68.9% (662/90) were on antiretroviral therapy. History of smoking was present in 58.8% (53/90) of participants.

Only 2.2% (2/90) of participants were vaccinated for *S. pneumoniae*. The aetiologic pathogens were identified in 56/90 (62.2%) cases, 30 were opportunistic. Pneumonia was caused by *Pneumocystis jirovecii* in 24/90 (26.7%) of cases, by *S. pneumoniae* in 15/90 (16.7%), by *S. aureus*or SARS-CoV-2 in 4/90 (4.4%), by citomegalovirus in 3/90 (3.3%), by atypical mycobacteria or influenza virus or metapneumovirus in 2/90 (2.2%), by *Hemophilus influenzae*or*Legionella pneumophila*or*Aspergillus spp* in 1/90 (1.1%).

About 10% (9/90) of cases had septic shock, 12.2% (11/90) required intensive care unit admission and 17.8% (16/90) mechanical ventilation or continuous airways positive pressure.

Overall mortality was 17.8% (16/90) while mortality due to opportunistic infections was 6.6% (2/30). At univariate analysis, HIV-RNA>50 copies/ml (OR 3.47, 95% CI 1.13-10.67 p 0.03) was associated with increase mortality while being on ART (OR 0.12, 95%CI 0.01-0.928, p 0.04) was protective. At multivariable analysis none of the considered variables retained significant association with the outcome.

Conclusions: Further efforts are needed to improve screening of high-risk population and vaccination programs in PLWHIV.

EPB050

Prevalence and determinants of asymptomatic *Leishmania* infection in HIV-positive people and progression to symptomatic visceral leishmaniasis in Bihar, India

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Background: In the leishmaniasis-endemic region of Bihar, India, the detection of asymptomatic *Leishmania* infection (ALI) among People living with HIV (PLHIV) can potentially identify those at risk of developing visceral leishmaniasis (VL).

This study investigates the prevalence and determinants of *ALI* and the risk of developing symptomatic VL in PLHIV with *ALI*.

Methods: We conducted a cross-sectional survey of PLHIV ≥18 years of age with no history of VL at four anti-retroviral therapy centers within VL endemic regions of Bihar, India. *ALI* was defined as a positive rK39 ELISA, rK39 RDT, and/or qPCR result.

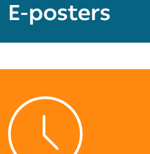
In addition, the Leishmania antigenELISA on urine was evaluated as a non-invasive alternative. Asymptomatic individuals were followed-up at three-month intervals over 18 months to assess conversion from asymptomatic to symptomatic infection. All non-asymptomatic patients were followed up telephonically.

Results: A total of 1,296 PLHIV (females: 53.6%) were included in the analysis. The baseline prevalence of *ALI* was 7.4% (n=96). All 96 (7.4%) were positive by rK39 ELISA, while 0.5% (n=6) and 0.4% (n=5) were positive by qPCR and rK39 RDT, respectively. A total of 2.2% (n=28) patients were positive by *Leishmania* antigen ELISA. Independent risk factors for asymptomatic *Leishmania* infection were a CD4 count <100 (odds ratio (OR) 3.1), a CD4 count between 100-<200 (OR=2.1) compared to a CD4 count ≥ 300, and household size ≥ 5 (OR=1.8).

The risk of all-cause mortality in the asymptomatic cohort was 2.6 times higher than in non-asymptomatic participants. A total of 109 asymptomatic patients were followed up prospectively. Overall, 3.7% (n=4) of patients converted from asymptomatic to symptomatic infection. The conversions rate of participants who were positive with rK39 ELISA, rK39 RDT, qPCR, and *Leishmania* antigen

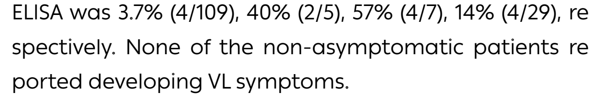
Oral abstracts

Poster exhibition


E-posters

Late-breaker abstracts

Author Index


ELISA was 3.7% (4/109), 40% (2/5), 57% (4/7), 14% (4/29), respectively. None of the non-asymptomatic patients reported developing VL symptoms.

Conclusions: PLHIV living in highly VL-endemic areas have a relatively high prevalence of ALI. Although progression rates to symptomatic infection appear low, all-cause mortality rates are higher and may reflect the impact of sub-clinical infection on HIV outcomes. The results may justify further studies investigating the early treatment of ALI in PLHIV.

Viral hepatitis C and other viral hepatitis (e.g., A, B, D, E)

EPB051

Understanding unsuccessful direct-acting antiviral hepatitis C treatment among people living with HIV from the International Collaboration on Hepatitis C Elimination in HIV Cohorts (InCHECH)

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Background: Historically, hepatitis C virus (HCV) was difficult to treat among people with HIV, however treatment with direct-acting antivirals (DAA) results in 90-95% of people being cured. There is a need to further understand why 5-10% are not successfully cured in order to ensure no one is left behind in HCV elimination efforts.

Methods: Data were drawn from InCHECH and included data from Australia, Canada, France, the Netherlands, Spain, and Switzerland. People who had interferon-free DAA HCV treatment data recorded between 2014 & 2019 were included in analyses.

Among people with at least one HCV RNA test 12 or more weeks after end of treatment (EOT), we used mixed-effects logistic regression to examine factors at treatment

start associated with unsuccessful treatment, defined as a positive RNA test at their first test 12+ weeks after EOT. Factors included in univariable analyses were key population (gay and bisexual males, males with a history of injecting drug use, females with a history of injecting drug use, heterosexual or other exposure males and heterosexual or other exposure females), years since HIV diagnosis, HIV viral load, CD4 cell count, HCV genotype, cirrhosis, and previous interferon-based HCV treatment). Factors significant at 90% in univariable analyses, and age, were included in multivariable analyses.

Results: Overall, 4554 people had DAA treatment data; the majority of whom were gay or bisexual males (46%) or had a history of injection drug use (37%). Of these people, 4509 (99%) had any HCV RNA data recorded, and 3844 (85%) had a test 12 or more weeks following EOT, ranging from 84% to 87% across key population groups.

Unsuccessful treatment was 5.5% (212/3844) overall, ranging from 4% to 8% among key population groups. Adjusted for age and key population group, a CD4 cell count between 200-350 cells/mm^3 was the only factor associated with unsuccessful treatment (aOR 1.78, 95%CI 1.20-2.63) compared to a CD4 cell count >350 cells/mm^3.

Conclusions: We found that 5.5% of people with an SVR12+ test were unsuccessfully treated with minimal difference across key populations.

Extra support through HCV treatment may be warranted among people with markers of sub-optimal HIV treatment.

EPB052

Acute HCV infection followed by spontaneous clearance impact on telomere shorting

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Background: Human Immunodeficiency Virus (HIV)-mediated inflammation and immune activation is associated with an immunesenescence status that accelerate telomere shorting. Coinfection with Hepatitis C (HCV) is related to a decreased telomere length in cirrhotic patients. HCV exposure is also associated to a higher HIV reservoir size and viral splicing in resting CD4 T-cells (rCD4), the main HIV reservoir.

However, it is unknown the impact of HCV exposure in telomere length of patients without cirrhosis, and its relation with HIV reservoir in rCD4 cells.

Methods: Prospective study of 71 HIV patients under antiretroviral therapy (ART) stratified by HCV status:

a) 28 without previous HCV infection (HIV+);

b) 18 with spontaneous HCV clearance (HIV+/HCV-);

c) 25 patients who previously eliminated HCV with Direct-acting Antivirals (DAAs) (HIV+/HCV- DAAs).

All patients displayed no advance fibrosis (F<2). The relative telomere length (RTL) was assessed by real-time multiplex PCR (MMqPCR) and reservoir size by Alu-LTR qPCR on rCD4

T-cells. Differences between groups were analysed using a generalized linear model. Linear correlations between telomere length and viral reservoir size were determined.

Results: HIV patients had a median age of 49 years, 94.4% were Caucasians and 66% were men. Median HIV infection time was 14 years. Lower CD4 nadir was found in HCV exposed individuals [425 (HIV+), 220 (HIV+/HCV-) and 280 (HIV+/HCV- DAAs), p= 0.004]. Our results showed similar RTL among patients HIV+/HCV- and HIV+/HCV- DAAs (AMR=1.032, p=0.569) and a lower significant RTL between previously exposed HCV patients (HIV/HCV- and HIV+/HCV- DAAs) and HIV+ subjects [(AMR=0.862, p=0.010) and (AMR=0.890, p=0.039), respectively] *(Figure 1a)*.

Additionally, we detected a significant negative correlation between RTL and the viral reservoir size (r=-0.531; p=0.028) in HIV+/HCV- patients *(Figure 1b)*.

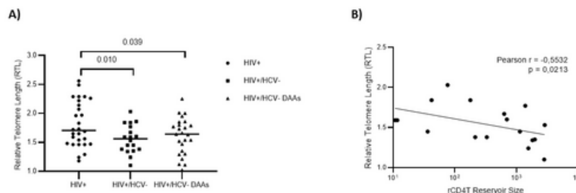

Figure 1. a) The RTL in rCD4 T-cells. b) Negative correlation between rCD4T reservoir size and RTL.

Conclusions: Exposure to HVC decreases the telomere length in rCD4 T-cells. In addition, lower telomere length in spontaneous clarifiers is associated with a larger reservoir size in rCD4 T-cells.

EPB053

A cluster randomized controlled studyofsecondary distribution of HCV self-test to support micro-elimination in Karachi, Pakistan

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Background: Pakistan has a nationwide HCV prevalence of 6% with majority of cases undiagnosed due to lack of comprehensive screening programmes. Self-testing has shown to increase testing uptake and acceptability in

HIV due to its convenience and privacy advantages. This study aims to evaluate the acceptability and impact of a program enabling home delivery of HCV self-testing using the oral-based OraQuick® HCV rapid antibody test. It is nested within a community-based micro elimination project in an HCV endemic district of Karachi, Pakistan.

Methods: This ongoing cluster randomized control study targets persons missed during house-to-house screening done as part of the micro-elimination study in two Union Councils in district Malir of Karachi. During house visits, individuals not found at home are eligible for participation. Target sample size is 1000 participants each in the intervention and control group. In the intervention group, an HCV self-test is left with instructions for use explained to a senior household member.

In the control group, a pamphlet is left with directions to visit the nearest clinic for HCV screening. Both groups are followed up within 4 weeks to inquire if testing was completed and a brief survey is conducted. Results reported are incentivized and individuals with positive tests are linked for further management.

Results: 728 participants have been recruited from 29th Nov 2021 to 22ndDec 2021 with 431 in the intervention group and 297 in the control group from rural and peri-urban clusters of the district. Mean age across both groups is 36 years with 85% male participants.

The proportion of participants who reported completing the HCV antibody test was 89% in the intervention group compared to 15% in the control group.

Over half (54%) of the participants who completed self-testing had received no formal education. Nearly all (96%) participants who reported completing the test demonstrated willingness to perform HCV self-test in the future.

Conclusions: Preliminary results of this study demonstrate that HCV self-testing is acceptable in this setting and population with potential of self-testing to increase the uptake of testing compared to standard HCV testing services while ensuring confidentiality and convenience especially in hard to reach populations.

EPB054

Hepatitis B prevalence and risk factors among adults living with HIV in South Africa

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Background: Globally, about 10% of people living with HIV (PLHIV) also have concurrent Hepatitis B virus (HBV) infection. Without routine screening for Hepatitis B, the choice of antiretroviral therapy can be more difficult to manage, as not all medications treat both infections.

The objective of this research was to identify risk factors that put PLHIV at higher risk of Hepatitis B infection.

Methods: We conducted a prospective clinic-based cohort from 2013 – 2017 in Durban, South Africa. Participants were enrolled into the cohort if they tested positive for HIV, and all PLHIV were subsequently tested for Hepatitis B after enrollment.

Follow up assessments were conducted at 3, 6, and 12 months after enrollment. Patients completed questionaries pertaining to sociodemographic status, medical history, clinical symptoms, and mental health and stigma pertaining to their diagnosis at each visit.

Alcohol use was measured as used within the last 30 days, used within the last year but not the last month, used but not within the last year, or never used.

We compared prevalence of HBV between age groups using a chi squared test. Univariate and multivariate logistic regression models were conducted on co-variates of the data set using the 'dplyr' and 'stats' packages in R. We measured adjusted odds ratios (aORs) for each covariate to compare the risk factors for those with HBV and HIV compared to PLHIV.

Results: A total of 3105 PLHIV were enrolled, with a mean age of 33 years and 43% (n=1331) were male. Of those, 196 (6%) individuals tested positive for HBV, with a mean age of 33 years and 62% (n=121) were male. Participants aged >25, who were born before South Africa implemented routine infant vaccination for HBV in 1995, were more likely to have HBV (p=0.043). HBV diagnosis was associated with drinking alcohol over the past year (aOR = 1.17), lack of condom use (aOR = 1.10), and income >10,000 ZAR/month (aOR = 1.63).

Conclusions: Implementing routine Hepatitis B testing for adults born before 1995 can help prevent the further increase of Hepatitis B infection rates.

These study findings also provide additional support for enhanced Hepatitis B screening among PLHIV.

EPB055

Behavioral factors associated with HCV viremia among HIV-positive men who have sex with men

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Background: Sexually acquired HCV infection contributes to the epidemics of incident HCV infection and reinfection among people living with HIV (PLWH) in recent decades. To achieve the goal of HCV microelimination, identification of the modifiable factors associated with HCV viremia is crucial to prevent onward HCV transmission.
Our study aimed to identify the behavioral factors associated with HCV viremia in high-risk HIV-positive men who have sex with men (MSM).
Methods: HIV-positive MSM who had documented free of HCV viremia at screening and met at least one of the following criteria were invited to participate in this prospective cohort study:
1. Having had sexually transmitted infections in the past six months;
2. Presence of elevated aminotransferases in the past six months; and,
3. Having had prior HCV viremia and achieved viral clearance either spontaneously or via antivirals.
Face-to-face questionnaire interviews about the behavioral factors associated with HCV acquisition for each participant was completed at enrollment. All participants underwent regular HCV RNA testing every 12 weeks with the use of 3-stage pooled-serum HCV RNA testing methods and were followed till detection of HCV viremia or completion of 48-week follow-up.
Results: Among the 735 participants, all had been receiving antiretroviral therapy with a mean CD4 count of 643 cells/mm^3 and plasma HIV RNA <200 copies/ml in 96.7%. High rates of recreational drug use (39.5%) and sexualized drug use ("chemsex") (34.0%) were reported.
After 48 weeks of follow-up, 674 participants (91.7%) remained HCV RNA-negative and 61 (8.3%) had HCV viremia detected. In the multivariable analysis, we found that recreational drug use (adjusted odds ratio [AOR], 2.13; 95% confidence interval [CI], 1.00-4.57], sharing injecting equipment (AOR, 19.9; 95% CI, 1.60-248.4), and having group sex (AOR, 2.5; 95% CI, 1.20-5.06) in the past 12 months were significantly associated with HCV viremia.
Conclusions: Recreational drug use, sharing injecting equipment, and having group sex were risk behaviors associated with HCV viremia in PLWH.
In addition to improving access to DAA testing and treatment, risk modification is imperative to prevent HCV acquisition in our endeavor to achieve HCV microelimination among high-risk PLWH who are MSM.

EPB056

Prospective liver fibrosis assessment in hepatitis B-positive individuals with and without HIV-coinfection in Senegal

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Background: Hepatitis B virus (HBV) infection is the first cause of liver cancer in West Africa. Although >10% of the general population is affected by chronic HBV infection in the region, only few large-scale research efforts have been undertaken to date.
Here, we present prospective data on liver fibrosis from a cohort of HBV-monoinfected and HIV/HBV-coinfected individuals (SEN-B) in Dakar, Senegal.
Methods: We included all persons living with HIV and HBV-coinfection, as well as HBV-monoinfected individuals presenting after October 2019 at two HIV-clinics in Dakar, Senegal. We measured HBV_DNA using the COBAS/TaqMan® platform and liver fibrosis (liver stiffness [LS]≥7.1 kPa) and cirrhosis (LS≥11.1 kPa) using transient elastography (TE).
TE results were compared between groups using descriptive statistics, and the association between HIV infection and liver fibrosis was assessed using multivariable with logistic regression adjusted for age, sex, HBV DNA, and body mass index.
We evaluated the proportion of individuals who experienced regression of cirrhosis or significant fibrosis during 6-12 months of follow-up.
Results: We included 581 HBsAg-positive individuals, of whom 110 were HIV/HBV-coinfected and on antiretroviral therapy. The median age was higher in HIV/HBV-coinfected compared to HBV-monoinfected participants (45 vs. 33years, p<0.001).
Among HIV/HBV-coinfected participants 89/107 (83%) had a suppressed HBV DNA. The prevalence of significant fibrosis at enrolment was 13% in HBV-monoinfected and

6% in HIV/HBV-coinfected individuals (p=0.07), whereas the proportion of cirrhosis was 4% in both groups. In multivariable analyses, male sex (adjusted odds ratio 3.83, 95% confidence interval 1.72-8.53) and HBV DNA >2,000 IU/mL (2.86, 1.41-5.83) were associated with liver fibrosis.

Overall, 288 (50%) individuals had follow-up TE results available at the time of analyses. Among individuals on tenofovir, 6/11 (54.5%) participants with significant fibrosis and 5/11 (45.4%) with cirrhosis had a regression of their fibrosis stage. No patient with untreated HBV-monoinfection developed liver cirrhosis during follow-up.

Conclusions: SEN-B is one of the first prospective cohorts of HBV-infected individuals in sub-Saharan Africa. The prevalence of liver fibrosis was low, and no association with HIV infection was found. Liver fibrosis regression was observed in one-half of patients on tenofovir during 12 months of follow-up.

EPB057

Long-term serologic responses to different combinations of inactivated hepatitis A virus vaccines among people living with HIV

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Background: PLWH are at increased risk for hepatitis A virus (HAV) infection. However, serologic responses and durability of HAV vaccination are reduced among PLWH. We aimed to compare the long-term serologic responses to different 2-dose combinations of the inactivated HAV vaccines and to identify the factors associated with seroreversion among PLWH.

Methods: This retrospective study included adult PLWH who had achieved seroconversion after completing 2-dose vaccination against HAV during an outbreak of acute hepatitis A between 1 June 2015 and 31 December 2017. PLWH included in the study received either Havrix for both doses (Havrix-Havrix group), Havrix as the first dose followed by Vaqta as the second dose (Havrix-Vaqta group), or Vaqta for both doses (Vaqta-Vaqta group). The antibody persistence was evaluated 5 years after vaccination and compared between different groups.

Results: The study comprised 1025 PLWH with a median age of 34 years and CD4 count of 584 cells/mm^3. Of them, 643 (62.7%) were in the Vaqta-Vaqta group, 363 (35.4%) were in the Havrix-Vaqta group, and 19 (1.9%) were in the Havrix-Havrix group. The peak anti-HAV IgG titers within 12 months after HAV vaccination were 10.5, 9.4, and 7.2 signal-to-cutoff (S/CO) in the Vaqta-Vaqta, Havrix-Vaqta, and Havrix-Havrix groups, respectively.

The proportion of PLWH with persistent seroprotection remained more than 96% over time, from 96.2% at months 24-36 to 96.0% at months 48-60. After a median follow-up of 3.9 years, 81 of the 1025 patients (7.9%) seroreverted. The seroreversion rate was much higher for the Havrix-Havrix group (10.5%) and the Havrix-Vaqta group (11.6%) than for the Vaqta-Vaqta group (5.8%) (P=0.001).

In the multivariable analysis, seroreversion was significantly associated with peak anti-HAV IgG titers (AOR, 0.60; 95% CI, 0.54-0.66), receiving 2 doses of Havrix (AOR, 2.47; 95% CI, 1.34-4.54), receiving immunosuppressants (AOR, 39.96; 95% CI, 1.11-1434.46), and weight (per 1-kg increment, AOR, 1.03; 95% CI, 1.00-1.05).

Conclusions: The seroprotection against HAV remained high in the long-term follow-up among PLWH on antiretroviral therapy who had undergone 2-dose HAV vaccination. The higher peak anti-HAV IgG titers and lower seroconversion rate among PLWH receiving 2 doses of Vaqta may provide potential benefits in conferring long-term protection against HAV.

EPB058

Integrating hepatitis services into community based opioid substitution therapy in three South African cities: interim findings on feasibility and HIV and viral hepatitis C prevalence

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Background: There are an estimated 82500 people who inject drugs (PWID) in South Africa. Among whom, the prevalence of HIV and hepatitis C virus (HCV) infection is high; 21% and 55%, respectively. Access to harm reduction and HIV services is increasing, however HCV diagnosis and treatment with direct acting antivirals (DAAs), remains limited.

We aimed to assess the feasibility of integrating HCV care into community-based opioid substitution therapy (OST) services in three South Africa cities and assess the HIV and HCV prevalence among clients.

Methods: PWID taking or initiated on OST were offered HIV antibody and HCV antibody testing using rapid point of care tests. HCV infection was confirmed using laboratory-based molecular testing. PWID with confirmed HCV infection were initiated onto DAAs.

Results and data on gender and age disaggregation were extracted from a centralised database and analysed in Stata v14.2 using descriptive statistics.

Results: Between June 2021-January 2022, 319 PWID were screened for HCV and HIV (83 in Cape Town; 68 in Durban, 168 in Johannesburg). Eighteen percent of clients were female. Most clients (58% of males and 57% of females) were aged between 25 – 35 years old.

Overall HIV prevalence was 30% (n=96), ranging from 8% (n=7) in Cape Town to 41% (n=69) in Johannesburg. Overall HCV prevalence was 83% (n=265), ranging from 69% (n=46) in Durban to 93% (n=156) in Johannesburg. 88 PWID

(28%) had HIV-HCV co-infection. The highest HIV-HCV co-infection prevalence was in Johannesburg among clients aged 25 – 35 (14% (n=6) of females and 86% (n=37) of males). To date, 95% (40/42) of clients with reactive HCV antibody tests have confirmed HCV infections and 30 clients have started DAAs.

Conclusions: A high prevalence of HCV and HIV and HCV-HIV co-infection was identified among PWID on OST in these cities. Interim findings demonstrate the feasibility of integrating HCV screening, lab-based molecular testing and DAA treatment in community-based OST services in South Africa.

STIs (including HPV)

EPB059
Impact of methamphetamine use and rectal STIs on systemic and rectal mucosal inflammation

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Background: Rectal gonorrhea and chlamydia (GC/CT) are associated with increased risk for HIV acquisition resulting from mucosal inflammation. In addition to promoting sexual risk behavior, methamphetamine (MA) use is associated with systemic and mucosal inflammation, suggesting parallel biological and behavioral mechanisms for HIV transmission among MA-using men who have sex with men (MSM). Data evaluating the combined biological effects of MA use with rectal GC/CT on inflammation are limited.

Methods: This is a cross-sectional analysis of stored rectal sponge and plasma specimens from 100 MSM in a NIDA-funded longitudinal cohort to evaluate markers of systemic and rectal inflammation under two conditions:

1. Recent MA use (measured by urine drug screen) and;
2. Rectal GC/CT infection (via nucleic acid testing).

The study consisted of 50 participants with recent MA use (25 with and 25 without rectal GC/CT) and 50 non-substance using controls (NSUC) (25 with and 25 without rectal GC/CT). NSUC had negative urine drug screens for opiates, cocaine, MA, amphetamines, ecstasy, and cannabis.

Luminex assays were used to measure cytokine concentrations from plasma and rectal samples as well as markers of immune activation (CD14, -163, -27) from plasma. Log-transformed immune markers were regressed on MA exposure and rectal GC/CT, controlling for HIV status, age, and, for rectal samples, receptive anal intercourse in past week. The Benjamin-Hochberg procedure with a false discovery rate of <0.2 was used to adjust for multiple comparisons.

Results: Study visits occurred from October 2014 to December 2017. Median age was 32 (range 19-45). 58% of participants identified as Latinx, 33% Black, and 9% non-Black/non-Latinx. 58% were living with HIV. Increased plasma levels of tumor necrosis factor (TNF)-α, interleukin (IL)-6, IL-8, IL-1ß, and rectal levels of IL-6 were associated with MA use and rectal GC/CT, independent of HIV status. Increased rectal levels of TNF-α, IL-1ß, and IL-17a were associated with rectal GC/CT.

Conclusions: Markers of systemic and rectal inflammation were positively associated with both MA use and rectal GC/CT. Condomless sex in the setting of MA- and GC/CT-induced immune activation may provide the basis for synergistic bio-behavioral mechanisms that promote HIV/STI transmission among MA-using MSM.

EPB060
Sexually transmitted infection testing and case rates before and during COVID-19 pandemic in a United States HIV cohort

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Background: The COVID-19 pandemic affected sexually transmitted infection (STI) testing and case (positive lab test) rates in the United States but testing and case rates among people with HIV (PWH) during this period have not been well characterized.

Methods: We analyzed medical records data of HIV Outpatient Study (HOPS) participants who were in HIV care from 1/1/2019-3/31/2021, with at least one CD4+ cell count and HIV viral load recorded.

We calculated STI (gonorrhea, chlamydia, and syphilis) testing, diagnosed STI case rates, and rate ratios (RR) comparing pre- and during pandemic periods (1/1/2019-2/29/2020 and 3/1/2020-3/31/2021) respectively.

Results: A total of 2,311 patients had 14,185 STI tests during the study window: 4,991 gonorrhea tests with 157 cases, 4,978 chlamydia tests with 135 cases, and 4,216 syphilis tests with 114 cases. Of the 2,311 pts, 10% were under 30 years of age, 53% were older than 50 years old, 76% were men, 56% were men who have sex with men (MSM), 39%

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were non-Hispanic/Latino (NH) Black, 40% were NH white, and 17% were Hispanic/Latino people.Overall STI testing RR for pandemic vs. pre-pandemic periods was 0.78 (95% Confidence Interval [CI] 0.73-0.82) for gonorrhea, 0.78 (CI 0.73-0.83) for chlamydia, and 0.93 (CI 0.88-0.99) for syphilis. Overall STI case RR for pandemic vs. pre-pandemic periods was 0.99 (CI 0.76-1.28) for gonorrhea, 0.84 (CI 0.61-1.14) for chlamydia, and 1.08 (CI 0.98-1.19) for syphilis.

In univariate analyses, those with any diagnosed STI tended to be ≤40 years of age, MSM, patients who entered the HOPS in 2019 or later, antiretroviral-naïve, and without an AIDS diagnosis. In univariate analyses for syphilis, RR of diagnosed syphilis between pandemic and pre-pandemic was significantly higher for MSM (1.11, CI 1.10-1.23), those who entered the HOPS during 2019-2021 (1.39, CI 1.08-1.80), those with baseline HIV viral loads > 200 copies/mL (1.43, CI 1.12-1.81), and antiretroviral-naïve patients (1.54, CI 1.06-2.25).

Conclusions: STI testing rates in the HOPS cohort decreased during the pandemic. STI case RRs for pandemic vs. pre-pandemic were similar, except for increases in diagnosed syphilis among some subgroups, highlighting the need for continued vigilance of syphilis, especially among PWH.

EPB061
The burden of genital discharge causing sexually transmitted infections over time starting from acute HIV infection among a cohort of women in South Africa

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Background: Many curable sexually transmitted infections (STIs) co-occur with HIV infection, adversely affecting women and HIV prevention efforts. However, limited longitudinal studies exist to understand temporal associations. We determined factors associated with discharge-causing STIs over time among a cohort of acutely HIV-infected women in South Africa.

Methods: We analysed data from the CAPRISA 002 study in South Africa, which included STI testing at enrollment and 6-12 monthly thereafter up to 15 years.

We estimated incidence as new cases per 100 person-years (PYs) and characterized all subsequent cases over time as re-infections. We used Cox-proportional-hazard and generalised estimation equation analyses to determine factors associated with STI incidence and prevalence over time, respectively.

Results: The median age at enrollment was 25 years (IQR=22-29) among 235 women. Total follow-up was 7.5 median years (IQR=5.7-10.8), within which 84.3% (n=198) started antiretroviral-therapy (ART) at 3.3 median years (IQR=1.2-5.6) after enrollment.STI incidence and re-infections per 100 PYs respectively, were *Neisseria gonorrhoeae* (NG) (5.1 and 9.5), *Chlamydia trachomatis* (CT) (7.4 and 14.7), *Trichomonas vaginalis* (TV) (8.0 and 26.6), *Mycoplasma genitalium* (MG) (7.7 and 16.7) and at least one STI (25.2 and 37.3).

STI incidence overtime was associated with Log_{10} viral load (aHR=1.3, 95%CI=1.1-1.5), Syphilis (aHR=16.7, 95%CI=7.7-36.3), HSV2 PCR (aHR=1.6, 95%CI=1.1-2.4), Bacterial vaginosis (aHR=1.5, 95%CI=1.0-2.2), baseline steady sexual partners (One versus none: aHR=3.2, 95%CI=1.8-5.6; two plus versus none: aHR=3.5, 95%CI=1.9-6.5), increasing age (5-year fold: aHR=0.8, 95%CI=0.7-0.9) and being married at baseline (aHR=0.3, 95%CI=0.1-0.8). STI prevalence before and after ART respectively, were NG (6.3% and 5.7%), CT (10.6% and 8.7%), TV (14.0% and 13.4%), MG (10.5% and 7.1%) and at least one STI (34.0% and 29.5%). STI prevalence overtime was associated with increasing age (5-year fold: aHR=0.8, 95%CI=0.7-0.9), baseline steady sexual partners (One versus none: aOR=4.3, 95%CI=2.0-9.2; two plus versus none: aOR=5.1, 95%CI=1.7-14.8) and being married at baseline (aOR=0.4, 95%CI=0.2-0.8).

Conclusions: The burden of curable STI co-infection with HIV remained high over time among women, underscoring the implications for HIV transmission risk and the need for integrated HIV and other STI care.

EPB062
What will it take to control the syphilis epidemic among gay, bisexual and other men who have sex with men (MSM) in British Columbia (BC), Canada?

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Background: In BC, due to the fast expansion of the Treatment as Prevention and pre-exposure prophylaxis (HIV-PrEP) programmes, the HIV burden among MSM has been substantially decreased. However, the syphilis epidemic continues to affect this population disproportionately. We developed an HIV and syphilis co-infection mathematical model to evaluate whether syphilis epidemic control in BC can be achieved in 15 years.

Methods: We designed a comprehensive deterministic compartmental model that combines the complex individual-based knowledge of clinical, behavioural and epidemiological aspects of the HIV and Syphilis epidemics among MSM in BC. We sub-divided the MSM population by HIV status and PrEP usage. The scenarios investigated included increasing syphilis testing and treatment rates and the use of doxycycline as PrEP for syphilis (Doxy-PrEP).
We measured the intervention impact by the World's Health Organization (WHO) target for ending the syphilis epidemic (90% reduction in syphilis incidence compared to 2018) and by the number of syphilis infections averted per 1000 tests/Doxy-PrEP. We also evaluated the impact of the HIV-PrEP program on the syphilis epidemic.
Results: The WHO's target can be achieved as early as 2027 by targeting MSM not on HIV-PrEP with increased testing and treatment and use of Doxy-PrEP (Figure). However, targeting MSM diagnosed with HIV (in comparison to the previous group) can be >5 times more effective in averting new syphilis infections if testing or Doxy-PrEP is increased by ≥10%.
Our model also showed the importance of HIV-PrEP programs in decreasing the burden of the syphilis epidemic (74% decrease in syphilis incidence rate), since MSM in these programs are regularly tested for syphilis.
Conclusions: Our results suggest that increasing access to syphilis tests and Doxy-PrEP among MSM with HIV diagnosis will effectively reduce the number of syphilis infections. However, faster achievement of WHO's target will require additional interventions among MSM not on HIV-PrEP.

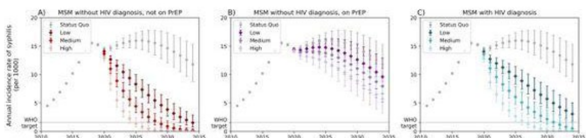

Figure. Intervention scenarios for improveents on syphilis testing, treatment and Doxy-PrEP coverage among MSM in different subgroups during 2020-2034 (Low: 10%, Medium: 20%, High: 40%)

EPB063
Serologic response after syphilis treatment among Thai adults living with HIV: a longitudinal cohort study

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Background: Despite straightforward treatments, post-treatment serologic monitoring and interpretation are challenging, particularly for people living with HIV (PLWH), who may have a slow serologic response and a higher risk of advanced-stage syphilis.
To add to the limited data of syphilis monitoring among PLWH, we aimed to determine the proportion and time interval of PLWH with a serologic response after syphilis treatment.
Methods: Data from the HIV-NAT 006 cohort which prospectively enrolled and followed Thai adults (aged ≥18 years) living with HIV who had reactive pretreatment RPR, at least one follow-up RPR within 1 year for primary/secondary syphilis and 2 years for latent/other syphilis after treatment, and documented syphilis stage was included in the analysis.
Adequate response (AR) was defined as ≥4-fold decrease or seroreversion within 12 months for primary/secondary syphilis and within 24 months for latent/other syphilis.
Delayed response was defined as ≥4 fold decrease or seroreversion beyond the time of an adequate response. Kaplan-Meier was used to determine the probability of achieving serologic response at month 12 and 24.
Results: Among 172 eligible PLWH, all were male (88.8% identified themselves as homosexual), median (IQR) age was 34.5 (26.5-41.6) years, 2.0% (3/152) reported using intravenous recreational drugs, CD4 cell count was 440 (294-597) cells/µL, 66.3% were taking antiretroviral therapy (ART), and 82.4% (98/119) had viral suppression at the time of syphilis diagnosis. Eight (4.7%) participants had primary, 59 (34.3%) had secondary, 103 (59.9%) had latent, and 2 (1.2%) had neuro/ocular syphilis. A total of 127 (73.8%) had AR (76.6% of primary/secondary and 72.2% of latent/other syphilis) and 13 (7.6%) had delayed response.
The probability of achieving serologic response at 12 and 24 months was 0.81 (95%CI 0.70-0.90) and 0.98 (95%CI 0.72-0.92) for primary/secondary, and 0.59 (95%CI 0.50-0.69) and 0.77 (95%CI 0.68-0.85) for latent/other syphilis, respectively.
Using a multivariable Cox regression, primary/secondary was the only significant predictive factor for achieving AR (adjusted hazard ratio: 1.73, 95%CI 1.10-2.73, p=0.019).

Conclusions: Most Thai PLWH with syphilis had a serologic response after treatment. Primary/secondary syphilis was more likely to respond and respond earlier than latent/other syphilis. Long-term monitoring is warranted for PLWH with syphilis.

EPB064

Cytomegalovirus viremia during pregnancy among women living with HIV in Canada

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Background: Congenital cytomegalovirus (CMV) infection is the leading cause of non-genetic childhood hearing loss and neurodevelopmental delay worldwide, and occurs disproportionately often in infants born to the 20 million women living with HIV (WLWH).

We aimed to quantify the frequency and viral load of CMV detected in blood collected from WLWH during pregnancy, and their association with parameters of HIV infection.

Methods: Pregnant WLWH enrolled in a Canadian multicentre prospective cohort study provided clinical data and biological specimens throughout pregnancy (at approximately 16-20, 24-28, 32-36 weeks), as well as at delivery and 4-16 weeks postpartum. CMV serostatus was determined by CMV IgG ELISA at 12-20 weeks, and CMV viral load was measured by qPCR in whole blood from all study visits. Associations between CMV viremia, antiretroviral therapy (ART), CD4+ T cell count, and HIV viral load were explored using logistic regression models.

Results: Of 298 pregnant WLWH, 216 were eligible for this analysis, having provided ≥1 blood specimen during pregnancy and being CMV seropositive.

At study entry (during pregnancy), median age was 33 years (IQR: 29-37), median CD4 count was 531 cells/mm^3(IQR: 390-723), 114 (53%) had a suppressed HIV viral load, and 40 (18.5%) initiated ART during pregnancy.

Of 932 total blood specimens tested, 34 specimens obtained from 28 (13%) women were positive by CMV qPCR, most with a viral load between 100-1000 (n=16) or >1000 IU/mL (n=14).

Two participants had CMV viremia at 2 visits; two had viremia at 3 visits. Women with CMV viremia during pregnancy/postpartum were not different from those without viremia in regards to maternal age, baseline CD4 count, baseline HIV viral load suppression, CD4 nadir, and proportion naïve to ART at the beginning of pregnancy.

Conclusions: In this cohort of pregnant CMV-seropositive WLWH in Canada, 13% had detectable CMV viremia during pregnancy, compared to ~0.5% among CMV-seropositive women without HIV as reported in the literature. No specific HIV parameters were associated with the detection of CMV viremia during pregnancy. The association between CMV replication and congenital CMV infection should be investigated.

EPB065

Cluster-randomized trial of routine syphilis screening among men attending HIV outpatient clinics in Ontario, Canada

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Background: The Enhanced Syphilis Screening Among HIV-positive Men (ESSAHM) Trial was a stepped wedge cluster-randomized trial that paired opt-out syphilis tests with routine HIV bloodwork to improve early syphilis case detection (https://doi.org/10.1093/cid/ciab582). Few patient covariates were collected given the pragmatic trial approach.

We re-analysed intervention effects using data from a concurrent cohort study that ascertained sociodemographic characteristics and sexual histories.

Methods: Population: HIV-positive men; intervention: standing orders for syphilis testing with HIV viral loads; control: usual syphilis testing practice; outcomes: case detection, proportion screened ("coverage"), and screening frequency; time: 01/02/2015 to 31/07/2017.

Trial clinics were also sites for the Ontario HIV Treatment Network Cohort Study (OCS); annual interviews measure income, education, sexual orientation, and number of sexual partners in the past 3 months.

We quantified intervention effects among OCS participants using time-adjusted generalized linear mixed-effect models to estimate odds ratios (OR) and rate-ratios (RR) with 95% confidence intervals (CI) and explored evidence for confounding and effect modification by sociodemographic and sexual history covariates.

Results: 34% (1325/3895) of trial participants were also OCS participants (mean 52.0 years old, 86% men who have sex with men). At baseline, 25% (n=316) reported 2+, 30% (n=365) reported 1, and 45% (n=556) reported 0 sex partners.

Comparing intervention to control periods, there were increases in case detection (OR 1.83, CI 0.85, 3.93), the proportion screened (OR 2.81, CI 2.20, 3.59), and number of tests per year (RR 1.73, CI 1.51, 1.97). There was no evidence

of confounding by sociodemographic characteristics. However, intervention effects were modified by number of sex partners (Table).

	Early syphilis	Screening coverage	Screening frequency
	OR (CI)	OR (CI)	RR (CI)
0 - 1 partner	1.46 (0.53, 4.00)	3.58 (2.71, 4.72)	2.05 (1.76, 2.39)
2 or more partners	3.05 (1.14, 8.12)	2.01 (1.39, 2.92)	1.30 (1.09, 1.56)
P-value for interaction	0.1629	0.0018	<0.0001

Table. Time-adjusted ratios for early syphilis case detection, syphilis screening coverage, and syphilis screening frequency comparing intervention to controls periods, by number of sex partners self-reported in past 3 months at baseline.

Conclusions: Routine screening tripled detection of early syphilis among men more likely to have had sexual exposure. Although the magnitude of increases in screening coverage and frequency were less among men with multiple partners compared to men without, there was still improvement compared to usual care.

EPB066
HPV DNA testing for women living with HIV visiting the women's health program(WHP), Cameroon Baptist Convention Health Services(CBCHS) clinics

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Background: It is a well-established fact that HPV is about six times more prevalent in HIV patients than their HIV negative counterparts. Due to immunosuppression, high risk HPV infections persist in women living with HIV population and would often progress to cervical neoplasia. WHO recently instituted oncHPV DNA testing as primary test for cervical cancer based on evidence from well-designed large randomized controlled trials and meta-analyses.

Novel tests for oncogenic subtypes of HPV has improved cervical cancer screening efficacy to about 95%; hence making predictability of cervical cancer risk higher.

Description: We summarize the findings and lessons learnt from screening women living with HIV for cervical cancer using oncHPV DNA from January 1 to December 31, 2021 at the Women's Health Program (WHP) of the CBCHS.

Lessons learned: Within CBCHS-WHP clinics, a total of 3,468 women were tested for HPV in 2021, 620 (17.9%) were women living with HIV and receiving ART treatment in various care and treatment centers across the country.

Of these 620 women living with HIV, 320 (52.6%) were positive for oncHPV types. 2690 women were HIV negative with 792 (29.4%) testing positive for oncHPV types.

Women with unknown HIV status (158) were excluded from the analysis. HIV positive women had a 2 fold higher rate of oncHPV positive than their HIV negative counterparts.

These results indicate the need for HIV-cervical cancer screening integration into HIV care so as to facilitate identification and treatment of women with cervical disease to prevent cervical cancer.

Conclusions/Next steps: Efforts need to be made to ensure HPV DNA testing is made systematic in the HIV population. It will be necessary to evaluate barriers as well as enhancers for uptake of oncHPV DNA testing in the HIV population.

EPB067
Prevalence of viral and bacterial STIs in patients with PrEP testing

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Background: The DHHS HIV treatment guidelines recommend evaluation of HIV-1, HCV, HBV, and bacterial sexually transmitted infections (STIs) prior to prescription of HIV pre-exposure prophylaxis (PrEP). Diagnostic panels were developed to facilitate guideline-recommended baseline evaluations and monitoring on PrEP.

We investigated the prevalence of STIs among patients for whom PrEP panels were ordered in the United States.

Methods: This was a retrospective database analysis of results reported for PrEP panels ordered from Aug 2019 through Dec 2021. PrEP Baseline panels tested for HIV-1, syphilis, chlamydia, gonorrhea, HBV, and HCV infections, while PrEP Monitoring panels tested for HIV-1, syphilis, chlamydia, and gonorrhea.

Tests with valid results were interpreted per CDC and treatment guidelines. Prevalence of infection was determined using combined data from Baseline and Monitoring panels.

Results: PrEP panels were ordered for 2,316 patients and were ordered more than once for 332 patients; average patient age was 43 years, and most (71%) were male. Laboratory evidence consistent with HIV-1 infection was seen in 2.7% of patients.

Syphilis infection was seen in 9.7% and evidence of previously treated or early syphilis in 7.1% of patients.

Chlamydia and gonorrhea were seen in 4.1% and 2.2% of patients, respectively.

Active HCV infection was seen in 1.3% and past HCV infection in 7.2% of patients.

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Most patients (47%) had no evidence of HBV exposure or immunity; 38% had evidence consistent with HBV vaccination, and 13% with recovery from HBV infection; 1% had biomarkers consistent with active HBV infection.

Among patients with more than one test, acquisition of HIV-1 infection was seen in one patient; syphilis was acquired by 1.8%, chlamydia by 2.2%, and gonorrhea by 0.6% of patients; no patients acquired HCV or HBV.

The most frequent coinfection with HIV-1 was syphilis (1.2% of patients), followed by chlamydia and gonorrhea (0.3% of patients, each), active HCV (0.2% of patients) and HBV (0.06% of patients).

Conclusions: The prevalence of STIs in patients with PrEP testing was high compared to the general population.

These findings may reflect a bias toward testing symptomatic individuals and/or high-risk behavior in this patient group. Continued vigilance for STIs, even among asymptomatic PrEP users, is warranted.

Neurologic disorders (e.g. CNS malignancies)

EPB068

A 2-year longitudinal examination of dosage of speed of processing training on Useful Field of View performance in adults 40+ with HIV-associated neurocognitive disorder: findings from the ThinkFast Study

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Background: Approximately 40% of adults with HIV experience HIV-Associated Neurocognitive Disorder (HAND). Neurocognitive strategies are needed to protect cognitive reserve in adults with HAND, especially as they age. Fortunately, speed of processing (SOP) training, a computerized cognitive training program, has demonstrated neurocognitive benefit in older adults without HIV.

The aim of this study was to examine if adults with HAND administered different doses of SOP training would experience improved performance in their rate of visual information processing over a 2-year period.

Methods: Examining the efficacy of SOP training in a clinical trial, HIV+ adults 40 years and older were administered a cognitive battery to determine if they had HAND or borderline HAND. If so, they were randomized to one of three-treatment groups: 1) 10 hours of SOP training (n=70; M_{age}=51.62 years); 2) 20 hours of SOP training (n=73; M_{age}=51.36 years); or 3) 10 hours of Internet (control) training (n=74; M_{age}=50.01 years).

Participants were assessed at baseline, posttest, year 1, and year 2 to determine their rate of visual processing using the Useful Field of View (UFOV®) test (lower scores=faster processing).

Results: No significant group differences in UFOV® performance at baseline was detected.Controlling for baseline UFOV® performance, posttest comparisons revealed significant dosage effects with the 10-hour group performing better than the control group (p=0.002, d=0.28), and the 20-hour group performing better than the 10-hour group (p=0.087, d=0.15) and the control group (p<0.001, d=0.43).

Effect sizes waned over the 2-year period; yet, compared to the control group modest effect sizes were observed in the 10-hour group (d=0.10) and 20-hour group (d=0.32) over time.

Conclusions: There was a significant improvement on UFOV® for participants in the training groups, with improvement observed with a higher dose of SOP training.

Other studies in older adults without HIV have also observed improvements in locus of control, driving safety, health-related quality of life, and self-rated health after receiving SOP training.

As it is hypothesized that this cognitive training provides wide-spread neural activation in the brain that provides these transfer effects, clinical and research implications are provided.

Mental health (including depression and psychiatric manifestations) and HIV

EPB069

Cumulative depression is associated with risk of all-cause mortality among adults living with HIV in Kenya, Tanzania, Uganda and Nigeria

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Background: Depression is a common comorbidity among people living with HIV (PLWH) in sub-Saharan Africa. Depression can threaten HIV treatment effectiveness, though its relationship with mortality among PLWH in this context requires further characterization.

We described the prevalence and chronicity (i.e., accumulation) of depressive symptoms among PLWH in four sub-Saharan African countries and estimated the effects of depressive symptom chronicity on all-cause mortality.

Methods: The African Cohort Study (AFRICOS) is an ongoing prospective cohort of people receiving care at twelve clinics in Kenya, Tanzania, Uganda, and Nigeria. Every six months from January 2013 to May 2020, participants underwent laboratory monitoring, structured surveys, and assessment of depression symptom severity using the Center for Epidemiologic Studies Depression Scale (CES-D). PLWH with at least two consecutive CES-D assessments within one year were included in this analysis.

All-cause mortality was the outcome of interest. The predictor of interest was a time-updated measure of the percentage of days lived with depression (PDD).

Marginal structural Cox proportional hazards regression models were used to estimate hazards ratios (HRs) and 95% confidence intervals (CIs), adjusting for time-invariant and time-variant confounders including alcohol use, drug use, and viral load. Inverse probability of exposure weights and inverse probability of censoring weights were used.

Results: Among 2520 eligible participants, 1479 (59%) were women and the median age was 38 (interquartile range [IQR]: 32-46). At enrollment, 1438 (57%) were virally suppressed (<200 copies/mL) and 457 (18%) had possible depression (CES-D ≥ 16).

Across 9093 observed person-years, the median PDD was 0.7% (interquartile range: 0-5.9%). The observed mortality rate was 0.8 deaths per 100 person-years. Causes of mortality were not ascertained for 39% of deaths; leading ascertained causes included cancer (18% of deaths) and accidents (14%). Models suggested that each 25% increase in PDD was associated with a 69% increase in the risk of all-cause mortality (HR: 1.69; 95% CI: 1.18-2.43).

Conclusions: Cumulative exposure to depressive symptoms substantially increased the risk of mortality in this cohort of PLWH in sub-Saharan Africa.

Systematic screening for and treatment of depression and associated common mental health conditions in sub-Saharan Africa may improve health outcomes in PLWH.

EPB070

Management of depression in people living with HIV in Senegal: acceptability and feasibility of group interpersonal therapy

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Background: Depression is highly prevalent in people living with HIV (PLHIV), with significant consequences for patient care. In resource-limited settings, the World Health Organization (WHO) recommends group interpersonal therapy (IPT-G) for its management. In the IeDEA West Africa Cohort Collaboration, we evaluated the feasibility and acceptability of IPT-G in depressed PLHIV in Senegal.

Methods: After screening for depression with the Patient Health Questionnaire (PHQ-9), PLHIV with a score ≥ 5 consulted a psychiatrist to confirm their diagnosis of depression. Post confirmation and in accordance with the WHO manual on the implementation of IPT-G, each patient received an individual session followed by 8 weekly group sessions. IPT-G sessions were led by trained social or community workers.

A double approach (i.e. quantitative and qualitative) was used to evaluate the IPT-G experience. Refusal rate, drop-out and attendance levels were assessed, as well as changes in the severity of depressive symptoms.

Results: Of the 75 PLHIV with a diagnosis of depression, five patients (6%) declined to participate in IPT-G. Among the 70 participants, 13% dropped out, often for specific reasons (hospitalization, moving, flooding, etc.).

The majority of patients who completed IPT-G (97%) attended ≥7 sessions; missed sessions were justified (i.e. death in the family, illness, work constraints). Improvement in depressive symptoms (from start to end of therapy), was significant (83% ± 23%, t=19, paired series, p<0.001).

Qualitative data showed positive benefits at different levels: 1) for patients, with immediate and long term positive effects (i.e., improved social and professional lives, skills to prevent relapse); and 2) for facilitators (i.e., skills to support patients). The main barrier to attending IPT-G sessions was transportation cost.

Conclusions: To our knowledge, this study constituted the first time IPT-G was used in West Africa. It appears to be well accepted, feasible and effective in treating depression in PLHIV in Dakar, Senegal. The group modality provides an opportunity to break patient isolation and enable peer-to-peer exchanges.

With a task-shifting approach, IPT-G is also helpful in closing the mental health treatment gap. Bringing services closer to those patients, by making IPT-G available beyond Dakar, needs to be considered.

EPB071

Potential health benefits of integrated screening strategies for alcohol, tobacco, and other substance use, and depression, anxiety, and chronic pain among PLHIV in the United States

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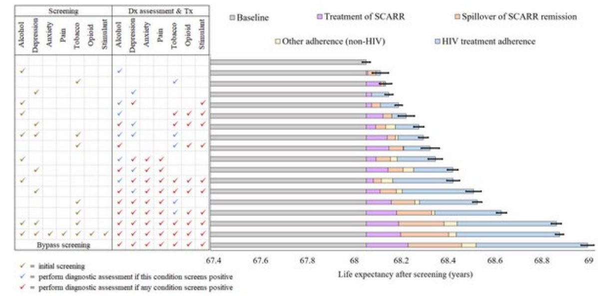
Background: Substance use often co-occurs with depression, anxiety, and chronic pain due to common determinants and dysregulations of the mesolimbic reward system. These syndemic conditions of abnormal reward response (SCARR) disproportionately affect people living with HIV (PLHIV). Current guidelines suggest individually screening for each of these conditions followed by diagnostic assessment for conditions that screened positive. We used a microsimulation model to compare alternative screening strategies that account for interrelationships among SCARR.

Methods: We augmented a microsimulation model previously validated to predict life expectancy in US adults with and without HIV. Using analyses of a large HIV-positive veterans cohort (98.4% male, median age 49), we specified the prevalence and co-occurrence of SCARR and causal inferences for how treating each condition impacts other SCARR ("spillover"), HIV treatment adherence, and preventative care.

We simulated PLHIV receiving alternative SCARR screening strategies (Figure), ranging from usual care (individual screening for alcohol/tobacco/depression, with diagnostic assessments only for conditions screening positive) to integrated care (screening alcohol/tobacco/depression with diagnostic assessments for additional conditions beyond those screening positive) to a "saturation strategy" (diagnostic assessments for all SCARR).

Results: The saturation strategy increased life expectancy by 0.95 years (95% CI: 0.93 – 0.98 years) compared to no screening. Usual care provided a small fraction of this benefit: 0.06 years gained for alcohol (95% CI: 0.03 – 0.09 years), 0.08 years for tobacco (95% CI: 0.06 – 0.11 years), 0.10 years for depression (95% CI: 0.08 – 0.11 years), or 0.25 years for all three (95% CI: 0.22 – 0.27 years).

However, one integrated strategy (screening alcohol, tobacco, and depression, with diagnostic assessment for all SCARR if any screened positive) approached the benefit of the saturation strategy (0.82 years, 95% CI: 0.80 – 0.84 years) with far lower diagnostic burden.



Conclusions: Primary care providers for PLHIV should consider comprehensive diagnostic assessment of SCARR if any conditions screen positive.

EPB072

Depressive symptoms among women by gender identity and HIV status participating in three multisite cohorts in the United States

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Background: Depression is a risk factor for HIV acquisition and a common HIV co-morbidity. Few studies have examined depression prevalence among a diverse cohort of women, allowing comparisons across race, gender identity, and HIV status.

Methods: We combined 2019-2020 data from 3 cohorts of adult women: LITE (transgender women of mixed HIV serostatus), LITE Plus (Black and Latina transgender women living with HIV) and WIHS (cisgender women of mixed HIV serostatus). Multivariable logistic regression models estimated crude (OR) and adjusted (aOR) odds ratios and 95% confidence intervals (95%CI) associated with correlates of depression symptoms (Center for Epidemiologic Studies-Depression score≥10; Kessler score>5).

Results: The study sample included 113 transgender women living with HIV (TWLH), 1470 cisgender women living with HIV (CWLH), 819 HIV seronegative transgender women (TW), and 621 HIV seronegative cisgender women (CW). Among women with HIV, mean CD4 count was similar by gender identity, with TWLH reporting lower viral suppression prevalence (<200 copies/mL).

Depressive symptom prevalence was high across groups (TWLH: 60%; both CWLH and CW: 72%; TW: 85%) and elevated for transgender (TW+TWLH) compared to cisgender (CW+CWLH) women in bivariable analyses (OR=1.62 95%CI=1.33-1.98).

In multivariable analyses, American Indian/Alaskan Native (aOR: 5.0, 95%CI: 1.4-17.7), White (aOR: 2.0, 95%CI: 1.5-2.7), and multiracial identity (aOR: 1.8, 95%CI: 1.3-2.4), Alcohol Use Disorder (aOR: 1.3 95%CI: 1.0-1.7), and substance use (aOR 1.65, 95%CI: 1.3-2.1) were associated with increased odds of depressive symptoms while gender identity (reference=cisgender; aOR: 0.6, 95%CI: 0.4-0.9) and Hispanic/Latina ethnicity (aOR: 0.6, 95%CI: 0.5-0.9) were associated with lower odds of depression. HIV status was not significant in adjusted analyses.

Conclusions: The unexpected association of transgender identity with lower odds of depression may relate to common requirements for mental health engagement before accessing gender-affirming hormones. It may also relate to CW sample selection criteria, as those at risk of HIV acquisition may experience heightened depression as well as drivers of poor mental health, reducing variability by gender identity.

Findings point to the need for combination interventions to address mental health and substance use, particularly given known links between poor mental health, substance use treatment discontinuation, and suboptimal antiretroviral and PrEP adherence.

EPB073

Does HIV compound maternal mental health challenges among adolescent mothers in South Africa?

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Background: Adolescent pregnancy and HIV are prominent global health challenges within South Africa and, both-independently and combined-may compound mental health difficulties for adolescents. There is an absence of knowledge regarding risk and protective factors for mental health difficulties among adolescent mothers affected by HIV in sub-Saharan Africa.

This study aims to identify the prevalence, risk and protective factors associated with common mental disorder among adolescent mothers (comparing those living with and not living with HIV.

Methods: Data are drawn from 1002 adolescent mothers (10-19 years) with 272 27.1% living with HIV and 730 (72.9%) not living with HIV) enrolled in a cohort study of young mothers and their children residing in the Eastern Cape Province, South Africa. All mothers completed a detailed interviews consisting of standardised measures of sociodemographic characteristics, mental health scored on a validated inventory, HIV management (if appropriate), and hypothesised risk and protective factors.

Logistic regression models were utilised to explore associations between hypothesised risk, protective factors, and common mental disorder. Interaction effects with maternal HIV status were additionally explored.

Results: Prevalence of common mental disorder among adolescent mothers was 12.6% overall, 16.2% ALHIV and 11.2% no HIV. Adolescent mothers living with HIV were significantly more likely report common mental disor-

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der compared to adolescent mothers not living with HIV (16.2%vs.11.2%, X^2=4.41, p=0.04). Factors associated with common mental disorder were any abuse exposure (OR=2.90 [95%CI:1.42-5.90], p=0.003), perceived social support (OR=0.24 [95%CI:0.15-0.38], p=<0.0001) and, exposure to community violence (OR=2.10 [95% CI:1.37-3.22], p=0.001). There was limited evidence of interaction effects between risk and protective factors and, maternal HIV status.

Conclusions: Over one in ten adolescent mothers score above the cut off for mental health problems. This is significantly higher for adolescent mothers who are living with HIV. Identified risk and protective factors span individual, interpersonal and community levels.

While adolescent mothers living with HIV were more likely to report probable common mental disorder, factors associated seemingly did not differ according to maternal HIV status. Provisions for adolescent mothers need to incorporate HIV and mental health care.

EPB074

Bio-Psychosocial predictors of suicidal ideation among recently diagnosed people living with HIV in Ibadan, Nigeria

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Background: Suicidal ideation (SI) is more prevalent among recently diagnosed people with HIV (PWH) than in the general population. Studies have not examined predictors of SI in recently diagnosed PWH as this is associated with future attempt and poorer outcomes.

Methods: Participants included 200 adults who had been diagnosed with HIV within 6 months of study enrollment. All participants were receiving suppressive treatment.

Marital status, income, adherence to antiretroviral therapy (ART), body mass index (BMI), self-reported sleep quality, self-reported social support, belief in self to achieve personal expectations, psychological distress and report of SI were measured using standardized scales validated for use in Nigeria. Analyses involved multiple regression, ANOVA and t-tests were used in the analysis.

Results: Participants included 61 males (30.5%) and 139 (69.5%). 87 (43.5%) people reported suicidal ideation. Lower adherence to ART, lower BMI, poor sleep quality, gender, lower level of income, higher psychological distress, lower self-efficacy and lower social support jointly predicted SI. [F (9,188) = 19.57, R2 = .484; p < .05] accounting for 48.4% variance.

Individuals who scored higher on psychological distress reported significantly higher SI than those with low level psychological distress. Those who reported lower self-efficacy reported higher SI to those with higher self-efficacy.

Individuals who reported good quality of sleep, lower total psychological distress, higher ratings of self-efficacy and higher ratings of social support reported significantly lower suicidal ideation. (p<.05) while BMI, income and gender did not predict SI in recently diagnosed individuals.

Conclusions: Recently diagnosed PWH experience suicidal ideation following diagnosis. The study suggests that the frequency of SI is high among recently diagnosed PWH population. Therefore, symptoms combinations of sleep problems, self-efficacy and problems of social support are important indices clinicians can look out for in newly diagnosed PWH. Longitudinal data driven studies with more biological indices will provide further understanding of suicidality in the early stage of HIV diagnosis and on the long-term of living with HIV.

EPB075

Bacterial translocation of LPS is associated with lower cognitive abilities in men living with HIV receiving antiretroviral therapy

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Background: Gut protective CD4 T-helper producing interleukin 17 (Th17), are preferential target of HIV and are rapidly depleted upon infection. Such depletion persists under antiretroviral therapy (ART) in people living with HIV (PLWH). This gut damage allows bacterial lipopolysaccharide (LPS) and fungal β-D-glucan (BDG) microbial translocation contributing to systemic inflammation and risk of non-AIDS comorbidities, including neurocognitive diseases.

Herein, we assessed whether:

1). Markers of gut damage like intestinal fatty acid-binding protein (I-FABP) and regenerating islet-derived protein 3α (REG3α) and

2. Microbial translocation markers, LPS and BDG were associated with cognitive function in ART-treated PLWH.

Methods: A total of 80 ART-treated men living with HIV from the *Brain Health Now* Canadian cohort was included. Detailed socio-demographic and clinical characteristics were collected for all participants. Brief cognitive ability measure (B-CAM) and 20-item patient deficit questionnaire (PDQ) were administered to all participants. Three groups of 26-27 participants were selected based on their B-CAM levels: low (<19), intermediate (19-26) or high (>26).
We excluded participants who received antibiotics or proton pump inhibitors or antiacids which modify microbial translocation, in the past 3 months. Cannabis users were also excluded. Plasma levels of I-FABP, REG3α, and LPS were quantified by ELISA, while BDG levels were assessed using the Fungitell assay.

Results: Plasma levels of I-FABP, REG3α, LPS and BDG were not different between groups of low, intermediate and high B-CAM levels. However, LPS and REG3α levels were higher in participants with PDQ higher than the median of 26.5, indicating that those with lowest self-reported cognitive function had higher levels of those markers (p=0.01 and 0.004 respectively).
Multivariable analyses showed that LPS association with PDQ was independent of age and level of education. However, similar analyses showed no significant association between LPS levels and B-CAM levels. I-FABP, REG3α and BDG levels were not associated with B-CAM nor PDQ levels in multivariable analyses.

Conclusions: In this well characterized prospective cohort of ART-treated men living with HIV, bacterial but not fungal translocation was associated with lowest self-reported cognitive function. The mechanism behind such association should be explored in interventional studies.

EPB076

Association between mental health symptoms and adherence to ART among people living with HIV in Kazakhstan

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Background: HIV incidence has continued to rise in Eastern Europe and Central Asia including Kazakhstan. One of the main priorities for HIV transmission prevention in the region is antiretroviral therapy (ART) adherence improvement. Multiple studies have shown that a range of mental health symptoms is associated with poor HIV adherence, but little is known about the role of mental health in achieving optimal ART adherence among people living with HIV (PLWH) in Kazakhstan. The goal of this cross-sectional study is to examine the associations between mental health symptoms of depression, anxiety and post-traumatic stress disorder (PTSD) with ART adherence among 230 PLWH in Almaty, Kazakhstan.

Methods: 230 PLWH who were at least 6 months on ART were randomly selected from the Almaty AIDS center registry in 2019. We used logistic regression to examine the association between symptoms of depression PHQ−9, anxiety GAD−7, PTSD (PTSD Checklist – Civilian Version), and self-reported adherence (number of pills missed for last 3 days, 1 week, 2 weeks, 1 month), adjusting for age, education, marital status, injection drug use, and hazardous drinking.

Results: PLWH had a high prevalence of depressive symptoms 66 (28.7%), anxiety symptoms 74 (32.2%), and PTSD symptoms 17 (7.4%), using widely accepted cut-offs of clinical symptoms. Twenty-two (9.6%) participants missed at least one dose of medication for the last 2 weeks and 42 (18.3%) for last month.
Those who missed any dose of ART for the last 2 weeks had a higher probability of symptoms:of depression (OR: 3.50, 95%CI: 1.16- 10.54), anxiety (OR: 3.28, 95% CI: 1.18- 9.08), PTSD (OR: 4.00, 95%CI: 1.13- 14.13). Similarly, those who reported any missed dose of ART for last month had a higher probability of symptoms: of depression (OR: 3.45, 95%CI: 1.49 -7.98), anxiety (OR: 2.556, 95%CI: 1.21 -5.40).

Conclusions: The high rates of depression, anxiety, and PTSD and significant associations between these mental health symptoms and poorer ART adherence after controlling for drug and alcohol use highlight the critical need to improve the mental health and well-being of PLWH in Kazakhstan and further suggest the need for integrated mental health and ART adherence interventions for this population.

EPB077

Reversibility of neuropsychiatric adverse events after switching to darunavir/cobicistat or doravirine in men on INSTI based regimen

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Background: Integrase strand transfer inhibitors (INSTI) are associated with sleep disturbances, anxiety and depression. Switching patients with neuropsychiatric adverse events (NPAEs) to other regimen could improve symptoms.

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The aim of this study was to evaluate improvements in NPAEs after switching INSTI based regimen to Darunavir/cobicistat (DRV/c) or Doravirine (DOR) based regimen.

Methods: We designed a single arm trial, at the Hospital de Infectologia, "La Raza" National Medical Center since March to December 2021 in order to evaluate the reversibility of NPAEs detected with Patient Health Questionnaire (PHQ-9) and sleep disturbances with Insomnia Severity Index (ISI) in patients who started INSTI based regimen with Dolutegravir (DTG) or Bictegravir (BIC). NPAEs leading to INSTI discontinuation were consider when PHQ-9 ≥15 points or ISI ≥15 points. These patients were switched to DRV/c or DOR based regimen. Then we compared scales at the moment of switch and 4 weeks later using Wilcoxon test.

Results: We included 339 treatment-naïve male patients with HIV infection who started antiretroviral therapy with INSTI based regimen, 238 (70%) with BIC and 101 (20%) with DTG. In 5 (1.4%) patients we lost follow up; of the 334 patients analyzed, baseline characteristics were median age of 27 years old (IQR 24-31), CD4+ cells count 258 (IQR163-362) and HIV-1 RNA viral load 4.4 $\log_{10}$ (IQR 3.9-4.9).

A total of 15 (4.5%) experience NPAEs that lead to discontinuation, of these 9 (60%) were moderate-severe or severe depression, PHQ-9 median points 20 (IQR 15-24).

Moderate-severe or severe insomnia by ISI was found in 9 (60%) of the patients with a median of 22 points (IQR 16.5-25.5). Some patients had more than one NPAE that leaded to discontinuation; 4 (27%) and 11 (73%) were switched to DRV/c and DOR respectively. After 4 weeks we observed significant improvements in PHQ-9, with median of 9 points (IQR 5-14), p= 0.003 and ISI 9 points (IQR 4-14), p= 0.008.

Conclusions: NPAEs seem to be associated in patients on INSTI based regimen; these NPAEs improve after switching to DRV/c or DOR based regimen since the first 4 weeks. ISI and PHQ-9 are quick, easy, and self-reported questionnaires to test on each visit.

EPB078

Sleep disorders and depression in people living with HIV during SARS-CoV-2 pandemic

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Background: Depression and insomnia have been frequently associated with HIV infection and treatment, even more so during COVID-19 pandemic. The aim of this study is to evaluate the prevalence of sleep disorders and depression in HIV patients on ART for at least 6 months and the potential role of the therapeutic regimen.

Methods: A single center study was performed from July to October 2021. The Pittsburgh Sleep Quality Index (PSQI) and the Beck Depression Inventory (BDI) were administered through Google form to detect sleep abnormalities and depression related symptoms.

Results: 196 subjects (81.6% males), with a median age of 48.3 years (IQR 37.7-55.2) were enrolled. Median time on ART was 104 months (IQR 49-226), median time on the current regimen was 22 months (IQR 10-40). Table 1 shows patients' treatments.

177 subjects (90.3%) had a plasma viral load < 50 cps/mL at the moment of the interview. Median CD4+ T-cells were 721/µL (IQR 532-917).

72 subjects (36.7%) had a BDI score higher than 5.

99 subjects (50.5%) declared they did not have any trouble sleeping. However, the results of PSQI showed that 146 subjects (74.5%) had troubles sleeping.

ANCHOR DRUG	NUMBER	%
Dolutegravir (DTG)	73	37.2
Bictegravir (BIC)	41	20.9
Darunavir (DRV)	25	12.8
Raltegravir (RAL)	25	12.8
Rilpivirine (RPV)	22	11.2
Doravirine (DOR)	7	3.6
Atazanavir (ATV)	1	0.5
Nevirapine (NVP)	1	0.5
Elvitegravir/cobicistat (EVG/c)	1	0.5

There wasn't any significant association between depression or troubles sleeping difficulties and third drug (p=0.57 and p=0.26), ART regimen (p=0.11 and p=0.8), anchor drug (p=0.46 and p=0.50). We studied in particular DTG vs DRV (p=0.83 and p=0.23) and INSTI vs non-INSTI (p=0.30 and

p=0.21). We found a significant association between showing depression symptoms and sleeping difficulties (p<0.001).

Conclusions: Sleep disorders and depression have a high prevalence in HIV population. Depression could be the primary cause leading to sleep disorders, even if it isn't easily demonstrated. The therapeutic regimen was not found to influence their onset.

However, our results might be influenced by the ongoing SARS-CoV2 pandemic. More studies are needed to ascertain this influence.

EPB080

Associations between HIV status and sexual orientation, disability status and gender identity and the experience of intimate partner violence in Nigeria

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Background: A large number of vulnerable populations exists among People Living With HIV/AIDS (PLWHA), such as sexual minorities and people living with disability. Currently, in addition to treating the disease and managing the associated transdisciplinary problems such as depression, stigma, adverse effects of medications and discrimination. Living with HIV requires identifying vulnerable sub-populations for targeted interventions.

The aim of this study was to determine associations between intimate partner violence, sexual orientation, gender identity and HIV status in Nigeria.

Methods: The study comprised a secondary analysis of an online survey data collected to seek the perspectives of respondents on the ease of access and quality of HIV prevention, treatment and ancillary care services, respect for rights, payment for services, and stigma in January to February 2021. The dependent variable was the HIV status.

The explanatory variables were sexual orientation (sexual minority, heterosexuals), living with disability, gender identity (cis- and transgender), history of bullying victimisation and experience of intimate partner violence. Binary logistic regression model was constructed to determine the risk indicators for the HIV status after adjusting for age, sex at birth, marital status, and educational level.

Results: There were 2194 respondents. Individuals who identified as transgender had significantly higher odds of having an HIV positive status than those who identified as cisgender males or female (AOR: 3.21; 95%CI: 1.75-5.88). People living with disability had significantly higher odds of living with HIV than people without disability (AOR: 3.40; 95%CI: 1.74-6.67). Respondents who had experienced sexual abuse had significantly higher odds of living with HIV than those who had not experienced sexual abuse (AOR: 1.64; 95%CI: 1.10-2.43). However, individuals who identified as sexual minorities were not significantly more likely to report HIV positive status (AOR:1.24; 95%CI: 0.98-1.57). Those who experienced bullying victimization had significantly lower odds of living with HIV than those who had not experienced bullying victimization (AOR: 0.57; 95%CI:0.45-0.72).

Conclusions: Individuals who identified as transgender, living with disability and had experienced sexual abuse were more likely to be HIV positive in Nigeria. Targeted intervention for vulnerable populations may help identify at risk persons and support prevention or management programs for them.

EPB081

Associations between depression, anxiety and clinical outcomes during HIV care and treatment

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Background: Depression and anxiety may influence clinical outcomes among people living with HIV (PLHIV). We evaluated these associations among newly-diagnosed PLHIV and after 12 months in care.

Methods: We conducted a prospective study in Umlazi township, South Africa. Depression and anxiety (mild or worse) were assessed at baseline (pre-HIV diagnosis) and 12 months using the 9-item Patient Health Questionnaire and 7-item Generalized Anxiety Disorder screening tool. Retention and clinical outcomes (hospitalization in prior 12 months, HIV viral load, TB, death) were measured. We estimated adjusted odds ratios (aORs) and prevalence ratios (aPRs) for each outcome to compare those with likely depression or anxiety (baseline and 12 months) to those with no evidence of depression or anxiety.

Results: Among 3,105 participants, 57% were male with median age 31 years. Pre-HIV diagnosis, 19% (n=583) reported mild or worse depression, and 16% (n=495) had mild or worse anxiety *(Figure 1)*. Baseline depression was significantly associated with worse clinical outcomes at 12 months including hospitalization (aOR=1.54), TB diagnosis (aOR=1.88), default from care (aOR=1.41), and death (aOR=1.69) *(Table 1)*. Baseline anxiety was associated with TB diagnosis (aOR=1.49,) and default from care (aOR=1.24). Hospitalization, elevated viral load, and default from care were also more prevalent among those with depression or anxiety at 12 months.

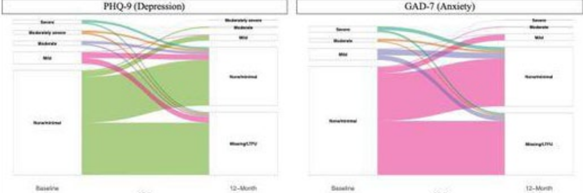

Figure 1. Alluvial plots of depression and anxiety scores, baseline to 12 months.

	Baseline (Pre-HIV Diagnosis)				12-Month Visit			
	Depression		Anxiety		Depression		Anxiety	
Clinical Outcomes	aOR (95%CI)	P-value	aOR (95%CI)	P-value	aPR (95%CI)	P-value	aPR (95%CI)	P-value
Hospitalized	1.54 (1.07, 2.22)	0.020	1.08 (0.72, 1.62)	0.715	3.77 (2.42, 5.88)	<0.001	3.35 (2.14, 5.24)	<0.001
Elevated viral load (200 copies/mL)	1.25 (0.85, 1.84)	0.253	1.03 (0.68, 1.57)	0.876	1.59 (0.96, 2.63)	0.074	1.74 (1.06, 2.85)	0.029
TB diagnosis	1.88 (1.39, 2.53)	<0.001	1.49 (1.07, 2.07)	0.019	1.39 (0.85, 2.28)	0.191	1.57 (0.98, 2.52)	0.061
Not retained in care after 12 months	1.41 (1.16, 1.72)	<0.001	1.24 (1.00, 1.53)	0.045	1.37 (1.04, 1.81)	0.027	1.31 (0.99, 1.73)	0.059
Died	1.69 (1.07, 2.67)	0.024	1.20 (0.72, 2.00)	0.488	—	—	—	—

All models adjusted for age, sex, education level, employment status, and food insecurity. aOR: adjusted odds ratio; aPR: adjusted prevalence ratio. Depression defined as scoring≥5 on PHQ-9, anxiety defined as scoring≥5 on GAD-7.

Table 1. Adjusted odds ratios and prevalence ratios comparing clinical outcomes by depression and anxiety screening scores.*

Conclusions: Newly-diagnosed PLHIV with mild or worse depression may be more likely to experience poor clinical outcomes than those without depression, and less likely to be retained in care.

These findings indicate a need for interventions for PLHIV with depression to prevent poor outcomes, including hospitalization and death.

EPB082

Syndemic trajectories of heavy drinking, cigarette smoking, and depressive symptoms are associated with all-cause, non-AIDS, and non-overdose mortality in women living with HIV

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Background: We investigated the sustained syndemic patterns of heavy drinking, smoking, and depressive symptoms among women living with HIV (WLWH) and whether syndemic phenotypes were associated with mortality.

Methods: Data from Oct. 1, 1994 to Dec. 31, 2017 of WLWH in the Woman's Interagency HIV Study, a prospective, observational cohort were included (N=3,693). Biannual measures of self-reporteddrinking, cigarette smoking, and depressive symptoms (Centers for Epidemiologic Studies Depression Scale) were used to model group-based trajectories (GBT).

A variable of syndemic phenotypes was based on membership in the high-risk trajectories of each condition. National Death Index (NDI) review identified death and cause of death (n=824, mean follow-up 7.8 years).

Cox proportional hazards models estimated associations of syndemic phenotypes with all-cause, non-AIDS, and non-overdose mortality, adjusting for confounding factors (age, race/ethnicity, enrollment wave, illicit drug use, HIV viral load and CD4+ T-cell count).

Results: WLWH were 62% Black, 22% Hispanic, with mean age of 37.3 years at baseline.The GBT analyses identified sustained high-risk trajectories for each factor (heavy drinking, 7%; current smoking, 43%; severe depressive symptoms, 24%).

Syndemic phenotypes included zero high-risk trajectories (43%, n=1,603), heavy drinking only (1%, n=36), smoking only (29%, n=1,071), severe depressive symptoms only (9%, n=323), any two (16%, n=584), and all three (2%, n=76) trajectories.

Compared to zero syndemic trajectories, having any two or all three syndemic were associated with greater all-cause mortality risk after controlling for confounders and each high-risk trajectory alone (Table). These findings remained when considering non-AIDS and non-overdose mortality.

Death by Type		All-Cause Mortality N=824	Non-AIDS Mortality N=522	Non-AIDS or Overdose Mortality N=461
Syndemic Trajectories (N)	Within Group Deaths (row %)	Mean FU 7.8 years	Mean FU 8.0 years	Mean FU 8.1 years
Zero Trajectories (1,603, REF)	192 (12)	HR (95% Confidence Intervals)		
Heavy Drinking Only (36)	8 (22)	1.54 (0.72, 3.29)	1.45 (0.53, 3.97)	1.51 (0.55, 4.13)
Depressive Symptoms Only (323)	74 (23)	1.58 (1.20, 2.09)***	1.34 (0.91, 1.98)	1.20 (0.79, 1.82)
Current Smoking Only (1,701)	285 (27)	2.10 (1.73, 2.56)***	2.50 (1.95, 3.20)***	2.30 (1.78, 2.99)***
Any Two Trajectories (584)	230 (39)	3.02 (2.46, 3.71)***	3.97 (3.07, 5.13)***	3.80 (2.91, 4.95)***
All Three Trajectories	35 (46)	3.44 (2.32, 5.09)***	3.13 (1.84, 5.31)***	2.73 (1.50, 4.95)***

*Table. Association between syndemic trajectory phenotypes and all-cause, non-AIDS and non-overdose mortality. ***p<.001; FU, follow-up; REF, reference group; heavy drinking trajectory consitently >7 drinks/week; depressive symptoms trajectory consistently with CESD ≥16.*

Conclusions: Sustained syndemics of heavy drinking, smoking, and depressive symptoms affected nearly 1 out of 5 WLWH and were associated with higher mortality than having none or one condition, even when removing AIDS and overdose-related mortality.

Our findings underscore the need for coordinated strategies to screen and treat these co-occurring conditions.

EPB083

High rates of suicide attempts among adolescents with perinatally acquired HIV in Uganda

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Background: Mental illness and suicidality often emerge during adolescence – an optimal time for intervention – and youth with HIV have higher rates of both than the general global population. Furthermore, suicide is a leading cause of death among adolescents and history of attempted suicide is a strong predictor of completed suicide. Adolescents with HIV and a mental health problem are particularly vulnerable to adversity, including discrimination, stigma, educational difficulties, risk-taking behaviors, and medical complications. In Uganda, adolescents with perinatally acquired HIV (PHIV) experience a high burden of mental health problems, but there is scant information regarding their suicidality.

This study examined current depressive symptoms, adverse experiences, and past suicide attempts among adolescents with PHIV and demographically matched HIV-negative adolescents.

Methods: Fifty-seven adolescents (35 PHIV – all VL ≤50 copies/mL; 22 HIV-negative; M_{age}= 15.77; 52.6% female) completed the Adverse Childhood Experiences (ACE) scale, Patient Health Questionnaire-9 (PHQ-9), Children's Depression Inventory (CDI), and questions about lifetime suicide attempts. Independent samples T-tests and Chi-square analyses were used to compare HIV status groups.

Results: There were no differences in age and sex across the two HIV status groups. Mean scores were: ACEs *M*=3.37 (SD=2.67), PHQ-9 *M*=2.36 (*SD*=3.96), and CDI *M*=5.16 (*SD*=5.34).

Although the PHIV group had higher scores on all measures and were slightly older than the HIV-negative group, these differences were not statistically significant. Among adolescents with PHIV, 20% (*n*=7) reported having at least one lifetime suicide attempt; none of the HIV-negative adolescents reported any previous suicide attempt (c^2= 5.02, *p* =.03).

Conclusions: In this small sample, adolescents with PHIV were significantly more likely to have made a suicide attempt in their lifetime than demographically similar HIV-negative peers. Despite this, mean scores on the ACEs, PHQ-9 and CDI did not significantly differ, though the PHIV had higher scores overall. Despite a higher risk for past suicide attempt, PHIV adolescents who survive an attempt may recover and experience periods of low depressive symptoms.

Future research is warranted to further explore why so many adolescents with PHIV are attempting suicide, what factors contribute to their attempts, and what factors aid in their recovery

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EPB084
Symptoms of depression and anxiety in adolescents and young adults living with HIV in Botswana

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Background: Anxiety and depression are prevalent among adolescents and youths and young adults living with HIV (AYAHIV). Few studies have focused on the mental health needs of youth in LMIC or African nations where the majority of AYAHIV live. Untreated mental illness among AYAHIV can lead to poor adherence to medication, poor self-care, and increased likelihood of severe sequelae. We screened AYAHIV in Botswana for anxiety and depressive symptoms as part of their routine HIV clinic visits.

Methods: We implemented a universal mental health screening program for AYAHIV aged 12 to 25 years in a paediatric national referral outpatient HIV clinic, in Gaborone, Botswana in 2019.

A self-administered Patient Health Questionnaire-9 (PHQ-9) and Generalized Anxiety Scale-7 (GAD-7) were used to screen for anxiety and depression, respectively. PHQ-9 scores of <5, 5-9, 10-14 and ≥ 15 indicated no symptoms of depression, mild, moderate, moderately severe and severe symptoms of depression. GAD-7 scores of <2, 2-6 and ≥ 7 indicated no symptoms of generalize anxiety, mild/moderate anxiety symptoms and severe anxiety symptoms.

Two-way ANOVA was used to describe the effects of gender and age group (12-15, 16-19, and 20-25 years) on PHQ9and GAD7 scores with post-hoc pairwise comparisons for variables attaining statistically significant omnibus test.

Results: A total of 1591 AYAHIV aged 12-15 (19%), 16-19 (52%) and 20-25 years (29%) were screened; 800 (50.3%) were males. Among them, 33% and 44.5% screened positive for symptoms of anxiety and depression; 22%, 8% and 3% screened positive for mild, moderate and severe anxiety symptoms and 29%, 11%, 3.6% and 0.9% had mild, moderate, moderately severe and severe symptoms of depression. Female AYAHIV aged 20-25 had significantly higher rates of symptoms of anxiety and depression when compared to 12-15-year-olds (*p<0.001 and p=0.001, respectively).* Female AYAHIV aged 16-19 had significantly higher rates of symptoms of anxiety when compared to 12-15-year-olds (*p=0.012).*

Conclusions: Routine mental health screening in an HIV care setting in Botswana revealed a high proportion of AYAHIV with concerning mental health symptoms.

Further studies will evaluate the clinical significance of these results. HIV service clinics should consider enhanced investments in mental health services, particularly for older adolescents and young adults.

Malignancies (AIDS and non-AIDS)

EPB085
HIV status is associated with reduced risk for precancerous lesions

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Background: Cervical cancer is one of the leading causes of death in women and the commonest cancer in sub-Sahara Africa in the reproductive age group. Screening for precancerous lesions using visual inspection with acetic acid (VIA) is an early diagnosis method used to detect cervical lesions that can be treated successfully with cryotherapy or Loop electrosurgical excision procedure to prevent cervical cancer.

The aim of this study was to determine the risk of precancerous lesions among women of child bearing age living with or without HIV.

Methods: We conducted a cross-sectional study at Livingstone Teaching Hospital among 329 adult women between January 2019 and December 2020. Precancerous lesions were defined by a positive VIA indicated by presence of a dense ulcerative acetowhite area in the transformation zone of the cervix.

We collected demographic, laboratory and clinical information using medical records and a questionnaire. Data were analyzed using SPSS version 22.0. Chi-square test, Mann-Whitney and logistic regression were the statistical methods used.

Results: The median (interquartile range) age of participants was 37 (29, 44) years. Among 329 participants, 208 were living with treated HIV and were virally suppressed. The prevalence of precancerous lesions was 19% (95%CI 15, 24). Among the HIV-positive participants, only 12.9% compared to 29.1% HIV negative had precancerous lesions. After controlling for age, marital status, full term pregnan-

cies, alcohol consumption, history of tuberculosis and use of family planning, HIV-positive participants had a significantly 63% reduced odds of having precancerous lesions as compared to the HIV-negative participants [odds ratio (OR) 0.37; 95% confidence interval (CI) 0.19, 0.70)].

Conclusions: Precancerous cervical lesions are common among our study participants; however, they are less common in the HIV positive population compared with the HIV negative.

This unique finding may have been influenced by other factors beyond the scope of our study such as differential infection with human papilloma virus (HPV) and use of antiretroviral therapy in HIV that reduces the risk of precancerous lesions. Screening for precancerous lesions and HPV must be intensified to mitigate the burden of cervical cancer.

EPB086

Retention in care in pregnant HIV positive Kaposi Sarcoma (KS) patients seen at a tertiary hospital in Harare, Zimbabwe: a case control study

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Background: Evidence is required to guide chemotherapy treatment of HIV positive pregnant patients on antiretroviral therapy with concurrent KS. We sought to document completion outcomes in pregnant HIV positive patients with KS compared to age and stage-matched non-pregnant HIV positive female counterparts at a university-affiliated hospital in Harare, Zimbabwe.

Methods: From January 1994 to January 2020, records of all female participants who received care in the KS clinic whilst pregnant were analysed retrospectively. Age and stage-matched non-pregnant controls were identified and matched in a ratio of 1:3. The primary outcome was loss-to-care after initiation of therapy. Multivariate analysis was performed to identify significant predictors of loss-to-care. The short-term foetal consequences were a secondary outcome.

Results: A total of 23 cases and 76 controls were enrolled for this study. 81% of the total participants were on antiretroviral therapy (ART), with 76% of the controls and 91% of the cases on ART. There was no difference in chemotherapy administered between the two groups. A total of 67(67.7%) patients were lost to follow-up with no statistical difference between the cases and controls [69.6% of cases and 67.1 controls (p=0.825)]. There was no statistical difference in the outcome between cases and controls based on baseline CD4+, current CD4+ count and viral load [OR-1.00(0.998-1.00) p=0.342; OR-1.00(0.996-1.00) p=0.276; OR- 1.00(0.999-1.00) p=0.367]. Pregnant women in WHO HIV Clinical stage 3 and 4 were not at a higher risk of loss to follow up than their non-pregnant counterparts [OR-1.87(0.24-14.65) p=0.553; OR-1.70(0.24-11.95) p=0.592]. Concurrent hypertension or tuberculosis had no statistical difference in outcome between the cases and controls [OR-0.49(0.03-8.13) p=0.620; OR-0.91(0.32-2.57) p=0.859]. There was one documented foetal stillbirth.

Conclusions: There is no difference in loss to follow up in HIV positive pregnant KS patients receiving chemotherapy treatment in comparison to non-pregnant age and stage-matched female patients with KS. Baseline CD4+, current CD4+ count, viral load or HIV clinical stage had no bearing on retention to care between pregnant and non-pregnant HIV positive KS patients.

EPB087

Where do we stand in the path towards cervical cancer elimination in Mozambique?

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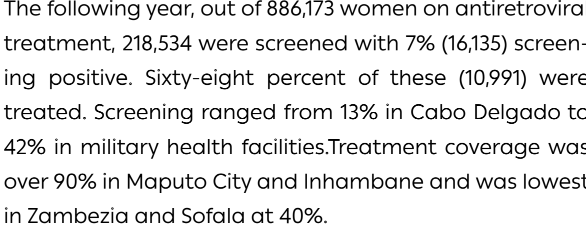
Background: Cervical cancer is the leading cancer among women in Mozambique with an incidence of 42.8 cases per 100,000 women. Cervical cancer is six times more frequent in women living with HIV (WLHIV) than non-infected women. The prevalence of HIV among women of reproductive age is 15.1% in Mozambique. The World Health Organization90-70-90 targets call for 90% of women to be immunized against HPV, 70% to be screened for cervical dysplasia, and 90% to be treated by 2030 to ensure countries are on the path toward cervical cancer elimination.

The Ministry of Health began its partnership with PEPFAR, implementing partners and the MD Anderson Cancer Center in 2011 with the aim of improving access to high quality screening and treatment for precancerous cervical lesions among WLHIV. These efforts were scaled up in 2018 with a yearly investment of more than 5 million US dollars. Optimized dolutegravir based ART regimens were introduced in 2018.

Description: We reviewed screening and treatment data from PEPFAR implementing partner supported health facilities in Mozambique's 11 provinces.

Lessons learned: From October 2018 to September 2019, 77,815 of the 727,700 women on antiretroviral treatment in Mozambique were screened for cervical dysplasia, with 10% (7,407) screening positive. Of these, 61% (4,533) were treated for precancerous lesions. During this period, screening varied by province from 4% in Manica to 17% in military health facilities (DOD) while treatment coverage was higher and ranged from 3% in Tete to 87% in Maputo city.



The following year, out of 886,173 women on antiretroviral treatment, 218,534 were screened with 7% (16,135) screening positive. Sixty-eight percent of these (10,991) were treated. Screening ranged from 13% in Cabo Delgado to 42% in military health facilities.Treatment coverage was over 90% in Maputo City and Inhambane and was lowest in Zambezia and Sofala at 40%.

Conclusions/Next steps: This review demonstrates a 2.8-fold increase in the number of WLHIV who have been screened for cervical cancer over the past 2 years. Mozambique has the opportunity to eliminate cervical cancer.

Increases in screening and treatment coverage rates are a result of successful coordination between government and stakeholders, but further improvement is needed.

EPB088

The role of expanded human papillomavirus genotyping in detecting high-grade cervical dysplasia by HIV status in Botswana

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Background: The World Health Organization's cervical cancer elimination strategy calls for high-performance screening with human papillomavirus (HPV) testing, but HPV primary screening and triage strategies in low- and middle-income countries (LMICs) with high HIV prevalence are not clear. Triage by HPV genotypes most associated with cervical cancer (HPV 16/18/31/33/35/45/52/58) may provide more sensitive detection of high-grade cervical dysplasia in both women with and without HIV in LMICs.

Methods: We analyzed data from an ongoing cross-sectional study in Botswana that performs HPV primary screening at 6 government health facilities using Atila AmpFire©HPV (Atila Biosystems, USA), which detects 15 individual HPV genotypes. Women who tested positive for any HPV genotype had visual triage evaluation and biopsy. High-grade cervical dysplasia was defined as histopathology of cervical intraepithelial neoplasia grade 2 or worse (CIN2+).

Results: In a preliminary analysis of 1905 women, 897 (47%) were HPV positive; of these, 366 (41%) had complete histopathology data at the time of analysis. Women living with HIV (WLHIV) represented 41% of all women, and 48% of women who tested positive for HPV; 99.9% were on antiretroviral therapy, 98.7% were virologically suppressed, median CD4 cell count was 686 (IQR 528-874) cells per µL.

The prevalence of CIN2+ was 18% among women who tested positive for HPV. HPV18 had the highest positive predictive value (PPV) for detecting CIN2+ in women with and without HIV (47% and 38%, respectively). Other individual HPV genotypes had variable PPV by HIV status, but differences did not reach statistical significance (Table 1).

Among HPV positive women, the sensitivity of triage with pooled HPV genotypes 16/18/31/33/35/45/52/58 to detect CIN2+ was 85% in WLHIV and 84% in women without HIV (p=1.00).

Conclusions: Nearly half of women in Botswana screened HPV positive, and prevalence of associated CIN2+ was similar in women with and without HIV. Triage of HPV positive results with pooled HPV genotypes 16/18/31/33/35/45/52/58 maintained high sensitivity in detecting CIN2+ in all women. In the modern antiretroviral era, streamlining of high-performance cervical cancer screening with HPV primary testing and genotype triage in both women with and without HIV is a promising strategy.

EPB089

Persistent low-level viremia may increase the risk of cancer in people living with HIV

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Background: Inflammation plays a critical role in tumor initiation, growth, and metastasis. Despite of antiretroviral therapy (ART) some patients maintain persistent low-level viremia (pLLV) (50-200 copies/mL), which could promote a state of chronic residual inflammation that contribute to an increased risk of developing carcinogenesis.

The aim is to assess the impact of pLLV on immune checkpoint inhibitors related to cancer and inflammatory markers in people living with HIV.

Methods: Transversal study in 54 individuals: 27 HIV+ virologically suppressed (uVL) and 27 with pLLV (≥2 years). Patients were matched for clinical and epidemiological characteristics. Plasma levels of 28 immune checkpoint inhibitors associated with cancer and 14 inflammatory markers were quantified by Multiplex Immunoassays (xMAP-Luminex technology). Adjusted Arithmetic Mean Ratio was calculated by Generalized Linear Model.

Results: Patients had a median age of 54 years and 77.8% were men. No differences were observed between groups in clinical and epidemiological characteristics (Table1).

Overall, 74.1% (n=40) of patients received triple therapy, being INIs (61.1%, n=33) the most frequent followed by NNRTI (22.2%, n=12). 74.1% (n=20) of pLLV patients were on INIs (median 17 months) compared to 48.1% (n=13) of uVL

(median 16 months). PLLV patients showed significantly higher levels of IDO (p=0.013) and CD96 (p=0.029), and a tendency in ULBP3 (p=0.060). At inflammation level only IL-12 showed lower values (p<0.001) in viremic patients (Table1).

Conclusions: Significantly higher levels of poor prognostic biomarkers for different cancer types are shown in patients with pLLV: IDO, associated with reservoir size, regulatory T-cell activation and T-cell exhaustion in patients on ART, as well as CD96 and ULBP3, which regulate decreased NK cell activity. The higher levels of these biomarkers and lower values of IL-12, a potent cytokine mediating anti-tumour activity, in individuals with pLLV suggest that pLLV may contribute to an increased risk of cancer development compared to virally suppressed individuals.

	uVL	pLLV	p
Gender (male)	21 (77.8%)	21 (77.8%)	1.000
Age (years)	54 (48-59)	53 (47-58)	0.775
Time of HIV infection (years)	16.5 (12-24)	16 (10-22)	0.454
Time on ART (years)	16 (11-22)	14 (9-19)	0.401
CDC category			
C	3 (14.3%)	9 (36%)	0.141
ART regimen			
NNRTIs	12 (44.4%)	0 (0%)	**<0.001**
PIs	2 (7.4%)	7 (25.9%)	0.068
INIs	13 (48.1%)	20 (74.1%)	0.051
Dual Therapy	9 (33.3%)	5 (18.5%)	0.214
Triple Therapy	18 (66.7%)	22 (81.5%)	
Time of current ART (months)	23 (17-23)	23 (11-25)	0.502
Resistance mutations	11 (40.7%)	17 (63%)	0.102
NNRTIs	2 (7.4%)	4 (14.8%)	0.386
NRTIs	2 (7.4%)	5 (18.5%)	0.224
PIs	10 (37%)	17 (63%)	0.057
CD4+ T-lymphocytes (cells/μL)	1005 (662.5-1198.5)	716.5 (508.5-1035)	0.104
Nadir CD4+ T- lymphocytes (cells/μL)	274 (179.5-393.5)	231.5 (67.75-399.25)	0.174
Immune checkpoint inhibitors (aAMR)			
IDO	2.28 (1.14-4.55)		**0.020**
CD96	1.24 (1.02-1.50)		**0.029**
ULBP3	1.30 (0.99-1.69)		0.060
ULBP1	1.17 (0.96-1.43)		0.113
ULBP4	1.14 (0.88-1.50)		0.325
Siglec9	1.18 (0.97-1.42)		0.092
Siglec7	1.16 (0.91-1.47)		0.224
Arginase	1.19 (0.85-1.65)		0.316
BTLA	1.00 (0.77-1.30)		0.993
CD112	0.98 (0.80-1.20)		0.821
CD155	1.09 (0.94-1.26)		0.266
CD137	0.92 (0.68-1.26)		0.613
CD152	0.96 (0.73-1.28)		0.794
CD27	0.73 (0.46-1.17)		0.188
CD28	0.97 (0.76-1.24)		0.801
CD73	1.14 (0.86-1.51)		0.367
CD80	0.96 (0.70-1.32)		0.805
E-cadherin	1.00 (0.81-1.25)		0.959
GITR	0.95 (0.70-1.29)		0.755
HVEM	0.93 (0.76-1.14)		0.478
LAG3	0.99 (0.71-1.37)		0.929
MICA	0.99 (0.74-1.34)		0.968
MICB	1.10 (0.90-1.36)		0.354
Perforin	1.10 (0.76-1.60)		0.613
PD1	0.97 (0.71-1.31)		0.823
PDL1	1.08 (0.78-1.48)		0.648
PDL2	0.95 (0.72-1.24)		0.682
TIM-3	0.95 (0.77-1.17)		0.617
Inflammatory markers (aAMR)			
IL-12	0.48 (0.32-0.73)		**0.001**
IL-1β	0.88 (0.72-1.09)		0.242
IL-2	1.13 (0.81-1.58)		0.485
IL-4	0.88 (0.71-1.09)		0.251
IL-6	0.90 (0.62-1.30)		0.583
IL-8	0.90 (0.64-1.26)		0.539
IL-9	1.11 (0.84-1.47)		0.456
IL-10	1.14 (0.85-1.53)		0.391
IL-23	1.20 (0.76-1.85)		0.440
IL-27	1.30 (0.88-1.94)		0.191
IFN-α	0.83 (5.67-1.20)		0.315
IFN-γ	0.98 (0.74-1.30)		0.879
TNF-α	0.93 (0.74-1.12)		0.387
TNF-β	1.10 (0.86-1.42)		0.438

Values are expressed as absolute number (percentage) and median (interquartile range). Values of immune checkpoint inhibitors and inflammatory markers are expressed as Adjusted Arithmetic Mean Ratio (aAMR) and 95% confidence interval calculated by Generalized Linear Model with gamma distribution, adjusted by integrase inhibitors, non-nucleoside reverse transcriptase inhibitors and resistance mutations. Comparison between categorical variables: Pearson's Chi-Square, comparison between continuous variables: Kruskal-Wallis and Mann-Whitney U test. uVL, patients HIV+ with undetectable viral load; pLLV, patients HIV+ with persistent low level viremia; ART, antiretroviral therapy; NRTI, nucleoside analogue HIV reverse transcriptase inhibitor; NNRTI, non-nucleoside analogue HIV reverse transcriptase inhibitor; PI, protease inhibitor; INI, integrase inhibitor.

Table 1. Differences among patients living with HIV with undetectable viral load and persistent low-level viremia.

EPB090

Kaposi sarcoma in ART-treated PLWH and HIV-uninfected people: differences in viral and immune characteristics

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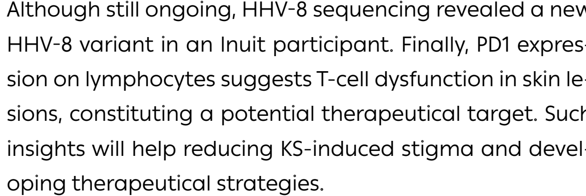
Background: The incidence of HHV-8-induced Kaposi sarcoma (KS) in people living with HIV (PLWH) has dramatically decreased with antiretroviral therapy (ART). However, emergence of KS in ART-treated PLWH with restored CD4 and sustained HIV control is reported, raising concerns on HHV-8 pathogenesis and optimal management.

Methods: We compared ART-treated PLWH with KS (KS ART+) and HIV-uninfected patients with classic KS (KS HIV-). We assessed CD4 and CD8 counts, anti-HHV-8 IgGs, gut permeability (LPS/I-FABP/Reg3) and senescence plasmatic markers (GDF15/suPAR). In PBMCs and skin biopsies, HHV-8 viral loads were quantified by digital-droplet PCR and positive samples are currently sequenced by next-generation sequencing. In skin biopsies, cells were isolated and analyzed by flow cytometry.

Results: 11 KS ART+ and 11 KS HIV- have been recruited. KS ART+ were younger than KS HIV- (53 vs 77 years, p<0.001). Despite similar CD4 counts, KS ART+ had higher CD8 counts (p=0.007) and lower CD4/CD8 ratios (p=0.03). Gut permeability markers were similar while GDF15 and suPAR plasmatic levels were higher in KS HIV- (p=0.01). In PBMCs, HHV-8 DNA was detected in 6/11 KS ART+ while only in 3/11 KS HIV-. Anti-HHV-8 IgG titers tended to be higher in KS ART+ than KS HIV- (p=0.07). In skin biopsies, HHV-8 DNA was detected in all participant and isolated CD4 and CD8 T-cells highly expressed PD1 (>50%) in both groups. Among KS ART+, 3 HHV-8 strains were classified as subtype C and one as subtype A. In KS HIV-, 2 HHV-8 strains were classified as subtype A, 2 as subtype C and one strain, found in an Inuit patient from Northern Canada, constitutes a newly identified variant.

Conclusions: ART-treated PLWH with KS exhibited younger age and higher CD8 counts compared to HIV-uninfected KS patients. HHV-8 control seems altered in KS ART+, with HHV-8 DNA more frequently detected in PBMCs despite higher anti-HHV-8 IgG titers.



Although still ongoing, HHV-8 sequencing revealed a new HHV-8 variant in an Inuit participant. Finally, PD1 expression on lymphocytes suggests T-cell dysfunction in skin lesions, constituting a potential therapeutical target. Such insights will help reducing KS-induced stigma and developing therapeutical strategies.

EPB091

Evaluation of screening algorithms based on HPV testing with partial genotyping for the prevention of cervical cancer among HIV-infected women in resource-limited countries: results of the ANRS 12375 study

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Background: In resource-limited countries, cervical cancer (CC) is the leading cause of cancer death among women living with HIV (WLHIV). The WHO recommended the use of HPV testing for primary CC screening because of its high sensitivity as compared to other screening methods. However, triage is desirable to identify HPV+ women having cervical intraepithelial neoplasia grade 2 or worse (CIN2+) and requiring treatment. In resource-limited contexts, Visual inspection with acetic acid and/or lugol (VIA/VILI) and partial genotyping are both feasible in a single-visit approach (screen-and-treat).

The ANRS-12375 study aimed to assess the performance (sensitivity, specificity), feasibility and benefit of different triaging options to detect CIN2+ lesions: partial genotyping (16/18/45), VIA/VILI alone and VIA/VILI combined with partial genotyping.

Methods: From Nov 2019 to Dec 2021, 2,255 WLHIV aged between 30 and 49 recruited in Abidjan (Côte d'Ivoire [CI], n = 1500), Bobo-Dioulasso (Burkina Faso [BF], n = 422) and Phnom Penh (Cambodia [KH], n = 333) were primarily screened with an Xpert HPV test, followed by VIA/VILI when positive and treatment if required. Relaxed criteria (or ABCD-criteria for **A**cetowhiteness, **B**leeding, **C**oloring, and **D**iameter) were used to identify CIN2+ lesion suring the VIA/VILI. The performance of the triage strategies to identify CIN2+ lesions were evaluated considering histology as standard reference.

Results: High risk-HPV infection was reported in 881 (41%) participants (median age: XX) with significant differences between sites (CI: 47%, BF: 33%, KH: 21%; P<xxx). HPV 16 accounted for 18% of infections and HPV 16/18/45 for 31%.

Among the 533 (60%) HPV+ participants with available histology (all data will be available by July), 15% had CIN2+ lesions, 71% were VIA+ and 31% HPV16/18/45+.

VIA sensitivity , partial HPV 16/18/45 genotyping and their combination as triage were 88% [79-94], 53% [42-63] and 91% [83-96], respectively, while the specificities were 33% [37-28], 73% [77-69], and 25% [36-27] (inter-sites heterogeneity: p=0.04).

Conclusions: Visual inspection after a positive HPV result is a good triage option with high sensitivity to identify women needing treatment even if inter-sites heterogeneity suggests differences in practice. While partial genotyping showed insufficient sensitivity, an algorithm combining partial genotyping and VIA/VILI appears to be the most efficient.

Cardiovascular disease

EPB092

Cardiovascular disease risk in transgender and cisgender women living with and without HIV

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Background: Cardiovascular disease (CVD) is a leading cause of morbidity and mortality among women living with HIV and may be influenced by gender identity and

hormone use. Few studies of CVD risk have included both transgender and cisgender women (TW; CW).

Methods: Harmonized data collected in 2019-2020 from two cohorts, LITE Plus (Black and Latina TW living with HIV) and the Women's Interagency HIV Study (WIHS; CW of mixed HIV serostatus), were used to estimate CVD risk.

The sample was restricted to those ≥ 40 years old, consistent with validity parameters of the American College of Cardiology pooled cohort estimator for Atherosclerotic CVD (ASCVD) risk. The estimator incorporates sex, age, race, cholesterol, blood pressure, diabetes, and smoking status. Female sex was used for all ASCVD estimates in this study. Logistic regression models estimated odds of an ASCVD score > 7.5% (i.e., intermediate or greater 10-year risk) by gender identity, including age, race, ethnicity, HIV status, hormone use, and depression. Multiple imputation accounted for missing data.

Results: The sample included 25 TW living with HIV (TWLH), 1329 CW living with HIV (CWLH) and 521 HIV seronegative CW. Mean age, BMI, cholesterol, and blood pressure did not differ across groups. Among women living with HIV, viral suppression (<200 copies/mL) and mean CD4 count did not differ by gender identity. TWLH had lowest prevalence of anti-hypertensive medication use, diabetes, and depression but highest prevalence of smoking. 64% of TWLH and 5% of both CW and CWLH reported hormone use (contraceptive or hormone replacement). 24% of TWLH had an ASCVD risk score >7.5% (v. 16% each for CW and CWLH). See table for results of bivariate and multivariable regression analyses.

	Bivariate analyses	Multivariable Model
Age (in years)	**1.15 (1.13-1.18)**	**1.16 (1.14-1.18)**
Transgender (ref: cisgender)	0.92 (0.36-2.31)	0.99 (0.33-2.93)
HIV+ (ref: HIV-negative)	0.80 (0.63-1.02)	**0.74 (0.56-0.97)**
White race (ref: Black)	0.81 (0.55-1.19)	**0.59 (0.39-0.91)**
Other race (ref: Black)	0.62 (0.39-1.98)	**0.46 (0.22-0.97)**
Multiracial (re: Black)	1.01 (0.74-1.38)	0.80 (0.55-1.15)
Hispanic (ref: non-Hispanic)	0.78 (0.56-1.08)	1.01 (0.60-1.68)
Hormone use (of any type)	0.72 (0.44-1.17)	1.12 (0.58-2.18)
Depression	**1.32 (1.02-1.72)**	**1.43 (1.07-1.93)**

Conclusions: Gender identity did not predict CVD risk scores. However, CVD risk was higher among TWLH than cisgender women. Studies with larger samples of TWLH are needed.

EPB093

IL-32 isoforms differentially impact coronary artery endothelium functions and potential to recruit inflammatory cells

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Background: HIV-induced inflammation leads to the premature development of cardiovascular diseases (CVD). We have previously shown that interleukin-32 (IL-32), a proinflammatory cytokine that is expressed in multiple isoforms (α, β, γ, D, ε, θ, ζ, η, and small/sm) with different inflammatory potential, is chronically upregulated in HIV-1 infection, even under ART and is associated with CVD. However, the mechanistic role of these different IL-32 isoforms in CVD is yet to be identified.

In this study, we aimed to investigate the potential impact of the different IL-32 isoforms on coronary artery endothelial cells (CAEC), the dysfunction of which is a major driver for atherosclerotic plaque formation.

Methods: Recombinant IL-32 isoforms (α, β and γ; the only commercially available isoforms) were used at 500ng/ml to stimulate primary CAEC (pCAEC/Creative Bioarray). pCAEC dysfunction in response to IL-32 stimulation was measured by studying the upregulation of VCAM-1 and ICAM-1 using flow cytometry, expression of the chemokines CCL2, CXCL1 and CXCL8 using both qRT-PCR (for gene expression) and ELISA for protein expression in supernatant as well as chemoattraction abilities by transwell assays.

Results: IL-32 isoforms showed differential effects on pCAEC. While IL-32β and to a lesser extent IL-32γ, upregulated the expression of ICAM-1 and VCAM-1 ($p=0.0347$ and $p=0.0019$, respectively) in pCEAC, the impact of IL-32α was not significant.

Furthermore, both IL-32β and IL-32γ significantly upregulated the expression of the chemoattractants CCL2, CXCL1 and CXCL8 at the protein level (CCL2: $p=0.002$ and $p=0.002$, CXCL1: $p=0.002$ and $p=0.002$, and CXCL8: $p=0.002$ and $p=0.0039$, respectively).

In contrast, IL-32α significantly downregulated CCL2 ($p=0.0068$) and CXCL1 ($p=0.0020$). In line with these results, classical monocytes isolated with negative selec-

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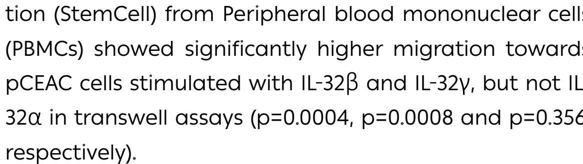

tion (StemCell) from Peripheral blood mononuclear cells (PBMCs) showed significantly higher migration towards pCEAC cells stimulated with IL-32β and IL-32γ, but not IL-32α in transwell assays (p=0.0004, p=0.0008 and p=0.356, respectively).

Conclusions: Our results suggest that IL-32β and IL-32γ isoforms induce coronary artery endothelial cell dysfunction and enhance their potential to recruit inflammatory cells such as monocytes. These IL-32 isoforms are upregulated in HIV infection and likely contributing to endothelial cell inflammation and CVD and may represent a therapeutic target.

EPB094
Lp(a) in people living with HIV

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Background:
Cardiovascular morbidity and mortality have become major concerns in the medical care of people living with HIV. While a lot of traditional and even HIV-specific risk factors are implemented in frequently used scores for cardiovascular risk assessment, the contribution of Lp(a) in people living with HIV is often under-recognized.
This study aimed to describe findings on Lp(a) in a sample of people living with HIV.

Methods: Retrospective analysis from electronic patient files from the ongoing Munich ArcHIV cohort. Cardiovascular risk was assessed using the Framingham score (high risk: > 20%; low- or intermediate risk ≤ 20%). Lp(a) concentrations > 30 md/dL were considered to be elevated. Medians with interquartile ranges and absolute numbers and percentages were used for continuous and categorical variables, respectively.

Results: Overall, 451 people living with HIV were included into this analysis. 376 (83.4%) were male, median age was 50 (IQR: 42; 56) years. Median Lp(a)-concentration was 12.8 (IQR: 5.1, 36) mg/dL. In 134 (29.7%) subjects, Lp(a) concentrations were elevated. Of 223 subjects with low- or intermediate cardiovascular risk, elevated Lp(a) concentration was found in 145 (45.7%). Of these, 55 (37.9%) did not receive lipid-lowering medication, 5 (3.4%) had submaximal doses of a statin, and 12 (8.3%) were on high-dose statins but did not receive ezetimibe.

Conclusions: We found a high prevalence of elevated Lp(a) concentrations in people living with HIV, demonstrating the importance of its consideration in cardiovascular risk assessment. The number needed to test to identify a person with elevated Lp(a) concentrations was 4, while on average 7 people had to be tested to identify one person that might possibly benefit from treatment intensification or intensivation.

EPB095
Silent coronary heart disease in patients on ART: prevalence and risk factors

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Background: Aging among HIV-infected patients is associated with an increase in co-morbidities, including cardiovascular disease. We wished to assess the prevalence and risk factors associated with silent coronary heart disease (SCHD) in well suppressed patients on antiretroviral therapy (ART).

Methods: A retrospective analysis of all consecutive patients who underwent screening for SCHD between November 1, 2015 and March 1, 2021 at the Saint-Louis Hospital in Paris. Patients without a history of coronary heart disease underwent myocardial scintigraphy coupled with exercise testing. Those with a positive scintigraphy had coronarography. SCHD was defined as either significant stenosis on coronarography or a myocardial infarction during follow-up. Baseline risk factors for SCHD were then assessed using univariate analysis.

Results: A total of 475 patients were studied. Most patients were male (87.8%), with a median age of 56 years, and 58.1% were smokers. 71.3% were on ART, with a median CD4 cell count of 500 and 91.6% had a viral load ≤ 50 cp/ml. 19 patients were diagnosed with SCHD, 10 had coronarography stenosis which led to stents and medical treatment and 9 additional patients had a myocardial infarction during follow-up. Myocardial scintigraphy performed better than exercise testing to detect SCHD with sensitivity of 47%, a negative predictive value of 98% and a positive predictive value of 31%.
Smokers (current or former) (RR 3.84 IC95% [1.1 - 13.0], p= 0.02) and patients receiving antiplatelet therapy (RR 3.13 IC95% [1.2 - 7.9], p=0.02) had a increased risk for SCHD.

Conclusions: The prevalence of SCHD among HIV-infected patients with controlled HIV-infection is low and similar to the general population. Smokers and patients receiving antiplatelet therapy for arteriopathy should be screened for SCHD.

EPB096

Arterial remodeling is associated with CD4 T cell count and plasma IL-10 in persons with HIV

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Background: Persons with HIV (PWH) have a higher prevalence of non-calcified coronary plaque compared to their HIV-negative counterparts. Although traditional risk factors are important, they do not fully explain the increased risk and presenting phenotype. We assessed coronary cross-sectional area (corCSA) from non-contrast computed tomography (CT) imaging, a measure of arterial remodeling that may have clinical significance among PWH on long-term antiretroviral therapy (ART).

Methods: We assessed 105 PWH with sustained virologic suppression and a spectrum of cardiometabolic health (37 non-diabetics, 36 pre-diabetics, and 32 diabetics). Participants underwent electrocardiogram gated non-contrast CT scans of the chest to measure the mean corCSA of the proximal left anterior descending artery. Partial Spearman rank correlation adjusted for CVD risk factors (age, sex, smoker status, hypertension, hemoglobin A1C, body mass index, and statin use) was used to assess relationships of corCSA with anthropometric measurements, HIV-related factors, and plasma cytokines (IL-10, IL-6 and IL-1β).

Results: Mean corCSA was similar between the three metabolic groups but higher in individuals with detectable coronary calcium on CT imaging ($p=0.08$). In adjusted models we observed an inverse correlation between corCSA and CD4 T-cell count ($\rho=-0.22$, $p<0.05$) and plasma IL-10 ($\rho=-0.25$, $p=0.03$) but not IL-6 ($\rho=0.13$, $p=0.26$) or IL-1β ($\rho=0.07$, $p=0.58$). We also observed a positive correlation between corCSA with duration of ART ($\rho=0.33$, $p<0.001$), but this was only significant if not adjusted for age.

Conclusions: A larger external coronary artery diameter on non-contrast CT imaging, a combined measure of coronary lumen diameter and wall thickness, was observed in PWH with lower circulating CD4 T cell counts and anti-inflammatory IL-10. Future studies will determine the contribution of atherosclerosis and arterial remodeling to corCSA in PWH.

EPB097

The effect of an HIV pharmacist on cardiovascular risk assessment in a regional HIV clinic: a cohort study

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Background: The adherence to cardiovascular disease (CVD) screening/monitoring guidelines for people living with HIV (PLHIV) by a regional outpatient clinic was assessed before and after the introduction of the HIV pharmacist to the multidisciplinary team.

Methods: This retrospective study included PLHIV actively attending the clinic for their HIV care (defined as 2 or more visits over 2-year study period) and were 40 years or older as at April 1st 2018. For PLHIV without established CVD, compliance to annual CVD risk screening (using Australian CVD risk calculator, based on Framingham) were assessed, including the parameters: documented CVD risk calculation, blood pressure, lipids (total cholesterol AND high-density lipids), diabetes status and smoking status. Adherence was assessed during study period 1 (April 1st 2018 – March 31st 2019; no HIV pharmacist in clinic) and study period 2 (April 1st 2019 – March 31st 2020; HIV pharmacist in clinic).

Results: Of the 73 clinic PLHIV (mean age 47.7 years), 37 were 40 years or older (89.2% male) and 28 did not have established CVD.

Of the patients with no CVD risk score documented, 7 patients in each study period had adequate information available to complete the CVD risk screen but the risk calculation was not documented.

Conclusions: While there was a trend towards improvement of documentation of CVD risk screening in PLHIV by the clinic, lack of annual BP and full lipid panel are common downfalls (lack of onsite pathology, patient and clinician factors all at play). The pharmacist role in meeting comorbidity screening and monitoring guidelines is just one component of overall medication management of our aging PLHIV cohort in ambulatory care.

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Monitoring parameter	Study Period 1 (All≥40yrs, N=32)	Study Period 2 (All≥40yrs, N=37)	p, IRR
BP documented	24 (75.0%)	26 (72.2%)	p= 0.782, IRR = .96 (CI 95%, 0.73 – 1.26)
Any lipids (at least TChol) available?	23 (71.9%)	31 (86.1%)	p= 0.076, IRR = 1.25 (CI 95%, 0.97 – 1.60)
	Study Period 1 (≥40yrs WITHOUT CVD, n=24)	Study Period 2 (≥40yrs WITHOUT CVD, n=27)	
CVD risk calculated (documented)?	2 (8.3%)	7 (25.9%)	p= 0.113, IRR = 3.11 (CI 95%, 0.766 – 12.64)
BP documented	16 (66.7%)	20 (74%)	p= 0.517, IRR = 1.11 (CI 95%, 0.81 – 1.53)
Any lipids (at least TChol) available?	16 (66.7%)	23 (85.2%)	p= 0.091, IRR = 1.28 (CI 95%, 0.96 – 1.69)
HDL included in lipid set	10 (41.7%)	12 (44.4%)	p= 0.844, IRR = 1.07 (CI 95%, 0.56 – 2.02)
Smoking status documented	16 (66.7%)	23 (85.2%)	p= 0.099, IRR = 1.28 (CI 95%, 0.95 – 1.71)
Diabetes status documented	11 (45.8%)	17 (63%)	p= 0.189, IRR = 1.37 (CI 95%, 0.86 – 2.21)

Study Period 1 = April 1st 2018 – March 31st 2019 (no HIV pharmacist in clinic); Study Period 2 = April 1st 2019 – March 31st 2020 (HIV pharmacist in clinic).

Renal disease

EPB098

Impact of HCV treatment on markers of kidney disease among persons with monoinfection and HCV/HIV co-infection

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Background: Chronic hepatitis C virus (HCV) infection causes systemic inflammation and is associated with higher risk of chronic kidney disease (CKD). Uptake of highly curative direct acting antiviral treatment has increased within the past 5 years, reducing HCV-related liver mortality.

However, the impact of sustained virological response (SVR) of HCV on kidney disease has not been rigorously assessed.

Methods: From 2010 – 2020, we enrolled 373 participants (21%,n=77) with neither HIV nor HCV infection, 19% (n=69) with HCV infection only, 27% (n=100) with HIV infection only, and 34% (n=127) with both HCV and HIV infection in Baltimore, Maryland. Participants were non-diabetic and had an estimated glomerular filtrate rate > 45 mL/min/1.73m^2 at baseline.

We collected specimens at annual visits and measured GFR by iohexol disappearance from plasma (iGFR). SVR was defined by HCV RNA below the limits of detection ≥12 weeks from the end of HCV treatment. Outcomes included annualized changes in iGFR and incident stage 3b CKD (iGFR <45). We used generalized estimating equations to model the association between SVR and changes in iGFR (continuous). Incident stage 3b CKD was modeled using Cox proportional hazards, adjusted for sociodemographic and behavioral confounders.

Results: At baseline, the median age was 49.5, 71% male, 90% Black, and 61% were living with HIV. Out of 1,342 study visits with non-missing iGFR, 954 annualized visit changes in iGFR were calculated. Among the 196 individuals with chronic HCV, 116 (60%) initiated treatment during follow-up and achieved SVR. The mean annualized iGFR slopes (standard deviation) among those with SVR and untreated infection were 0.20 (14.5) and -2.83 (15.1) mL/min/1.73m^2 per year, respectively (adjusted slope difference 2.98; 95% CI: 1.03, 4.3, p<0.01).

Among those with HIV, detectable HIV RNA was associated with 1.67 lower annualized iGFR slope difference (95% CI: -3.37, 0.03, p=0.05) compared to undetectable viral load visits. SVR was associated with 64% lower risk of chronic kidney disease progression (adjusted hazard ratio: 0.36 95% CI: 0.09 – 1.44, p=0.15).

Conclusions: SVR in HCV-infected persons and HIV RNA suppression in HIV-infected persons were associated with favorable changes in iGFR slope. SVR was associated with a non-significantly lower risk of progression to stage 3b CKD.

Other non-communicable diseases

EPB099

Epigenome-wide association study of liver function biomarkers identifies albumin-associated DNA methylation sites among male veterans with HIV

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Background: Liver disease (LD) is an important cause of morbidity for people with HIV (PWH) accounting for 13-18% all-cause mortality in this population. Progress in elucidating the biological mechanisms underlying LD has been slow due to the complexity of the many roles the liver plays in homeostasis and metabolism.

Epigenetic factors driving LD in PWH are not fully characterized. We performed an epigenome-wide association study (EWAS) to identify associations between DNA meth-

ylation (DNAm) and biomarkers of liver function—aspartate transaminase, alanine transaminase, albumin, total bilirubin, platelet count, FIB-4 score, and APRI score—in male US veterans with HIV.

Methods: Blood samples and clinical data were obtained for 960 male veterans with HIV from the Veterans Aging Cohort Study (VACS). DNAm associations with each liver biomarker were investigated using the Illumina 450K or EPIC850K array, adjusted for age, race, current smoking, BMI, diabetes, hazardous alcohol use, ever HBV infection, ever HCV infection, ever ART use, CD4+ T cell count, HIV RNA suppression (<200copies/mL), and leukocyte cell-type proportions.

We performed a meta-analysis for DNAm sites identified by both platforms. Associations between four DNAm age acceleration (AA) measures and liver biomarkers were assessed by linear regression after correcting for multiple testing.

Results: Nine DNAm sites mapped to the*TMEM49*, *SOCS3*, *FKBP5*, *ZEB2*, *SAMD14*genes were significantly associated with lower serum albumin levels in the EWAS meta-analysis. No significant associations were detected for the other six liver biomarkers. Higher PhenoAA was significantly associated with lower level of serum albumin (mg/dL) (b= -0.007,*p*-value = 8.6´10^{-4}).

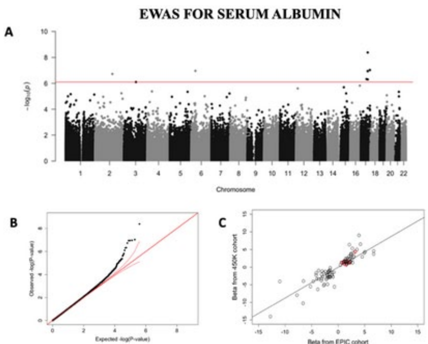

Figure. A Manhattan plot (A) and a Q-Q plot (B) of the distribution of p-values obtained from the meta-analysis of the results of serum albumin across the human genome relative to the expected distribution assuming a null hypothesis. (C) Beta coefficients for top associated CpG sites for serum albumin were consistent between the EPIC and 450K cohorts. Circles representing p-value pairs that were significant after meta-analysis and FDR correction to Q < 0.05 are highlighted in red.

Conclusions: We identified epigenetic associations of both individual DNAm sites and DNAmAA with liver function through serum albumin in men with HIV. EWAS may provide information on LD pathogenesis and generate new hypotheses for predicting LD progression among PWH. Further replication analyses are warranted to confirm the epigenetic mechanisms underlying liver function and LD in PWH.

EPB100

Women with HIV are at higher risk for obstructive lung disease in Kampala, Uganda after pulmonary tuberculosis

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Background: Tuberculosis (TB) and obstructive lung disease (OLD) are major contributors to global years of life lost and are common conditions in people with HIV. HIV and TB are risk factors for OLD. As women without HIV have a predilection for developing OLD as compared to men, we hypothesized that women with HIV (WHIV) are at a higher risk for OLD.

Methods: The Inflammation, Aging, Microbes, and Obstructive Lung Disease (I AM OLD) cohort is a prospective longitudinal cohort study of adults initially presenting with pulmonary TB in Kampala, Uganda. Both HIV-positive and HIV-negative non-pregnant adults are eligible. In this cross-sectional analysis, pre- and post-bronchodilator spirometry (ndd Easy on-PC) with demographic and clinical data were obtained within three months of completion of TB therapy.

The associations between sex and lung function were evaluated using multivariable linear and logistic regressions adjusting for age, BMI, smoking status, HIV status, and biomass fuel exposure. These models were then stratified by HIV status to examine whether these associations differed among men and women with and without HIV.

Results: Of 330 participants, 138 (42%) were women; 121 (38%) were HIV positive and 201 were HIV seronegative. Women represented 50% of the participants with HIV.

Multivariable analysis revealed women with HIV had greater than 4-fold odds of having OLD compared to men with HIV (OR 4.57, 95% CI 1.23, 20.93; p=0.03), with BMI as the most significant covariate.

In contrast, there was no significant difference in OLD between women and men without HIV.

Female versus Male	Obstructed (Post-BD FEV1/FVC < 0.70) vs normal	Restricted (Post-BD FEV1/FVC ≥ 0.70 and FVC < 80 % pred) vs normal
	OR (95% CI; P-value)	
Among HIV+ (N=121)		
Unadjusted	2.77 (0.92, 9.47; 0.08)	1.63 (0.64, 4.26; 0.3)
Adjusted	**4.57 (1.23, 20.93; 0.03)**	2.62 (0.85, 8.83; 0.1)
Among HIV- (N=201)		
Unadjusted	0.4 (0.09, 1.33; 0.17)	1.15 (0.61, 2.16; 0.65)
Adjusted	1.19 (0.21, 6.31; 0.83)	1.89 (0.86, 4.26; 0.12)

Table 1. Multivariable analyses of spirometry stratified by HIV status.

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Conclusions: Our study shows that WHIV in Kampala, Uganda post-TB infection are at a significantly higher risk for OLD as compared to men with HIV. Women without HIV did not demonstrate the same significant increase in risk for pulmonary dysfunction when compared to their male counterparts, suggesting that both sex and HIV-associated risks factor in OLD development.

EPB101

Increasing non-AIDS comorbidity burden among hospitalized persons with HIV (PWH) in the US and Canada

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Background: Recent studies found the primary reason for most hospitalizations among PWH is non-AIDS-related. We investigated the burden among hospitalized PWH of chronic clinical conditions that may be underlying contributors to hospitalization and could affect outcomes like readmission.

Methods: For each calendar year 2008-2018, among hospitalized PWH in care in five cohorts in the NA-ACCORD, we estimated the prevalence at the time of hospitalization of HBV and HCV infection (any history), hypertension (defined as hypertension diagnosis with antihypertensive use), hyperlipidemia (defined as lipid-lowering agent use), diabetes mellitus (DM), stage ≥3 chronic kidney disease (CKD), and multimorbidity (≥2 and ≥3 conditions), using previously validated definitions. Unadjusted and age-adjusted calendar time trends in prevalence were estimated using linear-risk models with GEE.

Results: We examined ≈1000-1100 hospitalized PWH each year, totaling 6785 unique PWH (75% cisgender men, 40% White, 38% Black, 18% with IDU risk). Median ages of hospitalized PWH increased from 47 years (IQR 40-54) in 2008 to 54 (45-61) years in 2018. In 2018, prevalence estimates were 53% (95% CI 49%-56%) for hypertension, 42% (39%-45%) for hyperlipidemia, 25% (22%-27%) for DM, 22% (20%-25%) for CKD, 22% (20%-25%) for HCV, and 7% (5%-8%) for HBV; in addition, 50% (47%-53%) had ≥2 conditions and 31% (28%-34%) had ≥3 conditions.

In unadjusted analyses (Fig. 1A-F), HCV prevalence decreased, HBV prevalence remained stable, and the prevalence of other conditions and multimorbidity increased over the study period. After adjusting for age (not shown), there was no significant change in the prevalence of hypertension or having ≥2 conditions, while other trends were attenuated but similar to unadjusted results.

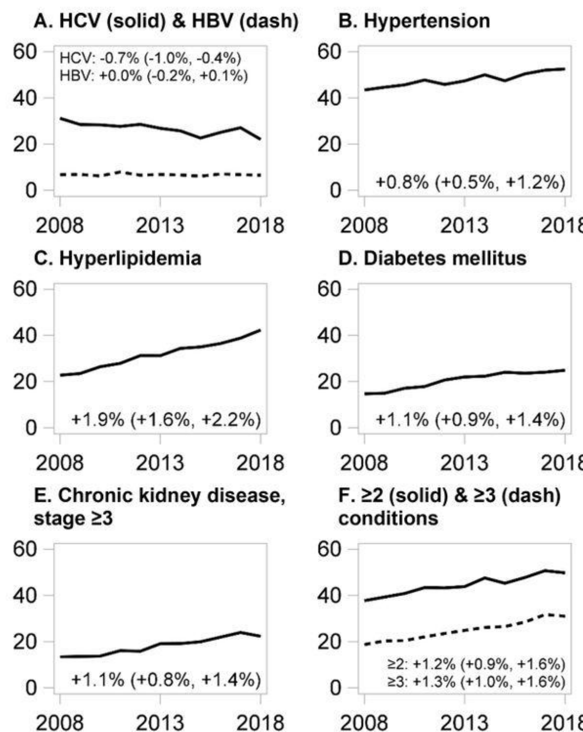

Fig. 1. Prevalence (%) of non-AIDS comorbidities among hospitalized PWH with unadjusted absolute change per year.

Conclusions: Among hospitalized PWH in care, non-AIDS morbidity and multimorbidity (≥3 conditions) increased from 2008 to 2018 even when accounting for age. These trends may reflect both changes in the population of PWH and increased hospitalization risk with greater clinical complexity.

EPB102
Factors associated with lower physical function among adults with HIV in the United States

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Background: People living with HIV (PWH) experience higher risk for frailty and lower physical function compared to adults without HIV. Our objective was to determine which factors may influence measures of physical function among PWH in the United States (U.S.).
Methods: We recruited PWH aged ≥ 18 years to participate in the multisite, observational PROSPER-HIV study. Frailty risk and physical function was assessed with: handgrip strength; 5-time repeated sit/stand chair test; and the Short Physical Performance Battery (SPPB). SPPB summary scores ranged 0 (frail) to 12 (not frail).
Triple-pass24-hour diet recalls were analyzed using NDSR Nutrition Analysis Software to determine total nutrient intake and compute the Healthy Eating Index-2015 (HEI-2015) score.
Physical activity was measured using at least 4 days (≥10 hours per day, including at least one weekend day) of accelerometry. Demographics, medical history, and patient reported outcomes (pain, fatigue, depression) were abstracted from the CFAR Network of Integrated Clinical Systems (CNICS) dataset.
Univariate analyses were performed using Chi-square or Kruskal-Wallis tests to evaluate associations between baseline factors and frailty risk. Multivariable models were created to evaluate the independent association between significant parameters from univariate analyses and frailty risk.
Results: The median age of our 413 participants was 54.0 years (±11.2); 54.5% self-reported Black race; 23.5% were female. 23% of participants were frail or at-risk for frailty. Overall diet quality and physical activity levels were sub-optimal: median HEI-2015 score was 51.4 (average U.S. score 59.0), dietary protein intake was 0.9 gm/kg/body weight (recommended intake 1.2 gm/kg/body weight for PWH), and only 31% spent at least 150 minutes/week in moderate-to-vigorous physical activity.
Participants assessed as frail/at-risk were more likely to be older (p<0.001), consume less dietary protein (p<0.01), and report experiencing at least some pain (p<0.01). Relationships of frailty with HEI-2015 and physical activity were not observed (p>0.05).
Conclusions: Dietary protein intake and pain were associated with frailty risk among PWH. Regardless of frailty status, diet quality and physical activity levels were sub-optimal compared to values typically reported for U.S. adults. Future investigations should study the impact of pain management and dietary protein intake on frailty prevention for PWH.

EPB103
Should HIV control programmes in Africa screen patients with HIV for multi-morbidity: findings from non-communicable diseases screening in the META trial in Dar es Salaam, Tanzania

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Background: About 80% of people living with HIV in sub Saharan are now accessing antiretroviral therapy programmes but screening for non-communicable diseases is not done routinely, despite the sharp rises of these conditions. We screened patients attending HIV clinics in Dar es Salaam Tanzania for raised glycaemia, blood pressure, and other indicators.
Methods: Patients with HIV were screened for a placebo-controlled trial of metformin at 4 tertiary hospitals in Dar es Salaam. Screening was biased towards those of higher body mass index (BMI) to identify patients with pre-diabetes. Patients screened were aged ≥18 years and on antiretroviral therapy for ≥6 months. Two blood pressure measurements were taken, 5 minutes apart and the mean reading was used. Patients returned after overnight fasting for point-of-care fasting blood glucose and 2-hour oral glucose tolerance test.
Results: 1220 participants were invited to fast for 8 hours and have their BP tested and 245 (20.1%) did not return, leaving 975 (79.9%) who were screened. Their median age (interquartile range) of screened participants was 47 (42-54) years and 731/975 (75.0%) were women. Women were younger and had a higher BMI than men (p<0.001). The proportion of overweight or obese participants was, respectively, 38/56 (67.9%), 388/511 (75.9%) and 293/408 (71.8%) in the ≤34, 35-49 and ≥50 years age groups (p= 0.218).
None of the participants reported having pre-diabetes or diabetes. Fasting blood glucose was ≥7mmol/L in 142/975 (14.6%) participants and 129/972 (13.3%) had HbA1c ≥6.5%. OGTT was between 7.8 to 11.0 mmol/L among 313/974 (32.1%, 95% CI 29.2%-35.2%) of participants and ≥11.1 mmol/L among 65/974 (6.7%, 95% CI 5.2%-8.5%).
Among 921 participants who were not known to be hypertensive, 347/921 (37.7%, 95% CI 34.5%-40.9%) had blood pressure of ³140/90 mmHg and 31/921 (3.4%, 95% CI 2.3%-

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4.7%) had blood pressure of ≥180/120 mmHg. Among 18/975 (1.8%) participants with BMI <25 kg/m²and age ≤34 years, 1/18 (5.6%, 95% CI 0.1%-27.3%) had an oral glucose tolerance test ≥11.1 mmol/L and 3/18 (16.7%, 95% CI 3.6%-41.4%) had BP of ≥140/90 mmHg

Conclusions: There is a substantial burden of raised BP and impaired glycaemia among people with HIV, including among younger people, with normal BMI.

EPB104

Prevalence and severity of nonalcoholic fatty liver disease in obese and non-obese patients with and without HIV infection in Asia

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Background: Nonalcoholic fatty liver disease (NAFLD) is usually associated with obesity. However, non-obese NAFLD is prevalent in Asia. Obese and non-obese NAFLD is associated with cardiovascular disease and liver cancer. The burden and factors associated with NAFLD are largely unknown among Asians with HIV.

We investigated the burden and severity of non-obese NAFLD among people living with HIV (PLWH) compared to HIV-negative populations.

Methods: A cross-sectional study of 1,111 PLWH and 609 HIV-negative hospital staff were randomly recruited in Bangkok, Thailand from 2017-2020 for transient elastography with controlled attenuation parameter (CAP). Pregnancy, regular alcoholic drinking (>1 day/week), hepatitis B and C were excluded. NAFLD was defined as CAP >248 dB/m. The Asian body mass index (BMI) cut-off <25 kg/m²was used to define non-obese NAFLD. The outcomes of this study were significant liver fibrosis (fibrosis >7.1kPa) and ASCVD risk ≥7.5%.

Results: HIV-negative were older, had higher BMI and majority were females. For PLWH, median ART was 12 years, CD4 count was 669 cells/mm³, and 95% had HIV RNA <50 copies/ml. NAFLD was significantly higher among HIV-negative participants compared to PLWH (49.6% vs 29.2%), obese group (75.9% vs 55.3%) and non-obese group (29.2% vs 20.0%) among HIV-negative participants and PLWH respectively.

However, liver fibrosis was significantly higher among PLWH compared to HIV-negative participants (13.1% vs 2.9%), obese group (22.5 % vs 4.9%) and non-obese group (8.7% vs 1.2%) among PLWH and HIV-negative participants respectively. ASCVD risk was also significantly higher in PLWH, proportion of ASCVD risk (≥7.5%) were 24.6%, 10.2%, 20.1% and 6.5% among Obese HIV, Obese non-HIV, non-obese HIV and non-obese non-HIV respectively.

In a multivariate model, after age, BMI, diabetes, hypertension, dyslipidemia, CD4 and ARV exposure were adjusted among PLWH, only BMI (≥25 kg/m², adjusted OR=4.3; 95%CI, 3.2-5.9; p<0.001) was significantly associated with NAFLD.

Conclusions: One-third of PLWH had NAFLD, 20% non-obese participants had NAFLD and 55.3% obese participants had NAFLD. HIV-negative participants had higher NAFLD prevalence, partly due to higher BMI.

Nevertheless, significant liver fibrosis and ASCVD risk was prevalent among PLWH, in both obese and non-obese participants. Weight management should be encouraged for both HIV-negative and PLWH populations.

EPB105

Associations between quality of oral health, HIV status, oral health practices and mental health status among adolescents in Nigeria: a cross-sectional study

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Background: Poor oral health is associated with poor general health. Adolescents living with HIV and with poor mental health might be at risk of poorer quality of oral health than their peers.

This study aimed to determine the associations between self-reported HIV status, oral health quality, oral health practices, and mental health among adolescents in Nigeria.

Methods: The was a cross-sectional study that collected data through an online survey administered to 13-19-year-olds in Nigeria. Data was collected on self-reported HIV status (negative, positive, unknown), oral health quality, oral health practices (frequency of toothbrushing, dental service utilization, refined carbohydrates consumption in-between-meals), mental health (depression, anxiety, and self-esteem) between September and October 2020.

Binary logistic regression was conducted to determine associations between the dependent (good quality of oral health) variables and the independent (HIV status, anxiety, depression, self-esteem, age, gender and oral health practices). The level of significance was p>0.05.

Results: There were 1419 complete responses. The mean (SD) age of study participants was 17.10 (1.61) years. A total of 47 (3.3%) respondents were HIV positive, 974 (68.6%) reported quality of oral health, 381 (26.8%) had high levels of anxiety, 119 (8.4%) had high levels of depression and 883 (62.2%) had good self-esteem.
Adolescents who reported "higher frequencies of toothbrushing" (β=2.15: 95% CI; 1.50-3.07, p<0.001) and "higher dental service utilization" (β=2.13: 95% CI; 1.55-2.94, p<0.001), had significantly higher odds of reporting good oral health quality.
Respondents with "unknown HIV status" (β=0.70: 95% CI; 0.52-0.93, p=0.014), "higher levels of refined carbohydrate consumption in-between-meals" (β=0.64: 95% CI; 0.47-0.86, p=0.003), "higher levels of depression" (β=0.96: 95% CI; 0.92-0.99, p=0.030), "higher levels of anxiety" (β=0.91: 95% CI; 0.86-0.95, p<0.001) and "higher self-esteem" (β=0.92: 95% CI; 0.86-0.95, p=0.020) had significantly lower odds of reporting good oral health quality.
Conclusions: Poor mental health and having an unknown HIV status increases the risk for reporting poor quality of oral health. Efforts geared at improving uptake of HIV testing by adolescents and those improving their mental health can positively influence the perception of oral health quality as this may also positively impact their general health in the future.

EPB106

Non-alcoholic to metabolic associated fatty liver disease: cardiovascular implications of a change in terminology in patients living with HIV

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Background: It has recently been suggested that the definition of non-alcoholic fatty liver disease (NAFLD) be changed to Metabolic Associated FLD (MAFLD) to better reflect the complex metabolic aspects of this syndrome.
We compared the ability of MAFLD and NAFLD to correctly identify high CV risk patients, sub-clinical atherosclerosis or a history of major cardiovascular event (MACE) in people living with HIV (PWH).
Methods: Single center, cross-sectional study of PWH on stable anti-retrovirals. NAFLD was diagnosed by transient liver elastography; published criteria were used to diagnose MAFLD (JHepatol.2020;73(1):202-209). Four mutually exclusive groups were considered: low (<7.5%) vs high (>7.5%) ASCVD risk, subclinical CVD (carotid IMT ≥1 mm and/or coronary calcium score >100), and MACE. The association of NAFLD and MAFLD with the CVD risk groups was explored via a multinominal model adjusted for age, sex, liver fibrosis, HIV duration, nadir CD4 and current CD4 cell count.
Results: We included 1249 PWH (mean age 55 years, 74% men, median HIV duration 24 years). Prevalence of overweight/obesity and diabetes was 40% and 18%. Prevalence of NAFLD and MAFLD and overlapping groups are shown in Fig 1A. Fig 1B shows distribution of NAFLD/MAFLD in the 4 patient categories (p-for-trend <0.001).

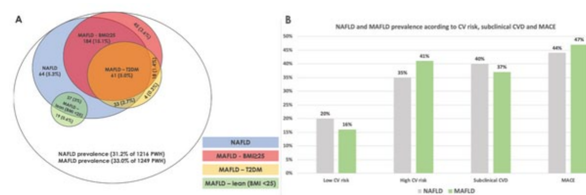

Fig 1.

Both MAFLD and NAFLD were significantly associated with an increased risk of CVD compared to the reference level (ASCVD<7.5%) (all p-values ≤0.004; Fig 2).

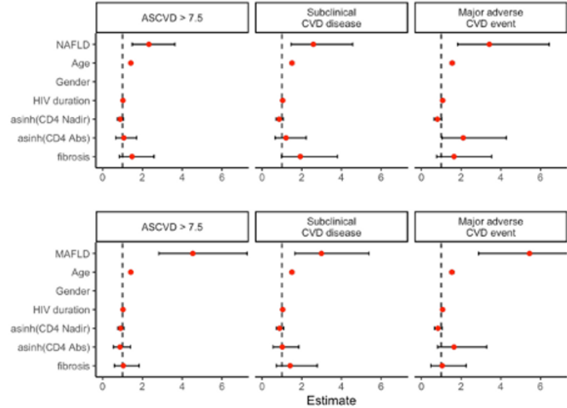

Fig 2.

Conclusions: NAFLD and MAFLD perform equally in detecting CVD or its risk. The proposed change in terminology may not help to identify PWH requiring enhanced surveillance and preventative interventions for cardiovascular disease.

Metabolic, lipid and endocrine complications (including lipodystrophy)

EPB107

Genome-wide association study of plasma cholesterol and triglycerides among people living with HIV

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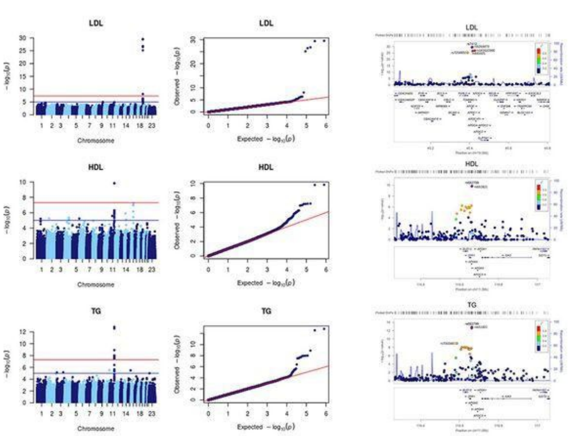
Background: HIV infection and antiretroviral therapy (ART) are closely linked to abnormalities in lipid metabolism. Several candidate gene studies have implicated genetic susceptibility to dyslipidemia among people living with HIV (PLWH); however, these have not been reliably investigated at the genome wide.

Methods: Genome-wide association study (GWAS) was conducted on 2745 PLWH enrolled in the Comparative HIV and Aging Research in Taizhou (CHART) cohort, an ongoing prospective cohort study in Zhejiang province, Eastern China. Low-density lipoprotein cholesterol (LDL-C), high density lipoprotein cholesterol (HDL-C), triglycerides (TG) and total cholesterol (TC) were measured at baseline. Single nucleotide polymorphisms (SNPs) were assayed using the Infinium[TM] Chinese Genotyping Array (CGA-24 v1.0. Illumina[R], 727,000 SNPs). Linear mixed regression analyses were constructed adjusting for age, gender, smoking, alcohol use, waist-hip-ratio and use of ART. Multiple testing was corrected.

Results: Overall, 1627 of 2745 (59.3%) PLWH had dyslipidemia including abnormal LDL-C (72; 2.6%), HDL-C (1297; 47.2%), TG (785; 28.6%) and TC (214; 7.8%). After standardized quality control and adjustment for non-genetic covariate, one novel SNP in APOE (rs72654473, P=2.90e-30) and four known SNPs in NECTIN2 (rs7254892, P=6.97e-26), APOE (rs7412, P=3.89e-30; rs445925, P=3.48e-27) and APOC1 (rs141622900, P=1.55e-27) were associated with a decreased LDL-C level. Two SNPs at minor allele carriers in APOA5 were related to an increased HDL-C level (rs662799, P=1.46e-10; rs651821, P=1.55e-10).



However, one novel SNP in BUD13 (rs3825041, P = 1.08e-8) and eleven known SNPs in APOA5 (rs662799, P = 1.45e-13; rs651821, P = 2.70e-13; rs2266788, P = 1.86e-8), BUD13 (rs10790162, P = 1.16e-8; rs180326, P = 1.05e-8; rs9326246, P = 9.91e-9), ZPR1 (rs2160669, P = 1.97e-8; rs6589566, P = 2.76e-8; rs964184, P = 2.95e-8) and LINC02702 (rs7350481, P = 1.22e-9; rs1558861, P = 3.14e-8) were associated with an increased TG level. These associations remained significant after multiple testing corrections.

Conclusions: Two new SNPs on loci commonly associated with dyslipidemia were identified in this genome-wide association study among PLWH, which may help individualize ART or define new prognostic tests to improve HIV patient care.

EPB108

Incidence of cardiometabolic outcomes among people living with HIV initiated on INSTI versus non-INSTI antiretroviral therapies

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Background: Antiretroviral therapy (ART) containing integrase strand transfer inhibitors (INSTIs) has been associated with weight gain, though there is limited information on associations between ART-related weight gain and cardiometabolic outcomes among people with HIV-1 (PWH).

We therefore evaluated risks of incident cardiometabolic outcomes following INSTI vs. non-INSTI-based ART initiation in the United States (US).

Methods: We conducted a retrospective study using IBM MarketScan Commercial Claims and Encounters, Medicare Supplemental, and Multi-State Medicaid databases (8/12/2012-1/31/2021). Treatment-naïve PWH initiating ART (index date) on/after 8/12/2013 (approval date of first second-generation INSTI, dolutegravir) were included and were censored at regimen switch/discontinuation, end of insurance eligibility, or end of data availability.

We used inverse probability of treatment weights constructed with baseline (12 months pre-index) characteristics to account for differences between INSTI- and non-INSTI-initiating cohorts. Doubly-robust hazard ratios (HRs) obtained from weighted multivariable Cox regression were used to compare time to incident cardiometabolic outcomes by INSTI-initiation status.

Cardiometabolic outcomes included congestive heart failure, coronary artery disease, myocardial infarction, stroke/transient ischemic attack, hypertension, type II diabetes, lipid disorders, lipodystrophy, and metabolic syndrome.

Results: Weighted INSTI and non-INSTI cohorts included 7,059 and 7,017 PWH, respectively (overall mean age=39 years, ~23% female, ~69% with commercial insurance, ~29% with Medicaid insurance). The most common INSTI-containing regimens were elvitegravir-based (43.4%), dolutegravir-based (33.3%), and bictegravir-based (18.4%); the most common non-INSTI-containing regimens were darunavir-based (31.5%), rilpivirine-based (30.4%), and efavirenz-based (28.3%).

Mean ± standard deviation follow-up were 1.5±1.5 and 1.1±0.7 years in INSTI- and non-INSTI-initiating cohorts, respectively. INSTI initiators were somewhat more likely to experience ≥1 incident cardiometabolic outcome (HR=1.13, p=0.076) than non-INSTI initiators; they were substantially and significantly more likely to experience incident congestive heart failure (HR=2.12, p=0.036), myocardial infarction (HR=1.79, p=0.036), and lipid disorders (HR=1.26, p=0.020) than non-INSTI initiators. Other risks were not significantly different (HR range=0.78-1.52).

Conclusions: Among treatment-naïve PWH in the US, INSTI initiation was associated with greater risk of developing congestive heart failure, myocardial infarction, and lipid disorders during a short follow-up period.

With increasing life expectancy among PWH, further research including additional clinical variables and using longer follow-up is warranted to examine the impact of INSTI-containing ART on long-term clinical outcomes.

EPB109

Lipid parameters and lipid modifying agent use in participants initiating F/TAF or F/TDF for PrEP in the DISCOVER trial

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Background: The tenofovir prodrugs TDF and TAF have differing effects on lipid levels, with F/TDF causing reductions in both HDL and LDL cholesterol. DISCOVER, a large Phase 3 randomized controlled trial of F/TAF versus F/TDF for PrEP, provides a unique opportunity to examine the effects of TAF and TDF on lipid parameters in people without HIV.

Methods: We assessed fasting concentrations of total cholesterol (TC), LDL, HDL, and triglycerides in participants who were not on PrEP at randomization. We identified lipid modifying agent (LMA) initiations in the blinded phase from concomitant medication records. We used multivariable logistic regression in a predictive analysis including study arm, age, BMI, race, and baseline history of diabetes, hypertension, cardiovascular disease, or hyperlipidemia as potential predictors of LMA initiation.

Results: Median TC, LDL, and HDL decreased in both arms through week (W) 96, but by a greater degree in the F/TDF arm; TC:HDL ratios were similar (Figure).

Median triglyceride levels increased slightly in the F/TAF arm and decreased slightly in the F/TDF arm. In the F/TAF and F/TDF arms, 113(4.2%) and 121(4.5%) participants were taking an LMA at randomization (P=0.59), and 33(1.5%) versus 26(1.2%) initiated an LMA post-randomization (p=0.36). In the multivariable model, older age (OR=1.31 per 5 years [95%CI 1.17,1.47]), diabetes (OR=4.03 [95%CI 2.02,8.05]), and hyperlipidemia (OR=3.05 [95%CI 1.66,5.62]) were associated with LMA initiation while study arm assignment was not (OR=1.31 [95%CI 0.77,2.23]).

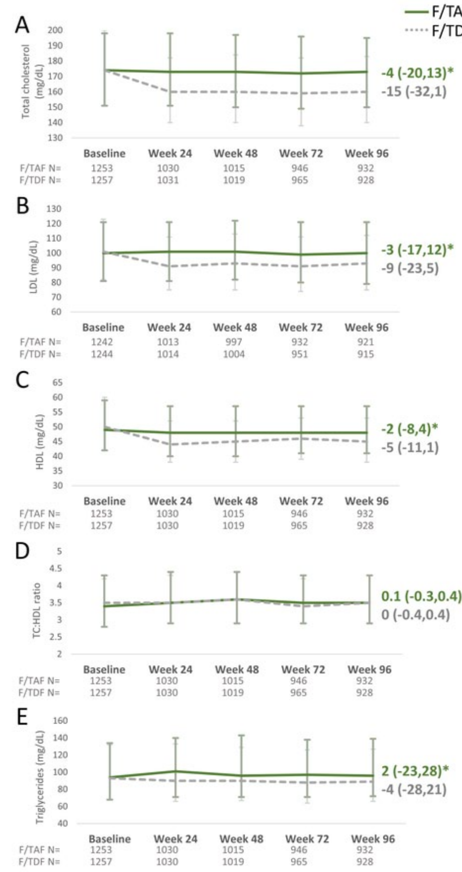

Figure. Median total cholesterol (A), LDL (B), HDL (C), total cholesterol to HDL ratio (D) and triglycerides (E) in participants initiating F/TAF (green solid lines) or F/TDF (grey dashed lines). Error bars represent the interquartile range (IQR). Data labels indicate median (IQR) change at week 96, with asterisks representing p value <0.05 by 2-sided Wilcoxon rank sum test.

Conclusions: Among participants who initiated PrEP in DISCOVER, F/TAF was associated with mostly stable lipids while F/TDF was associated with reductions especially in TC, LDL and HDL. TC:HDL ratio was similar between arms, and clinically significant triglyceride changes were not observed in either arm.

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Study arm assignment was not associated with LMA initiation, while traditional factors including age, diabetes and hyperlipidemia were. These results suggest that daily oral PrEP has only small effects on lipids.

Weight gain

EPB110
Weight gain after antiretroviral therapy initiation in people living with HIV

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Background: Treatment guidelines recommend integrase strand transfer inhibitor (INSTI)-based antiretroviral therapy (ART) for treatment naïve people living with HIV (PLWH).
The study aimed to compare weight changes in treatment naïve PLWH in the United States after initiating INSTI-, non-nucleoside reverse transcriptase inhibitor (NNRTI)-, or protease inhibitor (PI)-based ART.
Methods: Adult (≥18 years) PLWH initiating INSTI, NNRTI, or PI plus ≥2 nucleoside reverse transcriptase inhibitors (NRTI) between 01JAN2014-31AUG2019 were identified in electronic medical records (EMR) linked to prescription drug claims (Rx) data.
Included PLWH had ≥12 months (M) of EMR and Rx data before ART initiation (baseline), ≥6M of continuous ART after initiation (follow-up), ≥1 weight record at ART initiation, and ≥2 weight records during follow-up. PLWH were censored at earliest of: virologic failure (HIV RNA ≥200 copies/ml) after 6M of treatment, switch to different anchor agent class, loss to follow-up, or study period end (29FEB2020).
Weight changes up to 36M follow-up were compared among PLWH on INSTI- vs. NNRTI- and PI-based ART separately using multivariate non-linear mixed effect models.
Results: In the INSTI (N=931), NNRTI (N=245), and PI (N=124) groups, the majority were male (78.2%-81.2%) and overweight/obese (53.6%-61.6%) at baseline; 40.8%-45.2% were African American.
The INSTI vs. NNRTI/PI groups were younger (mean age [years]: 40 vs. 44/45) and had higher baseline prevalence of anxiety (9.1% vs. 6.1%/2.4%) or depression (10.2% vs. 8.2%/3.2%), lower weight at ART initiation (mean: 80.9kg vs. 85.7kg/85.0kg), and higher follow-up TAF usage (55.6% vs. 24.1%/25.8%; all p<0.05).
Multivariate models showed higher follow-up weight gain among PLWH in INSTI vs. NNRTI and PI groups (estimated 36M weight gain: 7.1kg vs. 3.8kg and 3.8kg, both p<0.05; Figure).

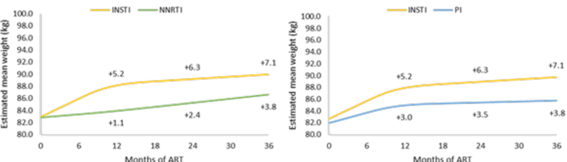

Figure. Weight changes over time among treatment naive PLWH iniated on INSTI-, NNRTI- and PI- based ART‡
ART, antiretroviral therapy; INSTI, integrase strand transfer inhibitor; NNRTI, non-nucleoside reverse transcriptase inhibitor; PI, protease inhibitor.
‡Mean weight changes were estimated from non-linear mixed effects models with restricted cubic splines.

Conclusions: Findings of higher weight gain in treatment-naïve PLWH initiated on INSTI-based regimen compared to non-INSTI-based regimens highlight the need to monitor weight and potential metabolic complications among PLWH starting INSTI-based ART.

EPB111
Can ART switch mitigate or reverse INSTI-related weight or BMI gain in at-risk people living with HIV-1?

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Background: Compared to protease inhibitors (PIs), integrase strand transfer inhibitor (INSTI)-based antiretroviral therapies have been associated with weight/body mass index (BMI) gain, particularly in females, African American (AAs), and Hispanics with HIV-1.
However, there is limited data on weight/BMI changes after switching off INSTIs. This study compared weight/BMI outcomes among at-risk patients switching from an INSTI to either a PI- or another INSTI-based regimen.
Methods: Adult females, AAs, or Hispanics with HIV-1 treated with an INSTI-based regimen who switched to a PI- or another INSTI-based regimen (index: switch date), had ≥6 months of observation pre-index (baseline) and ≥1 weight/BMI measurement in both pre- and post-index periods in the Symphony Health, IDV database (10/1/2014-3/31/2021) were included. Inverse probability of treatment weighting method was used to balance baseline differences between cohorts. Mean weight/BMI change and the proportion of patients with weight/BMI increase from pre-index to 12 months post-index were compared between cohorts using weighted mean differences and odds ratios, respectively.
Results: After weighting, 153 patients in PI (mean age=42.5 years, 60.3% female, mean baseline BMI=29.5 kg/m^2; 74.1% of post-switch regimens contained darunavir, 50.0% contained tenofovir alafenamide [TAF]) and 203 patients in INSTI (mean age=45.5 years, 52.4% female, mean baseline BMI=29.8 kg/m^2, 52.3% of post-switch regimens contained bictegravir, 65.5% contained TAF) cohorts were included.

Among patients with weight/BMI measurements at 9 (PI: N=64; INSTI: N=90) and 12 months (PI: N=46; INSTI: N=84) post-index, weight/BMI increases were observed in the INSTI cohort while decreases were observed in the PI cohort; differences between cohorts widened over time *(Table)*.

		INSTI Cohort		PI Cohort		Adjusted Weighted Mean Difference or Odds Ratio (INSTI vs PI)	p-value
		Pre-index measurement	Post-index measurement	Pre-index measurement	Post-index measurement		
9 months (PI: N=64; INSTI: N=90)	Mean weight, kg	86.77	88.32	95.01	94.79	1.66	0.212
	Any weight gain, n (%)	51 (56.8%)		21 (32.1%)		2.85	0.160
	Mean BMI, kg/m²	30.19	30.79	33.29	33.28	0.57	0.236
	Any BMI increase, n (%)	51 (56.8%)		21 (32.1%)		1.99	0.373
12 months (PI: N=46; INSTI: N=84)	Mean weight, kg	86.55	88.15	91.01	89.42	3.23	0.132
	Any weight gain, n (%)	58 (68.4%)		25 (55.9%)		2.97	0.393
	Mean BMI, kg/m²	30.20	30.84	31.64	31.17	1.12	0.144
	Any BMI increase, n (%)	56 (67.3%)		25 (55.9%)		2.34	0.517

Table.

Conclusions: This is the first study evaluating weight/BMI changes post-INSTI switch among females, AAs, and Hispanics. Among these patients, there was a numerically higher increase in weight/BMI among those switching to another INSTI versus a PI.

Future studies with larger sample sizes and additional follow-up are needed to confirm these findings.

EPB112

Switching ART Regimens is associated with greater weight gain in people living with HIV

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Background: The prevalence of overweight and obesity has increased world-widely within the last decade, and thus in people living with HIV (PLWH). Weight gain in PLWH is complex and influenced by many parameters including antiretroviral therapy (ART) and ART-regime changes over the time.

Description: The ongoing HIV-HEART Aging study (HIVH) is a prospective cohort to assess cardiovascular risk in PLWH in Germany since 2004. Here, weight change was analysed retrospectively over the last 2.5 years. The participants were grouped based on ART-regimen change vs. no regimen changes. Relative (%) and absolute (kg) weight change were assessed and analysed in linear regression models adjusted for age and sex.

Lessons learned: 916 mainly Caucasian participants from HIVH aged 51±10 years were included in the analysis (ART-regimen change within 2.5 years: n=468 [male=375 female=73]; continuous ART-regimen within 2.5 years: n=448 [male=398 female=70]).General and HIV-specific characteristics, including weight change within 2.5 years are shown in Table 1.

Despite comparable mean weight (~80 kg) and body mass index (BMI) (~26) at the start of the observation, the regression models showed an absolute weight change that was 1.35 kg (95% CL 0.17-2.53) higher in individuals with changing ART-regimen compared to participants who did not change their regimen.

Most switches in the ART-regimen were observed towards an integrase strand transfer inhibitor (INSTI)-containing regimen (63%) and involved simplification to a single-tablet-regimen (STR) (59%).

After 2.5 years, the proportion of protease inhibitor (PI)-containing regimens was similar in both groups, while non-nucleoside reverse transcriptase inhibitor (NNRTI)-containing regimens were more frequent in the continuous ART-regimen group.

Conclusions/Next steps: We showed that recent changes to contemporary ART-regimens in HIVH during the last 2.5 years were associated with greater weight gain compared to continuous ART-regimen during the observation period. This difference may be explained by the more frequent use of INSTIs in the switch group.

EPB113

Perceptions of health, body size and nutritional risk factors for obesity among people with and without HIV in South Africa

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Background: As of 2018, South Africa was home to >5 million people with HIV (PWH) on antiretroviral therapy (ART). Recently, the South African HIV treatment program has begun to transition all patients to dolutegravir-based ART, despite evidence that this medication may promote weight gain.

In this study, we sought to first evaluate self-perceptions of health and body size among people with and without HIV and then explore the relationship between nutritional behavior and obesity in PWH in South Africa.

Methods: We used nationally representative, population-based survey data from the South Africa Demographic and Health Survey 2016. This survey included people aged 15-49 years and collected demographics, body mass index

(BMI), HIV serostatus and information about chronic disease risk and behavior. We defined the following groups based on HIV serostatus and BMI: No HIV-Normal Weight, No HIV-Overweight/Obese, PWH-Normal Weight, PWH-Overweight/Obese. People with BMI <18.5 kg/m² were excluded. The primary outcomes were self-assessed health and body size and fried food and sugar-sweetened beverage (SSB) intake.

We first compared outcomes across groups. Finally, we used multivariable logistic regression to evaluate factors associated with accurate assessment of body weight in all participants and to assess the relationship between nutritional behavior and overweight or obesity in PWH.

Results: Half of all participants had a BMI ≥25 kg/m²and there were no significant differences in mean BMI by HIV serostatus. Among those with a BMI <25 kg/m², a greater percentage of PWH rated themselves as being in poor or average health compared to those without HIV (54.7% v. 35.4%, p<0.001). Among those with BMI ≥25 kg/m², a greater percentage of PWH perceived themselves to be „underweight or normal weight" compared to those without HIV (83.7% v. 78.6%, p=0.05).

In adjusted models, PWH had a lower odds of accurately self-assessing their BMI (OR: 0.69, 95% CI: 0.57-0.83). There were no significant differences in fried food or SSB intake by HIV serostatus, but in adjusted models among PWH, SSB was associated with having a BMI ≥25 kg/m² (OR: 1.40, 95% CI: 1.00 – 1.97).

Conclusions: Both self-perception and SSB intake may offer entry points for future interventions to reduce obesity among PWH.

EPB114

Weight change when discontinuing integrase strand transfer inhibitors in people living with HIV

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Background: Integrase Strand Transfer Inhibitors (INSTIs) can cause weight gain, but little is known about whether ceasing INSTI treatment results in weight loss. This study evaluated weight changes associated with different antiretroviral (ARV) regimens, including weight change when discontinuing INSTIs.

Methods: A retrospective longitudinal cohort was conducted using data extracted from the electronic database at Melbourne Sexual Health Centre (MSHC), Australia, from 2011-2021. We calculated the weight change per time unit by ARV regimen using generalized estimated equations (GEE). We adjusted for age, gender, time on ARV and concomitant use of Tenofovir Alafenamide (TAF). GEE was used to analyse risk factors for weight gain when using INSTIs.

Results: There were 1,540 people living with HIV(PLWH) (4,548 person-years) included: 1,292 using INSTIs (mean age 34, 90% males), 147 using protease inhibitors (PIs, mean age 39, 85% males), and 369 using non-nucleoside reverse transcriptase inhibitors (NNRTIs, mean age 37, 82% males). PLWH using INSTIs, PIs, and NNRTIs gained 0.65 kg per year (P<0.001), 0.20 kg per year (P=0.166) and 0.35 kg per year (P=0.008), respectively. When switching off INSTI, there was no significant weight change at 0.82 kg per year (P=0.055), regardless of INSTI types.

Only PLWH who were on raltegravir continued to gain weight after discontinuing raltergravir at 1.30 kg per year (P=0.025). Risk factors for weight gain in INSTI users were age under 60 years, male and concomitant use of tenofovir alafenamide (TAF).

		Sample size	Adjusted Weight change (kg/year)	95%CI	P-value
Overall weight change	INSTIs	1,054	0.65	0.54 to 0.77	<0.001*
	PIs	122	0.20	-0.08 to 0.47	0.166
	NNRTIs	298	0.35	0.09 to0.62	0.008*
Weight change when discontinuing INSTIs	INSTIs	53	0.82	-0.02 to 1.65	0.055
	Dolutegravir	31	1.04	-0.19 to 2.25	0.097
	Bictegravir	5	0.47	-4.87 to 5.82	0.861
	Elvitegravir	10	1.59	-0.85 to 4.02	0.201
	Raltegravir	7	1.30	0.16 to 2.43	0.025*

Data is represented as kilogram weight change per year. Age, gender, time on ARV and concomitant use of TAF were adjusted. Kg/year; Kilogram change in weight per year, CI; Confidence intervals, INSTIs; Integrase strand transfer inhibitors, PIs; Protease inhibitor, NNRTIs; Non-nucleoside reverse transcriptase inhibitors *P<0.05

Table.

Conclusions: The weight gain after INSTI use in PLWH does not appear reversible to the pre-INSTI level. Careful observation of weight after INSTI use and early initiation of strategies to avoid weight gain are important to prevent permanent weight gain and associated morbidity.

EPB115

Weight gain after non-nucleoside reverse transcriptase-to-integrase inhibitor switch in the United States

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Background: This retrospective study assessed the impact of switching to integrase strand transfer inhibitor (INSTI)- from non-nucleoside reverse transcriptase inhibitor (NNRTI)-based antiretroviral therapy (ART) on weight in treatment-experienced people living with HIV (PLWH).

Methods: Adult (≥18 years) PLWH treated with NNRTI+≥2 nucleoside reverse transcriptase inhibitors (NRTI) and those who switched from NNRTI- to INSTI+≥2 NRTIs (IN-

STI group) were identified between 01JAN2013-29FEB2020 in electronic medical records (EMR) linked to prescription drug claims (Rx). Included PLWH had ≥6 months (M) of NNRTI treatment before switch (index date) in INSTI group and before the sham index date assigned to PLWH without switch (NNRTI group). PLWH were excluded if viral load (VL) ≥200 copies/mL during 6M pre-index (baseline) or post-index (follow-up) period.
All PLWH had ≥12M of baseline EMR and Rx data, ≥6M of continuous follow-up ART, and ≥1 weight record at baseline and 12(±6)M follow-up. PLWH were censored at the earliest of: VL ≥200 copies/mL after 6M follow-up, index anchor class discontinuation, TAF to non-TAF NRTI switch, loss to follow-up, or 29FEB2020.
The association between NNRTI to INSTI switch and ≥5% weight gain at 12M follow-up was assessed using multivariable logistic regression.
Results: The INSTI (N=501) and NNRTI (N=614) groups (mean age: 48.8-49.7 years; 78.0-78.3% male; 36.1-37.8% African American) had mean baseline weight of 84.8-86.2kg. The INSTI vs. NNRTI group had higher baseline prevalence of diabetes (13.6% vs. 8.6%) and dyslipidemia (39.9% vs. 27.9%) and follow-up TAF usage (49.9% vs. 1.8%; all p<0.05). The INSTI vs. NNRTI group had higher frequency (33.5% vs. 20.7%; Figure) and odds of ≥5% 12M weight gain (odds ratio [95% confidence interval]: 1.73[1.24, 2.43]).

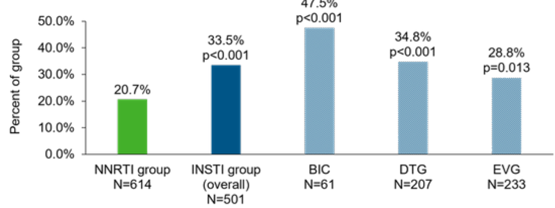

Figure. Frequency of ≥5% weight gain at 12 months among PLWH switching from NNRTI- to INSTI-based ART and those continuing NNRTI-based ART.
ART, antiretroviral therapy; BIC, bictegravir; DTG, dolutegravir; EVG, elvitegravir; INSTI, integrase strand transfer inhibitor; NNRTI, non-nucleoside reverse transcriptase inhibitor; PLWH, people living with HIV.
Note: P-values are from bivariate comparisons of the frequency of ≥5% weight gain in the overall INSTI group and specific INSTI drug groups vs. NNRTI group; RAL data not presented due to small sample size (N=7)/

Conclusions: The observed weight gain following switch from NNRTI- to INSTI-based ART highlights the need for alternative ART regimens for PLWH requiring switch from NNRTI-based ART to reduce the risk of potential metabolic complications.

EPB116
Change in weight and BMI associated with switching to bictegravir/emtricitabine/tenofovir alafenamide vs. a dolutegravir-based regimen among a prospective longitudinal cohort of virologically suppressed adults living with HIV

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Background: Increased weight and BMI have been observed among treatment-naïve-and-experienced patients initiating bictegravir (BIC) and dolutegravir (DTG). Here, we report change in weight and BMI among patients switched to a BIC vs. DTG-based regimen (DBR) through the first 48 weeks compared to 2 years prior to switch.
Methods: Data on demographics, clinical characteristics, weight, and BMI are collected from virologically suppressed adults switched to BIC/emtricitabine(F)/tenofovir alafenamide (TAF), F/TAF plus DTG, DTG/abacavir (ABC)/lamivudine (3TC), DTG/rilpivirine (RPV) and DTG/3TC 2 years prior to switch through 144 weeks post switch. Linear spline models were fit to estimate and compare the trajectories of weight and BMI changes observed pre-and-post-switch.
Adjusted piecewise linear mixed-effects models were fit to examine factors associated with weight and BMI change pre-and-post-switch.
Results: Of 956 enrolled, 673 switched to BIC/F/TAF, 148 switched to F/TAF plus DTG, 51 switched to DTG/ABC/3TC, 48 switched to DTG/RPV and 36 switched to DTG/3TC. At baseline median age was 53 years, 15% were female, 45% were non-white, median weight was 85 kg, and median BMI was 27.9 kg/m^2.
At Week 48, switching to BIC/F/TAF vs. a DBR were both associated with lower annualized weight gain post-switch (-0.59 kg/year vs. -0.13 kg/year respectively, p=0.45), with similar trends observed for changes in BMI.
Compared to switching from integrase strand transfer inhibitors (INSTIs), switching from efavirenz (EFV) was associated with significantly higher annualized weight gain post-switch (+3.11 kg/year, p<0.001), whereas switching from RPV was associated with significantly lower annualized weight gain post-switch (-2.17 kg/year, p=0.022).
There was no significant difference in annualized weight gain post-switch among those switching from other non-nucleoside reverse transcriptase inhibitors and protease inhibitors compared to those switching from INSTIs.
Male sex, baseline CD4 ≥200 cells/mm^3, and duration of HIV infection >5 years were the only evaluated factors associated with significantly higher annualized weight gain post-switch.

Conclusions: In this real-world cohort, switching to a BIC vs. DBR were both associated with lower annualized weight gain post-switch that was not significantly different at Week 48; however, patients switching from EFV gained significantly more weight, while those switching from RPV gained significantly less weight post-switch compared to those switching from INSTIs.

EPB117

Preferences for weight gain compared with other antiretroviral therapy side effects among people living with HIV: a discrete choice experiment

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Background: Antiretroviral (ARV) side effects are a critical determinant of adherence among people living with HIV (PLWH). Integrase Strand Transfer Inhibitors (INSTIs) are the most commonly used ARV but have recently been reported to cause weight gain. We aimed to determine the relative importance of weight gain compared to other ARV side effects for PLWH.

Methods: We conducted a discrete choice experiment (DCE) survey to explore PLWH's preferences for eight short-term side effects (i.e. weight gain, nausea, headache, dizziness, diarrhoea, depression, trouble sleeping and concentrating) and for four long-term side effects (i.e. long-term weight gain, risks of heart attack, kidney problems and bone fracture).

We sent a link to an anonymous survey through short message service (SMS) and postcards to PLWH attending Melbourne Sexual Health Centre (MSHC) and the Alfred Hospital in Victoria, Australia, between July and August 2021. The choice data were analysed using random parameter logit (RPL) and latent class (LCM) models.

Example question: If you only had the choice between Medication A or Medication B with the following side effects, which would you prefer?

	Medication A	Medication B
Weight gain	You gain an extra ten kg in the next five years	You gain an extra five kg in the next five years
Risk of heart attack	You have a slightly higher risk compared to people your age	Same as people your age
Risk of a broken bone	You have a slightly higher risk compared to people your age	You have a much higher risk compared to people your age
Risk of kidneys not working normally	Same as people your age	You have a much higher risk compared to people your age

Results: A total of 335 respondents were included: most were male (88.1%), and the mean age was 49.7 years. In the RPL analyses, PLWH ranked the relative importance of short-term ARV side effects as follows (from most important to least important): depression, weight gain, headache, diarrhoea, sleep, nausea, fatigue; and for long-term side effects as follows: risk of heart attack, kidney problem, weight gain and risk of bone fracture.

In the LCM analyses, 23.9% were most sensitive to short-term weight gain, while 16.0% were most sensitive to long-term weight gain.

Conclusions: Overall, weight gain was the second most important among eight short-term side effects and the third most important among four long-term side effects in a cohort of Australian PLWH.

However, there was a significant minority who were most sensitive to weight gain as a side effect of ARVs. We recommend that clinicians should actively discuss the possibility of weight gain for all PLWH taking ARVs.

EPB118

Longitudinal analysis of weight change in HIV-1 treatment-naïve and -experienced people living with HIV (PLWH) initiating/switching to an NNRTI- or InSTI-based antiretroviral therapy in four large cohort studies

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Background: We analysed weight change from baseline (BL) to 12 months (12M) between PLWH on non-nucleoside reverse transcriptase inhibitors (NNRTIs) or integrase strand transfer inhibitors (InSTIs) and assessed the role of the nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs) backbone (emtricitabine/tenofovir disoproxil-fumarate [FTC/TDF] or FTC/tenofovir alafenamide [FTC/TAF]).

Methods: Linear mixed models were used to estimate early weight change using data from four Gilead-sponsored, post-authorisation, observational HIV cohort studies (2010 to 2020), accounting for selected confounders in treatment-naïve (TN) and -experienced (TE) participants.

Results: 2,666 participants were included in the analysis (Table 1). TN on InSTI-based regimens had higher predicted mean weight gains at 12M than those on NNRTIs, +1.9kg (+FTC/TDF) to +3.1kg (+FTC/TAF) vs +1.2kg (+FTC/TDF) to 1.1kg (+FTC /TAF) respectively. Only the 95%CI for the +FTC/TDF means did not overlap (Figure 1a/b).Among TE, no differences in predicted mean weight change were observed between NNRTI and InSTI by NRTI backbone, and all 95%CI overlapped (mean weight change range at 12M: +1.0 to +1.5kg, Figure 1c/d). Switching from FTC/TDF to FTC/TAF led to greater mean weight increases (+1.8 NNRTI-based and +1.9kg InSTI-based), compared to +1.3kg without switching (NNRTI/InSTI-based); however, the 95% CI between the no-switch and FTC/TDF to FTC/TAF-switch overlapped.

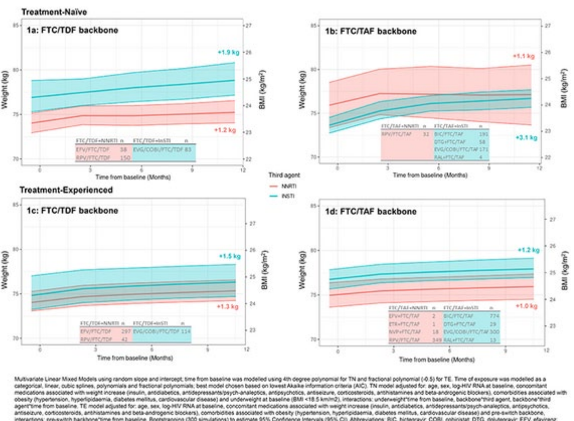

Figure 1. Predicted mean weight (kg) and BMI (kg/m²) change over 12 months follow-up in Treatment-Naive and Treatment-Experienced by third agent (InSTI vs NNRTI) and backbone (FTC/TDF vs FTC/TAF).

	TN - NNRTI (n: 218, 30%)	TN - InSTI (n:509, 70%)	TE - NNRTI (n: 703, 37%)	TE - InSTI (n: 1230, 63%)
Sex: Male, n (%)	195 (89.5)	462 (90.8)	619 (87.3)	1032 (83.9)
Age (years) – median (Q1 - Q3)	39 (31 - 44)	37 (30 - 47)	45 (35 - 53)	48 (39 - 55)
ART backbone: FTC/TDF, n (%)	188 (86.2)	83 (16.1)	339 (47.8)	114 (9.3)
FTC/TDF to FTC/TAF Switch: No, n (%) *			346 (48.8)	568 (46.2)
FTC/TDF to FTC/TAF Switch: Yes, n (%)			343 (48.4)	520 (42.3)
Baseline weight (kg) - median (Q1 - Q3)	75.0 (68.0 - 85.0)	72.0 (65.0 - 81.2)	74.5 (67.0 - 83.0)	76.0 (67.0 - 85.4)
BMI (kg/m2) - median (Q1 - Q3)	23.5 (21.8 - 25.6)	23.1 (21.3 - 25.4)	23.8 (21.6 - 26.0)	24.7 (22.2 - 27.5)

*Switching categories refer to pre-current NRTI; No switch category includes participants whose NRTI remained stable on either FTC/TDF (emtricitabine/tenofovir-disoproxil-fumarate) or FTC/TAF (emtricitabine/tenofovir-disoproxil-fumarate); ABC (abacavir) to FTC/TAF was included NNRTI (n: 20, 2.8%) and InSTI (n: 142, 11.5%). Abbreviations: InSTI, integrase inhibitors; NNRTI, non-nucleoside reverse transcriptase inhibitors. Body mass index (BMI) categories were defined as underweight, <18.5 kg/ m²; normal, ≥18.5 to <25 kg/ m²; overweight, ≥25 to <30 kg/m²; and obese, ≥30 kg/ m².

Table 1: Baseline demographic and clinical characteristics of Treatment-Naïve (TN, n: 727) and -Experienced (TE, n: 1939) participants by NNRTI- and InSTI-based antiretroviral therapy.

Conclusions: 12M mean weight change varied by treatment status, third agent, backbone, and pre-switch backbone. Compared to NNRTI, InSTI-based regimens had greater weight change in TN; however, no differences by third agent were observed in TE. The smaller increases on F/TDF vs F/TAF are consistent with the existing literature documenting a weight suppressive effect of FTC/TDF.

EPB119

Weight changes and pregnancy outcomes among pregnant people living with HIV in use of integrase inhibitors initiated before or after conception: a cohort study

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Background: There is scant data on weight changes (WC) and their association with unfavorable pregnancy outcomes among pregnant people living with HIV (PPLHIV) using integrase inhibitors (II). The P1081 and 2010 studies were RCTs on this subject. However, it is important to assess these issues in real world studies.

The objective of this cohort study is to compare weight gain (WG) and its association with unfavorable pregnancy outcomes in PPLHIV who initiated II before or after conception.

Methods: Retrospective cohort study of WC and obstetric/neonatal outcomes among PPLHIV attending a Prevention of Mother-to-Child Transmission reference center in Brazil from 2018-21, comparing participants who conceived in use of II to those initiating use during pregnancy.

We classified WG based on Institute of Medicine guidelines as low (<0.18 kg/week), normal (≥0.18 to ≤ 0.59 kg/week), or high (> 0.59 kg/week). II regimens consisted of a raltegravir or dolutegravir backbone with two NRTIs. Continuous variables were analyzed with a Kruskal-Wallis test and count data with Chi-squared tests in SPSS 19.

Results: 186 PPLHIV met the eligibility criteria and were included: 48% used dolutegravir, 52% raltegravir. Participants who conceived on II used it for 61 weeks through delivery, versus 22 weeks for those who initiated II after conception (p<0.001) (Table 1).

Near delivery HIV VL was undetectable for all groups. In the baseline BMI ≤ 25 subgroup, the proportion of treatment-naïve participants experiencing high WG (33.3%)

was greater than in the treatment experienced group (13.6%) (p=0.032). No significant differences were observed in obstetric/neonatal outcomes among groups.

	Conceived in use of II, baseline BMI ≤25 (N=22)	Initiated II in pregnancy, baseline BMI ≤ 25 (N=45)	p	Conceived in use of II, baseline BMI > 25 (N=36)	Initiated II in pregnancy, baseline BMI > 25 (N=83)	p
Median baseline log$_{10}$HIV RNA copies/mL (IQR)	0 (0-1.74)	3.78 (3.04-4.53)	<0.001	0 (0-1.15)	3.84 (3.26-4.42)	<0.001
Median gestational age at baseline (IQR)	13 (9-17)	20 (14-25)	0.006	18 (6-24)	18 (9-27)	0.66
Median near delivery log$_{10}$HIV RNA (IQR)	0 (0-0)	0 (0-1.61)	0.15	0 (0-0)	0 (0-0.81)	0.35
Duration of II use up to delivery (weeks)	61 (24-97)	22 (17-26)	<0.001	61 (30-93)	22 (17-28)	<0.001
Low WG during pregnancy, N(%)	5 (22.7%)	2(4.4%)	0.032	13 (36.1%)	25 (30.1%)	0.81
Normal WG, N (%)	14 (63.6%)	28 (62.2%)		17 (47.2%)	43 (51.8%)	
High WG, N (%)	3 (13.6%)	15 (33.3%)		6 (16.7%)	15 (18.1%)	
Composite adverse obstetric/ neonatal outcome*, N (%)	4 (18.2%)	13 (28.9%)	0.344	9 (25%)	8 (9.6%)	0.28

Table 1. Weight gain and pregnancy outcomes.
**Prematurity < 37 weeks, birth weight < 2500 g, or small for gestational age.*

Conclusions: In this cohort, PPLHIV who entered treatment during pregnancy with BMI ≤ 25 experienced significant WG using II. Such gain was not observed in participants who conceived using II or treatment-naïve PPLHIV with baseline BMI > 25.

EPB120
Association between Dolutegravir use and weight gain among adults in Tanzania

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Background: Dolutegravir (DTG)-based regimen is recommended by World Health Organization as first line antiretroviral Therapy (ART) for people living with HIV (PLHIV). One of the adverse event associated with DTG is weight gain. We analyzed routine HIV data in Tanzania to determine the factors associated with weight gain for adults on ART in Tanzania between 2018 and 2020.

Methods: Retrospective cohort study for adults (above 20 years of age) enrolled in HIV care and treatment clinics with electronic database from 1st January 2018 until 30 September 2020. The follow up was for maximum of 33 months from ART start. The intervention group were those who started DTG containing regimen as their first ART regimen and continued using DTG regimen throughout the study period whereas the control group were individuals who started with a regimen without DTG as their first ART regimen. Weight gain at six (6) months of follow-up, we defined weight gainers (WGs) as those clients whose weight increased by at least 10% from baseline.

Results: A total of 316, 534 clients were included in the analysis of these 157,563 (49.78%) started DTG as their first ART regimen, whereas 158,971 (50.22%) were in group of ART regimen without DTG. On multivariable analysis PL-HIV in DTG contain regimen groups had higher odds of becoming weight gainers as compared to clients in Non DTG regiment. Group (AOR=1.18, 95% :1.15, 1.21).

This association was also highly significant (p-value <0.001) at 5% level. Female reported to have significantly greater odds of gaining more weight as compared to males when corrected for other factors (AOR=1.15, p<0.001).

Moreover, clients with CD4 cell counts of all groups less than less 500 were significant more likely to become weight gainers in six months of follow-up as compared to those with CD4 counts of at least 500.

Conclusions: DTG use was associated with weight gain in the study population and was more among those with lower immunity. Close monitoring is necessary to identify those who may need to be switched to other regimens due to excessive weight gain. It is also importance to adopt mechanisms for early HIV diagnosis before advanced immunocompromise.

EPB121
Bictegravir-containing ART regimens and weight gain in children with perinatal HIV

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Background: Integrase strand transfer inhibitors (INSTI) have been associated with weight gain in adults living with HIV, but there is limited data in children with perinatal HIV (CPHIV). Currently, an increasing number of children are being initiated on Biktarvy (bictegravir/emtricitabine/tenofovir alafenamide), a fixed-combination tablet approved for use in children weighing over 25kg.

With the widening availability of BIC-containing regimens for children and an increasing incidence of pediatric obesity, there is an urgent need to understand the impact of INSTI-containing regimens on weight gain in CPHIV.

Methods: We performed a retrospective analysis of weight gain in CPHIV on INSTI-containing regimens, 24 on BIC and 17 on other INSTIs. Change in weight (kg) and body mass index (BMI,kg/m2) at 52 and 78 weeks after initiation were analyzed with a repeated measures one-way ANOVA test. To compare the weight gain among those on BIC and other INSTIs, we performed a mixed model regression adjusted for baseline BMI% and age.

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Results: CPHIV on BIC were a median age of 12.5 (IQR,10-15) and had median weight increases of 6kg at 52 weeks (p=0.0004) and 6.5kg at 78 weeks (p=0.0004). BMI increased by 2.5 at 52 weeks (p=0.002) and 2.3 at 78 weeks (p=0.004). BMI% increased by 12% and 7% at 52 (p=0.002) and 78 weeks (p=0.03). Z-score increased by 0.5 at 52 weeks (p=0.002) and 0.3 at 78 weeks (p=0.02).

The mean BMI% for the BIC group was 12.03 units greater than that of Other INSTIs at 52 weeks (p=0.06) while adjusting for baseline BMI percentile and age, but there was no significant difference at 78 weeks.

Conclusions: CPHIV on Bictegravir-containing ART regimens exhibit significant increases in weight, BMI, BMI-percentile, and Z-score at 52 and 78 weeks. The increases in BMI-percentile and z-score suggest that the weight gain is more than expected with normal growth.

Our study is limited by a small cohort. It should also be considered that studies in adults have shown that TAF contributes to weight gain in PLWH and this may be contributing to weight gain in CPHIV on BIC/FTC/TAF. Further investigation is needed to evaluate the effects of BIC on weight gain in CPHIV.

Hepatic complications (e.g., NASH)

EPB122

Non-invasive identification of severe NAFLD and risk stratification of clinical outcomes using Fibroscan-AST (FAST) score in 1683 people with HIV

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Background: Non-alcoholic fatty liver disease (NAFLD) is very frequent in people with HIV (PWH). Guidelines recommend identification of PWH at high risk for NAFLD-related fibrosis and clinical outcomes. The FibroScan-AST (FAST) score was developed to identify patients with nonalcoholic steatohepatitis (NASH) and significant fibrosis, associated with higher risk of end-stage liver disease. We employed the FAST score to identify PWH with severe NAFLD and for risk stratification of clinical outcomes.

Methods: FibroScan was performed in PWH without viral hepatitis coinfection or alcohol abuse from three large prospective cohorts.

We compared prevalence of FAST>0.35 (90% sensitivity and 50% specificity for NASH with significant fibrosis) and FAST≥0.67 (50% sensitivity, 90% specificity). Incidence of liver-related outcomes (ascites, encephalopathy, variceal bleeding, hepatocellular carcinoma) and extra-hepatic outcomes (cancer, cardiovascular disease) was evaluated by survival analysis. The performance of FAST score in predicting clinical outcomes was compared with simple fibrosis biomarkers.

Results: We included 1683 PWH (mean age 50.1 years, 74.5% male). Prevalence of FAST>0.35 and FAST≥0.67 was 8.1% and 1.5%, respectively. At baseline, on multivariable logistic regression higher BMI (aOR 1.15, 95% CI 1.10-1.20), longer duration of HIV infection (aOR 1.05, 95% CI 1.02-1.07), lower CD4 (aOR 0.99, 95% CI 0.99-0.99) and male sex (2.11, 95% CI 1.22-3.65) were associated with FAST >0.35. During a median follow-up of 3.5 years, incidence of liver-related and extra-hepatic outcomes was 7% and 11.5%, respectively. Incidence of liver-related outcomes increased according to FAST score category (see Figure).

On multivariable Cox regression analysis, FAST score >0.35 was an independent predictor of liver-related outcomes (aHR 4.44, 95% CI 1.66-11.9). The area under the curve to predict liver-related outcomes was as follows: FAST score 0.83; FIB-4 0.76; NAFLD fibrosis score 0.77; FibroScan 0.78.

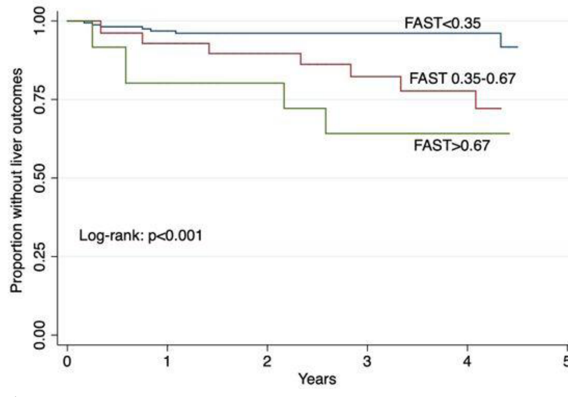

Figure.

Conclusions: A significant proportion of PWH are at risk for severe NAFLD. FAST score predicts liver-related events and can help risk stratification.

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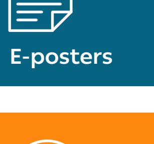

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EPB123
Incidence and disease severity of non-alcoholic fatty liver disease among people living with HIV in Thailand

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Background: Non-alcoholic fatty liver disease (NAFLD) has significant clinical implications since it can increase the risk of cardiovascular disease and hepatocellular carcinoma without progression to liver cirrhosis.

We estimated the incidence and outcome of NAFLD among people living with HIV (PLWH) in Thailand to better understanding NAFLD disease burden, so, appropriate monitoring and prevention can be addressed.

Methods: PLWH who were not pregnant and who did not drink alcohol were enrolled.Fibroscan with controlled attenuation parameter (CAP) were performed at HIV-NAT, Thailand during 2013-2021. Participants with at least 2 fibroscan results were analysed. NAFLD was defined as CAP>248 dB/m. Outcome of interests were significant liver fibrosis (fibrosis ≥7.2KPa), chronic kidney disease (CKD-EPI< 60 ml/min/1.73m^2), and atherosclerotic cardiovascular disease (ASCVD) risk score >7.5% using pooled equation.

Results: Of 816 PLWH (67% males, 25% HBV, 16% HCV), 236 (29%) had NAFLD at first CAP measurement. Median follow-up time of 2.2 (IQR, 1.5-3.3) years, 127 PLWH (22%, 127/580) developed NAFLD at second CAP measurement. The incidence of NAFLD was 9.1 (95%CI 7.7-10.8), 8.5 (6.8-10.7), 8.4 (5.2-11.3) and 12.4 (8.5-18.3) per 100 person-years (PYS) for overall, HIV mono-, HBV- and HCV-co-infected participants, respectively.

In multivariate analysis, male [hazard ratio, HR: 1.71 (95%CI 1.12-2.60), p 0.013]; age >50 years [HR: 1.57 (95%CI 1.02-2.41), p 0.038]; and BMI >23 kg/m^2 [HR: 1.24 (95%CI 1.17-1.32), p <0.001] were significantly associated with NAFLD. Median liver stiffness (IQR) at the second fibroscan was 5.0 (IQR 4.2-6.1), 5.1 (4.2-6.5) and 5.6 (4.8-7.8) kPa for HIV mono-, HBV- and HCV-co-infected participants, respectively.

The incidence of significant liver fibrosis was 4.1 ,6.6, and 9.4 per 100 PYFU for HIV mono-, HBV- and HCV-co-infected participants, respectively. ASCVD risk score >7.5% and chronic kidney disease at the last visit was higher among NAFLD (8.8 % vs 5.7%; p=0.011) and (16.7% vs 8.6 %; p=0.005), respectively.

Conclusions: In this Asian PLWH cohort, almost one third had fatty liver disease at first fibroscan and one fifth developed NAFLD in a median of 2.2 years. The routine evaluation of fatty liver disease and the monitoring of its impact on cardiovascular diseases risks and other comorbidities should be integrated in HIV care.

Other ART complications and adverse reactions

EPB124
Low incidence of adverse drug reactions associated with generic-equivalent antiretroviral product substitutions in a publicly-funded HIV treatment program

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Background: Generic antiretrovirals (ARVs) provide low-cost alternatives to brand-name products. In British Columbia Canada, persons living with HIV (PLWH) receive ARVs free-of-charge through a publicly-funded HIV Drug Treatment Program (DTP). Brand-name products are automatically switched to available generic equivalents in accordance with Health Ministry policies.

We describe the incidence and type of adverse reactions attributed to generic ARVs (generic product substitution issues, "PSIs") reported to DTP Pharmacovigilance.

Methods: We included PLWH age ≥19 years who received ≥1 commonly used generic ARV between 01-Jun-2017 and 30-Jun-2021: abacavir-lamivudine (ABC-3TC), emtricitabine-tenofovir disoproxil fumarate (FTC-TDF), efavirenz-FTC-TDF (EFV-FTC-TDF), atazanavir or darunavir. Manufacturer-specific generics were categorized as "generic-1" (brand-to-generic transition) and "generic-2" (generic-1-to-2 transition).

All data were extracted from DTP databases. Antiretroviral use and PSIs were summarized monthly. PSI incidence proportion (95% confidence interval, [95%CI]) and symptoms were described during the first year following each generic transition (product rollout) date.

After pooling across products, a logistic regression model (using generalized estimating equations) compared PSI incidence for generic-2 versus generic-1.

Results: Between 01-Jun-2017 and 30-Jun-2021, 5560/8842 (63%) of ARV-treated PLWH received generic ARVs, of whom 5421/5560 (98%) received ≥1 of the generics studied.

Of N=5421, 83% were male, median age 52 (Q1-Q3=43-58) years. Overall, 27% received one, 40% two, and 33% three or more different generics.

Figure 1a-1e shows longitudinal ARV usage, PSI frequency, and first-year PSI incidence, which was <1% for most generics. Of 93 PSIs, 71/93 (76%) were reported ≤1 year post-generic transition date. Common symptoms included mild-moderate gastrointestinal, central nervous system (predominantly efavirenz-related), dermatologic, and general (unwellness/ malaise) effects.

Pooled analysis of ABC-3TC, FTC-TDF and EFV-FTC-TDF showed significantly lower first-year PSI incidence for generic-2 (0.55%, 95%CI=0.31-0.78%) versus generic-1 (0.98%, 95%CI=0.69-1.27%), p=0.029, suggesting fewer PSIs with generic-to-generic versus initial brand-to-generic transitions.

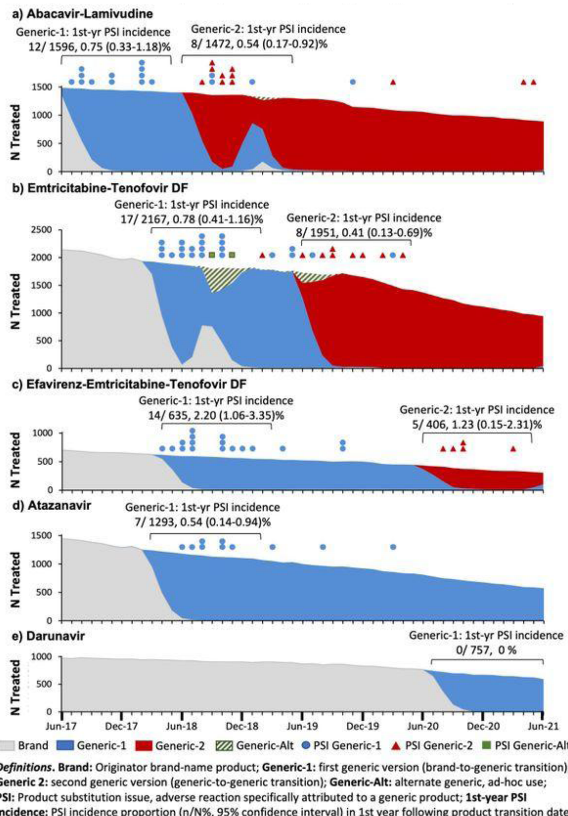

Figure 1. Longitudinal antiretroviral product usage, generic product substitution issue (PSI) frequency, and PSI incidence (in 1st-year following each generic product transition)

Conclusions: We report a low incidence of adverse drug reactions attributed to ARV generic product substitution.

EPB125

Switching to dual drug HIV regimen is associated with macrophage activation on a 2-years follow-up

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Background: Immunadapt is a study evaluating the impact of combination antiretroviral treatment (cART) simplification on immune activation. We previously showed that switching to dual therapies could be associated 6 months later with macrophage activation. Follow-up continued up to 24 months after treatment simplification.

Methods: Immunadapt is a prospective, single arm study, performed in Nice and Cannes, France, of stable and successfully treated subjects simplifying cART from triple to dual regimens.

The following immune activation markers were measured before cART change, 6 months and between 18 and 24 months after the switch: IP-10, MCP-1, soluble CD14 (sCD14), soluble CD163 (sCD163) and lipopolysaccharide binding protein.

Patients were stratified according to low or high risk factors of immune activation (CD4 nadir < 200, previous AIDS or very-low-level viremia during the follow-up). Variables were compared using matched Wilcoxon test. Statistical analysis were performed using R 4.0.3 software.

Results: From April 2019 to September 2021, 14 subjects completed follow-up (mean age 60 years, 12 men, 26 years since HIV infection, CD4 668 cells/mm3, CD4 nadir 302 cells/mm3, CD4/CD8 ratio 0.9, 18 years on cART, 6 cART regimens received, 53 months on last cART regimen before switch). Twenty-one months following the switch, all but one subjects maintained their viral load < 50 cp/ml. One subject had two viral blips during the follow-up (66 cp/ml and 52 cp/ml) and changed therapy to a triple-drug combination.

For the entire population, the trajectory of sCD163 increased significantly from baseline (+36%, p =0.003) and from the sample collected 6 months after the switch. The other markers did not change. As after 6 months, such sCD163 increase was more pronounced in subjects with high risk of immune activation (+53% vs +19%, p= 0.026).

Conclusions: cART simplification to dual therapy is associated with macrophage activation despite successful virological control after almost two years' follow-up. Further studies are needed in order to understand the long-term clinical impact of such macrophage activation.

EPB126

Incidental anaemia in patients started on antiretroviral therapy in Harare, Zimbabwe: a retrospective cohort study

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Background: Although antiretroviral treatment (ART) reduces the prevalence of anaemia, some patients remain at risk of developing anaemia after commencing ART. Anaemia is associated with disease progression, reduced quality of life and mortality in people living with HIV (PLWHIV). The burden of anemia in PLWHIV on ART in Zimbabwe is unknown. We estimated the incidence of anaemia after ART commencement and identified associated risk factors for anaemia in a cohort of PLWHIV.

Methods: Using routine clinic patient records, we conducted a retrospective cohort study of patients at Newlands Clinic, Harare, Zimbabwe who started ART between January 2016 and December 2020. Patients were followed up for 104 weeks after ART commencement. Anaemia was defined according to the World Health Organisation age and sex specific reference ranges of haemoglobin. Cox regression was used to assess for independent risk factors for anaemia.

Results: A total number of 1,110 patients ≥ 5 years old, were commenced on ART during the study period. The prevalence of anaemia at ART commencement was 40.0%. After excluding patients with prevalent anaemia at ART commencement, incomplete blood results, and pregnant women, 529 patients were included in the analysis with a total follow up time of 823.6 person-years.

The median age was 36.1 years (IQR 27.0 - 44.6) and 290 (58.4%) were female. The incidence rate of anaemia after ART commencement was 176.1 per 1,000 person-years (95% CI 149.6-207.2) with 146 (27.6%) of the participants developing anaemia during follow up.

The median time to developing anemia after ART commencement was 48.1 weeks (IQR 24.1-91.5). Of those with incidental anemia, 79.6% had normocytic,13.6% had macrocytic and 6.8% had microcytic anemia. Female patients (aHR 2.06 95% CI 1.45-2.94, p=0.001), zidovudine use (aHR 4.10 96%CI 2.65-6.33, p=0.001) and age < 18 years (aHR 1.47 95% CI 1.17-1.86, p=0.001) had higher risks of developing incidental anaemia.

Conclusions: Almost one in every five participants a year developed anaemia. Female sex, zidovudine use, and young age were independent risk factors for developing anaemia. Further research is needed to assess the impacts of a high incidence of anaemia on HIV progression, quality of life and comorbidities in this cohort of PLWHIV.

EPB127

Platelet reactivity and activation in people living with HIV

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Background: The increased risk of cardiac events in people living with HIV (PLWHIV) treated with Abacavir or Tenofovir has come under scrutiny in the past years. Increased platelet reactivity and activation have been described as potential biological mechanisms. We aim to evaluate P2Y12 receptor-mediated platelet reactivity among PLWHIV and determine whether the underlying inflammatory status contributes to it. Platelet activation intensity will be assessed in vitro.

Methods: This study was carried out among PLWHIV on treatment combinations that include Abacavir (ABC) or Tenofovir (TAF or TDF). Platelet reactivity was measured in P2Y12 reaction units (PRU). Platelet activation intensity was assessed as per P-selectin and GPIIb/IIIa expression increase following activation with ADP. Major pro and anti-inflammatory cytokines, CD4 counts, and viral loads were measured in patients' serum.

Results: In total, 73 PLWHIV on different treatment combinations and 22 healthy controls were included in this study (Table). Inferential analysis revealed that PRU values were significantly elevated in PLWHIV compared to control [Mean; 257.85 vs. 196.67, p<0.000], but no significant difference was noted between treatment subgroups. PRU values did not correlate strongly with CD4 counts, detectable viral load values, or cytokine values. P-selectin and GPIIb/IIIa expression increase following ADP-activation was significantly more prominent in PLWHIV (p<0.005) (Image). However, no difference was detected in-between antiretroviral treatment regimens.

	Healthy Controls (n=22)	Naïve to treatment (n=12)	Abacavir (n=21)	Tenofovir [TDA+TDF] (n=38)
Male n (%)	63.6 (14)	10 (83.3)	15 (71.4)	28 (73.7)
Age, median (IQR)	48.5 (29.75-58.25)	36.5 (23.5-45.25)	42 (30.5-53.5)	43 (34.75-57)
CD4 (cells/mm^3) ,median (IQR)	----	324 (53.5-797.75)	702 (503-1064.5)	575 (413.75-726.25)
Viral load (copies/ml), median (IQR)	----	26.14 (0-64.5)	0	0 (0- 10750)
PRU, median (IQR)	190 (160.5-240)	296.5 (217-326)	245 (200-298)	243.5 (200-296)
IFN (pg/ml)		14.610 (0-17.1525)	14.080 (0-18.700)	8.908 (0-17.7)
IL-2 (pg/ml)		4.2640 (0- 7.277)	7.9520 (0-9.3940)	3.218 (0-7.494)
IL-6 (pg/ml)	6.86 (1.56-16.2)	23.265 (10.87-28.9)	24.520 (13.66-34.73)	19.040 (12.67-25.88)
IL10 (pg/ml)	3.18 (2.3-13.23)	10.16750 (0-15.425)	12.190 (4.5-15.63)	8.9125 (4.5-16.565)
TNF-a (pg/ml)	26.37 (4-155.9)	39.950 (6.21-42.86)	39.090 (0-46.230)	27.475 (0-44.045)

Table.

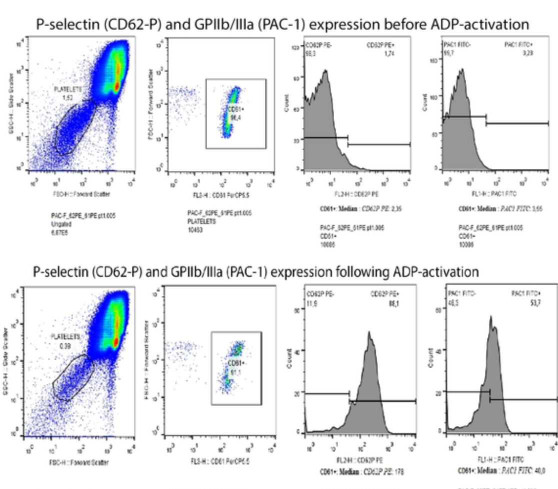

Figure.

Conclusions: PLWHIV exhibit increased platelet reactivity in-vivo and attenuated activation in-vitro. Treatment combinations of ABC or TDF/TAF do not display significantly different platelet reactivity. Platelet activation intensity does not seem to differ significantly across treatment combinations.

EPB128

Impact of differentiated service delivery models on retention and viral load suppression among ART clients in Katakwi Destrict

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Background: Although Uganda rolled out Differentiated Service Delivery (DSD) models in 2017 to improve retention and achieve viral load suppression, these have remained low relative to UNAIDs targets of 95-95-95. We determined the impact of facility and community DSD Models on viral load suppression and retention among ART clients in Katakwi district in North Eastern Uganda.

Methods: A retrospective cohort study of all ART clients in the different approaches of DSD models who were active by 2017, were followed up to 2020.

The primary outcomes were retention and viral load suppression of ART clients in different approaches. Eight health facilities providing ART services were purposively sampled and 771 ART clients were sampled by simple random sampling out of 4742 total population of clients on ART in Katakwi district.

We analyzed the retention, viral load suppression, and their determinants by logistic regression method using STATA.

Results: A total of 771 participants were sampled of whom 42.7% were males and 57.3% were females, with a mean age of 40 years. While the retention rates at 95% CI were 99% at 12 months, 94% at 24 months, 90% at 36 months, and 85% at 48 months. The viral load suppression rates were 57% at 12 months, 70%at 24 months, 70.3% at 36 months, and 69% at 48 months. Retention was highest among ART clients in the community-based DSD model with 100% retention in CDDP and95% in CCLAD as compared to facility-based models in which FBIM had the lowest achievement of (61.6%) followed by FBG (90.7%) and FTDR (93.9%). Viral load suppression was highest amongst the community-based DSD models in which CDDP had the highest achievement (92%) followed by CCLAD (79%) compared to the facility-based DSD models in which FBIM performance (34%)was far below the set standard of 955 followed by FBG (65%) with FTDR having a relatively better performance (81%).

Conclusions: Both facility and community-based DSD models have led to improved retention and viral load suppression however, community-based DSD model have shown to be more effective than facility-based DSD through mitigation of barriers to effective HIV/AIDS care of patients on ART.

Polypharmacy

EPB129

Pharmacotherapeutic profile, polypharmacy and its associated factors in a cohort of people living with HIV in Rio de Janeiro, Brazil

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Background: Inadequate polypharmacy may reduce expected clinical benefit, and increase the risk of drug interactions, toxicity, adherence problems, and hospitalization. Among people living with HIV (PWH) important interactions between antiretroviral therapy (ART) and concomitant medications are common.

We described the pharmacotherapeutic profile, polypharmacy and its associated factors among PWH in the largest HIV service in Rio de Janeiro, Brazil.

Methods: Cross-sectional study including PWH on ART who received at least one medical prescription (outpatient and hospitalized) in 2019. We described the proportion of prescribed medications according to Anatomical Therapeutic Chemical (ATC) index stratified by age (<50 vs. ≥50 years). Polypharmacy was defined as ≥5 medications prescribed except ARV. Logistic regression models assessed demographic and clinical factors associated with polypharmacy.

Results: A total of 143,306 prescriptions of 4547 participants were analyzed. Median age was 44.4 years (IQR:35.4-54.1) and 1615 (35.6%) were ≥50 years-old. The

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majority were cisgender men (2958;65.1%), and 224(4.9%) were transgender women. Over half self-declared as Black/*Pardo* (2582;56.8%) and 671(14.9%) completed higher education. Median time since HIV diagnosis was 10.9 years (IQR:6.2-17.7). Most frequently prescribed concomitant medications were nervous system drugs (64.8%; e.g. diazepam) and antiinfectives for systemic use (60.0%; e.g. azithromycin) (Figure).

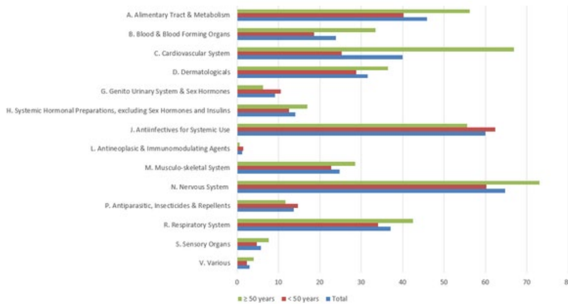

Figure. Frequency (percentage) of concomitant medications (ATC index) prescribed to people living with HIV stratified by age strata (<50 vs. ≥50 years), Rio de Janeiro, 2019.

Prevalence of polypharmacy was 50.6% (95%CI:49.2-52.1). On multivariate logistic model, being older, cisgender woman, having less education and longer time since HIV diagnosis increase the odds of polypharmacy (Table).

	Polypharmacy (≥5 concomitant drugs)		Bivariate models		Multivariate model	
	No (%) 2245(49.4)	Yes (%) 2302 (50.6)	OR (95%CI)	p-value	aOR (95%CI)	p-value
Age (years)						
18-39	1120 (64.9)	606 (35.1)	Ref.		Ref.	
40-49	552 (45.8)	654 (54.2)	2.38 (1.81-3.18)	<.001	1.78 (1.32-2.42)	<.001
50-59	412 (38.8)	649 (61.2)	4.00 (2.83-5.80)	<.001	2.81 (1.93-4.20)	<.001
≥60	161 (29.1)	393 (70.9)	6.53 (3.79-12.43)	<.001	4.44 (2.49-8.67)	<.001
Gender						
Cisgender man	1675 (56.6)	1283 (43.4)	Ref.		Ref.	
Cisgender woman	452 (33.1)	913 (66.9)	2.73 (2.02-3.78)	<.001	1.72 (1.25-2.41)	0.001
Transgender woman	118 (52.7)	106 (47.3)	1.02 (0.65-1.68)	0.95	1.04 (0.65-1.75)	0.89
Skin color or race						
White	961 (48.9)	1004 (51.1)	Ref.		NA	NA
Black	455 (49.3)	467 (50.7)	0.92 (0.69-1.24)	0.58	NA	NA
Pardo (Mixed-Black)	829 (49.9)	831 (50.1)	0.98 (0.76-1.26)	0.89	NA	NA
Education						
< Elementary	376 (34.8)	703 (65.2)	5.06 (3.49-7.48)	<.001	4.15 (2.81-6.22)	<.001
Elementary	387 (42.8)	518 (57.2)	3.71 (2.59-5.40)	<.001	3.41 (2.35-5.03)	<.001
Middle	1013 (54.5)	845 (45.5)	2.24 (1.71-2.93)	<.001	2.59 (1.96-3.42)	<.001
Superior	458 (68.3)	213 (31.7)	Ref.		Ref.	
Time since HIV diagnosis (years)						
≤10	1255 (60.5)	820 (39.5)	Ref.		Ref.	
>10	990 (40.0)	1482 (60.0)	3.00 (2.36-3.83)	<.001	1.79 (1.36-2.37)	<.001

Table.

Conclusions: We found high rates of polypharmacy and concomitant medication use in a cohort of PWH in Brazil. Targeted interventions to prevent drug interactions and improve treatment adherence are warranted. Standardized protocols for continuous review of the patient's therapeutic regimens should be implemented.

Frailty

EPB130

Associations of frailty with cardiovascular disease risks in older people living with HIV

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Background: We assessed associations between frailty and clinical and subclinical CVD risks using atherosclerotic cardiovascular disease (ASCVD) score, coronary artery calcium (CAC) score, epicardial fat volume (EFV) and carotid intima-media thickness (cIMT).

Methods: A cross-sectional study was done in older people living with HIV (PWH) aged >50 years and age- and sex-matched HIV-negative people in Bangkok, Thailand. ASCVD risk was calculated using pooled cohort equations. Coronary calcium and EFV were measured using non-contrast cardiac CT scans. Frailty was defined using Fried criteria. Separate multivariable logistic regression used CVD risks (ASCVD ≥7.5%, CAC score ≥100, EFV ≥100 cm³ and cIMT) as outcomes and frailty as the predictor. Multinomial logistic regression was employed using frailty as the outcome and CVD risks as predictors and adjusted relative risk ratios (RRRs) were reported.

Results: A total of 439 participants (308 PWH and 131 HIV-negative) with median age of 55 years (IQR 52-60) were recruited between 2017 and 2018; 157 (36%) were female. Overall, 53% (232) were pre-frail and 7% (33) were frail. Higher prevalence of frailty was seen in PWH (9% vs. 3%, p=0.001). The median ASCVD risk score and EFV was 6.8% (IQR 3.5-12.6) and 93 cm³ (IQR 73-119), respectively, and 65 (15%) had CAC score ≥100. The median cIMT was 0.6 (0.5-0.7) mm and 46 (11%) had cIMT ≥0.9mm. In multivariable models using CVD risks as outcomes, frailty was associated with ASCVD risk ≥7.5% (odds ratio 2.38, [95%CI 1.06-5.33]), CAC score ≥100 (3.05 [1.18-7.92]) and EFV ≥100 cm³(2.54 [1.05-6.15]), compared to non-frail participants.

ASCVD risk ≥7.5%, CAC score ≥100 and EFV ≥100 cm³were also more likely seen among frail individuals (adjusted RRRs, 2.05 [1.01-4.61], 2.93 [1.10-7.80] and 3.10 [1.27-7.55], respectively) than non-frail participants. Higher cIMT was also more likely seen among frail participants than those without frailty (RRR for 0.1mm increase in cIMT, 1.60 [1.20-2.13].

Conclusions: Frailty was associated with multiple atherosclerotic risk scores independent of HIV infection. Our results highlight the importance of frailty screening in HIV care, especially among settings with high prevalence of aging population.

EPB131

Risk factors for frailty in a geriatric cohort on long term antiretroviral treatment in Uganda

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Background: Antiretroviral treatment (ART) scale-up has led to a generation aging with HIV in sub-Saharan Africa (SSA). Frailty, an age-related syndrome heightened by HIV infection, is marked by diminished physiologic reserve and vulnerability to stress, and is predictive of adverse clinical outcomes. We determined the prevalence and risk factors of frailty in a geriatric cohort in Kampala, Uganda.

Methods: We determined frailty prevalence and predictors in an aging cohort (≥60 years) enrolled between December 2020 and December 2021.

Frailty was defined by criteria proposed by Fried and colleagues:

1. Unintentional weight loss,
2. Exhaustion,
3. Weakness
4. Slow walking, and;
5. Low physical activity.

We performed logistic regression controlling for: gender, age, BMI, pre-ART and current CD4 count, WHO stage, years on ART, co-morbidities (NCDs), household income, depression, and cognitive status.

Results: Of 500 participants, 51.2 % were male, median age was 64 (IQR:62-68) years, and median time on ART was 15 (IQR:10-17) years. Twenty-eight (5.6%) were underweight, and 154 (31.2%) had an income lower than 1 USD/day. CD4 count at the ART start and at the time of enrolment were 159 cells (IQR:74-235) µL and 645 (IQR:450-805) µL, respectively. Two had a viral load >1,000 copies/ml, 127(25.4%) >1 NCD, 72.8% some degree of cognitive impairment, and 10.2% depression. Forty-five (9%) were frail, 229(45.8%) pre-frail, and 226(45.2%) robust. CD4 count and WHO stage were similar across the three groups.

Men (AOR 0.30, CI: 0.11-0.77, p-value: 0.012), those with normal BMI (AOR 0.06, CI:0.01-0.3, p-value: 0.03), and those overweight (AOR 0.08, CI 0.01-0.48, p-value: 0.005) were less likely to be frail. Participants who were below the poverty line (AOR 2.60, CI: 1.13-6.01, p-value: 0.025), cognitively impaired (AOR 5.70, CI:1.49-21.71, p-value 0.011) and depressed (AOR 20.68, CI:6.46-66.37 p-value: 0.000) were more likely to be frail.

Conclusions: Despite the exceptional rates of viral suppression and robust CD4 count recovery, more than half of the patients with HIV infection were frail or pre-frail in our cohort, highlighting the clinical relevance of this condition.

The assessment of frailty may pave the way for interventions for preventive/multidisciplinary interventions in nutrition, mental health, and lifestyle.

EPB132

Albuminuria is not associated with pre-frailty/frailty among PLWH in Botswana

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Background: Easy to measure biomarkers of inflammation associated with pre-frailty/frailty are urgently required as many people living with HIV (PLWH) age. Albuminuria, an easy to assess biomarker of inflammation, has been linked to pre-frailty/frailty in some non-sub-Saharan cohorts but not extensively studied among clinical cohorts in sub-Saharan Africa.

We investigated the association between albuminuria and composite outcome of pre-frailty/frailty in a clinical cohort of PLWH in Botswana, sub-Sahara Africa.

Methods: In a cross-sectional study of 1017 PLWH, ≥40 years, pre-frailty/frailty was assessed using the Fried's frailty criteria. 0, 1-2 and ≥3 of any of unintentional weight loss, low physical activity, exhaustion, weak grip strength or slow walk determined pre-frail/frail participants.

Using sex-based Albumin-Creatinine Ratio (ACR), albuminuria was defined as 25-355m/g for females and 17-250mg/g for males.

Multivariate logistic regression analysis evaluated the association between albuminuria and composite outcome of pre-frailty/frailty.

Results: Of the 1017 participants assessed for pre-frailty/frailty, 484 (47.6%) were female. The median age was 51 [IQR= (57-45)] years. Albuminuria prevalence by ACR was 20.7% versus pre-frailty/frailty prevalence of 64% [591 (58.1%) pre-frail and 59 (5.8%) frail].

After adjusting for age, gender, education, income, alcohol use, diagnosis of hypertension, chronic kidney disease, multimorbidity (defined as having more than one major chronic conditions such as diabetes mellitus, hypertension and other), HIV duration, current CD4 count and ART regimen, there was no association between albuminuria and pre-frailty/frailty [aOR=1.07 (0.92, 1.24), p=0.377].

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Conclusions: Albuminuria was not independently associated with pre-frailty/frailty in this cohort of PLWH. Future studies should assess whether different albuminuria measures and cut-off points could be used to predict pre-frailty/frailty among PLWH in this setting.

EPB133

Approaches to optimally target frailty screening among people with HIV in clinical care: findings from the Centers for AIDS Research Network of Integrated Clinical Systems (CNICS)

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Background: There is broad consensus that frailty screening in the primary care setting is useful and this may be particularly important for people with HIV (PWH) due to their high prevalence of frailty. We compared criteria to optimally target clinic-based frailty screening among PWH to reduce screening burden.

Methods: PWH in care at 6 CNICS sites across the United States completed patient reported outcome (PRO) assessments at their routine clinic visits.

Frailty was assessed based on self-report of 4 of the 5 components of the Fried phenotype: fatigue, unintentional weight loss, low mobility, and poor physical activity. PWH with ≥3 components were considered frail. Using logistic regression to predict frailty, we evaluated different combinations of demographic, clinical, and laboratory variables selected via 3 variable selection approaches (clinical, stepwise, and Bayesian Model Averaging).

We compared receiver operator characteristic (ROC) curves (which measure sensitivity and specificity) and used the regression coefficients from each model to develop screening criteria tools.

Results: Among 6,260 PWH in clinical care, 769 (12%) were frail. ROC curve values ranged from 0.57 for simple clinical approaches, such as age alone, to 0.85 for complex approaches. For example, a complex tool which included depressive symptom score (using PHQ-7 from PHQ-9 excluding sleep items to limit collinearity with frailty phenotype), age, sex, cigarette smoking, hepatitis C virus, alcohol use disorder, and current CD4 count ≤350 cells/mm^3 had ROC curve values of 0.85 for frailty. A targeted screening criteria tool based solely on age, sex, and depressive symptoms (ROC=0.84) had a sensitivity of 90% and specificity of 58% for frailty and identified 47% of PWH in CNICS as meeting criteria for frailty screening.

Conclusions: Similar variables for frailty screening (e.g., depression symptoms and age) were selected across multiple variable selection approaches. More complex tools had better testing characteristics, however would also be more difficult to implement in clinical settings.

A simple, targeted screening approach based on 3 readily available characteristics (age, sex, and depressive symptoms) identified 90% of PWH with frailty and reduced the number of PWH who needed to be screened by 53%.

Drug-drug interaction (DDI)

EPB134

Multi-medicine use and potential drug-drug interactions among people living with HIV on antiretroviral therapy in Australia

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Background: The lifelong use of combination antiretroviral therapy (cART) and the earlier ageing process in people living with HIV (PLWH) increase susceptibility to comorbidities, multi-medicine use and drug-to-drug interactions (DDIs), possibly increasing treatment toxicity and reducing treatment effectiveness. Currently, there are no Australian population-based studies comprehensively evaluating patterns of comedication use and the occurrence of potential DDIs in PLWH.

Methods: In this cohort study, we identified 2,230 people dispensed cART from 2018 to 2019 (mean age 49.0 SD 12.0 years old, 88% male, 11% new users) using a nationwide 10% random sample of dispensing claims. We identified systemic comedications dispensed within 90-days of antiretroviral medicines for a period of 12-months. For every antiretroviral and non-antiretroviral pair, we classified possible DDIs using the University of Liverpool HIV drug interactions database. We report the proportion of people receiving multiple medicines by medicine class, type of interaction and antiretrovirals used.

Results: A total of 1,728 (78%) patients were dispensed at least one and 633 (28%) five or more comedications over one year; median = 3 (IQR 2, 6), increasing to 4 (IQR 2, 7)

among people aged 50+ years old. Among people who received multiple medicines, systemic anti-infectives and nervous system medicines were the most common (68% and 56%, respectively).

Most people on comedications had at least one interaction unlikely to require dosage alteration (n = 1,637, 95%), 558 people (32%) had interactions requiring close monitoring/ dose adjustment and 94 (5%) received medicines that should not be used concomitantly, of which the top 5 were: budesonide, clopidogrel, fluticasone, esomeprazole and pantoprazole.

Contraindications or interactions requiring close monitoring/dose adjustment were more common among people taking protease inhibitors (50%-73% across different antiretrovirals), non-nucleoside reverse transcriptase inhibitors (35%-64%), people using single-tablet combinations containing elvitegravir (30%-46%) and those using tenofovir disoproxil (26%-30%).

Conclusions: Multi-medicine use is widespread amongst PLWH in Australia and a high proportion of people receive medicines that require close monitoring or dose adjustment. Patterns of interactions vary by cART regimen and occur even among people on novel single-tablet regimens. Selecting regimens based on patient's comorbidities and comedications is key to optimising treatment.

Other issues related to aging with HIV

EPB135

Antiretroviral therapy gaps and discontinuation among people living with HIV in Medicare program

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Background: Antiretroviral therapy (ART) adherence is critical to achieve durable virologic suppression and minimize resistance in people living with HIV (PLWH). This study aimed to assess treatment gaps and discontinuation in PLWH in Medicare.

Methods: A retrospective analysis of 2013-2018 100% Medicare fee-for-service claims examined continuous treatment gaps over 12-months of follow-up among PLWH initiating a new (index) anchor ART agent (INSTI, NNRTI, or PI class). Treatment gap in any anchor ART use was defined as a fixed continuous period with no supply of an anchor medication after the entire days' supply of the most recent anchor ART prescription was exhausted.

Multivariable logistic and Cox regressions were used to examine factors associated with discontinuation (≥90-day continuous gap in any anchor ART agent) and time to discontinuation, respectively.

Results: The final study sample included 48,627 PLWH (mean age 54.5 years, 74.4% male, 47.5% White, 87.4% disabled). At least one ≥7-day treatment gap was common (55.2%) with lower gap rates in INSTI vs. PI group, and 10.1% PLWH discontinued treatment (Table).

	Overall sample (N=48,627)	INSTI† (N= 32,751)	NNRTI† (N=7,842)	PI† (N=8,034)
Length of continuous gaps in any anchor ART use				
0 (no gap)	19.3%	20.4%	18.5%	15.2%
≥1 day	80.7%	79.6%	81.5%	84.8%
≥7 days	55.2%	53.5%	55.5%	61.9%
≥14 days	41.0%	39.0%	41.7%	48.8%
≥90 days (discontinuation)	10.1%	8.6%	11.0%	15.3%
Time to discontinuation‡ in days (median)	106	115	93	95

†Index anchor ART agent: ‡≥90 days continuous gap in any anchor ART agent; ART, antiretroviral therapy; INSTI, Integrase Strand Transfer Inhibitor; NNRTI, Non-Nucleoside Reverse Transcriptase Inhibitor; PI, Protease Inhibitor; PLWH, people living with HIV

Table. Continuous gaps in any anchor ART and discontinuation over 12 months of follow-up from initiation of new anchor ART agent among PLWH enrolled in Medicare

Younger age (age ≤34 years: Odds Ratio [OR] 1.54; age 35-44: OR 1.54 vs. age 65-74), female sex (OR 1.20), Black race (OR 1.17 vs. White race), higher comorbidity score (OR 1.08), and comorbidities such as mental illnesses (OR 1.16) and substance use (OR 1.32) were associated with higher odds of discontinuation (all p-values <.001). PI-based index ART was associated with higher odds of discontinuation vs. both INSTI- and NNRTI-based index ART. Multivariable Cox regressions showed qualitatively similar results.

Conclusions: Among Medicare beneficiaries living with HIV who initiated a new anchor ART agent, gaps in any anchor ART use were commonly observed with 1 in 10 discontinuing anchor ART over 12-months of follow-up.

The study results highlight characteristics of PLWH at higher risk of discontinuing (and earlier discontinuation of) their ART in Medicare program.

EPB136

Use of the Patient Generated Index to identify physical health challenges among people living with HIV

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Background: People living with HIV have more physical health challenges such as problems with fatigue, mobility, and gait relative to their HIV-negative counterparts. Physical health challenges have received little attention in the literature despite being associated with an increased fall risk, greater mortality, and reduced health-related

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quality of life. Other work has shown that individualized measures provide unique information that is not captured by standardized health-related quality of life measures.

The purpose of this study is to estimate the prevalence of physical health challenges from areas that patients spontaneously report as substantially affecting their quality of life.

Methods: The patient generated index (PGI), an individualized measure of health-related quality of life, was administered to 866 people living with HIV drawn from the Brain Health Now cohort across five sites in Canada.

In the PGI, participants are asked to indicate, in their own words, the five most important areas of their lives affected by HIV. PGI text threads from their first visit were coded according to the World Health Organization's International Classification of Functioning, Disability, and Health (ICF). The rate and content of nominated physical health problems were tabulated.

Results: The sample comprised 866 participants (mean age: 53; years with HIV: 16.8; women: 15.7%). The mean age of the participants was 53 years and the mean number of years living with HIV was 16.8 years. PGI text threads were coded to 18 domains of the ICF. 248 [28.6%; 95% CI (25.6, 31.6%)] respondents nominated at least one physical health problem and 46 (5%) participants indicated two or more physical health problems.

The most commonly nominated area was physical health unspecified (25% of total codes), followed by energy (22%), fatigue (11%), managing fitness (11%), endurance (7%), pain (5%), mobility (3.5%), sports participation (3%), effects of aging (3%), and walking (2%).

Conclusions: Physical health challenges are common among people living with HIV. By capturing what matters to the person, personalized health-related quality of life measures such as the PGI are well-suited to identify the unique physical challenges of people living with HIV and those potentially in need of a patient-centred rehabilitative approach.

EPB137
Evaluating healthy aging among Canadian HIV-positive older adults in the CHANGE HIV cohort

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Background: Life expectancy among people living with HIV (PLWH) is approaching that of the general population, however, PLWH continue to experience greater burden and earlier onset of medical comorbidities. Important differences in clinical outcomes and quality of life persist. Examining healthy aging as a multidimensional state can guide development of preventative and management strategies that are appropriate for the complex social and healthcare needs of people aging with HIV.

Methods: The CHANGE HIV (Correlates of Healthy Aging iN GEriatric HIV) study is a Canadian cohort of PLWH age 65 or older. In this cohort, healthy aging is assessed using the Rotterdam Healthy Aging Score (HAS), calculated across 7 domains of health (chronic disease, mental health, pain, social support, quality of life, cognitive and physical function).

We report on the HAS for the first 227 participants in the cohort and determine the proportion of those with healthy (scores 13-14), intermediate (scores 11-12), and poor aging (scores 0-10) scores. Scores were compared based on sociodemographic and HIV-related factors using Kruskal-Wallis and Fisher's exact tests.

Results: Median [IQR] age was 70 [68,74], majority of participants were men (89%), white (77%), born in Canada (66%) and retired (77%). Median [IQR] HAS was 12 [10,13] with 34% of participants achieving healthy, 39% intermediate and 27% poor aging scores.

Women and transgender participants had lower median [IQR] HAS (10.5 [9,13] compared to 12 [11,13] among men) and higher proportion of poor aging scores (50% compared to 24% among men, p=0.015). Women had fewer comorbidities compared to men (p=0.024), but worse cognitive function scores (p=0.002) and more pain (p<0.001).

HAS scores were lower among retired individuals compared to those employed or engaged in volunteer activities (p=0.013) but did not differ by age (p=0.641), race (p=0.698), country of birth (p=0.887), CD4 count nadir (p=0.510), or duration of HIV infection (p=0.066).

Conclusions: Gender seems to have an important impact on the aging experience of PLWH, especially across comorbidity, cognitive function and pain domains of health. Using a multidimensional score like the HAS can identify individuals at risk of poor clinical outcomes and direct interventions that support their healthy aging.

EPB138
Poor HIV outcomes among older adults newly diagnosed with HIV in Malaysia: a four-year retrospective analysis

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Background: There is a high burden of HIV among the older population globally, but little is known about their clinical characteristics and health outcomes, especially

in the Asia-Pacific region. Our study aimed to assess the prevalence and outcomes of new HIV infection among adults aged ≥50, compared to those diagnosed at age <50years.

Methods: This is a retrospective study involving individuals newly diagnosed with HIV from 2016-2019 at the University of Malaya Medical Center, Malaysia. Follow up data was censored on 31.12.2020. Late diagnosis was defined as having a baseline CD4 counts <200cells/µL or WHO stage-3 or 4 HIV/AIDS at diagnosis. Clinical characteristics of older people with HIV >50years (OPWH) compared to <50years were compared using x^2 test. A Kaplan-Meier curve and log-rank test were used to compare the survival probability between the two age groups.

Results: Of 594 new cases, 68 (11.5%) were diagnosed in individuals ≥50 years. Males predominated in both groups with an overrepresentation of ethnic Indians among OPWH (p<0.001). The main transmission route in those ≥50 and <50 years old was heterosexual and homosexual contact, respectively (p=0.001). Late diagnosis was more common among OPWH (69.1% vs 49.8%, p=0.003).

A lower proportion in the OPWH achieved CD4 counts ≥500cells/µL by end of 2020, 26.9% vs 42.4%, respectively (p=0.020). OPWH had a significantly higher prevalence of hypertension (42.7% vs 5.9%), dyslipidemia (25.0% vs 5.3%), diabetes mellitus (27.9% vs 3.6%) and multimorbidity (26.5% vs 2.9%) at presentation (P<0.001 for all) than the younger group. Older patients had a significantly higher mortality risk (Figure 1).

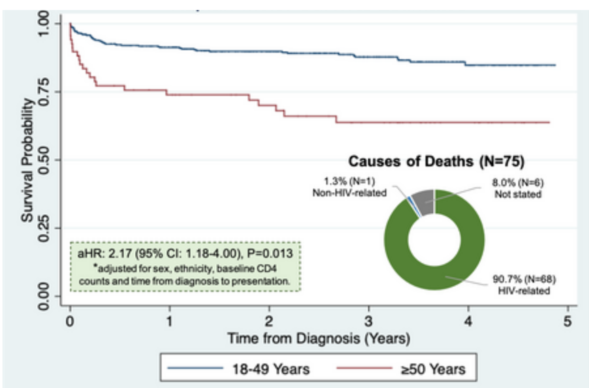

Figure 1. Kaplan-Meier survival estimates of new HIV/AIDS cases stratified by age of diagnosis.

Conclusions: Older people with HIV present late, experience greater mortality and less robust immunological responses as compared to their younger counterparts. Prompt action is needed to enhance early testing and linkage to care among older individuals. Further studies are needed to better understand the unique needs of this population.

EPB139
Physical activity can reduce adiposity in older adults with HIV in the modern HIV era

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Background: People with HIV (PWH) are living longer and developing chronic comorbidities at higher rates than those without HIV. Aging and HIV are associated with increased abdominal adiposity, which is a modifiable risk factor for cardiovascular disease, diabetes mellitus, chronic kidney disease, and frailty. In the general aging population, physical activity is one of the few non-pharmacological interventions that improves adiposity. The relationship between physical activity and adiposity in people with well-controlled HIV is unclear.

Our aim was to describe the association between objectively-measured physical activity and abdominal adiposity (i.e., waist circumference) in PWH.

Methods: As part of the multisite, observational PROSPER-HIV study, adults with HIV, who are virally suppressed wore an Actigraph accelerometer for 7-10 days and completed duplicate measures of waist and hip circumference. Valid accelerometer data included those who wore the device for ≥ 10 hours a day for a minimum of 4 days (i.e., at least one weekend day). Demographic and medical characteristics were abstracted from the CFAR Network of Integrated Clinical Systems (CNICS) dataset. Descriptive statistics and multiple linear regressions were used to analyze the data.

Results: A total of 374 PWH enrolled in the PROSPER-HIV study met our accelerometer wear time criteria. On average, they were 58 years of age (IQR: 50, 64), male (75%), Black (60%), and currently taking an integrase inhibitor (93%). Median engagement in moderate-to-vigorous physical (MVPA) activity per week was 0 (0, 15) minutes and 4,899 (3133, 7118) steps per day. Median waist circumference was 100 cm (91, 110) and the median waist-to-hip ratio was 0.90.

Controlling for age, sex, employment and integrase inhibitor use, the number of steps taken per day was associated with reduced abdominal adiposity (b= -68.9; p=0.027) and the hours of daily sedentary time was associated with increased abdominal adiposity (b= 0.06; p=0.017) Relationships between MVPA and abdominal adiposity were not observed (p>0.05).

Conclusions: Physical activity reduces abdominal adiposity in aging PWH. Specifically, increasing the number of steps per day is an acceptable physical activity interven-

tion in a mostly sedentary population. Future work should investigate how to tailor the amount, type and intensity of physical activity needed to reduce adiposity in PWH.

EPB140

Improvements in patient-reported outcomes in older adults aged ≥50 years with HIV-1 after switching to a 2-drug regimen of fixed-dose combination DTG/3TC: 48-Week results From the SALSA study

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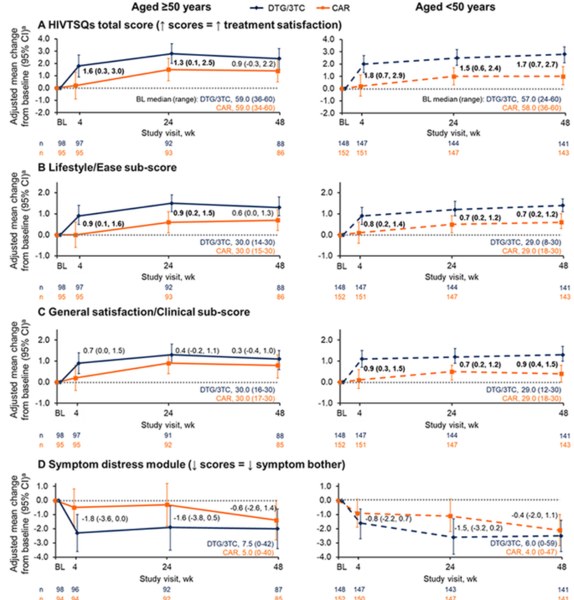
Background: Older adults living with HIV (OALWH) have unmet needs beyond viral suppression, and patient-reported health outcomes provide insight into these needs in this important population. In the SALSA study (NCT04021290), switching to the 2-drug regimen DTG/3TC was non-inferior in maintaining virologic suppression at Week 48 compared with continuing 3-/4-drug (3/4DR) current antiretroviral regimen (CAR) in virologically suppressed adults, including OALWH. We present patient-reported health outcomes from SALSA analyzed by age at baseline.

Methods: SALSA is a randomized, open-label study of virologically suppressed (HIV-1 RNA <50 c/mL) adults on stable 3/4DR who switched to DTG/3TC or continued CAR for 52 weeks. A post hoc analysis of treatment satisfaction and symptom bother by age (≥50 and <50 years) at Weeks 4, 24, and 48 using the HIV Treatment Satisfaction Questionnaire, status version (HIVTSQs) and symptom distress module (SDM), respectively, was performed.

Results: Participants aged ≥50 years who switched to DTG/3TC vs continued CAR had greater improvements (higher increases from baseline) in mean HIVTSQs total score and lifestyle/ease sub-score at Weeks 4 and 24, which were stable through Week 48 (Figure); general satisfaction/clinical sub-scores were comparable between treatment groups. Participants aged <50 years in the DTG/3TC group had improved HIVTSQs total score and sub-scores vs CAR at all time points assessed. Participants aged ≥50 years in the DTG/3TC group had numerical improvements in SDM score vs CAR at Weeks 4 and 24 (greater decreases from baseline), which remained stable through Week 48. Participants aged <50 years in the DTG/3TC group had SDM scores comparable to CAR.



For HIVTSQs and related sub-scores, higher scores indicate improvement; for SDM, lower scores indicate improvement. Dotted lines indicate no change from baseline. Median baseline scores and adjusted difference between DTG/3TC and CAR are presented within each graph; bolded values indicate significance. The n for each study week is presented below each graph. [a]Estimated mean change from baseline at each visit in each group calculated using mixed-model repeated measures adjusting for treatment, visit, baseline third agent class, race, sex, baseline value, age, treatment-by-visit interaction, baseline value-by-visit interaction, visit-by-age interaction, treatment-by-age interaction, and treatment-by-visit-by-age interaction, with visit as the repeated factor. The correlation matrix for within-participant errors was unstructured. BL, baseline.

Figure. Adjusted mean change from baseline (95% CI) at Weeks 4, 24 and 48 analyzed by age ≥50 years (solid lines) and <50 years (dashed lines) in (A) HIVTSQs total score, (B) HIVTSQs lifestyle/ease sub-score, (C) HIVTSQs general satisfaction/clinical sub-score, and (D) SDM.

Conclusions: Rapid and stable improved treatment satisfaction through 48 weeks was reported by OALWH who switched to DTG/3TC. Comparable results were observed among participants aged <50 years. These findings support improved patient outcomes among OALWH after switch to DTG/3TC vs continuing CAR.

EPB141

Assessing sexual satisfaction amongst midlife women living with HIV in Canada

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Background: Although sexual activity and function both decline in older women living with HIV, positive dimensions of their sexual health, such as sexual satisfaction, are relatively unexplored. To address this gap, we evaluated the prevalence of sexual satisfaction and its correlates in midlife women living with HIV (aged≥45).

Methods: We used cross-sectional questionnaire data from cis and trans-gendered women living with HIV participating in the Canadian HIV Women's Sexual and Reproductive Health Cohort Study (CHIWOS; 2013-2015). We excluded women who were <45 years (n=783), only reported non-consensual sex (n=11) or had missing sexual health/satisfaction data (n=92).

Sexual satisfaction was evaluated using one item from the Sexual Satisfaction Scale for Women (SSS-W): "Overall, how satisfactory or unsatisfactory is your present sex life?" Responses were dichotomized into "satisfied" ("completely/very/reasonably satisfactory") or "not satisfied" ("not very/not at all satisfactory"). Multivariable logistic regression determined correlates of sexual satisfaction.

Results: Among 524 women of median age 51.8 (IQR 48.2-56.9), 40.1% were sexually active. A total of 50.0% met criteria for probable depression (CES-D score≥10) and 89.6% reported an undetectable viral load.

Overall, 60.9% reported being satisfied with their sexual lives with higher prevalence among sexually active vs inactive women (74.1% vs 51.6%; p<0.001).

Women with probable depression had 56.3% lower odds of sexual satisfaction than women without (aOR:0.44;95% CI:0.28-0.69). Women who were sexually active (aOR 2.42;1.46-4.01) or were in a relationship (aOR 2.50;1.07-5.83) had higher odds of sexual satisfaction than those not.

Those with a detectable viral load also had higher odds of sexual satisfaction (aOR 2.50;1.07-5.83), however, this effect was no longer seen when differences in substance use and education were accounted for. Sexual orientation, menopause status, physical health, HIV stigma and sexual violence were not significantly associated with sexual satisfaction.

Conclusions: Most midlife women living with HIV were satisfied with their sexual lives, even those who were not sexually active. Associations with sexual activity, relationship status, and depression suggest that these aspects should be evaluated during sexual health screening. The close connection between mental and sexual health highlights the need to address both of these aspects of health in conjunction.

EPB142

Randomness of motor activity and cognitive performance in people living with HIV infection

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Background: Motor activity in healthy young adults exhibits self-similar fluctuations (i.e., fractal) with temporal correlations across multiple timescales. Circadian intactness is causally related to the fractal dynamics. The temporal correlations decrease (i.e., increased randomness) with aging and in neurodegeneration, which is also associated with faster cognitive decline and risk of dementia. Older PLWH experience neurocognitive complications that impinge on quality of life and impede effective clinical management.

This study aimed to examine randomness of motor activity and association with neurocognitive performance in PLWH.

Methods: Among ~100,000 UK Biobank participants with 7-day actigraphy, 102 PLWH were identified based on HIV-1 seropositivity, hospital records, or self-report. Five people without identified infection were extracted to match each PLWH on age, sex, ethnicity, social-economic status, and comorbidities. Randomness of motor activity at timescales from 2-10h was quantified by a scaling exponent α (α=0.5 indicates complete randomness, greater α indicates stronger temporal correlations). Reaction time (RT) during a card identifying task was used to quantify information processing speed, a measure of executive function.

Results: 102 PLWH [age: 56.9±7.2 (mean±SD); female/male: 21/81] and 510 matched uninfected controls (age: 56.8±8.2; female/male: 107/403) were examined. There was no significant difference in α between PLWH [0.90±0.01 (estimate ±SE)] and uninfected controls (0.91±0.01, *p*=0.4). PLWH displayed longer RTs [6.30±0.02 (unit: log ms)] than uninfected controls (6.25±0.01, *p*=0.03). Group (i.e., PLWH/control) significantly moderated the association between α and

RT (p=0.02), adjusting for age and sex. For a 1-SD decrease in α, RT changed by -0.01±0.01 (p=0.2) in uninfected controls whereas it changed by 0.05±0.02 (p=0.05) in PLWH.

Conclusions: PLWH displayed longer RTs than uninfected controls, suggesting compromised executive function. Increased randomness in motor activity was associated with longer RT in PLWH but not in uninfected controls, implying a potential relation of circadian dysfunction with executive function.

Further studies are warranted to examine whether drivers of aging (e.g., inflammation, immune activation) and consequent multimorbidity frequently seen in PLWH maybe related to the observed association. Further understanding of circadian dysfunction that leads to the increased randomness of motor activity may help better phenotype cognitive aging process of PLWH.

EPB143

Comparative prevalence of mild cognitive impairment and Alzheimer's dementia in adult Ugandans living with HIV and demographically matched HIV-negative controls

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Background: The comparative prevalence rate of mild cognitive impairment (MCI) and Alzheimer's dementia (AD) in cART treated people living with HIV (PWH) and age-matched peers without HIV is unknown.

Methods: 471 adults between 20 and 87 years (277 PWH and 189 HIV-negative controls) matched by age, sex, and village of residence were evaluated with a comprehensive neuropsychological test battery in Kampala, Uganda. Impairment in seven cognitive domains including immediate recall, memory and learning (delayed recall, recognition), language (verbal fluency), processing speed, executive function, attention/working memory and motor function were defined.

Cognitive status – i.e., not cognitively impaired, asymptomatic cognitive impairment (ANI), minor neurocognitive disorder (MND) or HIV-associated dementia (i.e., HAD, if HIV+) , was defined according to Frascatti criteria and age-related cognitive dysfunction of the AD subtype was defined per Bondi et al. (2014). MCI- i.e., presence of cognitive impairments of moderate (i.e. ≥ 1 SD worse in ≥2 tests) or pronounced (i.e. >2.0 SD worse in≥1 tests) severity without functional limitation.

Amnestic MCI (aMCI) type is defined if memory - i.e., impaired recognition or delayed recall, was present. AD was defined if ≥1 pronounced memory impairment accompanied with functional limitation. Differences in MCI and AD rate according to HIV status were quantified and odds ratio (OR) with 95% confidence intervals (CI) overall and stratified by age (<60vs. ≥60 years) calculated.

Results: Among unimpaired/ANI adults, amnestic MCI rate was respectively 28.9% (60/204) and 14.7% (21/133) among PWH and HIV- controls (OR=2.18, 95% CI:1.25, 3.84). Among cognitively unimpaired/ANI affected individuals <60 years old, amnestic MCI prevalence was 16.2% for controls and 30.3% for PWH (OR=1.9, 95%CI:1.02, 3.60).

Among MND/HAD individuals ,AD rate was 16.3% and 38.6% for controls and PWH (OR=3.23, 95% CI: 1.23, 8.52), respectively. Among adults ≥60 years with ANI/no impairment (n=65), prevalent amnestic MCI was 14.7% for controls and 41.9% for PWH (OR = 4.04, 95% CI:1.23, 13.40). The prevalence of AD was identical at 38.9% each for HIV+ (n=18) and for HIV- controls (n=18) ≥60 years with MND/HAD.

Conclusions: Ugandan PWH have higher MCI/AD rates that may may occur at younger age than HIV-negative Ugandans.

EPB144

Association of age at ART initiation with CD4:CD8 ratio recovery among virally suppressed people living with HIV, 2001-2019

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Background: We aimed to characterize the potential for CD4:CD8 recovery by age in a virally supressed HIV-positive population on long-term antiretroviral therapy (ART). Understanding this is important in the context of an aging HIV-positive population, in which age-related diseases are an increasing health burden.

Methods: In a longitudinal study, CD4:CD8 ratio trajectory was assessed among 1859 people with HIV attending the Royal Free Hospital London, who initiated ART between 2001 and 2015, achieved viral suppression (VL<1000 c/mL) within 6 months, and maintained this subsequently.

The association of age at ART initiation with the CD4:CD8 ratio after 5 and 10 years on virally suppressive ART was examined using multivariable linear regression to adjust for: baseline CD4 count, gender, ethnicity, and probable HIV transmission route.

Results: Increases in CD4:CD8 ratio occurred over 10 years on ART for all ages, from median ratio value 0.24 at baseline to 0.88 at year 10. However, the increase was progressively less with older age (from 0.28 to 0.95 for age 20-29; from 0.24 to 0.92 for age 30-39; from 0.24 to 0.84 for age 40-49; from 0.22 to 0.80 for age 50-59; from 0.20 to 0.57 for ages 60-79). Compared to the reference group starting ART aged 30-39, after 5 and 10 years on ART CD4:CD8 ratio was substantially lower for those starting ART after age 60, even more so after age 70 (Table).

	Year after ART initiation					
	Year 5			Year 10		
	Fold difference[1,2]	95% CI	p	Fold difference[1,2]	95% CI	p
Age at ART initiation						
20-29	0.96	0.89, 1.05	0.395	0.97	0.87, 1.09	0.653
30-39 (reference)	1.00			1.00		
40-49	0.93	0.88, 0.99	0.017	0.95	0.87, 1.02	0.161
50-59	0.91	0.84, 0.99	0.024	0.95	0.85, 1.06	0.401
60-69	0.83	0.71, 0.97	0.018	0.82	0.63, 1.05	0.121
70+	0.73	0.52, 1.04	0.079	0.62	0.42, 0.93	0.021

Table: Association between age at ART initiation and CD4:CD8 ratio after 5 and 10 years of virally suppressive ART, adjusted for baseline CD4 count and demographic variables.

[1]Compared to age 30-39 (reference category)

[2]CD4:CD8 ratios were logged before analysis and subsequently exponentiated

Conclusions: Age had a substantial impact on CD4:CD8 ratio recovery for people starting ART after age 60. Results may indicate the level of CD4:CD8 recovery possible in a virally suppressed, aging HIV positive population.

EPB145

Prevalence and Associated Factors of Healthy Aging with HIV in Latin America

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Background: Older adults living with HIV in Latin America represent a growing and heterogeneous population, though few studies have addressed correlates of healthy aging (HA) among them

Methods: We included patients aged <50 years at enrollment (on/after January 1, 2002) who aged to ≥50 years while in care at Caribbean, Central and South America network for HIV epidemiology (CCASAnet) sites. We followed individuals from enrollment until death, first gap in care of 12 months, or study end (November 4, 2021). Patients were classified as HA annually after age 50 if they had suppressed HIV-1 viral loads (<200 copies/mL), last CD4+ count ≥350cells/µL, no prior AIDS-defining event, and <2 non-communicable diseases.

We estimated odds ratios (OR) for associations between characteristics and annual HA using a multivariable mixed logistic model, including birth sex, HIV acquisition risk, follow-up time before age 50, CD4+ count at enrollment, educational attainment, and site. We multiply imputed missing baseline data and used time-to-event analysis to estimate median times from first year of HA to loss of HA.

Results: We followed 3,782 individuals for a median of 7.2 years (interquartile range [IQR]: 3.5, 11.7) before age 50 and 8 years (IQR:5-12) after age 50; 47% were HA during their first year, 2,503 (66%) were HA at least once (median 2, IQR: 0, 4 years), and 1,120 (45%) were HA for ≥80% of follow-up. Of those with HA at least once: 72% were male, median baseline age was 43 years (IQR: 39, 47), 47% acquired HIV through heterosexual sex, and most had high educational attainment (41% Secondary, 23% University, 11% <Primary). Adjusted median time from first HA to loss of HA was 3 years (IQR: 2, 4).

Those with HA at least once were more likely to be female (OR=1.28), have higher baseline CD4+ count (OR=1.12 per 100 cells/µL), higher education (OR=1.43 for Secondary and OR=1.63 for University compared to <Primary) and shorter time in care before age 50 (OR=0.96 per year).

Conclusions: HA was prevalent in this large Latin American cohort reaching 50 years of age while in HIV care. Associated characteristics highlight groups who require tailored strategies to promote HA.

ART in acute, first- and second-line therapies

EPB146

Cost-effective continuous flow synthesis of HIV second and third generation integrase inhibitor drugs: a step towards local API manufacturing in Africa

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Background: The sub-Saharan African region, which has the highest Human Immunodeficiency Virus (HIV) prevalence in the world and has invested heavily in running its HIV programme is currently facing a catastrophic prob-

lem of production, distribution, cost and availability of antiretroviral (ARV) drugs. Exploring the recently emerged "enabling technique", namely flow chemistry in the production of APIs has gained a lot of attention.

This study evaluated the application of flow chemistry on the production of dolutegravir; a recently approved highly important and effective antiretroviral drug that has become the backbone of South Africa's HIV programme together with many other countries and cabotegravir.

Methods: Synthesis of dolutegravir and cabotegravir was achieved in a traditional batch synthetic route starting from a commercially available benzylated pyran *viaa* seven steps chemical transformation process. The same steps were followed to achieve continuous flow chemistry and the results were paralleled. Different continuous flow procedures including little things factory (LTF) microrector, packed bed reactor, Labtrix Start and uniqsis systems were explored to achieve excellent yields in short time.

Obtained products were characterized using techniques such as Nuclear Magnetic Resonance (NMR) and High-performance liquid chromatography (HPLC) for purity and yield.

Results: The study demonstrated batch synthesis of dolutegravir and cabotegravir in overall time of 70.5hours with an overall yield of 67%. The flow process took approximately 10% of the time of the traditional batch process affording desired products in improved excellent yields. The key features are a significant reduction in the time for the pyran amination step from 18 hours at room temperature in 86% isolated yield to 100% in 20minutes and1 minute at 100°C using LTF and Uniqsis flow systems respectively.

Moreover, amidation reaction resulted in 100% yield over 30seconds residence time from 33% over 4.5hours in batch method for both drugs. The uniform heat transfer, efficient and intensive mixing in flow technology systems contributed to the high yields.

Conclusions: To a great extent, efficient and cost-effective continuous flow procedure towards dolutegravir and cabotegravir was developed. The local API manufacture could be facilitated using this very efficient approach to the synthesis to effort an end of HIV epidemic.

EPB147

Treatment experience of single-tablet dolutegravir/lamivudine in the United States: results from the 'real-world outcomes with dolutegravir-based two-drug-regimens for the treatment of HIV-1' (TANDEM study)

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Background: Treatment for people living with HIV-1 (PLWH) continues to advance with a two-drug regimen (2DR) approach. Dolutegravir/lamivudine (DTG/3TC) is indicated as a 2DR for both treatment-naïve and virally suppressed PLWH. Despite sustained virologic efficacy for DTG-based 2DRs observed in clinical trials, there is limited evidence in US real-world clinical settings. The TANDEM study characterizes real- world prescribing behaviors and treatment outcomes for DTG-based 2DR.

Methods: TANDEM was a retrospective medical chart review conducted across 24 US sites. Eligible PLWH were adults initiated on DTG/3TC or DTG/rilpivirine (DTG/RPV) prior to Sept/30/2020 with a minimum clinical follow-up of six months. Treatment-naïve PLWH had no prior history of HIV therapy while stable switch (SS) PLWH were defined as having HIV-1 RNA <50 copies/mL, on a stable anti-retroviral treatment regimen for ≥3 months upon DTG-based 2DR initiation. Clinical characteristics, treatment history and outcomes were abstracted. Analyses were descriptive. Results are reported for the DTG/3TC cohort. DTG/RPV results are reported separately.

Results: From an overall sample of 469 PLWH on DTG-based 2DR, 318 received DTG/3TC. Of the DTG/3TC cohort, 126 were treatment-naïve and 192 were SS. 48.4% naïve PLWH received DTG/3TC as part of a test-and-treat paradigm. For DTG/3TC naïve and SS PLWH respectively, mean age was 37.4 and 49.1 years, 88.1% and 82.3% were male, 61.1% and 64.6% were Caucasian. By data cut-off, mean time on DTG/3TC was 1.3 and 1.5 years naïve and SS respectively. SS PLWH received an average 10.4 years prior ART, 66.1% received ≥2 prior regimens. Most common reasons for initiating DTG/3TC were avoidance of long-term toxicities in both naïve (32.5%) and SS (27.1%) cohorts.

Simplification / streamlining in SS (25.0%) and convenience in naïve PLWH (15.9%) were also common. 93.7% naïve PLWH achieved virological suppression and 83.3% remained suppressed; 95.8% SS maintained suppression receiving DTG/3TC. N=1 naïve and N=3 SS PLWH discontinued DTG/3TC by the data cut-off.

Conclusions: Results reflect data from clinical trials, demonstrating DTG/3TC is effective and well tolerated in the real-world. DTG/3TC was primarily initiated to avoid po-

tential long-term toxicities. Nearly all DTG/3TC users, whether treatment-naïve or SS, experienced sustained virologic suppression with few treatment discontinuations.

EPB148

Advanced HIV infection in the US: immune response to ART initiation

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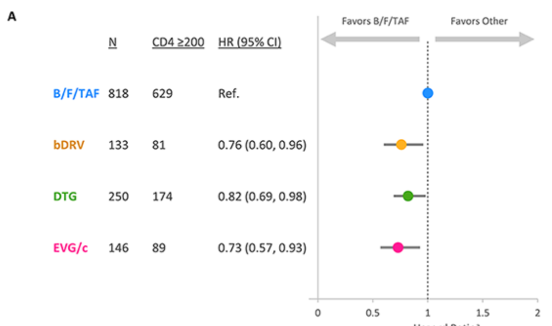
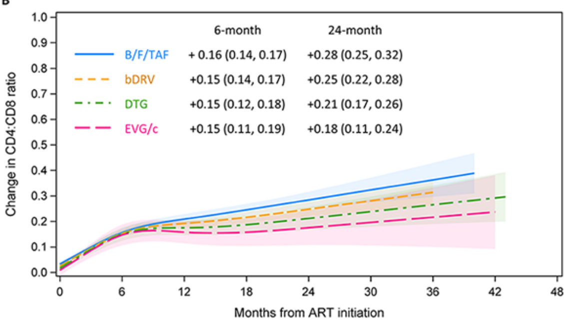
Background: Up to 20% of individuals newly diagnosed with HIV in the US have advanced HIV infection (CD4<200 cells/µL). We compared the absolute CD4 cell count and CD4:CD8 ratio recovery among people with advanced HIV after common antiretroviral therapy (ART) regimens initiation in 2018-2020.

Methods: In the OPERA cohort, all ART-naïve, adults with advanced HIV (CD4<200 cells/µL) initiating bictegravir/emtricitabine/tenofovir alafenamide (B/F/TAF) or a boosted darunavir (bDRV)-, dolutegravir (DTG)- or elvitegravir/cobicistat (EVG/c)-based three-drug regimen were selected. A Cox proportional hazard model was used to assess time to CD4 cell count ≥200 cells/µL. A linear mixed model was used to assess changes in CD4:CD8 ratio from baseline. Inverse probability weighting was employed to control for confounding (Figure).





[a] Cox proportional hazards model, inverse probability of treatment weights (baseline age, CD4 cell count, log10 viral load, eGFR, sex, Black race, ADAP/Ryan White, AIDS history, any comorbidities)
[b] Predicted values from linear mixed model, restricted cubic splines on time (knots: 2, 6, 12, 24), inverse probability of treatment weights; reference: male, 40 years old, non-Black, no comorbidity, no AIDs history, no ADAP/Ryan White coverage, baseline CD4 cell count: 86 cells/µL, log10 viral load: 5, baseline CD4:CD8 ratio measured on index day

Figure. Association between regimen and (A) reaching a CD4 cell count ≥200 cells/µ³, or (B) changes in CD4:CD8 ratio from index[b]

Results: Of 1349 individuals included, those initiating B/F/TAF were least likely to have a history of AIDS-defining illness, any comorbidity or ADAP/Ryan White coverage (Table). Compared to those initiating B/F/TAF, a statistically lower likelihood of achieving a CD4 cell count ≥200 cells/µL was observed (HR; 95% CI) with bDRV (0.76; 0.60-0.96), DTG (0.82; 0.69-0.98) and EVG/c (0.73; 0.57-0.93; Figure A).

All groups presented a similar pattern of CD4:CD8 ratio changes: a rapid increase in the first 6 months, followed by a slower increase thereafter (Figure B). Overall, only 40 individuals (4%) achieved CD4:CD8 ratio normalization (≥1).

	B/F/TAF N=816	bDRV N=134	DTG N=253	EVG/c N=146
Age, median years (IQR)	36 (29, 46)	34 (27, 46)	37 (28, 47)	36 (28, 44)
Female, n (%)	156 (19)	29 (22)	43 (17)	29 (20)
Black Race, n (%)	505 (62)	84 (63)	167 (66)	98 (67)
Ryan White/ADAP, n (%)	310 (38)	76 (57)*	134 (53)*	65 (45)
CD4 cell count, median cells/µL (IQR)	78 (29, 147)	94 (36, 145)	83 (35, 149)	84 (24, 150)
Log10 HIV viral load, median (IQR)	5.3 (4.9, 5.7)	5.4 (4.7, 5.6)	5.3 (4.8, 5.7)	5.2 (4.7, 5.6)
History of AIDS, n (%)	326 (40)	52 (39)	128 (51)*	68 (47)
Any comorbidity[a], n (%)	383 (47)	68 (51)	144 (57)*	80 (55)

* p <0.05 for the comparison with B/F/TAF
[a] Cardiovascular disease, hypertension, diabetes mellitus, dyslipidemia, thyroid disease, mental health conditions, liver diseases, bone disorders, renal disease, rheumatoid arthritis, substance abuse

Table. Population characteristics at ART initiation

Conclusions: Among individuals with advanced HIV infection, B/F/TAF initiation was associated with a faster CD4 cell count recovery (>200 cells/µL). No difference was observed in CD4:CD8 ratio changes over time across groups; CD4:CD8 ratio normalization was rare with all regimens.

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EPB149

Higher CD4/CD8 ratio recovery observed among people living with HIV started with integrase strand transfer inhibitors

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Background: CD4/CD8 ratio is a surrogate marker of immune dysfunction. Low ratios in people living with HIV (PWH) on antiretroviral therapy (ART) are associated with non-AIDS defining illness and mortality.

We evaluated trends in CD4/CD8 ratio among PWH starting ART with first line integrase strand transfer inhibitors (INSTI) compared to non-INSTI-based ART, and the incidence of CD4/CD8 ratio normalization.

Methods: All participants enrolled in adult HIV cohorts of IeDEA Asia-Pacific who started with triple-ART with at least one CD4/CD8 ratio and one HIV-1 RNA measurement post-ART were included. Baseline was defined as 6 months pre-ART. CD4/CD8 ratio normalization was defined as the ratio ≥1. Longitudinal changes in CD4/CD8 ratio were analyzed by linear mixed model, and the incidence of the normalization was analyzed using Cox regression.

Results: Of a total of 38,785 PWH, 36,353 (94%) started with ≥3 antiretroviral drugs. Among these, 5529 (15%) had CD4 and CD8 measurements at baseline and at least one time after ART initiation and were included in the analysis. Their median age was 35 years (interquartile range [IQR], 29-43) and 80% were male; 65%, 19% and 16% started with non-nucleoside reverse transcriptase inhibitor (NNRTI), protease inhibitor (PI) and INSTI, respectively.

The overall baseline CD4/CD8 ratio was 0.19 (IQR, 0.09-0.33). In an adjusted linear mixed model, PWH starting with NNRTI- (p=0.005) or PI-based ART (p=0.030) had reduced CD4/CD8 recovery over 5 years of ART, compared to INSTI-based ART. During 24,304 person-years of follow-up (PYS), 32% PWH had CD4/CD8 ratio normalization.

After 5 years of ART, the probability of normalization for NNRTI, PI and INSTI was 23% (95%CI 21-24), 30% (95%CI 26-33) and 40% (95%CI 35-46), respectively. Using Cox regression, PWH who started with NNRTI- (adjusted hazard ratio, 0.63 95%CI 0.52-0.79, p<0.001) or PI-based ART (0.76 95%CI 0.61-0.95, p=0.015), compared to INSTI-based ART, had significantly lower risk of achieving CD4/CD8 ratio normalization.

Conclusions: Our study confirms that INSTI use is associated with higher rates of CD4/CD8 ratio recovery and normalization. These data support the importance and benefits of more rapidly scaling up INSTI-based ART in the Asia-Pacific region.

EPB150

Long-term integrated analysis of B/F/TAF in treatment-naïve adults with HIV through five years of follow-up

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Background: Bictegravir/emtricitabine/tenofovir alafenamide (B/F/TAF) is a guideline-recommended single-tablet regimen for people with HIV-1 (PWH). Week (W) 48 primary and W96 and W144 secondary endpoint results of the blinded phase from two studies established non-inferiority of B/F/TAF to dolutegravir/abacavir/lamivudine (DTG/ABC/3TC) and DTG+F/TAF in treatment-naïve PWH. We present pooled outcomes from a 96W open-label extension (OLE) in participants initially randomized to B/F/TAF for a total follow up of W240.

Methods: We conducted two randomized, double-blind, phase 3 studies in treatment-naïve adult PWH: Study-1489 (B/F/TAF vs DTG/ABC/3TC) and Study-1490 (B/F/

TAF vs DTG+F/TAF). Unblinding occurred after all participants completed W144, after which all were offered B/F/TAF in OLE. Participants originally randomized to B/F/TAF who entered OLE were pooled into B/F/TAF group. An analysis at W240 assessed efficacy as proportion with HIV-1 RNA <50 c/mL using missing=excluded (M=E) and missing=failure analyses; safety assessed adverse events (AEs) and laboratory results.

Results: 634 participants originally randomized/treated with B/F/TAF (506 [80%] treated in OLE), 89% men, 33% Black, median age 32 years (range 18-71). W240 98.6% (426/432) of B/F/TAF participants maintained HIV-1 RNA <50 c/mL (M=E) with a mean CD4 increase of +338 cells/ml from baseline. No B/F/TAF participant in the final resistance analysis developed virologic resistance.

Among B/F/TAF group through W240, 28% (178/634) experienced a study drug-related AE, 1% (9/634) were Grade 3 or 4. AEs led to drug discontinuation in <1.6% (n=10/634) of participants. There were no discontinuations due to renal AEs. Lipid changes were similar at W240 to W192, with minimal change in TC:HDL. Median weight change (IQR) from baseline to W240 was +6.1kg (2.0, 11.7), +3kg (0.3, 5.8) occurring during year one.

	Pooled B/F/TAF (N= 634 originally randomized to B/F/TAF, N=506 entered the OLE)*				
	Week 48	Week 96	Week 144	Week 192	Week 240
HIV-1 RNA <50 c/mL Missing = Excluded – Pooled Data, n/N (%)	585/589 (99.3)	554/557 (99.5)	528/531 (99.4)	476/480 (99.2)	426/432 (98.6)
HIV-1 RNA <50 c/mL Missing = Failure[ǂ] – Pooled Data, n/N (%)	585/634 (92.3)	554/634 (87.4)	528/634 (83.3)	476/634 (75.1)	426/634 (67.2)
Change from baseline in CD4 cell count cells/mm³, mean (SD)	208 (178), n=584	263 (207), n=546	288 (231), n=517	317 (246), n=475	338 (236.2) n=415
eGFR [Cockcroft-Gault], change, mL/min, median (Q1, Q3)	-8.8 (-18.4, 0.3)	-7.5 (-16.6, 2.9)	-5.8 (-16, 3.4)	-8 (-19.3, 2.8)	-8.4 (-19.4, 2.6)
Fasting lipids change, mg/dL, median (Q1, Q3)					
Total cholesterol	12 (-3, 30)	16 (0, 35)	13 (-8, 32)	19 (3, 38)	21 (1, 42)
LDL cholesterol	8 (-5, 22)	18 (3, 35)	20 (2, 40)	22 (6, 39)	19 (2, 40)
HDL cholesterol	5 (-1, 11)	4 (-1, 10)	4 (-2, 10)	6 (0, 12)	4 (-2, 11)
Total:HDL cholesterol ratio	-0.1 (0.5, 0.3)	0 (-0.5, 0.5)	0 (-0.6, 0.4)	0 (-0.6, 0.4)	0.1 (-0.5, 0.6)
Triglycerides	6 (-21, 32)	7 (-17, 39)	5 (-23, 37)	8 (-21, 37)	10 (-16, 46)
Body weight change from baseline, kg, median (Q1, Q3)	(n=588)	(n=557)	(n= 533)	(n= 485)	(n=431)
	3 (0.3, 5.8)	3.5 (0, 8.2)	4.2 (0.5, 8.9)	4.9 (1.3, 9.9)	6.1 (2.0, 11.7)

*Includes only participants that were initially randomized and treated with B/F/TAF

ǂof 634, 115 prematurely discontinued study-drug during randomized phase, 13 did not enter OLE, 62 prematurely discontinued study drug during OLE (LTFU 28, participant decision 22, AE 4, investigator's discretion 3, non-compliance w/study-drug 2, death 1, lack of efficacy 1, protocol violation 1)

Table. Changes from baseline to Week 240

Conclusions: Through 5-years of follow-up, B/F/TAF maintained high rates of virologic suppression with no treatment-emergent resistance and rare drug discontinuations due to AEs. These results demonstrate the durability and safety of B/F/TAF in PWH.

EPB151

A pilot study of the impact of a rapid ART initiation in advanced HIV disease

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Background: Rapid ART initiation is important in patients with advanced HIV disease because of their high morbidity and mortality.

Methods: Pilot, single-center, single-arm, prospective, phase IV, clinical trial conducted in a tertiary care Italian hospital from 1.05.2020 to 31.12.2021. 30 ART-naïve participants, presenting at HIV-1 diagnosis with advanced disease described as the presence of an AIDS-defining condition and/or CD4 cell count <200 cells/µL, were enrolled.

Exclusion criteria were: CrCl <30 mL/min, severe hepatic impairment, active tuberculosis (TB), cryptococcosis, pregnancy or breastfeeding and systemic cancer chemotherapy. Bictegravir/emtricitabine/tenofovir alafenamide (B/F/TAF) 50/200/25 mg was started within 7 days of HIV diagnosis.

The primary endpoint was time-to-clinical or virologic failure (VF) (ITT analysis). Safety and feasibility were also assessed.

Results: 30 patients were enrolled: 16% female, 90% white, median age 45yrs (38-58), 43% presented with CDC stage C disease, CD4 cell count was 90 cells/µL (39-147), HIV RNA log10 cp /ml 6.0 (5.4-6.4), 40% of patients had ≥ 1 comorbidity. Proportion with HIV RNA <50 cp/mL increased from 9/30 (30%) at w4 to 27/30 (90%) at w48. No viral rebound was observed. Proportion with CD4 >200 cells/µL increased form 2/30 (7%) at BL to 24/30 (80%) al w 48. CD4/CD8 improved, while the eGFR decreased slightly (Figure 1).

There were no ART discontinuations due to toxicity or VF. 3 participants had 6 SAEs (4 unrelated; 2 potentially related to B/F/TAF): 1 seizure (w4 and w12) + PML with IRIS (w5) + 2 *Pneumocystis*pneumonia with IRIS (w4) + pneumomediastinum (w5); 3 clinical worsening (w1) + acute appendicitis and disseminated TB with IRIS (w2) that required ART switch. There were no ART modifications based on review of baseline genotype (no NRTI mutations, 3 accessory INSTI mutations [E157Q, G163K, L74I]).

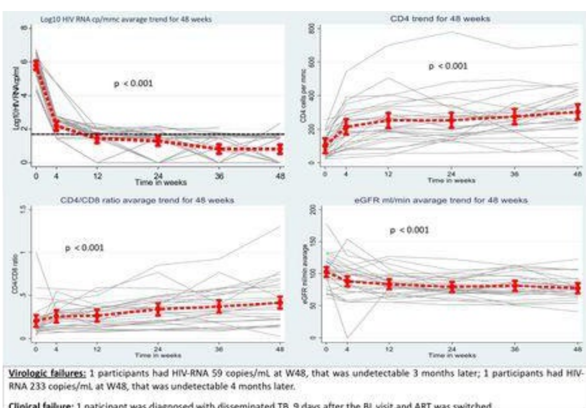

Figure 1. Viral decay, immunological results and eGFR average trend for 48 weeks.

Conclusions: Our results support the efficacy, safety and feasibility of a rapid start strategy with B/F/TAF in patients with advanced HIV.

EPB152

Country of birth influences INSTI prescription in treatment-naive patients living with HIV in France

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Background: INSTI-based regimens are recommended in France for treatment-naive patients living with HIV. However, NNRTIs and boosted PIs remain alternative choices. We aimed to describe factors associated with the use of these possible regimens in ART-naive patients in France.

Methods: From the Dat'AIDS prospectively collected database, we selected all adults having an HIV-RNA ≥400 copies/mL who started their first ART between 01/01/2014 (INSTI availability) and 12/31/2020. Uni- and multivariable logistic regressions were used to analyze patients' characteristics driving to an INSTI-based first prescribed regimen.

Results: We analyzed data from 9094 patients, 44.7% MSM, 27% women and 26.8% heterosexual men ; 48% born abroad ; 4.7% and 2.8% with concomitant hepatitis B and tuberculosis, respectively. INSTIs were prescribed as first line in 49.9%, increasingly over the years – from 21.6% in 2014 to 74.7% in 2020. Characteristics related with the choice of an alternative regimen appear in the Table.

Patients born in France were more likely to receive an INSTI-based regimen than patients born abroad (OR 1.85, 95%CI 1.68-2.04)

Logistic regression		Univariate		Multivariate	
		OR	95%CI	OR	95%CI
Age at HIV diagnosis		1.01	1.00-1.01	1.01	1.00-1.02
Gender and sex	Women	Ref		*	
	Men having sex with men	1.98	1.78-2.20		
	Men having sex with women	1.48	1.32-1.66		
Born in France		1.64	1.50-1.78	1.85	1.68-2.04
Year of prescription	2014	Ref		Ref	
	2015	2.34	1.98-2.77	2.49	2.10-2.96
	2016	2.93	2.48-3.47	3.06	2.58-3.63
	2017	4.84	4.09-5.73	4.98	4.19-5.92
	2018	4.80	4.04-5.71	5.17	4.33-6.17
	2019	8.59	7.18-10.3	9.30	7.75-11.20
	2020	15.1	12.1-18.9	12.2	9.87-15.10
HIV-RNA (for 1 Log)		1.20	1.15-1.26	1.14	1.09-1.21
Concomitant hepatitis B		0.72	0.59-0.88	0.78	0.63-0.98
Concomitant tuberculosis		3.11	2.26-4.28	3.47	2.58-4.67
CD4 cell count at initiation	<200	Ref		Ref	
	200-350	1.07	0.95-1.21	1.25	0.14-1.50
	350-500	1.11	0.98-1.21	1.29	1.13-1.48
	>500	1.12	0.99-1.25	1.31	1.14-1.50
CDC stage C		1.08	0.95-1.22	-	-

*: Because of collinearity, place of birth and gender could not be analyzed in the same multivariate model, thus we chose to keep place of birth.

Table.

Conclusions: Despite unrestricted access to INSTIs in France, independently from HIV disease parameters, patients born abroad less frequently received INSTIs as a first regimen. Qualitative data are needed to better understand physicians' prescribing practices.

EPB153

Starting antiretroviral therapy (ART) at the first HIV-specialist appointment with or without baseline laboratory data with BIC/FTC/TAF (The BIFAST study)

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Background: Starting ART as soon as possible, even without baseline laboratory data, is highly recommended in undeveloped settings, however its implementation in developed countries is controversial.We sought to evaluate the safety of this strategy in a referral HIV clinic in downtown Madrid.

Methods: Phase IV, open-label, non-randomized, single-centre clinical trial. Patients referred to the HIV-clinic were offered same day ART with BIC/FTC/TAF whether or not having baseline laboratory data (Group 1, without lab data (WOLD); group 2 with lab data (WLD). Results of VL, CD4 and PRO at week 24 are shown here.

VARIABLE	VALUE		
	WITHOUT LAB bDATA (WOLD) (N=20)	WITH LAB bDATA (WLD) (N=39)	
Median age – years (IQR)	32 (26-39)	35 (30 - 42)	
Males – number of patients (%)	19 (95%)	38 (97.4%)	
Ethnicity – number of patients (%)			
European	14 (70%)	22 (56.4%)	
Latin-American	6 (30%)	17 (43.6%)	
Mechanism of HIV acquisition – number of patients (%)			
MSM	17 (85%)	34 (87.2%)	
Other	3 (15%)		
Coinfections – number of patients (%)			
HBsAg	0	1 (2.6%)	
Syphilis	1 (5%)	8 (20.5%)	
Resistance (mutations) – number of patients (%)			
NNRTIs 4(6.8%) E138A (2), V108I (1), K103N (1)		4	
NRTIs 1 (1.7%) M184V		1	
PIs 1 (1.7% L90M	1		
CD4 count – cells/mm³; median (IQR)	454 (286 - 725)	404 (238 - 668)	
< 200 cells/mm³ (%)	1 (5%)	7 (18.4%)	
HIV-1 RNA viral load – (%)			
> 100,000 copies/mL	3 (15%)	11 (28.2%)	
> 500,000 copies/mL	1 (5%)	2 (5.1%)	
Median time from diagnosis to star of ART; days (IQR)	16 (13-22)	28 (14-63)	(p = 0.031)
Other Baseline characteristics			
High school degree		37 (62.7%)	
Had sex with different partners		37 (62.7%)	
Used dating apps always or almost always		23 (39%)	
Chemsex users		18 (30.5%)	
Condomless sex		21 (35.6 %)	
Practiced sex since knowing the diagnosis		26 (44%)	
Changed sexual habits since knowing HIV status		10 (17%)	

Table 1. Baseline characteristics of participants.

Results: The main characteristics of 59 included subjects are described in Figure 1. All patients in both treatment groups started without the baseline resistant testing

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(bDRT). Efficacy at week-24 in the ITT-E and PP analysis were 80% (16/20) (CI95%: 62.5-97.5%) in WOLD vs 87.2% (34/39) (CI95%: 76.7-97.7%)in WLD, and 88.9% (16/18) (CI95%: 74.4-100%) vs 94.4% (34/36) (CI95%: 87-100%) respectively.
Four patients (6.8%) were lost to follow-up (2 in each arm); one patient discontinued treatment because a suspected TB infection and four patients presented > 50 cop/mL at week 24 (90, 68, 53, 53 cop/mL, respectively).
The mean time to achieve VL <50 cop/ml was 14.5 weeks (±11.4 weeks) in WOLD vs 61.3 weeks (±169 weeks) in WLD from HIV diagnosis. An improvement in subjects' self-perception (decrease of anxiety/depression symptoms and increase in happiness and optimistic perception about the future) was observed in PRO in both groups.
Conclusions: Starting ART at the first HIV-specialist appointment with BIC/FTC/TAF, with or without laboratory data, is a safe strategy and diminishes patient anxiety within the first weeks of treatment.

ART in highly treatment-experienced persons

EPB154
Doravirine associated resistance mutations in antiretroviral therapy naïve and experienced HIV-1C infected people in Botswana

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Objectives: Doravirine (DOR), a non-nucleoside reverse transcriptase inhibitor (NNRTI), has an opportunity for use as part of first-line antiretroviral therapy (ART) regimen or salvage ART regimen for individuals with HIV multidrug resistance mutations.
However, there is limited data on the prevalence of DOR-associated resistance mutations in people with HIV (PWH) in Botswana. We determined the prevalence of DOR-associated resistance mutations among ART-naïve and ART-experienced PWH with virologic failure on efavirenz- or nevirapine-based ART in Botswana.
Methods: HIV-1C Pol sequences from 6078 PWH in Botswana were analyzed for DOR-associated resistance mutations. Virologic failure was defined, as HIV-1 RNA load (VL) >400 copies/mL. DOR-associated resistance mutations were identified and their levels were predicted according to the Stanford HIV database "DRM penalty scores and resistance interpretation". Proportions were estimated with 95% confidence intervals (CI) and compared among groups.
Results: Among 6078 available HIV-1C sequences, 99% (5999) had known ART status and 79% (4738/5999) were on ART while 21.0% (1261/5999) were ART naive at study entry. The suppression rate among ART-experienced was 95% (4517/4738).
The overall prevalence of any DOR-associated resistance mutations was 4.3% (64/1473); by ART status: 11.3% (24/212) among ART failing and 3.2% (40/1261) among ART-naïve individuals. The prevalence of intermediate DOR-associated resistance mutations was 0.6% (95% CI: 0.2-11.4) in ART-naïve individuals and 4.7% (95% CI: 2.3-8.5) among ART failing individuals. The prevalence of high level DOR-associated resistance mutations was 2.6% (95% CI: 1.8-3.7) among ART-naïve and 6.6% (95% CI: 3.7-10.8) among ART-failing PWH (Figure 1). PWH failing ART with efavirenz or nevirapine-associated resistance mutations had higher prevalence (28.9%:22/76) of DOR-associated resistance mutations.

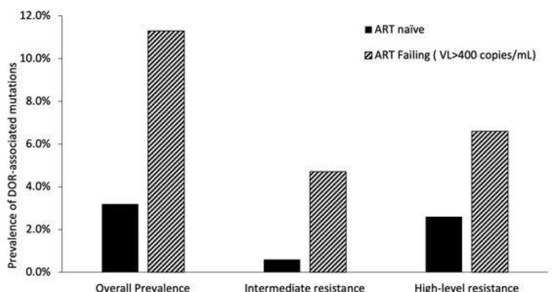

Figure 1. The overall prevalence, intermediate and high-level resistance of DOR-associated mutations by ART groups.
***Statistically higher among ART failing individuals (all p-value >0.01)*

Conclusions: Prevalence of DOR-associated resistance mutations was low among ART-naïve individuals, but DOR-associated mutations were found in >20% of individuals failing NNRTI-based ART with at-least one efavirenz or nevirapine-associated resistance mutations in Botswana. The use of DOR among first-generation NNRTI-experienced PWH should be based on HIV drug resistance testing.

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EPB155

The presence of minority HIV Drug resistance variants in the protease and Gag regions confers poor response to therapy among subtype A and D patients

I. Nankya[1], E. Nabulime[1], F. Kyeyune[1], C. Kityo[2], M. Quinones[3,4]
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Background: The extensive use of antiretroviral therapy has favored the emergence of novel patterns of mutations conferring drug resistance. Most of these mutations are found in genes targeted by the drugs and are detectable using the conventional Sanger sequencing technology which has a 20% limit of detection. The more sensitive sequencing approaches currently being employed are not readily available in the developing countries.
Methods: Samples were obtained from patients failing on a protease inhibitor (PI) based regimen (n = 500). Sanger based sequencing was performed as part of the standard of care.
Mutation analysis was performed using the Stanford HIV drug Resistance (HIV DR) database. A subset of these samples was grouped into two: those failing a PI based with mutations in the protease region (n = 100) and those failing without mutations in the protease region (n = 128).
These samples were analyzed in the protease and Gag regions using Next Generation Sequencing (NGS) technology and analysis of the drug resistance mutations was performed at the 20% and 1% cutoffs.
Results: An initial analysis revealed that most patients harbored mutations that confer resistance to Lopinavir and Atazanavir, but these mutations had little effect on Darunavir. NGS revealed that in patients failing with or without drug resistance mutations, minority drug resistance mutations were present at each of the codons even those that confer multi-drug resistance to PIs.
Further analysis of the Gag gene revealed more genetic diversity among patients failing with no mutations in the protease.
Conclusions: Patients who fail a PI regimen with a susceptible genotype based on Sanger sequencing harbor minority variants in the protease region and numerous polymorphisms in the Gag region which when combined could explain their poor response to therapy. Therefore, in order to improve patient care in low resource settings, there is need to adapt NGS as the standard genotyping technique.
In addition, since mutations in the Gag also play a role in response to PIs, this region should be included in the routine monitoring for response to therapy in patients on a PI based regimen.

EPB156

How clinical trials of combination antiretroviral therapy for adults with HIV capture health-related quality of life with patient-reported measures: a systematic review

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Background: Beyond biochemical treatment goals (e.g., HIV viral load, CD4 cell count), health-related quality of life (HRQoL) is used as an indicator of combination antiretroviral therapy (cART) performance. In cART trials, HRQoL is assessed using patient-reported outcome measures (PROMs). The purpose of this review was to describe the scope of HRQoL assessment among cART clinical trials.
Methods: PubMed, Embase, PsycInfo, and CINAHL were searched for cART clinical trials published between 2015 and 2020 that reported PROM data on HRQoL. To understand the scope of HRQoL representation, PROMs were mapped to the Wilson and Cleary domains of symptom status, functional status, general health perceptions, and overall quality of life (QOL). Qualitative content analysis of PROM items was conducted to identify subdomains.
Results: Of 3602 identified records, 35 trials were included. All 35 assessed two or more domains and most (n=26; 74%) assessed at least 3. All studies measured functional status, while 32 (91%) assessed general health perceptions, 26 (74%) overall QOL, and 17 (49%) symptom status. A total of 26 PROMs were used in the included studies. Trials reported on average 2.2 PROMs (range 1–5), with most (n=22; 63%) combining two or more PROMs.
The HIV Treatment Satisfaction Questionnaire (n=17) and the Short-Form Health Survey (n=11) were the most frequently used HIV-specific and generic PROMs, respectively; both of which assess various domains. Half of PROMs assessed the domain of symptom status, with physical symptoms (n=18) being the most frequent subdomain.
Functional status was assessed by 16 PROMs, and work productivity (n=9) was the most common measured subdomain. General health perceptions were assessed by 9 PROMs, with perceived health status (n=6) being the most frequent subdomain.

Nine PROMs assessed overall QOL, and the perceived value of life (n=5) and enjoyment of life (n=5) were the most frequent measured subdomains (n=5).

Conclusions: HRQoL assessment in cART clinical trials particularly focus on functional status and general health perceptions. HRQoL was measured broadly, which was accomplished by combining PROMs and prioritizing comprehensive PROMs. Our findings not only detail a portrait of HRQoL assessment in HIV trials but help inform PROM selection in future research.

EPB157

Comparison of virologic suppression rates among first- and second-line antiretroviral therapy patients at an urban clinic in Zimbabwe: a cohort study

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Background: The most common reason for virologic failure (VF) on antiretroviral therapy (ART) is suboptimal adherence. We compared virologic suppression (VS) rates among people living with HIV (PLWH) receiving efavirenz (EFV) based first-line ART and those with VF history receiving atazanavir (ATV/r) or dolutegravir (DTG) based second-line ART.

Methods: We abstracted routinely collected patient records from the electronic medical records of Newlands Clinic in Harare, Zimbabwe. We defined baseline as time of commencing ART for first-line and switch for second-line patients.

We included patients aged ≥12 years at baseline with at ≥24 weeks duration on the respective ART regimen. We computed VS rates (viral load <50 copies/mL) at weeks 12, 24, and 48 post-baseline.

Restricted to second-line patients, we estimated the odds and probability of VS at week 48 by ART regimen, sex, age, and CD4 count using logistic regression models.

Results: Among 1445 (60% female) patients initiating first-line ART and 1050 (58% female) patients switching to second-line ART, median (interquartile range [IQR]) age was 37 years (29–44) and 29.5 years (19–42), respectively.

Among the second-line patients, 835 (79.5%) received ATV/r-based ART while 215 (20.5%) received DTG-containing ART. Except at week 12, VS rates were lower in second-line compared to first-line patients.

Among second-line patients, switching to DTG-containing ART was associated with a 1.6-fold increase in the odds of VS at week 48 compared to ATV/r. The odds of VS also increased with female sex, baseline CD4 counts >500 cells/mm^2, and older ages; with age being the most important predictor of VS (Figure).

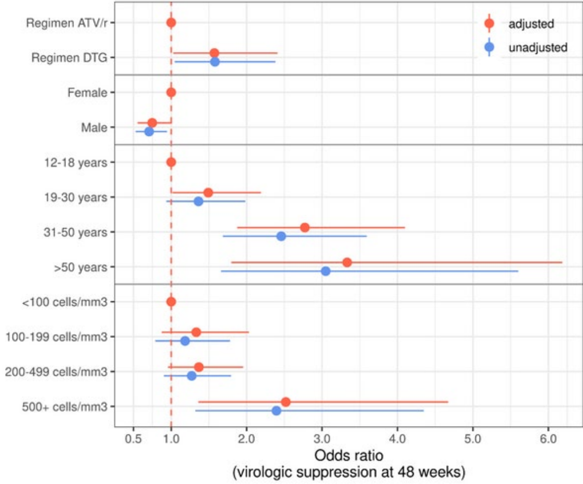

Figure.

Conclusions: PLWH with history of VF are still less likely to achieve virologic suppression after switching to second-line ART. We recommend close monitoring and adherence support among this population after switching, particularly among young PLWH with history of VF, even in the DTG era.

EPB158

Low level of virologic failure and resistance in ART-experienced, integrase inhibitor-naïve participants receiving dolutegravir (DTG) and Nucleoside Reverse Transcriptase Inhibitors (NRTIs) combined regimens: 10-year follow-up in the SAILING Study

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Background: DTG demonstrated superiority to RAL in the SAILING study at Week 48 (WK48) in treatment-experienced, integrase inhibitor-naïve patients with HIV-1 who harbored resistance to ≥2 antiretroviral drug classes. A previous ad hoc analysis of SAILING reported no protocol-defined virologic failure (PDVF) through WK48 in participants receiving DTG with only NRTIs as background regimen (BR) that was suboptimal due to baseline NRTI resistance. This 10-year follow-up assesses virologic outcomes and viral resistance in this subpopulation receiving DTG plus dual NRTIs through the end of study (EOS).

Methods: 29 DTG participants receiving only NRTIs as BR throughout the study were analyzed. Virologic outcomes were determined by last available on-treatment HIV-1

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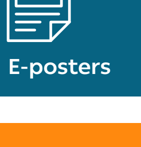
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RNA (VL) through the EOS (up to WK480). Genotyping and phenotyping were performed on baseline and PDVF timepoint samples by Monogram Biosciences.

Results: The virologic response rate for DTG participants receiving only NRTIs through EOS was 79% (23/29). With 28 of them entering continuation phase, the viral suppression rate (VL<50 c/mL) remained high (82%, 23/28).

PDVF occurred in 3 participants with BR consisting of 2 fully active NRTIs, and treatment-emergent IN substitutions were detected in 2: one had R263K and S230R at WK120; the 2nd had N155H and S230S/R at WK208. Both demonstrated low fold change (FC<4) to DTG.

None of them developed treatment-emergent NRTI resistance to BR. High virologic response rate (80%, 8/10) and low PDVF (1) was also observed in 10 DTG participants with baseline M184V who received NRTI-only BR containing either 3TC or FTC along with a 2nd NRTI.

Participant characteristics	VL <50 c/mL	VL ≥50 c/mL	PDVF[a] occurrence	Resistance incidence
Received only NRTIs as BR (n=29[b])	23/29 (79%)	6/29 (21%)	3/29 (10%)	2/29 (7%)
2 fully active[c] (by PSSf)	14/23 (61%)	4/6 (67%)	3/3 (100%)	2/2 (100%)
1 fully active	8/23 (35%)	1/6 (17%)	0	0
Missing phenotypes	1/23 (4%)	1/6 (17%)	0	0
Baseline M184V/I receiving 3TC or FTC plus a 2nd NRTI (n=10)	8/10 (80%)	2/10 (20%)	1/10 (10%)	1/10 (10%)
M184V/I alone	4/8 (50%)	2/2 (100%)	1/1(100%)	1/1 (100%)
M184V/I + >1 NRTI RAMs[d]	4/8 (50%)	0	0	0

[a]Protocol-defined virologic failure (PDVF): non-response was VL decrease <1 log_{10} c/mL, unless <400 c/mL by Week 16 or VL ≥400 c/mL on or after Week 24; virologic rebound was VL ≥400 c/mL after confirmed VL <400 c/mL or >1 log_{10} c/mL increase above any nadir of ≥400 c/mL. [b]Total of 32 participants were identified in this subpopulation, but 3 didn't have on-treatment VL for virologic outcome assessment so they were excluded from this analysis. [c]Fully active based on phenotype as per Monogram Bioscience's PhenoSense assay (using lower cutoff if upper and lower exist). [d]RAM = resistance-associated mutation.

Table 1. Cumulative Virologic Response and PDVF Through 10-Year Follow-up in DTG Participants Receiving a Background Regimen of NRTIs Only.

Conclusions: Although this analysis was on a selected small subgroup, the low rate of virologic failure, PDVF, and viral resistance observed through extended 10-year follow-up continuously support the higher resistance barrier of DTG, and that DTG+NRTIs regimen is durable and effective treatment for treatment-experienced patients harboring ART-resistant HIV-1.

EPB159

Safety and efficacy of switching to BIC/FTC/TAF plus DOR in HIV-infected patients with multiclass-resistant virus

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Background: Patients with a history of antiretroviral resistance often require a multi-tablet regimen to achieve virologic control, increasing the risk for adverse events (AEs) and drug-drug interactions (DDIs). With approval of the single-tablet regimen bictegravir/emtricitabine/tenofovir alafenamide (BIC/FTC/TAF) and the nonnucleoside reverse transcriptase inhibitor (NNRTI) doravirine (DOR), switching patients with multiclass-resistant virus to BIC/FTC/TAF plus DOR may be beneficial as both BIC/FTC/TAF and DOR have a high barrier to resistance, no food restrictions, and low potential for DDIs and AEs.

This study evaluated the safety and efficacy of switching from rilpivirine/emtricitabine/tenofovir alafenamide (RPV/FTC/TAF) plus dolutegravir (DTG), to BIC/FTC/TAF plus DOR in multiclass-resistant patients. A pharmacokinetic (PK) analysis was conducted in a subset of patients to assess the potential interaction between BIC and DOR.

Methods: This was an open-label switch trial in HIV-infected males recruited from a US private practice, aged ≥45 years and with documented viral resistance on historical genotyping to protease inhibitors, nucleoside reverse transcriptase inhibitors, and/or NNRTIs but no resistance to RPV or DOR and no K65R mutation. Virologic suppression (≤50 copies/mL) while on RPV/FTC/TAF plus DTG for ≥6 months was required prior to study enrollment.

The primary endpoint of the study was viral suppression (<50 copies/mL) at 48 weeks. Secondary endpoints included safety, tolerability, weight changes, and PK assessments.

Results: The study enrolled 20 males with a median age of 65 years (range, 46-74), median CD4 count of 624 cells/µL (range, 193-1273), and median time since HIV diagnosis of 37 years (range, 12-42). BIC/FTC/TAF plus DOR was well tolerated with no serious or treatment-related AEs reported and no appreciable changes in body mass index from baseline to Week 48. At Week 48, 100% of participants had <50 viral copies/mL and the median CD4 count was 589 cells/µL (range, 257-934). The PK parameters for BIC and DOR in a subset of 10 patients were consistent with historical data and no clinically significant interactions occurred between BIC and DOR.

Conclusions: Switching from RPV/FTC/TAF plus DTG to BIC/FTC/TAF plus DOR in HIV-infected males with multiclass-resistant virus was well tolerated and efficacious with an advantageous AE profile and no food restrictions.

EPB160

Efficacy and safety of fostemsavir plus optimized background therapy in heavily treatment-experienced adults with HIV-1: week 240 results of the Phase 3 BRIGHTE study

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Background: In the ongoing phase 3 BRIGHTE study, fostemsavir plus optimized background therapy (OBT) demonstrated durable virologic suppression through 96 weeks in heavily treatment-experienced (HTE) adults with HIV-1.

Methods: In the Randomized Cohort (RC), participants with fully active agents in 1 or 2 remaining antiretroviral classes received fostemsavir 600 mg twice daily or placebo for 8 days followed by open-label fostemsavir plus OBT.

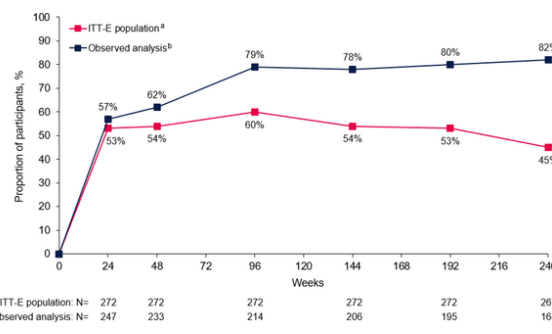
In the Non-randomized Cohort (NRC), participants with no approved fully active agents received fostemsavir 600 mg twice daily plus OBT. Week (W) 240 assessments included virologic outcomes (Snapshot [intention-to-treat exposed] and observed analyses), CD4+ cell count, and safety.

Results: Of 371 participants enrolled, 71% (193/272) in the RC and 55% (54/99) in the NRC were ongoing at W240. In the RC, virologic response rates generally remained consistent over time through W240 (Figure).

Lower virologic suppression by Snapshot analysis beyond W192 was partially confounded by missing data due to COVID-19.

By observed analysis, mean (SD) CD4+ cell counts steadily increased from baseline (n=272) over time and increased by 296 (228) cells/mm^3 by W240 (n=139); mean CD4+/CD8+ ratio increased from 0.20 to 0.60. In the RC, 78% (73/94) of participants with baseline CD4+ count <200 cells/mm^3 had CD4+ counts increase to ≥200 cells/mm^3. Consistent with earlier findings across the RC and NRC, the most common drug-related adverse events (AEs) were nausea (35/371, 9%) and diarrhea (18/371, 5%).

Grade 2 to 4 drug-related AEs were reported in 24% (88/371) of participants; 8% (30/371) reported AEs leading to discontinuation. No reported deaths (RC: 15/272, 6%; NRC: 20/99, 20%) were due to COVID-19.



ITT-E, intention-to-treat exposed. [a]Change in optimized background therapy due to lack of efficacy = failure. [b]Includes only participants with an observed HIV-1 RNA measurement at that visit. [c]N=267 in the ITT-E population at Week 240 due to 5 participants who completed the study before Week 240 and therefore did not have available HIV-1 RNA values at Week 240.

Figure. Virologic response (HIV-1 RNA <40 copies/mL) through Week 240 by Snapshot analysis in the ITT-E population and by observed analysis for the Randomized Cohort.

Conclusions: HTE participants treated through ~5 years with optimized fostemsavir-based regimens demonstrated durable virologic responses, continued clinically meaningful improvements in CD4+ cell count, and favorable safety. Although COVID-19 impacted Snapshot virologic response rates, overall observed rates remained high (≥80%).

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Regimen simplification and switch studies

EPB161

Switching EFV/FTC/TDF to B/F/TAF or generic EFV/FTC/TDS in virologically suppressed adults with human immunodeficiency virus: a 96-week retrospective cohort

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Background: Drastic cuts to the Mexican health budget led to a governmental decision to switch patients from EFV/FTC/TDF to either B/F/TAF or generic EFV/FTC/TDS. While tenofovir disoproxil succinate is approved in some countries, no information is available regarding its efficacy in maintaining virologic control. We aimed to describe the rates of virologic suppression after 96 weeks of said switch.

Methods: A retrospective cohort with data gathered from files at CAPASITS Nuevo León. Participants were ≥18 years and had plasma HIV-1 RNA <50 copies/mL while taking EFV/FTC/TDF for at least 6 consecutive months. This study was approved by UANL and Secretaría de Salud Nuevo León ethics committees.

The primary objective was determining the proportion of participants who maintained HIV- 1 <50 copies/mL at Week 96 after switch. We included subjects who reached 96 weeks with their new therapy between May 1st and October 30th, 2021. Demographics were analyzed using descriptive statistics and a Fisher's exact test with an α of 0.05 for the primary objective.

Results: Out of 421 files reviewed from patients receiving either B/F/TAF or EFV/FTC/TDS, 358 met inclusion criteria. Authors aimed to gather information from 129 patients per group, but maintaining recruitment for six more months would render less than ten additional cases. Completion of 96- week period was achieved by 266 and 92 patients receiving B/F/TAF and EFV/FTC/TDS respectively.

Baseline demographics for both groups are described in Table 1. HIV-1 RNA < 50 copies/mL was maintained in 93.9% (250/266) of B/F/TAF and 85.8% (79/92) of the EFV/FTC/TDS arm (8.1% difference; P =.01). Median CD4 cell difference was -33 cells/mL in the B/F/TAF group and 15 for the patients receiving EFV/FTC/TDS.

	B/F/TAF	EFV/FTC/TDS	Pvalue
Age in years [Median (IQR)]	51.5 (39.2-57)	37 (30-42)	<.001
Gender (Cisgender Women % / Transgender Women % / Cisgender Men%)	24.8/10.5/64.6%	31.5/0/68.4%	<.001 for Transgender Women
Years taking ARV [Median (IQR)]	6.9 (5.2-10.8)	5.9 (4.5-7.7)	<.001
Patients with additional previous ARV before EFV/ FTC/TDF [n (%)]	66/266 (24.8)	13/92 (14.1)	.02
At least one blip during the 96- week period [n (%)]	51/266 (19.1)	33/92 (35.8)	.002

Table 1.

Conclusions: While generic EFV/FTC/TDS might represent more than 50% savings, B/F/TAF maintained more patients undetectable than EFV/FTC/TDS. A nearly universal integrase inhibitor approach for switching patients with previous virologic control while taking EFV/FTC/TDF might be pricier but allows for fewer patients to develop virologic failure and blips.

EPB162

Integrase resistance emergence with dolutegravir/lamivudinewith prior HIV-1 suppression

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Background: There are no reports of virological failure (VF) with emergence of integrase or reverse transcriptase (RT) resistance mutations in treatment-experienced individuals starting co-formulated DTG/3TC with a suppressed HIV viremia. This switch strategy has been studied in two large phase III randomized trials including 615 participants, no resistance selection reported to date.

Methods: We report the first case of integrase resistance emergence in an individual who switched to co-formulated DTG/3TC started after a history of prolonged viral suppression.

Results: A 57-year-old man was diagnosed with HIV-1 infection on 2013 with 77 CD4+ cells/mm3 and HIV-1-RNA viral load (VL) 80,700 copies/ml. A basal HIV-1 genotype was not performed. Antiretroviral treatment (ART) with

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3TC/AZT and Efavirenz 600 mg was started. Seven months after ART initiation his CD4+ count increased to 371 cells/mm3 and HIV-1 VL was <20 copies/ml. His ART was subsequently switched to LPV/r + FTC/TDF. On 2015 he interrupted his ART for three months and was then restarted on DRV/r 800/100mg + FTC/TDF, re-suppressing again. In 2017 his ART was simplified to DRV/c OD + 3TC.

In 2019 he was switched to co-formulated DTG/3TC to avoid a pharmacokinetic interaction with clobazam, a known weak inducer of CYP3A4/UGT-1A1 with no expected DTG dose-adjustment needed. In October 2020 he had two consecutive detectable HIV-1 VLs (149 and 272 copies/mL) despite receiving a directly observed treatment in a residential home.

Plasma HIV-1 population sequencing (Vela genomics) detected emergence of R263K and S230N in the IN region, conferring intermediate DTG resistance. The RT and protease regions could not be amplified.

Proviral DNA sequencing revealed mutations in both the RT and IN regions: M184I (14.29%) and M230I (6.25%), conferring high level resistance to 3TC and low-level or intermediate resistance to all non-nucleoside reverse transcriptase inhibitors, and mutations G163R (9.77%) and S230N (98.8%),conferring low-level resistance to elvitegravir and raltegravir. ART with DRV/c/FTC/TAF + DTG 50 mg BID was started in October 2020. After three months, the HIV-1 VL was undetectable.

Conclusions: This is the first reported case of integrase resistance selection in an INI-naive individual treated with co-formulated DTG/3TC started as a switch strategy following a prior long-term virological suppression.

EPB163

Real-world HIV renal outcomes with TDF-to-TAF switch

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Background: With the advent of tenofovir alafenamide (TAF), many people living with HIV (PLWH) at Kaiser Permanente Southern California switched their antiretroviral therapy (ART) from tenofovir disoproxil fumarate (TDF) based to TAF-based regimens. Renal outcomes associated with TDF-to-TAF switch were evaluated.

Methods: This retrospective study included PLWH who switched TDF-to-TAF with no other ART changes, with ≥6 months of therapy, and ≥2 estimated glomerular filtration rates (eGFR) on both TDF and TAF. eGFR was calculated using the CKD-EPI equation (mL/min/1.73m^2). Mean eGFR was calculated in 6-month intervals (up to 18 months). Outcomes included mean eGFR comparison (TAF – TDF), and eGFR slope calculations (annual eGFR change), comparing eGFR_TDF_Baseline to first available eGFR_TAF and last available eGFR_TAF.

Multivariable regression or mixed model analysis was used to adjust for individual and clinical characteristics, comorbidities, concomitant medications and was stratified by baseline eGFR (≥90 and <90).

Results: The mean age of the 1,037 participants was 47 years; most were male (90%), 15% were African American and 59% had eGFR_TDF_Baseline <90. Comorbidities included CVD (12%), HTN (27%), DM (10%), and obesity (23%). Concurrent medications included cotrimoxazole (10%) and NSAIDs (32%).

Known overall previous TDF exposure was 3.6 years. Adjusted mean eGFR increased after TAF switch for all PLWH (+2.81 mL/min/1.73m^2; p<0.001) and for participants with eGFR_TDF_Baseline <90 (+5.5; p<0.001), but not eGFR_TDF Baseline ≥ 90 (-0.58; p=0.202).

Adjusted differences observed in eGFR_TAF slopes (Table 1) were more pronounced in those participants with eGFR_TDF_Baseline <90, using: first available eGFR_TAF (+6.51 mL/min/1.73m^2; p<0.001) and last available eGFR_TAF (+3.23; p<0.001).

eGFR_TDF_ Baseline[1]	N	eGFR_TAF Slope[2] (TAF First Available)	p-Value	95% CI	Mean (SD) Days[3]
≥ 90	426	+0.54	0.820	(-4.16, 5.24)	270.2 (79.3)
< 90	611	**+6.51**	<0.001	(3.09, 10.96)	268.6 (75.3)
Total eGFR	1037	**+3.57**	<0.010	(0.86, 6.29)	269.3 (76.9)
eGFR_TDF_ Baseline[1]	**N**	**eGFR_TAF Slope[2] (TAF Last Available)**	**p-Value**	**95% CI**	**Mean (SD) Days[3]**
≥ 90	426	-0.77	0.520	(-3.11, 1.57)	517.9 (77.0)
< 90	611	**+3.23**	<0.001	(1.59, 4.86)	524.4 (72.8)
Total eGFR	1037	**+1.51**	0.025	(0.19, 2.83)	521.7 (74.6)

[1]eGFR (mL/min/1.73m2); [2]Annualized eGFR slope calculation between eGFR_TDF_Baseline and eGFR_TAF (mL/min/1.73m2); [3]Mean days between eGFR_TDF_Baseline and eGFR_TAF

Table 1. Adjusted eGFR TAF Slope Calculations

Conclusions: In this real-world review of PLWH who switched their ART from TDF-to-TAF, we observed an improvement in mean eGFR upon switch to TAF.

Overall eGFR improvement was driven by a significant positive change in participants with TDF baseline eGFR <90, as no significant difference was observed in the ≥ 90 group.

EPB164

Switching to dolutegravir/lamivudine two-drug regimen: durability and virologic outcomes in routine U.S. clinical care

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Background: The FDA expanded the indication for the two-drug regimen dolutegravir/lamivudine (DTG/3TC) on 08Apr19 to include ART-experienced, suppressed individuals.

This study aimed to describe the real-world experience of virologically suppressed, ART experienced adults switching to DTG/3TC from one of three commonly prescribed traditional three-drug regimens in the U.S.: bictegravir/tenofovir alafenamide/emtricitabine (BIC/TAF/FTC), dolutegravir/abacavir/lamivudine (DTG/ABC/3TC) or DTG+TAF/FTC.

Methods: Using data from the OPERA cohort, all adults who switched from a three-drug regimen of interest to DTG/3TC with a viral load (VL) <50 copies/mL between 08Apr19 and 30Apr21 were followed until 31Oct21.

Incidence rates of discontinuation, loss of suppression (first VL ≥50 or ≥200 copies/mL) and confirmed virologic failure (2 VL ≥ 200 copies/mL or discontinuation after 1 VL ≥ 200 copies/mL) were assessed with univariate Poisson regression, stratified by age, sex and race.

		N	n (%)	IR per 100 py (95% CI)
Discontinuation	**Overall**	**787**	**170 (22%)**	**17.47 (15.03-20.30)**
	Age <50	490	104 (21%)	17.02 (14.05-20.63)
	Age ≥50	297	66 (22%)	18.22 (14.32-23.19)
	Male	659	146 (22%)	17.89 (15.21-21.04)
	Female	128	24 (19%)	15.26 (10.23-22.77)
	Black	250	52 (21%)	17.52 (13.35-22.99)
	Non-Black	537	118 (22%)	17.45 (14.57-20.89)
VL ≥50 copies/mL*	**Overall**	**696**	**118 (17%)**	**14.02 (11.71-16.79)**
	Age <50	432	72 (17%)	13.79 (10.95-17.38)
	Age ≥50	264	46 (17%)	14.39 (10.78-19.21)
	Male	582	94 (16%)	13.31 (10.88-16.30)
	Female	114	24 (21%)	17.71 (11.87-26.43)
	Black	215	41 (19%)	16.42 (12.09-22.30)
	Non-Black	481	77 (16%)	13.01 (10.40-16.26)
VL ≥200 copies/mL*	**Overall**	**696**	**30 (4%)**	**3.29 (2.30-4.71)**
	Age <50	432	22 (5%)	3.89 (2.56-5.90)
	Age ≥50	264	8 (3%)	2.32 (1.16-4.65)
	Male	582	22 (4%)	2.88 (1.89-4.37)
	Female	114	8 (7%)	5.49 (2.74-10.97)
	Black	215	14 (7%)	5.15 (3.05-8.69)
	Non-Black	481	16 (3%)	2.51 (1.54-4.09)

* Among individuals with ≥1 viral load(s) over follow-up

Figure. Incidence rates of DTG/3TC discontinuation and loss of suppression, stratified by age, sex and race.

Results: Of 787 PLWH switching to DTG/3TC, 54% switched from DTG/ABC/3TC, 31% from BIC/TAF/FTC and 16% from DTG+TAF/FTC. Median follow-up was 13.6 months (IQR: 8.2-22.3). Loss of suppression defined as 1 VL ≥50 copies/mL occurred at a rate of 14.02 per 100 person-years, or 3.29 per 100 person-years when defined as 1 VL ≥200 copies/mL (Figure). There were ≤5 confirmed virologic failures (incidence rate: 0.43 per 100 person-years; 95% CI: 0.16-1.00). The incidence rate of DTG/3TC discontinuation was 17.47 per 100 person-years (Figure).

Of 170 total discontinuations, only 6 (4%) were attributed to treatment-related undesirable events (loss of suppression, lab abnormality, adverse diagnosis/side effect). Rates of loss of suppression and discontinuation were consistent across age, sex, and race strata (Figure).

Conclusions: This descriptive study of virally suppressed adults switching to DTG/3TC demonstrated that this two-drug regimen is an effective treatment option, with low rates of loss of viral suppression (≥200 copies/mL) and rare virologic failure events. DTG/3TC seemed to be well tolerated with few discontinuations linked to treatment-related events.

EPB165

Changes in inflammatory biomarkers and baseline variables after switching to dolutegravir/lamivudine (DTG/3TC) in 2 randomized clinical trials of virologically suppressed adults: 48-week pooled analysis

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Background: Persistent inflammation has been linked to increased risk of non–AIDS-related comorbidities in people with HIV-1. International guidelines recommend the 2-drug regimen DTG/3TC as a switch option, supported by randomized clinical trials demonstrating its durable efficacy and high barrier to resistance. We present inflammatory biomarker results in virologically suppressed adults switching to DTG/3TC.

Methods: This analysis included 48-week pooled data from the phase 3 TANGO and SALSA trials of adults with HIV-1 RNA <50 c/mL randomized to switch to once-daily DTG/3TC fixed-dose combination or continue current antiretroviral regimen (CAR). Using a multivariate ANCOVA model adjusting for relevant baseline variables, log-transformed Week 48 serum inflammatory biomarker levels and CD4+/CD8+ ratio were compared between groups and associations with baseline variables evaluated as fixed effects.

Results: Week 48 levels of soluble CD14 (sCD14) and C-reactive protein (CRP) appeared lower in the DTG/3TC vs CAR groups, and for sCD163, IL-6, and CD4+/CD8+ ratio, Week

48 values were similar between groups (Table). Across biomarkers, higher baseline values were strongly associated with higher Week 48 levels. Female participants had higher Week 48 levels of all inflammatory biomarkers compared with male participants. Asian participants appeared to have lower Week 48 levels compared with other races across all inflammatory biomarkers, although sample sizes were small.

Increasing age appeared to be associated with higher sCD14, sCD163, and IL-6 levels but not with CRP and CD4+/CD8+ ratio. Higher IL-6 and CRP levels at Week 48 were observed in participants with obese BMI at baseline.

	Variable: Reference	n: n	Ratio (95% CI)
sCD14			
Treatment	DTG/3TC: CAR	548:547	0.94 (0.91-0.97)
Sex	Female: Male	213:882	1.05 (1.00-1.10)
Race	Asian: White	52:808	0.84 (0.78-0.91)
	Black: White	181:808	0.93 (0.88-0.97)
Baseline BMI	Overweight: Underweight/Normal	403:478	0.98 (0.95-1.02)
	Obese: Underweight/Normal	214:478	0.96 (0.91-1.00)
Age	Per 10 years	1095	1.02 (1.01-1.04)
Baseline sCD14	ng/L	1095	1.58 (1.46-1.71)
sCD163			
Treatment	DTG/3TC: CAR	547:545	1.02 (0.99-1.05)
Sex	Female: Male	213:879	1.02 (0.98-1.06)
Race	Asian: White	52:805	0.89 (0.83-0.95)
	Black: White	181:805	0.94 (0.90-0.98)
Baseline BMI	Overweight: Underweight/Normal	402:476	0.99 (0.96-1.03)
	Obese: Underweight/Normal	214:476	1.01 (0.97-1.05)
Age	Per 10 years	1092	1.02 (1.01-1.03)
Baseline sCD163	ng/L	1092	1.93 (1.86-2.00)
IL-6			
Treatment	DTG/3TC: CAR	546:540	1.08 (1.00-1.17)
Sex	Female: Male	211:875	1.11 (0.99-1.25)
Race	Asian: White	52:801	0.80 (0.66-0.97)
	Black: White	179:801	1.01 (0.90-1.13)
Baseline BMI	Overweight: Underweight/Normal	402:472	1.02 (0.93-1.12)
	Obese: Underweight/Normal	212:472	1.18 (1.05-1.33)
Age	Per 10 years	1086	1.08 (1.04-1.12)
Baseline IL-6	ng/L	1086	1.44 (1.35-1.54)
CRP			
Treatment	DTG/3TC: CAR	522:514	0.87 (0.78-0.98)
Sex	Female: Male	201:835	1.16 (0.98-1.37)
Race	Asian: White	52:766	0.68 (0.52-0.89)
	Black: White	171:766	1.03 (0.87-1.21)
Baseline BMI	Overweight: Underweight/Normal	383:450	1.06 (0.92-1.21)
	Obese: Underweight/Normal	203:450	1.16 (0.98-1.38)
Age	Per 10 years	1036	0.99 (0.93-1.04)
Baseline CRP	mg/L	1036	1.63 (1.54-1.72)
CD4+/CD8+ ratio			
Treatment	DTG/3TC: CAR	550:541	0.99 (0.97-1.01)
Sex	Female: Male	212:879	1.03 (1.00-1.06)
Race	Asian: White	51:807	0.97 (0.92-1.02)
	Black: White	179:807	0.99 (0.96-1.02)
Baseline BMI	Overweight: Underweight/Normal	403:475	0.99 (0.96-1.01)
	Obese: Underweight/Normal	213:475	0.99 (0.96-1.02)
Age	Per 10 years	1091	1.00 (0.99-1.01)
Baseline CD4+/CD8+ ratio		1091	2.48 (2.43-2.54)

n = number of participants with non-missing data at Week 48. Ratio calculated using an ANCOVA model on $\log_e$-transformed data adjusting for treatment, sex, race, baseline BMI, baseline CDC category, baseline smoking status, HCV co-infection, age, baseline CD4+/CD8+ ratio, $\log_e$-transformed baseline biomarker value, study, and baseline third agent class. Analyses for IL-6 and CD4+/CD8+ ratio also adjusted for baseline CRP. Analysis for CRP also adjusted for baseline triglycerides, baseline lipid-modifying agent, baseline total cholesterol, baseline LDL-C, and baseline HDL-C. Results are only displayed for covariates found to be associated with ≥1 of the inflammatory biomarkers analyzed.

Table. Ratios of inflammatory biomarker levels with DTG/3TC vs CAR at week 48

Conclusions: At Week 48 in this pooled analysis of 2 randomized trials, inflammatory biomarker levels were similar between the 2-drug regimen DTG/3TC and a broad range of 3-/4-drug antiretroviral regimens. Multiple baseline variables besides ART were associated with each inflammatory biomarker. These data highlight the multifactorial aspect of the inflammatory response.

EPB166

Rapid tenofovir-lamivudine-dolutegravir transition in Papua New Guinea: a virtual approach to antiretroviral prescriber refresher trainings during a global pandemic

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Background: The rates of pre-treatment HIV drug resistance among first-line antiretroviral therapy (ART) initiators in Papua New Guinea (PNG) have been alarmingly high. In response, the National Department of Health (NDoH) planned a rapid transition of first-line ART to dolutegravir-based regimens in 2019–2020 in all high-burden provinces. When the COVID-19 pandemic reached PNG in March 2020, refresher training for ART prescribers on the revised treatment guidelines could not be conducted as planned. To ensure that patients could safely transition to new regimens, the NDoH, supported by PEPFAR and partners, facilitated the development of a virtual training platform for country-wide prescriber trainings.

Description: The USAID HIV Support in PNG project implemented by FHI 360 played a critical role in the development, facilitation, and implementation of the first virtual training for ART prescribers in PNG. This involved establishing a virtual training platform using Google Classroom and creating 21 video lectures with more than six hours of content covering all aspects of HIV care and treatment, including revised care-and-treatment guidelines and tenofovir-lamivudine-dolutegravir (TLD).

The virtual training, launched in May 2020, reached 108 prescribers (33.3% nursing officers, 30% health extension officers, 23.3% community health workers, 13.3% doctors) from all 22 provinces.

Among the training participants, 76.7% had not attended an HIV refresher training in the previous three years; 83.4% rated the training as four (out of five) or higher, and training evaluation scores averaged more than 80%.

This resulted in safe, rapid rollout of TLD, with more than 64% of ART clients transitioned to dolutegravir-based regimens within three months of the training and more than 93% transitioned by September 2021.

Lessons learned: Despite initial concerns that virtual training would not be feasible in PNG due to limited connectivity and low computer literacy, free platforms such as Google Classroom and the widespread availability of smartphones allowed successful training of health care workers in PNG.

Conclusions/Next steps: Virtual training of health care practitioners was viable for highly-effective, low-cost capacity building in resource-constrained environments during the COVID-19 pandemic. Similar approaches may be considered for other capacity-building initiatives instead of regular in-person trainings.

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EPB167

Intermittent doravirine/lamivudine/tenofovir disoproxil fumarate (DOR/3TC/TDF) maintains viral suppression in real life in controlled HIV-infected patients

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Background: The ANRS QUATUOR trial has demonstrated the non-inferiority of triple regimens given 4 days a week, compared with 7 days a week. We aimed to report here our experience with intermittent doravirine/lamivudine/tenofovir disoproxil fumarate (DOR/3TC/TDF), not licensed at time of QUATUOR, for maintaining the viral suppression.

Methods: This observational study enrolled all adults who initiated DOR/3TC/TDF given 5 or 4 days a week between 10/01/2019 and 01/31/2021, in two French hospitals.

The primary outcome was the rate of virological success (no virological failure [VF]: confirmed HIV-RNA ≥50 copies/mL, or single HIV-RNA ≥200 copies/mL, or ≥50 copies/mL with ART change) at W48.

Secondary outcomes included: strategy success rate (HIV-RNA <50 copies/mL with no ART change), evolution of CD4 count, CD4/CD8 ratio and rate of residual viremia over follow-up.

Age, years, median (IQR)	52 (48-58)
Gender, n (%)	
- Male	30 (71)
- Female	12 (29)
Birth Country, n (%)	
- France	25 (60)
- Other	17 (40)
Transmission group, n (%)	
- MSM	23 (55)
- Heterosexual	11 (26)
- Other	8 (19)
CDC stage C, n (%)	8 (19)
CD4 nadir, cells/mm^3 (IQR)	246 (106-440)
Time from HIV diagnosis, years, median (IQR)	19 (12-29)
Time from ART initiation, years, median (IQR)	15 (8-23)
Genotypic sensitivity score, n (%)[a]	
- 3	24 (86)
- 2	4[b] (14)
Duration of viral suppression, years, median (IQR)	6 (2-10)
CD4 count, cells/mm^3 (IQR)	616 (498-876)
CD4/CD8 ratio, median (IQR)	0.91 (0.73-1.36)
Antiretroviral strategy prior to intermittent DOR/3TC/TDF, n (%)	14 (33)
- 7 days a week 3-DR[c]	25 (60)
- 5 or 4 days a week 3-DR[d]	3 (7)
- 7 days a week 2-DR	
Frequency of intermittent DOR/3TC/TDF, n (%)	
- 4 days a week	35 (83)
- 5 days a week	7 (17)

NOTES. 2-DR: two-drug regimen. 3-DR: three-drug regimen. a. Calculated from cumulative historical HIV-RNA and HIV-DNA genotypes with reverse transcriptase available sequences (N=28). b. These four patients had a past M184V/I mutation. c. Including 5 patients under daily DOR/3TC/TDF. d. Other than DOR/3TC/TDF.

Table. Patient characteristics at baseline (N=42).

Results: Forty-two patients were included, with median age: 52 years (IQR 48-58), ART duration: 15 years (IQR 8-23), duration of virological suppression: 6 years (IQR 2-10) [Table]. All had HIV-RNA <50 copies/mL at study entry. Four had a past M184V/I mutation. Median follow-up was 65 weeks (IQR 50-80). The virological success rate was 97.6% (95%CI 87.4-99.9) and the strategy success rate was 90.5% (95%CI 77.4-97.3) at W48.

One VF occurred at W38 (HIV-RNA=61 and 76 copies/mL), in a patient reporting a good compliance, without resistance at baseline, with no emergence of resistance, and with HIV-RNA <50 copies/mL after resumption of daily tenofovir alafenamide/emtricitabine/bictegravir.

There were four strategy discontinuations over the entire study period for adverse event (hepatic cytolysis: n=2, neuropsychic disorder: n=2), two deaths and one lost of follow-up. There was no significant change in CD4 count, CD4/CD8 ratio and residual viremia rate over follow-up.

Conclusions: This observational study shows the potential for the NNRTI next-generation DOR/3TC/TDF regimen given intermittently to maintain a high virological success rate, while reducing cumulative exposition and cost of ART.

EPB168

Switching to Dolutegravir/lamivudine or Bictegravir/Emtricitabine/Tenofovir alafenamide. A comparative real-world study

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Background: Few studies compared Dolutegravir/Lamivudine (D/L) and Bictegravir/Emtricitabine/Tenofovir alafenamide (B/F/T) in switch therapy. Our objective was to evaluate the performance of these two treatments in the real-world setting.

Methods: A retrospective single-center study was conducted between April 2019 and November 2021 in Barcelona, Spain. All patients who started D/L or B/F/T on switching therapy (baseline HIV-RNA: <50 copies/mm^3) were included. Safety and virologic outcomes at the end of follow-up were evaluated. Descriptive statistics and multivariate Cox logistic analysis were performed to identify differences in the rate of discontinuation between both regimens.

Results: We analyzed data from 358 patients on D/L (mean age: 47.3 years) and 332 on B/F/T (mean age: 45.5) with a median follow-up of 293 and 440 days respectively. Eighty-six percent of patients were men, without differences between groups. Patients in D/L group previously received 13 different regimens (dolutegravir 42%, abacavir 60%, tenofovir alafenamide 24%), while 22 on B/F/T (tenofovir alafenamide 40%, tenofovir disoproxil fumarate 40%, elvitegravir/cobicistat 36%, non-nucleoside reverse transciptase inhibitors, 35% Darunavir/cobicistat 35%).

Fourty-two percent of patients treated with D/L were not exposed to new drugs. Oppositely, all participants in the B/F/T group were exposed to at least one new drug.

No differences were observed in the virologic outcome between both groups. Viral Load (VL) < 50 copies/mm^3 was 98.3% in D/L vs. 97.3% in B/F/T, VL 51-500 copies/mm^3 was 1.4% vs 2.5% and VL > 500 copies/mm^3 was 0.3% in both groups.

Discontinuation rate was 8.7% for D/L, side effects, 4 (1.1%) (3 anxiety and/or insomnia, 1 abdominal pain), 5.9% loss of follow-up, 1.4% deaths, 0.3% interactions. B/F/T discontinuation rate was 15%: side effects, 1 (0.3%) (1 arthralgia), 10.5% loss of follow-up, 1.5% deaths, 2.4% physician decision (3 weight gain, 2 dyslipidemia), 0.3% interaction.

When considering only patients not exposed to the same drugs, adverse events with D/L were more frequent than with B/T/F 1.97% and 0.3%, respectively (P:0.1). The adjusted risk of discontinuation of B/T/F was: 1.37 (95% CI: 0.85-2.20; P:0.19)

Conclusions: Both treatments were effective and well-tolerated in the real-world setting. The few discontinuations in the B/T/F group seem related to the switch from TDF.

EPB169

Efficacy and safety of switching to Dolutegravir/ Lamivudine by baseline regimen in virologically suppressed adults: 48-week pooled analysis

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Background: Dolutegravir/Lamivudine (DTG/3TC) has durable efficacy and a high barrier to resistance, supporting its inclusion in international guidelines as a recommended INSTI-based regimen.

We present pooled efficacy and safety outcomes among virologically suppressed adults switching to DTG/3TC by baseline regimen.

Methods: This analysis includes 48-week data from the phase 3 TANGO and SALSA trials of adults with HIV-1 RNA <50 c/mL randomized to switch to once-daily DTG/3TC fixed-dose combination or continue current antiretroviral regimen (CAR). Primary and key secondary endpoints were proportions with HIV-1 RNA ≥50 and <50 c/mL at Week 48, respectively (Snapshot, intention-to-treat exposed).

Results: Among 1234 participants, the most commonly used baseline third agent class and NRTI backbone were INSTIs (63%) and TAF/FTC (74%), respectively. Overall, at Week 48, few participants had HIV-1 RNA ≥50 c/mL (adjusted difference, −0.5; 95% CI, −1.3, 0.4); results were consistent across baseline regimen subgroups.

High proportions of participants maintained HIV-1 RNA <50 c/mL in the DTG/3TC and CAR groups across baseline regimen use (Table). No DTG/3TC participants had confirmed virologic withdrawal (CVW); 1 CAR participant had CVW (no resistance detected).

In the overall analysis, proportions of any AEs and Grade 2-5 AEs were similar between treatment groups, with few AEs leading to withdrawal or serious AEs; drug-related AEs were more frequent in the DTG/3TC group, as expected in stable switch studies. Similar results were observed by baseline regimen use.

Virologic outcomes: proportion of participants with HIV-1 RNA <50 c/mL (Snapshot)

Baseline regimen	Subgroup	DTG/3TC N	DTG/3TC n (%)	CAR N	CAR n (%)	Adjusted difference (95% CI)[b]
Overall	**—**	**615**	**576 (94)**	**619**	575 (93)	**0.8 (−2.0, 3.6)**
Baseline third agent class	INSTI	387	361 (93)	394	367 (93)	0.1 (−3.4, 3.7)
	NNRTI	174	164 (94)	172	157 (91)	3.0 (−2.5, 8.4)
	PI	54	51 (94)	53	51 (96)	−1.8 (−9.8, 6.2)
Baseline NRTI + XTC + INSTI/NNRTI/PI[c]	TAF	451	423 (94)	462	433 (94)	0.1 (−3.1, 3.2)
	TDF	109	100 (92)	110	102 (93)	−0.9 (−7.9, 6.2)
	ABC	45	43 (96)	34	28 (82)	13.6 (−0.5, 27.6)
2nd-generation INSTI + XTC + NRTI	TAF	61	57 (93)	71	67 (94)	−0.9 (−9.1, 7.3)
	TDF	13	12 (92)	12	11 (92)	0.6 (−20.7, 22.0)
	ABC	31	30 (97)	25	21 (84)	12.8 (−2.9, 28.4)
	No	510	477 (94)	511	476 (93)	0.4 (−2.7, 3.4)

Safety outcomes

Baseline regimen	Subgroup	N DTG/3TC	N CAR	Any AEs, n (%) DTG/3TC	Any AEs, n (%) CAR	Grade 2-5 AEs, n (%) DTG/3TC	Grade 2-5 AEs, n (%) CAR	AEs leading to withdrawal, n (%) DTG/3TC	AEs leading to withdrawal, n (%) CAR	Drug-related AEs, n (%) DTG/3TC	Drug-related AEs, n (%) CAR	Serious AEs, n (%) DTG/3TC	Serious AEs, n (%) CAR
Overall	**—**	**615**	**618**	**475 (77)**	**464 (75)**	**281 (46)**	**303 (49)**	**18 (3)**	**5 (<1)**	**93 (15)**	**21 (3)**	**28 (5)**	**32 (5)**
Baseline NRTI + XTC + INSTI/NNRTI/PI[c]	TAF	451	462	353 (78)	359 (78)	221 (49)	234 (51)	14 (3)	2 (<1)	60 (13)	8 (2)	23 (5)	21 (5)
	TDF	109	109	85 (78)	76 (70)	44 (40)	48 (44)	4 (4)	2 (2)	26 (24)	12 (11)	4 (4)	7 (6)
	ABC	45	34	32 (71)	25 (74)	15 (33)	18 (53)	0 (0)	1 (3)	4 (9)	1 (3)	1 (2)	3 (9)
2nd-generation INSTI + XTC + NRTI	TAF	61	71	50 (82)	53 (75)	29 (48)	33 (46)	1 (2)	0 (0)	7 (11)	2 (3)	3 (5)	3 (4)
	TDF	13	12	9 (69)	12 (100)	5 (38)	7 (58)	0 (0)	0 (0)	0 (0)	1 (8)	1 (8)	0 (0)
	ABC	31	25	24 (77)	18 (72)	12 (39)	12 (48)	0 (0)	0 (0)	3 (10)	0 (0)	1 (3)	1 (4)
	No	510	510	392 (77)	381 (75)	235 (46)	251 (49)	17 (3)	5 (<1)	83 (16)	18 (4)	23 (5)	28 (5)

[a]In TANGO, 1 participant was found to be taking a TDF-based regimen and was excluded from the safety population. [b]Estimates and CIs were based on a stratified analysis using Cochran-Mantel-Haenszel weights adjusting for baseline third agent class and study. [c]Other NRTI backbone regimens were included in SALSA (zidovudine, tenofovir disoproxil succinate, biovir [NOS]).

Table. Efficacy and safety outcomes at week 48: ITT-E and safety populations[a]

Conclusions: DTG/3TC maintained high proportions of virologic suppression, had a high barrier to resistance, and demonstrated a good safety and tolerability profile 1 year after switch regardless of prior 3-/4-drug regimen use, supporting this 2-drug regimen as a robust, well-tolerated switch option with fewer antiretrovirals.

EPB170

Changes in non alcoholic fatty liver disease spectrum and metabolic markers in people with HIV after switching to a raltegravir-based regimen

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Background: Nonalcoholicfatty liver disease (NAFLD) is a major comorbidity among people with HIV (PLWH). Its aggressive nature in such population, mandates exploring less steatogenic antiretroviral therapies (ART). We aimed to evaluate the effect of switching to raltegravir (RAL) based regimen on NAFLD, body mass index (BMI), and lipids among PLWH with NAFLD.

Methods: In this phase IV, open-label randomized control trial (ClinicalTrials.gov: NCT02210715), PLWH without viral hepatitis co-infection were randomized 1:1 either to switch arm (RAL 400mg BID) and control arm (continuing any other ART not containing integrase inhibitors). Patients with suppressed HIV viral load and NAFLD (defined as controlled attenuation parameter (CAP) ≥238 dB/m) at baseline were included.

Outcomes were evaluated as changes between baseline and 24 months of follow-up. Liver fibrosis was measured as liver stiffness by Fibroscan. Nonalcoholic steatohepatitis (NASH) was determined using cytokeratin-18 (CK-18), a hepatocyte apoptosis marker.

Changes in outcomes were represented as standardized mean differences (SMD) and a fixed-effect linear regression model was applied to compare outcomes between both study arms.

Results: 31 PLWH were included (mean age 53.9yrs). Compared to baseline, SMD of aspartate aminotransferase decreased in switch arm in comparison to control arm (switch -9.54, control 5.57, p=0.036) (see Figure).

In the adjusted multivariate model, NASH measured by CK-18 and liver fibrosis represented as liver stiffness measurement improved in switch group compared to control group. However, these observations were not significant when comparing both arms (see Table). No changes in BMI and lipids were observed.

Variables	Multivariate model*		
ΔCAP (24 months – baseline)	coefficient	p-value	Difference in slope
Control	-0.641	0.4013	0.8853
Switch	-0.450	0.5547	0.8853
ΔLSM			
Control	0.063	0.0306	0.8853
Switch	-0.050	0.1376	0.8853
ΔCK–18			
Control	-1.242	0.1254	0.4500
Switch	-2.407	0.0649	0.4500

Conclusions: This study indicated that switching to RAL improves AST and may potentially alleviate the progression of NASH and fibrosis. However, larger interventional studies are needed to conclude the same.

EPB171

Efficacy of Tenofovir alafenamide versus tenofovir disoproxil fumarate among HIV positive Zambian adults switched from NNRTI to dolutegravir-containing ART: results from the VISEND clinical trial

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Background: Tenofovir alafenamide (TAF) is recommended by the WHO as a favorable option for special circumstances when osteoporosis and/or renal impairment are of particular concern. Compared to tenofovir disoproxil fumarate (TDF), there is paucity of data on TAF use in resource-constrained settings. Additionally, there is limited information on its efficacy in important subpopulations like pregnant women.

In the VISEND trial, we compared virologic outcomes among HIV-positive Zambian adults (including pregnant women), receiving TDF/lamivudine (3TC)/dolutegravir (DTG) or TAF/emtricitabine (FTC)/DTG after switching from TDF/3TC/Efavirenz (EFV) or Nevirapine (NVP).

Methods: We conducted a 144 week, randomized, open label, phase 3 non-inferiority trial. In both Arm A (participants having baseline HIV RNA <1,000 copies/mL) and Arm B (participants having baseline HIV RNA ≥ 1,000 copies/mL), individuals were randomized to either TDF/3TC/DTG or TAF/FTC/DTG.The primary end point was VLS at 48 weeks, assessed using the FDA snapshot algorithm (Intent-to-treat (ITT) population). HIVDR was assessed for reverse transcriptase, protease and integrase Sanger sequences using the Stanford University HIVdb algorithm for individuals with HIV-1 RNA ≥ 1,000 copies/mL.

Results: At Week 48 for Arm A, 88% of TDF/3TC/DTG-treated participants were virally suppressed vs. 87% of TAF/FTC/DTG-treated participants [difference, -0.5%, 95%CI -6.9 to 5.9]. For Arm B, 82% of TDF/3TC/DTG-treated participants were virally suppressed vs. 87% of TAF/FTC/DTG-treated participants [difference, +5%, 95%CI 2.2 to 8.9].

A total of 16 women (8 on TDF/3TC/DTG; 8 on TAF/FTC/DTG) became pregnant during the study and only 1 had HIV RNA >1,000 copies/mL. Among individuals with HIV RNA >1,000 copies/mL, HIVDR was detected in 12 (38%) individu-

als receiving TDF/3TC/DTG versus 9 (33%) for those receiving TAF/FTC/DTG in Arm B and no participant was resistant to DTG.

Conclusions: In the VISEND trial, there was no difference in virologic outcomes between participants receiving either TDF or TAF based ART after switching from NNRTI-based ART though there was a trend towards better VLS for individuals receiving TAF based ART with baseline HIV RNA ≥ 1,000 copies/mL.

In addition, virologic outcomes for pregnant women receiving TAF based ART were comparable to those receiving TDF based therapy. There is therefore need to expand the use of TAF in HIV-1 infected individuals.

Pharmacokinetics/pharmacodynamics/pharmacogenomics and therapeutic drug monitoring

EPB172

Targeted delivery of dolutegravir to HIV reservoirs in the mesenteric lymphatic system by lipophilic ester prodrug approach

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Background: Dolutegravir (DTG) is a first-line HIV integrase inhibitor. Mesenteric lymph nodes (MLNs) are one of the most important HIV reservoirs. Delivering antiretroviral agents to MLNs *via* intestinal lymphatic transport can lead to high levels of drugs in these reservoirs.

However, DTG does not have the required physicochemical properties for intestinal lymphatic transport. Therefore, highly lipophilic prodrugs of DTG have been designed, synthesized, and assessed in this work for efficient delivery of DTG to viral reservoir in MLNs.

Methods: The intestinal lymphatic transport potential of DTG and its prodrugs was assessed by previously reported *in silico*, *in vitro* and *ex vivo* methods. Male Sprague Dawley rats were used in subsequent pharmacokinetic and biodistribution studies. Blood samples were collected at predetermined time points following intravenous and oral administration of DTG. Mesenteric lymph fluid, MLNs and additional tissues were collected at 2, 4 and 8 hours following oral administration in the lipid-based formulation. All biological samples were analyzed for DTG concentration by means of a validated HPLC method.

Results: DTG had negligible association with chylomicrons in *in silico*, *in vitro* and *ex vivo* assessments. The ester prodrugs of DTG had moderate to high affinity to chylomicrons *in silico* (23-98%), *in vitro* (30-70%) and *ex vivo* (55-70%).

The absolute oral bioavailability of DTG following oral administration in the lipid-free vehicle (53%) is similar to the lipid-based formulation (64%). Substantial concentrations of DTG were found in MLNs and mesenteric lymph following oral administration in lipid-based formulation (1432±327 ng/g and 6597±1040 ng/mL, 887±147 ng/g and 6571±1849 ng/mL, 607±94 ng/g and 4158±2064 ng/mL at 2, 4 and 8 hours, all results are shown as mean ± SD, n=4).

Conclusions: Substantial levels of DTG were found in mesenteric lymph and MLNs when co-administered with lipids. However, current cART including DTG does not eradicate HIV from these reservoirs in MLNs. Therefore, it is likely that higher levels of DTG are required for eradicating the virus from MLNs.

This potentially could be achieved by oral administration of highly lipophilic prodrugs of DTG that have high intestinal lymphatic transport and efficient release of the active drug within the MLNs.

EPB173

Characterization of the absorption, metabolism, and excretion of islatravir, an HIV nucleoside reverse transcriptase translocation inhibitor, in humans

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Background: Islatravir (ISL) is a nucleoside reverse transcriptase translocation inhibitor under clinical investigation for the treatment and prevention of HIV-1 infection. After cellular uptake, ISL is phosphorylated to its active form (ISL-triphosphate), which has a long intracellular half-life. As a nucleoside analogue, ISL is expected to be well absorbed from the gastrointestinal tract. Preclinical and clinical data demonstrate that 4'-ethynyl-2-fluorodeoxyinosine (M4) is the major metabolite, and previous trials have also demonstrated that both M4 and unchanged parent are excreted in the urine. A definitive human AME (absorption, metabolism, excretion) trial was performed to more fully characterize ISL AME.

Methods: A single-dose, open-label study in 6healthy male participants was conducted. Participants received a single oral dose of 10mg (~62µCi) [^{14}C]ISL. Blood (whole blood and plasma), urine, and fecal samples were collected throughout the study. Total radioactivity recovery was assessed, and metabolic profiling was performed. ISL concentrations were assessed in plasma samples only. Participants were discharged from the study when the radioactivity in the collected samples fell below a prespecified threshold; all participants qualified for discharge at 15 days post dosing.

Results: A single dose of 10 mg [^{14}C]ISL was generally well-tolerated; there were no AEs, SAEs, or discontinuations, and no meaningful trends in vital signs or safety labora-

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tory studies. Overall, a mean of 97.7% of the radioactive dose was recovered, with 91.4% in urine and 6.3% in feces. In plasma, 29% of the total radioactivity AUC0-24 and 35% of the total radioactivity Cmax was from [^{14}C]ISL. The major metabolite in AUC-proportional pooled plasma was M4, with 31% of the radioactivity attributable to M4 and 58% to ISL. In urine, the majority of the radioactivity was assigned to M4, accounting for 53% of the administered dose, while unchanged ISL accounted for 32% of the dose.

Conclusions: ISL is well absorbed after oral dosing. The majority of the absorbed ISL in plasma is unchanged ISL, but there is a significant amount of the inosine metabolite M4.

In contrast, M4 is the major species in urine, with a significant amount of unchanged parent ISL. These findings are consistent with previous and expected results for this compound.

EPB174

Impact of intrinsic and extrinsic factors on the pharmacokinetics of long-acting lenacapavir for treatment of HIV

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Background: Lenacapavir (LEN) is a novel, first-in-class selective inhibitor of HIV-1 capsid protein, currently being investigated in heavily treatment experienced (HTE) participants with HIV-1 (PWH). The ongoing Phase 2/3 studies in PWH uses every 6 months subcutaneous (SC) dosing with oral loading/lead-in (oral LEN 600 mg on Days 1 and 2, and oral LEN 300 mg on Day 8 followed by SC LEN 927 mg on Day 15 and every 6 months thereafter).

The objective was to characterize the population pharmacokinetics (PopPK) of LEN and evaluate the effect of intrinsic/extrinsic factors that may affect LEN exposures.

Methods: Pharmacokinetic (PK) data were pooled from 7 studies in participants with and without HIV who received intravenous/oral/SC LEN. A total of 6855 LEN concentrations from 384 participants were analyzed in the PopPK analysis using nonlinear mixed effects modeling. Several intrinsic and extrinsic factors/covariates including pharmacoenhancers (cobicistat or ritonavir), body weight (BW), age, sex, race, ethnicity, dose, disease status, food, formulation and estimated glomerular filtration rate were evaluated. LEN exposures were simulated using the bayesian posthoc PK parameters and presented across applicable covariates.

Results: A 2-compartment model with 1st order process for oral absorption, with a parallel 1st and transit compartment absorption for SC and linear elimination, adequately described LEN concentration data.

The typical total clearance (CL), intercompartmental CL, central volume, and peripheral volume values were 4.05 L/h, 41.2 L/h, 68 L and 908 L, respectively. Dose was found to affect oral bioavailability and CL of LEN. HTE participants had lower CL (23.3% decrease) compared to participants without HIV.

Pharmacoenhancers were found to affect oral LEN bioavailability (58.7% increase). The change in LEN exposures with BW ranged from approximately −32.3% to +23.5% (relative to the median exposures) for participants with 5th to 95th BW percentiles, respectively. No additional covariates were found to significantly affect LEN exposure.

Conclusions: Higher LEN exposures were observed with lower body weightsand for participants on pharmacoenhancers. In addition, higher exposures were observed in HTE participants compared to participants without HIV, potentially due to unaccounted and complex disease-related cofounders. These changes in LEN exposures were not considered clinically meaningful.

EPB175

Pharmacokinetic modeling and simulation of intramuscular and subcutaneous ibalizumab delivery

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Background: Ibalizumab (IBA) is a long-acting post-attachment inhibitor approved for the treatment of heavily treatment-experienced (HTE) adults with multidrug resistant HIV-1 failing their current antiretroviral (ARV) regimen. In approved dosing, IBA is diluted in 250 mL of saline and administered via intravenous infusion (IVI) as a loading dose of 2000 mg followed by 800 mg maintenance doses, every 2 weeks (q2w). We used population pharmacokinetic (PopPK) modeling to simulate intramuscular (IM) and subcutaneous (SC) dosing.

Methods: A three-compartmental model with parallel Michaelis-Menten and first order elimination was used to describe the PopPK for IM and SC administration. PK data from 7 clinical studies (phase 1, 2 and 3) conducted in HIV infected patients (n=281) were used to build the models, with age, weight, CD4 count and sex added sequentially as covariates. The predictive performance was evaluated by visual predictive check (VPC). IBA concentrations were estimated for dosing simulations of 2000 mg IVI followed by 400 mg weekly (qw) or 800 mg q2w for both IM and SC administration. One hundred subjects were simulated for each dosing regimen with body weight ranging from 50-140 Kg.

Results: The goodness-of-fit plots showed that data were evenly distributed across the line of identity, indicating no major bias and appropriateness of the models for the

population and each individual, with inclusion of body weight as a significant covariate. The VPC results showed that approximately 95% of data points were within the 90% prediction interval for both IM and SC models, indicating good predictability.

All dosing regimens evaluated with IM and SC delivery support maintenance of IBA trough serum concentrations (C_{trough}) above the previously demonstrated effective value (0.3 µg/mL). IM administration supported higher C_{trough} with less variability than SC. In addition, 400 mg qwk dosing led to higher C_{trough} than 800 mg q2wk.

Conclusions: These data support the potential administration of IBA via IM or SC injection weekly or every 2 weeks, and warrant the ongoing investigation to provide additional IBA delivery options convenient for HTE patients.

The safety and PK of IM administration are currently being evaluated in an open-label non-randomized phase 3 study (TMB-302).

EPB176

Pharmacokinetics (PK) and tolerability of cabotegravir (CAB) and rilpivirine (RPV) long-acting (LA) intramuscular (IM) injections to the vastus lateralis (lateral thigh) muscles of healthy adult participants

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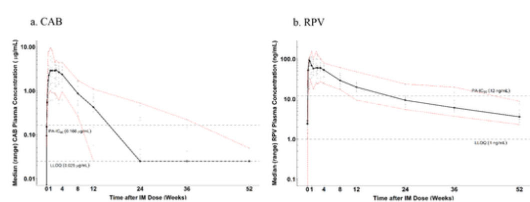
Background: CAB + RPV LA IM gluteal injections monthly and every 2 months demonstrated efficacy for maintaining HIV viral suppression and were well tolerated. Vastus lateralis thigh muscle could be a potential alternative site of administration due to injection fatigue, intolerability, or inaccessibility of the gluteal muscle or in future applications allowing self-administration. CAB and RPV PK and participant tolerability were evaluated following single IM injections to the lateral thigh; preliminary results are presented.

Methods: Healthy adult participants received 4 weeks of daily oral CAB 30mg and RPV 25mg, followed by 10-14 day washout and single 3-mL IM injections of CAB LA 600mg and RPV LA 900mg to contralateral vastus lateralis muscles. Safety, tolerability, and sparse PK were collected through 52 weeks post-injection. PK parameters were estimated using noncompartmental analysis (NCA).

Results: Fifteen participants (6 females) enrolled with median age 33 years, weight 93.6 kg, and BMI 31.4 kg/m^2. One female participant withdrew during oral dosing due to pregnancy. Injection site reactions (ISRs) occurred in 14/14 participants: 12/14 (86%) Grade 1 (mild) and 2/14 (14%) Grade 2 (moderate), most resolving in 3-7 days. Most common ISRs were pain (14/14 [100%]), erythema (8/14 [57%]), induration (7/14 [50%]), bruising (4/14 [29%]), warmth (3/14 [21%]), and pruritis (2/14 [14%]). Observed CAB and RPV concentration-time profiles are shown in the Figure.

Plasma concentrations at Weeks 4 and 8 were 15- and 5.3-fold above protein-adjusted IC_{90} (PA-IC_{90}) for CAB and 4.7- and 2.4-fold for RPV, respectively.



Plasma concentrations below the lower limit of quantification (LLOQ) were imputed as the value of LLOQ. Black solid line represents the median and dotted red lines represent min and max of the observed data. Grey open circles represent individual observed data. PA-IC_{90}: in vitro protein-adjusted concentration resulting in 90% of the maximum inhibition of viral growth.

Figure. Preliminary median (range) of plasma concentration-time profiles of CAB (a) and RPV (b) after single IM administration of (a) CAB LA 600 mg (3 mL) and (b) RPV LA 900 mg (3 mL) to the lateral thigh muscle in healthy adult participants.

	Cmax	Tmax	AUClast	Concentration At Week 4	Concentration At Week 8
CAB LA (n=14)	3.38 mg/mL (66%)	1 week (1, 8)	3832 h*mg/mL (22.8%)	2.56 mg/mL (38.9%)	0.88 mg/mL (84.2%)
RPV LA (n=14)	93.5 ng/mL (37.7%)	0.8 week (0.42, 4)	145000 h*ng/mL (33.1%)	56.7 ng/mL (28.5%)	30.8 ng/mL (37.7%)
PK parameters were estimated using noncompartmental analysis. Values displayed are geometric mean (CV%) except for Tmax, which is displayed as median (range). Plasma concentrations below LLOQ were omitted. AUClast: area under concentration-time curve from time 0 to the last observation above LLOQ. Cmax: maximum plasma concentration post IM injection. Tmax: time at which Cmax occurs.					

Table. Preliminary plasma PK parameters after single IM administration of CAB LA 600 mg (3 mL) and RPV LA 900 mg (3 mL) to the lateral thigh muscles in healthy adult participants.

Conclusions: CAB and RPV LA IM injections to the vastus lateralis muscle were well tolerated with mild-to-moderate ISRs, and showed favorable plasma PK profiles, supporting further evaluation of thigh IM administration in target population(s).

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EPB177

Emtricitabine triphosphate in dried blood spots predicts current HIV viremia in people living with HIV and ongoing substance use disorders

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Background: Bictegravir/emtricitabine/tenofovir alafenamide (B/F/TAF) exhibits high efficacy and a favorable safety profile. People with HIV (PWH) and substance use disorders (SUD) are at risk of medication non-adherence. The BASE study (NCT03998176) is an open-label, phase IV, single-arm study evaluating the effectiveness, safety, durability, and adherence of B/F/TAF amongst PWH with SUD. We evaluated antiretroviral concentrations in dried blood spots (DBS) to compare with viral suppression (VS) at 24 weeks (W24) post B/F/TAF initiation.

Methods: BASE enrolled 43 viremic (HIV RNA > 1000 c/mL) treatment naïve or experienced PWH with ongoing SUD to receive B/F/TAF daily for 48 weeks. DBS concentrations, from two 7mm punches, of emtricitabine-triphosphate (FTC-TP) and tenofovir-diphosphate (TVF-DP) were analyzed by LC/MS/MS and results were dichotomized into quantifiable vs. below the limit of quantification (BLQ). Limits of quantification were 1000 and 50 fmol/punches for FTC-TP and TFV-DP respectively. Median FTC-TP and TFV-DP concentrations were compared with Mann-Whitney test. Multivariate logistic regression analysis estimated an odds ratio (OR) for VS (HIV RNA <50 c/mL) based on whether DBS concentrations were detectable for each FTC-TP and TFV-DP.

Results: Thirty-six BASE participants (84%) provided paired DBS and HIV RNA samples at W24. All participants reported current methamphetamine use. Mean (range) age was 41 years (26-62); 22% female, 83% White, 11% Black. At W24, 31/36 (86%) were VS. Median (range) DBS concentrations of FTC-TP and TVF-DP were 3463 (BLQ-11325) and 1724 (BLQ-4100) fmol/punches, respectively. Participants with VS had significantly higher FTC-TP (p=0.0187) but not TFV-DP (p=0.2778) compared with participants with HIV RNA >50cpm. Participants with BLQ FTC-TP concentrations were more likely to have detectable HIV compared to those with detectable FTC-TP (aOR 20.8; 95% CI, 1.9-227.3). Four participants with detectable HIV RNA and BLQ FTC-TP had detectable, but low, TVF-DP concentrations (median, 595.5 fmol/punches).

Conclusions: Undetectable FTC-TP in DBS was a strong predictor of current HIV viremia in PWH with SUD taking B/F/TAF. The highest TFV-DP concentrations in participants with detectable viremia correlated with levels previously shown to be associated with 2 doses per week. PWH exhibiting poor short-term adherence, as indicated by undetectable FTC-TP DBS concentrations, may benefit from adherence interventions and resistance testing.

Drug interactions

EPB178

Drug-drug interactions between antiretrovirals and remdesivir

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Background: Although COVID-19 vaccination is expanding worldwide, deaths due to COVID-19 continue to increase due to unequal distribution. HIV infection, specifically with CD4 counts <200cells/mm^3, is one of the risk factors for COVID-19 symptoms becoming severe, with comorbidities also serving as risk factors of severe COVID-19 among people with HIV. Remdesivir and dexamethasone are the mainstays of inpatient COVID-19 treatment, with colchicine and favipiravir being studied for outpatient therapy, so we sought to evaluate drug-drug interaction (DDIs) between antiretrovirals (ARVs) and these drugs *in vitro*.

Methods: DDIs between ARVs and anti-COVID-19 drugs and candidates were evaluated via *in vitro* studies as a function of:

a. Drug metabolism for midazolam (MDZ) in human liver microsomes (effect for cytochrome P450 3A (CYP3A));

b. Drug efflux for loperamide (LPM) in P-glycoprotein (P-gp) stably expressing MDCK, and

c. Uptake transport for rosuvastatin (ROS) in organic anion transporting polypeptide 1B1 (OATP1B1) stably expressing HEK-293.

Initially, the effects of remdesivir (RDV), dexamethasone (DEX), colchicine, and favipiravir were evaluated in each system at each drug's clinical maximum plasma concentration. The *in vitro* inhibitory kinetics of RDV toward CYP3A, P-gp, and OATP1B1 were evaluated over RDV concentration ranges of 0.01-500 µM.

Finally, the effects of ARVs on 10 µM RDV metabolism and transport were evaluated for ARVs that inhibit CYP3A4, P-gp, or OATP1B1.

Results: RDV (10 µM) significantly inhibited CYP3A (47.9%), P-gp (35.8%), and OATP1B1 (33.0%) activities. DEX (1 µM) significantly inhibited CYP3A (15.2%) and OATP1B1 (25.4%) activities. IC_{50} values of RDV toward MDZ metabolism and LPM efflux were 21.7 µM and 59.8 µM, respectively. RDV metabolism was significantly inhibited by zidovudine (53.5%), efavirenz (50.1%), darunavir (50.2%), lopinavir (53.8%), ritonavir (69.8%), and cobicistat (25.4%). RDV uptake was significantly inhibited by darunavir (15.4%), rilpivirine (25.0%), and ritonavir (19.3%). No ARVs inhibited RDV efflux.

Conclusions: Our current study suggests that RDV is a weak inhibitor of CYP3A, P-gp and OATP1B1, leading to DDIs with ARVs that should be monitored. Other treatments for COVID-19 studied here did not demonstrate significant DDIs with ARVs. As new COVID-19 therapeutics emerge, and given the prevalence of HIV worldwide, DDIs with ARVs must continue to be assessed.

Long-acting agents and other drug delivery systems (e.g., injectables, implants, dual therapies, microneedle patches)

EPB179

Initiating long-acting cabotegravir and rilpivirine in a real-world setting – clinical characteristics and switch reasons from people living with HIV (PLHIV) and health care provider perspective in the German CARLOS cohort

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Background: 2-monthly cabotegravir (CAB) + rilpivirine (RPV) long acting (LA) for HIV treatment offers a less frequent dosing alternative to daily oral antiretroviral therapy (ART). The CARLOS cohort is a non-interventional, multicenter, prospective study in PLHIV receiving CAB+RPV LA in routine care in Germany. Here we describe clinical characteristics and reasons for switching to LA therapy from a PLHIV and healthcare provider (HCP) perspective in a real-world setting.

Methods: Clinical characteristics were collected from medical records. Reasons for switching were assessed through surveys administered at baseline.

Results: Between May-Dec 2021,236 PLHIV initiated CAB+RPV LA across 19 sites in accordance with the SmPC. Median age was 42.5 (interquartile range (IQR);36.0-49.5), 95.3% (225/236) were male (Table1).

From the HCP perspective, the main reason (92.4%; n=218/236) for switching to CAB+RPV LA was "patient wish" (Fig1). Among PLHIV, "convenience" (62.8%; n=140/223) and "pill fatigue" (52.5%; n=117/223) were the most often cited reasons for choosing LA therapy. Prior to switching, 23.1% (50/216) of PLHIV reported having been often/always "worried about unintentional disclosure of their HIV status through oral therapy", 27.8% (n=60/216) often/always "worried about forgetting daily ART" and 29.6% (64/216) often/always felt "taking daily oral ART was an uncomfortable reminder of their HIV status".

The majority of PLHIV (84.7%;n=200/236) were started with an oral lead-in (OLI) phase prior to the injectables. For those choosing no OLI, "patient preference" was the main rationale provided (86.1%;n=31/36).

Conclusions: Switching to CAB+RPV LA in routine clinical care is primarily driven by patient choice with convenience and pill fatigue being the most often cited reasons for switching in this cohort.

	Total	Observed data
Sex, male, % (n)	95.3 % (225)	236
Age, years, median (interquartile range; IQR)	42.5 (36.0-49.5)	236
Age categories <50; 50-65; >65, % (n)	 75.0 % (177); 24.6 % (58); 0.4 % (1)	236
BMI ≥30 kg/m², % (n)	10.5 % (19)	181
CD4 T-cell count, cells/µL, median (IQR)	714.5 (543 – 986)	228
History of AIDS (CDC C), % (n)	7.6 % (18)	236
Time on ART, years (median, IQR)	8.1 (4.9-11.7)	210
Number of previous regimens ≥3, % (n)	43.2 % (102)	236

Table 1. Baseline characteristics

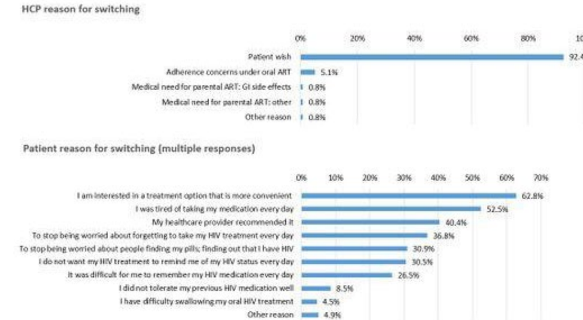

Figure 1. Reasons for switching from daily oral treatment to long-acting (LA) injections from healthcare provider (HCP) and patient perspective.

EPB180

Long-acting cabotegravir+rilpivirine in older adults: pooled Phase 3 Week 96

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Background: Cabotegravir (CAB) + rilpivirine (RPV) is the first complete long-acting (LA) regimen for the maintenance of HIV-1 virologic suppression. With successes in HIV treatment, the proportion of people living with HIV aged ≥50 years (y) is increasing. Similar outcomes with CAB+RPV LA have been observed regardless of age through Week (W) 48. Here, longer-term outcomes through W96 are presented by age group.

Methods: Data from ATLAS-2M and FLAIR were pooled and stratified by age (<50 y and ≥50 y). Data from ATLAS-2M participants who transitioned from CAB+RPV in ATLAS were excluded. W96 efficacy endpoints were the proportion of participants with plasma HIV-1 RNA ≥50 (virologic non-response) and <50 copies/mL (virologic suppression). Incidence of confirmed virologic failure (CVF; two consecutive measurements of ≥200 copies/mL) and safety through W96 were also assessed.

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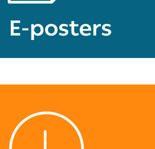
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Results: In total, 983 participants aged <50 y and 237 aged ≥50 y were randomized to receive CAB+RPV LA Q8W or Q4W, or continue oral ART (*Table*); 18 (LA, n=17; oral ART, n=1) were ≥65 y. Participants ≥50 y tended to have more comorbidities and co-medications at baseline vs. <50 y. Virologic outcomes were similar across arms and age groups; rates of virologic suppression were high (87–94%) and rates of non-response were low (1–3%). CVF rates were similarly low across arms and age groups (1–2%).
The frequency of drug-related adverse events (AEs), serious AEs, and AEs leading to withdrawal were comparable between age groups for both LA regimens. Injection site reactions were similar across age groups, most being mild to moderate. Outcomes were broadly comparable for participants ≥65 y.

n (%) unless otherwise specified	CAB + RPV LA Q8W		CAB + RPV LA Q4W		Oral ART	
	<50 y (N=238)	≥50 y* (N=89)	<50 y (N=491)	≥50 y* (N=119)	<50 y (N=254)	≥50 y (N=29)
Baseline characteristics						
Female (sex at birth)	49 (21)	24 (27)	101 (21)	37 (31)	52 (20)	12 (41)
Body mass index, ≥30 kg/m²	43 (18)	16 (18)	70 (14)	22 (18)	31 (12)	6 (21)
White race	170 (71)	69 (78)	377 (77)	95 (80)	178 (70)	25 (86)
Comorbidities at baseline						
0	95 (40)	18 (20)	234 (48)	26 (22)	134 (53)	8 (28)
1–2	92 (39)	44 (49)	174 (35)	37 (31)	91 (36)	13 (45)
≥3	51 (21)	27 (30)	83 (17)	56 (47)	29 (11)	8 (28)
Co-medications at baseline						
0	105 (44)	25 (28)	269 (55)	32 (27)	154 (61)	9 (31)
1–2	80 (34)	32 (36)	153 (31)	39 (33)	75 (30)	13 (45)
≥3	53 (22)	32 (36)	69 (14)	48 (40)	25 (10)	7 (24)
Efficacy						
HIV-1 RNA ≥50 c/mL at Week 96†	7 (2.9)	1 (1.1)	11 (2.2)	3 (2.5)	8 (3.1)	1 (3.4)
HIV-1 RNA <50 c/mL at Week 96†	210 (88.2)	84 (94.4)	430 (87.6)	103 (86.6)	227 (89.4)	26 (89.7)
CVF‡	5 (2.1)	1 (1.1)	4 (0.8)	2 (1.7)	4 (1.6)	0
Any AE (excluding ISRs)	199 (84)	78 (88)	450 (92)	113 (95)	217 (85)	25 (86)
Drug related	65 (27)	19 (21)	166 (34)	35 (29)	29 (11)	4 (14)
AE leading to withdrawal (excluding ISRs)	9 (4)	2 (2)	20 (4)	6 (5)	4 (2)	0
Drug related	5 (2)	1 (1)	11 (2)	4 (3)	3 (1)	0
Any serious AE (excluding ISRs)	13 (5)	8 (9)	29 (6)	11 (9)	18 (7)	4 (14)
Drug related	1 (<1)	0	3 (<1)	1 (<1)	0	0
Number of injections	5732	2222	21,784	5201	–	–
Number of ISR events	1793	552	5145	963		
Grade 3 (severe) events,§ n (% of ISR events)	30 (2)	4 (<1)	45 (<1)	17 (2)		
Participants withdrawing due to ISR-related reasons, n (% of participants with injections)	3 (1)	2 (2)	11 (2)	4 (3)		

*17 participants were ≥65 years (Q8W, n=12; Q4W, n=5).
†FDA Snapshot algorithm (intention-to-treat exposed).
‡Two consecutive measurements of HIV-1 RNA ≥200 copies/mL.
§No Grade 4 or Grade 5 events were reported.
AE, adverse event; ART, antiretroviral therapy; CAB, cabotegravir; CVF, confirmed virologic failure; ISR, injection site reaction;
LA, long-acting; Q4W, every 4 weeks; Q8W, every 8 weeks; RPV, rilpivirine; y, years.

Table. Pooled Outcomes From ATLAS-2M and FLAIR Stratified by Age (<50 y and ≥50y) at Week 96

Conclusions: CAB+RPV LA demonstrated high efficacy and acceptable safety and tolerability in participants aged <50 y and aged ≥50 y at W96. These data support the use of CAB+RPV LA as a complete maintenance regimen in adults irrespective of age.

EPB181

"Give it a Shot": best practices from HCPs for administering long-acting cabotegravir+rilpivirine

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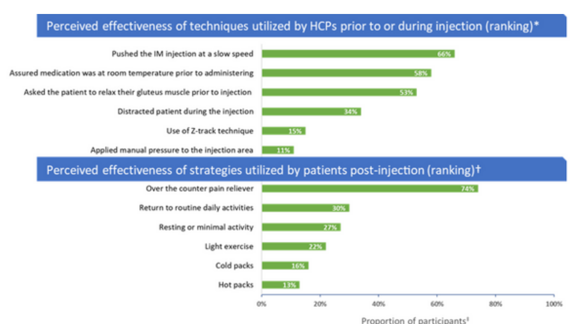
Background: Cabotegravir (CAB) + rilpivirine (RPV) dosed monthly or every 2 months is a complete long-acting (LA) regimen for the maintenance of HIV-1 virologic suppression. LA intramuscular (IM) gluteal injection is a novel antiretroviral delivery method that can cause discomfort/pain.
We surveyed injectors in the CAB+RPV development program on optimal administration techniques in order to inform clinical practice and improve patient/provider experience with gluteal injections.

Methods: Primary injectors across the Phase 3/3b program were invited to participate in an anonymous, self-administered online questionnaire containing 15 items with pre-defined response options and one open-ended item. Topics included provider demographics, clinical and injection experience, techniques used to minimize pre-/post-injection discomfort, and the perceived effectiveness of these techniques. Data were captured electronically and summarized using descriptive statistics.

Results: Surveys were sent to 161 sites in 15 countries. Overall, 181 providers returned the survey; 76% had administered ≥50 CAB+RPV injections. Among respondents utilizing ≥1 injection technique (n=169), the most commonly used and ranked as the most effective in minimizing pre-/post-injection pain were (*Figure*): pushing the IM injection at a slow speed (66%), bringing the medication to room temperature (58%), relaxing the gluteus muscle prior to injection (53%), and distracting the patient (34%).



*Data based on n=169 HCPs (93% of sample) who reported utilizing at least one technique prior to/during injections that successfully minimized pain/discomfort. n=12 HCPs (7% of sample) reported no techniques and were excluded from the base.
†Data based on n=145 HCPs (80% of sample) who reported study participants trying at least one post-injection strategy that successfully minimized pain/discomfort.
‡Percentages reflect the proportion of HCPs/participants who ranked each strategy as first, second, or third most effective at minimizing injection-associated pain/discomfort.
HCP, healthcare professional; IM, intramuscular.

Figure. Most effective techniques in minimizing pain/discomfort.

Overall, 60% of injectors felt that a prone position provided optimal patient comfort and 41% had no preference on injection order (CAB vs. RPV). Post-injection, the techniques ranked by injectors as most effective in minimizing pain, as reported to them by patients, were over the counter pain relievers (74%) and returning to routine daily activities (30%).

Conclusions: In the Phase 3/3b studies, CAB+RPV LA injections were well tolerated, associated with low rates of treatment discontinuation due to injection site reactions, and preferred by patients over daily oral therapy. These data support that simple techniques, routinely used by injectors, help optimize the administration of CAB+RPV LA.

EPB182

Long-acting cabotegravir+rilpivirine injection site reactions: pooled Week 96 results

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Background: Long-acting cabotegravir + rilpivirine (CAB+RPV LA) administered monthly or every 2 months is the first complete LA regimen recommended by treatment guidelines for the maintenance of HIV-1 virologic suppression. Across Phase 3/3b trials, the most frequently reported adverse events were injection site reactions (ISRs).

Here, we present pooled ISR outcomes by regimen, sex, and body mass index (BMI) from the ATLAS-2M and FLAIR studies through Week (W) 96.

Methods: Data from participants receiving CAB+RPV LA in ATLAS-2M and FLAIR were pooled and stratified by dosing regimen, sex at birth, and baseline BMI category. Data from ATLAS-2M participants who transitioned from CAB+RPV in ATLAS were excluded. ISR characteristics were evaluated through W96.

Results: A total of 920 (Q8W, n=321; Q4W, n=599) participants received ≥1 injection of CAB LA/RPV LA across ATLAS-2M and FLAIR, representing 34,939 injections through W96 (Q8W, n=7954; Q4W, n=26,985) (**Table**). Overall, 8453 ISRs (Q8W, n=2345; Q4W, n=6108) were reported by 801 participants (Q8W, 89% [n=285]; Q4W, 86% [n=516]). Most were mild to moderate in severity (Grade 1, 83%; Grade 2, 16%; Grade 3, 1%), with a median (interquartile range) duration of 3 days (2–4), and 86% had a duration ≤7 days. The most commonly reported ISRs (% of injections) were pain (20%), nodule (1%), and discomfort (1%). ISRs decreased in incidence over time, being reported by 71%, 24%, and 15% of participants at W4, W48, and W96, respectively. Withdrawals due to ISR-related reasons were infrequent and comparable between dosing regimens, occurring in 2% (n=20/920) of participants (majority were injection intolerability [n=10]). ISR profiles over 96 weeks were generally comparable across regimen, sex, and baseline BMI category.

	Dosing Regimen			Sex at Birth		Baseline BMI Category	
	Total	Q8W	Q4W	Female	Male	BMI <30 kg/m²	BMI ≥30 kg/m²
Number of participants receiving ≥1 injection	920	321	599	201	719	770	150
Number of injections	34,939	7954	26,985	7617	27,322	29,428	5511
ISR events,* n (% of injections)	8453	2345	6108	1840	6613	7304	1149
Pain	6939 (20)	1904 (24)	5035 (19)	1322 (17)	5617 (21)	6062 (21)	877 (16)
Nodule	462 (1)	107 (1)	355 (1)	121 (2)	341 (1)	381 (1)	81 (1)
Induration	269 (1)	61 (1)	208 (1)	156 (2)	113 (<1)	235 (1)	34 (1)
Discomfort	220 (1)	113 (1)	107 (<1)	18 (<1)	202 (1)	162 (1)	58 (1)
Swelling	141 (<1)	56 (1)	85 (<1)	45 (1)	96 (<1)	119 (<1)	22 (<1)
Grade ≥3 ISR events,† n (% of ISR events)	96 (1)	34 (1)	62 (1)	9 (<1)	87 (1)	63 (<1)	33 (3)
Median (IQR) duration of ISRs, days	3 (2–4)	3 (2–4)	3 (2–4)	3 (2–7)	3 (2–4)	3 (2–4)	3 (2–5)
ISR duration >14 days, n (% of ISR events)	477 (6)	130 (6)	347 (6)	210 (11)	267 (4)	389 (5)	88 (8)
Recovered	463	120	343	197	266	386	77
Recovering	0	0	0	0	0	0	0
Not recovered	0	0	0	0	0	0	0
Recovered with sequelae	14	10	4	13	1	3	11
Participants withdrawing due to ISR-related reasons, n (% of participants with injections)	20 (2)	5 (2)	15 (3)	2 (<1)	18 (3)	19 (2)	1 (<1)

*Top five most common ISRs reported.
†There were no Grade 4 or Grade 5 ISR events.
BMI, body mass index; IQR, interquartile range; ISR, injection site reaction; Q4W, every 4 weeks; Q8W, every 8 weeks.

Table. Pooled ISR Outcomes From ATLAS-2M and FLAIR Stratified by Dosing Regimen, Sex at Birth, and Baseline BMI Category at Week 96

Conclusions: The majority of ISRs were mild to moderate in severity, short-lived, and rarely led to treatment discontinuation. Outcomes were comparable by regimen, sex, and BMI category. These data further support the use of CAB+RPV LA as a complete maintenance regimen for HIV-1.

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EPB183

Week 96 weight and lipid changes from baseline among participants receiving cabotegravir and rilpivirine long-acting or comparator therapy in the ATLAS-2M and FLAIR studies

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Background: Long-acting cabotegravir + rilpivirine (CAB+RPV LA) administered monthly or every 2 months is the first and only complete LA regimen recommended by treatment guidelines for the maintenance of HIV-1 virologic suppression. In pooled Phase 3/3b studies, weight and lipid changes from baseline were modest in participants receiving CAB+RPV LA or comparator antiretroviral regimen (CAR) through Week (W) 48. Weight and lipid changes from baseline to W96 in the ATLAS-2M and FLAIR studies are presented.

Methods: Data from 1220 participants naive to CAB+RPV in ATLAS-2M and FLAIR were pooled; 937 were randomized to CAB+RPV LA (every 4 or 8 weeks). Data were compared with 283 participants randomized to CAR (abacavir/dolutegravir/lamivudine; FLAIR only). Changes from baseline in weight, BMI, and lipids at W96 were analyzed.

Results: Median (range) weight change from baseline to W96 was +1.80kg (−24.6, 25.4) in the pooled LA arms and +2.00 kg (−17.3, 35.7) in the CAR group (*Table*).

Weight increases of ≥5% and ≥10% occurred in 32% (n=261/825) and 12% (n=103/825) of participants, respectively, in the pooled LA arms compared with 34% (n=86/255) and 13% (n=33/255) in the CAR group. At W96, 16% (n=75/460) of pooled LA participants and 20% (n=32/160) of CAR participants shifted BMI category from normal to overweight, and 12% (n=37/311) and 11% (n=8/75) of overweight participants shifted to obese, respectively. A higher proportion of participants with ≥10% weight gain were female and Black. There were no clinically relevant changes in lipid profiles between groups.

Conclusions: Median weight changes remained modest and comparable between CAB+RPV LA and CAR participants at W96. Weight increases of ≥10% and upward BMI shifts were uncommon, with no significant lipid changes observed. A study comprehensively evaluating potential for weight and metabolic changes with oral and LA INSTI-based regimens is ongoing.

(ITT-E Population)	Pooled CAB+RPV LA Q8W + Q4W (ATLAS-2M and FLAIR) (n=937)*	ABC/DTG/3TC CAR (FLAIR) (n=283)*
Median age, years (range) ≥50 years, n (%)	39 (19, 83) 208 (22)	34 (18, 68) 29 (10)
Female sex at birth, n (%) **Female self-reported gender,** n (%)	211 (23) 211 (23)	64 (23) 64 (23)
Race, n (%) Black White Asian Other	 149 (16) 711 (76) 41 (4) 36 (4)	 56 (20) 203 (72) 15 (5) 9 (3)
Pre-switch ART regimen, n (%) INI based NNRTI based PI based	 560 (60) 307 (33) 70 (7)	 283 (100) N/A N/A
BL median weight, kg (range) **Median weight change at W96,** kg (range) ≥5% weight increase from BL, n (%) ≥10% weight increase from BL, n (%)	76.0 (41.8, 138.9) 1.80 (−24.6, 25.4) 261/825 (32) 103/825 (12)	74.0 (45.9, 148.0) 2.00 (−17.3, 35.7) 86/255 (34) 33/255 (13)
BL median BMI, kg/m² (range) **Median BMI change at W96,** kg/m² (range) **BL BMI category, n (%)** Underweight (<18.5 kg/m²) Normal (18.5–<25 kg/m²) Overweight (25–<30 kg/m²) Obese (≥30 kg/m²) **Number of participants changing BMI category at W96,** n (%)† Underweight -> normal [or overweight or obese] Normal -> overweight [or obese] Overweight -> obese [or normal] Obese -> overweight [or normal or underweight]	24.91 (16.6, 54.0) 0.53 (−8.9, 10.3) 15 (2) 460 (49) 311 (33) 151 (16) 6 (40) [0] 75 (16) [3 (<1)] 37 (12) [30 (10)] 11 (7) [0]	24.00 (16.2, 47.4) 0.60 (−5.9, 12.7) 10 (4) 160 (57) 76 (27) 37 (13) 2 (20) [0] 32 (20) [3 (2)] 8 (11) [9 (12)] 10 (26) [0]
BL median lipids at W96 (median change [range]) TG (mmol/L) TC (mmol/L) LDL (mmol/L) HDL (mmol/L) TC/HDL ratio	 1.18 (−0.02 [−5.9, 5.3]) 4.70 (0.05 [−2.4, 2.8]) 2.76 (0.02 [−2.2, 2.3]) 1.30 (0.05 [−1.3, 1.3]) 3.48 (−0.05 [−3.4, 3.5])	 1.10 (0 [−2.2, 3.7]) 4.45 (0.20 [−1.8, 2.9]) 2.47 (0.06 [−1.5, 2.4]) 1.25 (0.05 [−0.9, 1.8]) 3.41 (−0.04 [−3.6, 2.6])

*Participants in FLAIR entered the study naive to ART and underwent a 20-week induction period on ABC/DTG/3TC prior to the start of the maintenance phase. Baseline values for participants from FLAIR represent maintenance baseline. Participants in ATLAS-2M were ART experienced and virologically suppressed prior to entering the study.
†The denominators for the percentages are the total number of people in each BMI category at BL.
ABC/DTG/3TC, abacavir/dolutegravir/lamivudine; ART, antiretroviral therapy; BL, baseline; BMI, body mass index; CAB, cabotegravir; CAR, comparator antiretroviral regimen; HDL, high-density lipoprotein; INI, integrase inhibitor; ITT-E, intention-to-treat exposed; LA, long-acting; LDL, low-density lipoprotein; N/A, not applicable;
NNRTI, non-nucleoside reverse transcriptase inhibitor; PI, protease inhibitor; Q4W, every 4 weeks; Q8W, every 8 weeks; RPV, rilpivirine; TC, total cholesterol; TG, triglycerides; W, week.

Table. Baseline Characteristics and Weight, BMI, and Lipid Changes at Week 96 From ATLAS-2M and FLAIR Studies

EPB184

Injection site reaction experience in clinical studies of people using lenacapavir for HIV treatment

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Background: Lenacapavir (LEN), a potent first-in-class capsid inhibitor, is in development as a 6-monthly subcutaneous (SC) injection for treatment and prevention of HIV-1 infection. In animals, SC injection led to reversible chronic granulomatous inflammation at the injection site as a foreign body response to LEN drug depot.

Methods: We characterized the injection site reactions (ISRs) in participants who received at least one dose of subcutaneous (SC) LEN 927 mg (2 x 1.5 mL) in clinical studies in heavily treatment experienced (CAPELLA) and in treatment naïve (CALIBRATE) people with HIV (PWH).

Results: In CAPELLA, 72 participants received at least one and 70 two doses of SC LEN. In CALIBRATE, 103 received at least one and 95 two doses. The median duration of follow up was 376and 449 days, respectively. Most ISRs (97%, 99/102 participants) were Grade 1 or 2, rarely leading to discontinuation (4 participants: 1 [nodule], 2 [induration] 1 [erythema/swelling]). Common ISRs (any ISR ≥10% in both studies) were swelling, erythema, pain, nodule and induration, which generally occurred less frequently with subsequent injection (Table).

Swelling, erythema and pain generally resolved within days; nodule and induration resolved over months. Investigators reported nodules and induration as generally palpable, not visible, non-erythematous, nonpainful.

	CAPELLA			CALIBRATE		
ISR types	1st SC (n=72) %	2nd SC (n=70) %	Median duration (days)	1st SC (n=103) %	2nd SC (n=95) %	Median duration (days)
Swelling	26%	13%	12	14%	12%	11
Erythema	24%	11%	6	14%	18%	5
Pain	22%	21%	3	15%	9%	4
Nodule	22%	11%	180	11%	8%	195
Induration	11%	10%	118	9%	6%	202

Table.

Conclusions: Among PWH using SC LEN, ISRs were generally mild to moderate, rarely leading to discontinuation, and decreased in frequency with subsequent injection. Most ISRs resolved within days, while induration and nodules gradually improved over months but were generally not visible or painful. The pattern and nature of ISRs is consistent with preclinical experience.

EPB185

Preference for long acting injectable (LAI) antiretrovirals for HIV treatment or PrEP in Argentina

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Background: Information on long acting injectable (LAI) antiretrovirals preference is limited in Latin America. This study assessed preference for LAI antiretrovirals (ARV) and its correlations, among people living with HIV (PLHIV) and people willing to receive PrEP in Argentina.

Methods: An online survey was conducted, addressing HIV negative people willing to use PrEP and also PLHIV already on oral treatment. The sample was divided into: cisgender women (CW), trans and non-binary (TNB) and cisgender men (CM), identified as heterosexual (HCM) and gay, bisexual or queer (GBQ). Descriptive statistics were used to summarize data.

Results: The survey was responded by 1676 participants (M= 33 years, IQR: 28–41), including 786 CW, 88 TNB and 802 CM, of whom 85 self-identified as HCM and 717 as GBQ men. Among the 804 PLHIV, the majority (91.5%) preferred LAI (13.4% bimonthly and 78.1% six-monthly).

Preference for LAI was high in all groups: CW 86.7%, HCM 84.6% , CBQ 94.8%, and TNB 85.1%. Common reasons for preferring LAI over pills were discretion and no need to remember taking pills.

There was a positive association between LAI preference and identifying as GBQ cis men (Z=4,3; p<.05) and negative for cis women (Z = - 2,9; p< .05). Also, there was a positive association with respondents who have a higher educational level (Z = 4,3; p <; .05) and those who used injectable medication before (Z = 2,6; p< .05). Concerning PrEP, among 894 HIV negative participants, 68% preferred LAI (10.8% bimonthly and 57.2% six-monthly). Preference for LAI PrEP was similar in all groups: CW 68.8%, HCM 72.7%, GBQ 65.6%, TNB 65.9%.

Common reasons for choosing LAI PrEP were not wanting to take pills every day and fear of forgetting them. LAI preference for PrEP was positively associated with having had a good experience using injectable medication before (Z = 3,4; p< .05).

Conclusions: Overall, acceptance of LAI was high for both potential PrEP users and PLHIV based on its convenience, particularly among those with previous experience. Still more information is needed related to its implementation in our context and to the perspective of decision makers and health care providers.

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EPB186

Early implementation and clinical outcomes of long-acting injectable cabotegravir and rilpivirine in a safety-net HIV clinic

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Background: Registrational trials of long-acting cabotegravir-rilpivirine (CAB/RPV-LA) required viral suppression (VS) on oral antiretrovirals, but CAB/RPV-LA may benefit patients who are unable to attain VS due to adherence challenges. We sought to assess the feasibility and early clinical outcomes of CAB/RPV-LA implementation in a large safety-net HIV clinic.

Methods: Informed by the capability-opportunity-motivation behavior (COM-B) model, Ward 86 in San Francisco developed a pilot program to support provider initiation and patient adherence to CAB/RPV-LA. Provider supports included education/training and a clinic pharmacy team for review, insurance authorization, and initiation. Patient referral eligibility consisted of regular clinic attendance, no RPV and ≤1 integrase inhibitor mutation, and locator information. Patient-centered supports included education, a direct-to-inject option, and reminder/follow-up phone calls/texts.

Additionally, patients without VS had individualized plans, including identification of community-based supports (e.g. case managers), community-based injection sites, and financial incentives. Appointment attendance and viral load (VL) monitoring for all patients were aided by electronic medical record reports and reviewed in multidisciplinary (MD/RN/pharmacy) case conferences. We defined viral suppression as VL<40 copies/mL.

Results: From February-November 2021, providers referred 70 patients, of whom 16 are in process and 29 are on hold due to patient/provider preference. Of 25 patients who started CAB/RPV-LA, median age was 46; 8% were cis-women, 20% Black, 16% Latinx, 36% experiencing homelessness/unstable housing, and 56% currently using stimulants. Twenty-three (92%) patients have had 100% on-time injection attendance, defined as within +/- 7 days of a 28-day injection cycle, with the other two patients late for only one injection each. Of 14 starting with VS (median CD4 680), 11 (79%) direct-to-inject, with median 4 injections (2-6 injections), 13 (96%) have maintained VS and 1 patient is without follow-up VL due to unexpected travel. Of 11 starting without VS (median CD4 135, mean log10 VL 4.93), all direct-to-inject, with median 4 injections (3-8 injections), 8 (73%) have achieved VS. For the 3 patients without VS, 100% have had a two-log VL decline by median 22 days.

Conclusions: Our data demonstrate the feasibility and promise of a patient-centered approach for CAB/RPV-LA implementation for both those with VS and those with challenges adhering to oral therapy.

Adherence

EPB187

Viral load suppression after intensive adherence counselling among HIV infected adults at Kiswa health centre, Kampala: a retrospective cohort study. Secondary data analysis

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Background: The Joint United Nations Programme on HIV/AIDS through the 95-95-95 target requires 95% of people with HIV infection (PWHIV) on antiretroviral treatment (ART) to be virally suppressed. Viral Load (VL) non-suppression has been found to be associated with suboptimal ART adherence, and intensive adherence counselling (IAC) has been shown to lead to VL re-suppression by over 70% in PWHIV on ART. Currently, there is data paucity on VL suppression after IAC in adult PWHIV in Uganda.

This study aimed to evaluate the proportion of VL suppression after IAC and associated factors among adult PWHIV on ART at Kiswa health centre in Kampala, Uganda.

Methods: Study was a retrospective cohort design and employed secondary data analysis to review routine program data. Medical records of adult PWHIV on ART for at least six months with VL non-suppression from January 2018 to June 2020 at Kiswa HIV clinic were examined in May 2021. Descriptive statistics were applied to determine sample characteristics and study outcome proportions. Multivariable modified Poisson regression analysis was employed to assess predictors of VL suppression after IAC.

Results: Analysis included 323 study participants of whom 204 (63.2%) were female, 137 (42.4%) were between age of 30 and 39 years; and median age was 35 years (interquartile range [IQR] 29-42).

Participant linkage to IAC was 100%. 48.6% (157/323) of participants received first IAC session within 30 days or less after unsuppressed VL result. 66.78% (205/307) of participants who received recommended three or more IAC sessions achieved VL suppression. 34% of participants completed three IAC sessions in recommended 12 weeks.

Receipt of three IAC sessions (ARR = 1.33, 95%CI: 1.16-1.53, p<0.001) and having baseline VL of 1,000 - 4,999 copies/ml (ARR =1.47, 95%CI: 1.26-1.73, p<0.001) was significantly associated with VL suppression after IAC.

Conclusions: VL suppression proportion of 66.78% after IAC in this population was comparable to 70%, the percentage over which adherence interventions have been shown to cause VL re-suppression.

However, timely IAC intervention is needed from receipt of unsuppressed VL results to IAC process completion. Resistance testing should be performed for PWHIV with persistent VL non-suppression after IAC for apt ART regimen switch.

EPB188

Antiretroviral Therapy (ART) use among pregnant enrollees receiving medicaid managed care

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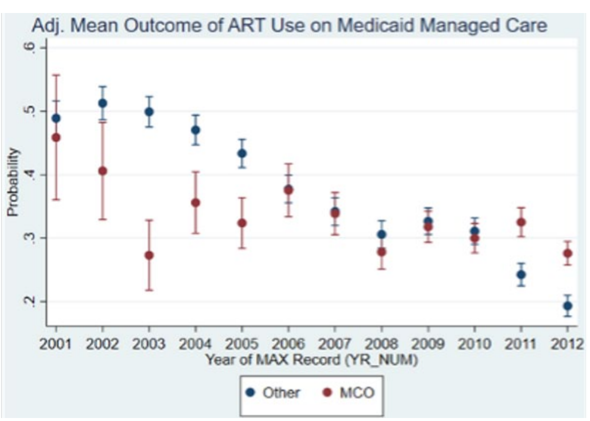
Background: Medicaid is a critical source of care, including ART, for vulnerable HIV+ pregnant women. Between 2001-2012 the number of persons with Medicaid covered by capitated managed care organizations (MCOs) increased dramatically. We address 2 questions in this abstract:

1. Overall, what is the trend in ART use among pregnant women with Medicaid between 2001–2012; and
2. What is the relationship between this trend and MCO, versus other (mostly fee-for-service) coverage.

Methods: In this observational study, we used 12 years (2001-2012) of Medicaid Analytic eXtract (MAX) data from the 14 states with the highest prevalence of HIV (CA, FL, GA, IL, LA, MA, MD, NC, NJ, NY, OH, PA, TX, VA) to examine ART use among pregnant mothers enrolled in an MCO. We fit a multivariable logistic regression model, adjusting for patient characteristics (age, race/ethnicity, state, eligibility, rurality, prenatal care visits, substance use, and comorbid conditions), and an interaction between MCO status and year to measure the association between MCO enrollment and ART use over time.

Results: Among 30,656 deliveries from 23,755 HIV+ Medicaid enrollees, we identified 10,565 [34.5%] with any ART use 12 months prior to delivery. Overall, rates of ART use fell from 37.7% in 2001 to 27.18% in 2012. Trends by coverage type are shown in the Figure. Early on, ART use was higher in those with non-MCO coverage, but in 2011 and 2012 ART use was higher in MCO.



Conclusions: ART use declined among pregnant women in Medicaid 2001-2012, and after adjustment the decline was greater for women with non-MCO coverage than for those with MCO coverage. The observed decline in ART use cannot be explained by the expansion of MCO coverage or patients' clinical characteristics. Additional analysis is needed to assess drivers of low adherence in this population and the role of MCOs in HIV care engagement.

EPB189

Construction and validation of a questionnaire to measure adverse effects of antiretrovirals in the Mexican population

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Background: Until now, there wasn't a validated questionnaire that records adverse events on antiretroviral therapy (ART) in the Mexican population. With polypharmacy, adverse events are critical for adherence to ART. The terminology of each report varies; therefore, it is convenient to document the discomfort through a validated questionnaire that can be self-applied and standardized to the main events with current therapies. We aimed to perform and validate a self-reported questionnaire of adverse events with ART use.

Methods: We performed the bibliographic review of ART's adverse events and formulated 57 questions. The importance and relevance were performed with the content validity by the method by 13 judges.

A pilot study was conducted with ten patients of different socioeconomic levels to evaluate whether the questions were understandable and culturally relevant. The psychometric statistical analysis was performed with 377 patients who completed 57 items.

We performed an internal consistency analysis to eliminate the redundant items. With a factorial analysis with orthogonal rotation, a principal components method to the 57 questions three times, we excluded those items with factorial charges less than .40 and preserved the statistically significant items.

Results: Only 23 to 57 questions were grouped in five factors (mean intercorrelations r= 0 40, KMO of 0. 917): sleeping and productivity disorders, neuropsychiatric area, general discomfort, weight gain & digestion disorders, and cognitive area, with 34.6%, 9.5%, 5.96%, 5.35%, 5.10% of explained variance, respectively.

The Cronbach's Alpha for the questionnaire was 0.90 and from 0.70-0.86 by factors & 60.5% of the total explained variance.

Factor (items number)	Cronbach's Alpha (reliability coefficient)	Explained Variance (%)	Item- total correlations
"Sleeping and productivity disorders" (6)	0.86	34.6%	0.52-0.75
Neuropsychiatric area (5)	0.77	9.5%	0.38-0.66
"General discomfort" (5)	0.70	5.96%	0.40-0.69
Weight gain & Digestion disorders (4)	0.84	5.35%	0.43-0.70
Cognitive area (3)	0.70	5.10%	0.39-0.65
Questionnaire Total (23)	0.90	60.5 %	0.40-0.75

Table 1. Reliability and validity for the factors & total questionnaire.

Conclusions: The development of the questionnaire has the methodological support to be applied in the Mexican population in ART. The measurement index was adequate and useful to have homogenized reports of adverse events in different therapeutically ART groups.

Sex-specific (including cis- and transgender) issues of ART efficacy, adverse reactions and complications

EPB190

Do ART and chemsex drugs get along? Potential drug-drug interactions in a cohort of HIV-positive chemsex users

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Background: HIV infection has evolved into a chronic condition requiring life-long antiretroviral treatment (ART), exposing people living with HIV (PLWH) to potential drug-drug interactions (pDDIs) with co-administered substances. There is an increased risk of pDDIs among PLWH chemsex users, due to intake of recreational illicit drugs alongside a chronic ART.
This study aims to characterize potential ART and chemsex drugs pDDIs and evaluate their association with unscheduled relevant medical and psychiatric hospital consultations and admissions.
Methods: Single-centre, retrospective, observational study of pDDIs between ART and recreational drugs in a series of gbMSM (gay, bisexual and other men who have sex with men) PLWH who practice chemsex attending a tertiary hospital from march 2017 through march 2020. In order to study associations between all recorded pDDIs and relevant clinical events related to the individuals detected in the unscheduled medical visits, we estimated the incidence rate (IR) per 100 person-years of those events and compared it between patients with green (absence of pDDI) and orange-flag (moderate severity pDDI) or red-flag (high severity pDDI) using the Incidence Rate Ratio (IRR).
Results: A total of 172 PLWH chemsex users were included. ART regimens were mostly based on integrase inhibitors (44%). The most frequently used substances and recreational drugs were erectile dysfunction agents (83%), methamphetamine (79%), GHB (77%) and alkyl nitrites (71%). Polydrug use was reported in 52% of the participants. Of the 2048 pDDIs found, 23% were orange flag pDDIs; 88% related to boosted ARTs and 8% to non-nucleoside reverse transcriptase inhibitors. The IR of the 285 unscheduled relevant episodes in patients with orange-flag pDDIs was 64.67 (95%CI: 40.07; 89.28), and the IRR relative to green flag pDDIs was 1.05 (95%CI: 0.60; 1.8, p=0.876).
Conclusions: Despite the fact that one in four chemsex users present pDDIs between drugs and ART, mainly with boosted-ARTs, we have not found evidence of an increased incidence of unscheduled relevant medical and psychiatric consultations among exposed patients.
Further research should be conducted on this subject and a multidisciplinary approach to these patients is recommended.

EPB191

Periconceptional dolutegravir use and risk of adverse pregnancy outcomes in Kenya

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Background: Previous studies suggested an association between periconceptional dolutegravir (DTG) use among women of childbearing age (WCBA) and neural tube defects (NTDs) in the offspring. This safety signal, which prompted countries to delay or suspend plans to transition WCBA to DTG regimens. While the initial safety signal observed was not confirmed in subsequent data, many countries continued to be hesitant to use DTG in WCBA. We conducted a nested cohort study at 23 sites in Kenya that had WCBA on DTG regimens to assess the relationship between exposure to DTG and NTDs.
Methods: We identified 198 women periconceptionally exposed to DTG from July 1, 2017– July 5, 2019 and matched them to 398 women periconceptionally exposed to efavirenz (EFV) by maternal age, last menstrual period date and facility type. Data were collected through interviews and medical records abstraction. The subset of women pregnant at the time of the study were prospectively fol-

lowed through monthly phone calls until birth, and infant exams were conducted at delivery. Outcomes captured include NTDs, stillbirths, prematurity, and small for gestational age (SGA). We compared proportions in different risk categories using chi-square test.

Results: No NTDs were identified among women exposed to DTG or EFV. One case of cleft lip and palate was detected in the EFV cohort. There was no statistically significant difference of any adverse pregnancy outcomes (stillbirths, prematurity, SGA) between DTG and EFV cohorts (DTG: 28.8%, EFV: 26.0% p=0.54), pretermdelivery (DTG: 9.6%, EFV: 12.0%, p=0.46) small for gestational age (DTG: 16.2, EFV: 13.3%, p=0.41) or stillbirth (DTG 3.0%, EFV: 1.3%p=0.24).

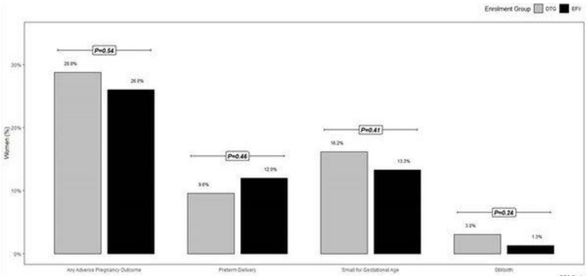

Figure. Pairwise comparison of adverse pregnancy outcomes by enrolment group.

Conclusions: We did not find a NTD signal or a difference in adverse pregnancy outcomes between DTG and EFV cohorts. These findings are consistent with other published studies and support current WHO guidelines to use DTG as a preferred first-line ARV drug in all populations.

Pregnancy (clinical management issues and pharmacokinetics) and contraception

EPB192
Impact of mother mentors' model to improve retention in PMTCT services in health facilities supported by Global Funds. a case from Christian Social Services Commission (CSSC)-AMREF, Tanzania

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Background: Social Stigma and gender-based violence against people living with HIV/AIDS is still prevalent among the communities in Tanzania. This situation has exacerbated lack of access to quality prevention of Mother to Child Transmission (PMTCT) services to women and adolescent girls living with HIV/AIDS. The Global Fund's (PMTCT) project (2021-2023) is implemented by CSSC--AMREF at the rural areas and non-supported health facilities in 8 regions of Arusha, Lindi, Pwani, Morogoro, Tabora, Shinyanga, Mwanza and Geita where the project covers using Mother Mentor's model.

Description: The project trained 606 mother mentors and 264 health care workers who acts as their supervisors in all regions for ten days based on the national PMTCT mother mentor's curriculum in June and July 2021. A monthly monitoring and evaluation tracking tools were developed and were given to mother mentors.

Additionally, others mentors are supported with monthly transport allowances to facilitate their movement during sensitization, awareness creation campaign and tracking pregnant and breastfeeding women, children, and adolescents with HIV/AIDS to attend PMTCT services as part of strengthening the linkage between community and health facility in ensuring they reduce HIV transmission and mortality in the respective regions.

The use of Mother Mentors is reportedly to have significantly contributed to some positive results in the targeted communities. The GF PMTCT project's quarterly report revealed that, a total of 494 PMTCT clients lost to follow up were linked to care, 446 clients were linked to psychosocial and income generating activities (PSAG), thirdly 136 PSAG groups comprising of 940 members were formed of which 582 are PMTCT members.

Lessons learned: Mother Mentors plays a significant role in improving retention of mother baby pair between community and health facilities level. They need to be supervised and supported both technically and financially to be able to assist PMTCT cascades at the community setting.

Conclusions/Next steps: MM need to be scaled in other countries.

EPB193
Associations between HIV/ART exposure during pregnancy and adverse maternal and infant outcomes in the MANGO cohort in western Kenya

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Background: Data eliciting associations betweenantiretroviral treatment (ART) exposure and adverse maternal and newborn outcomes, including congenital abnormalities, are limited. We explored these outcomes within theMeasuring Adverse Pregnancy and Newborn Congenital Outcomes (MANGO) study in western Kenya.

Methods: MANGO is a cohort study that uses mixed prospective and retrospective data collection to ascertain delivery outcomes among pregnant women living with

HIV (WLHIV) and not living with HIV (WNLHIV) enrolled in care or delivering at a tertiary referral facility in western Kenya. For this analysis, women with singleton pregnancies from 9/2020 to 11/2021 werestratified by HIV status and ART exposure (i.e., WLHIV on dolutegravir [DTG] versus WLHIV on non-DTG-containing ART).

We utilized multivariate logistic regression models to determine factors associated with our composite outcome ofadverse maternal (i.e., emergency c-section delivery) and infant outcomes (i.e., stillbirth, preterm birth [<37 weeks gestation], low birth weight [<2.5 Kg], congenital abnormality, and neonatal death).

Results: Among 7,075 women with a documented delivery, 6910 (98%, median age 26 years) had singleton pregnancies and 344 (5%) were WLHIV. Among 176 WLHIV with recorded ART exposure, 149 (85%) were on DTG- and 27 (15%) were on non-DTG-containing ART. The composite outcome occurred in 2,846 (40%) of women overall, and by group: WNLHIV (40%), WLHIV (40%), WLHIV on DTG (34%), WLHIV on non-DTG-containing ART (41%).

Neither HIV status (aOR 0.970, 95% CI 0.78-1.21) nor DTG exposure (aOR 0.54, 95% CI 0.21-1.40) were associated with the composite outcome. Transferring into the study facility for delivery was associated with increased odds of the composite outcome regardless of HIV status (aOR 3.82, 95% CI 3.17-4.61).

Variable	All WLHIV (regardless of ART) and WNLHIV (n=6910)		WLHIV on DTG and WLHIV on non-DTG ART (n=176)	
	uOR (95% CI)	aOR[1] (95% CI)	uOR (95% CI)	aOR[2] (95% CI)
Age at delivery	1.004 (0.996-1.012)	1.002 (0.991-1.013)	**0.950 (0.905-0.908)**	0.980 (0.920-1.043)
Gravidity	1.028 (0.993-1.064)	1.010 (0.963-1.060)	0.807 (0.641-1.016)	0.883 (0.664-1.176)
Transfer in	**3.869 (3.212-4.660)**	**3.822 (3.171-4.607)**	**4.037 (1.164-14.00)**	3.623 (0.988-13.29)
Years on ART	n/a	n/a	0.966 (0.904-1.033)	0.963 (0.664-1.176)
HIV positive status (positive vs. negative)	0.970 (0.777-1.211)	0.934 (0.743-1.174)	n/a	n/a
DTG exposure	n/a	n/a	0.757 (0.327-1.752)	0.541 (0.210-1.396)
aOR=adjusted odds ratio; ART=antiretroviral therapy; CI=confidence interval; DTG, dolutegravir; uOR=unadjusted odds ratio; WLHIV=women living with HIV; WNLHIV=women not living with HIV; Note: Statistically significant factors in bold type; [1] Calculated with a logistic regression model among the cohort of WLHIV (regardless of ART exposure) and WNLHIV, adjusting for the other variables, as applicable, in the table; [2] Calculated with a logistic regression model among the cohort of WLHIV on DTG and WLHIV on non-DTG ART, adjusting for the other variables, as applicable, in the table.				

Conclusions: Transfer status, a likely indicator of women at increased risk of adverse pregnancy outcomes, should be accounted for when implementing pharmacovigilance programs at tertiary facilities. Pharmacovigilance programs need to continue monitoring adverse outcomes as new antiretrovirals become available in resource-limited settings.

EPB194

A multicentre observational study to determine the safety and effectiveness of dolutegravir (DTG) use during pregnancy: data from DOLOMITE-NEAT ID Network study

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Background: This analysis assessed real-world outcomes from women living with HIV on DTG based regimen (DBR) during pregnancy according to exposure trimester, using data from clinical sites participating in DOLOMITE -NEAT ID Network study.

Methods: Data were included from woman in Europe and Canada who were exposed to DBR during pregnancy for at least one day. Exposure was categorised by trimester, overall days and days per trimester. No adjusted analysis was performed because of the small number of events observed except maternal VL at delivery and birth weight.

Results:

1	Characteristics at DTG first exposure in pregnancy	Any trimester N=138	1st Trimester, N=92 (66.7%)	2nd or 3rd trimester N= 46 (33.3%)	P-value
2	Age, years, median (IQR)	32 (27-37)	33 (28-37)	30 (26-36)	0.229
3	Ethnicity, n (%): White; Black; Other/Unknown.	56 (40.6); 55 (39.9); 27 (19.6)	33 (35.9); 40 (43.5); 19 (20.7)	23 (50.0); 15 (32.6); 8 (17.4)	0.275
4	Time since HIV diagnosis, years, median (IQR)	9.1 (4.3-15)	9.4 (5.2-15.5)	5.2 (2.2-10.8)	0.003
5	Prior AIDS defining illness, n (%)	23 (16.8)	17 (18.5)	6 (13.3)	0.438
6	CD4 count, median (IQR) cells/mm³	545 (327-782)	537 (328-777)	564 (294-786)	0.933
7	Plasma HIV RNA, copies/mL prior pregnancy confirmation, median (IQR)	40 (20-293)	40 (20-50)	40 (40-7370)	0.023
8	Maternal VL at date of DTGexposure, n/N (%) a) <50 copies/ml b) <200 copies/ml	a) 91/138 (65.9) b) 95/138 (68.8)	a) 68/92 (73.9) b) 70/92 (76.1)	a) 23/46 (50.0) b) 25/46 (54.3)	a)0.019 b)0.032
9	Presence of any drug resistance mutations in those with resistance test, N= 79, (56.5%), n (%)	46/78 (59.0)	33/61 (54.1)	13/17 (76.5)	0.162
10	Cumulative exposure to DTG during pregnancy in days, median (IQR)	96 (55-198)	98 (54-256)	91 (56-119)	0.162

Table 1.

1	Primary outcomes	Any trimester	1st trimester	2nd or 3rd trimester	P-value
2	Stillbirths, n/N (%)	2/133 (1.5)	2/85 (2.4)	0/48 (0.0)	0.535
3	Birth weight of <2500 grams, n/N (%)	20/116 (17.2)	10/69 (14.5)	10/47 (21.3)	0.453
4	Birth weight of <1500 grams n/N (%)	5/116 (4.3)	2/69 (2.9)	3/47 (6.4)	0.394/0.405
5	Preterm birth (<37 weeks gestation), n/N (%)	20/116 (17.2)	10/69 (14.5)	10/47 (21.3)	0.453
6	Severely preterm birth (<32 weeks gestation), n/N (%)	5/116 (4.3)	2/69 (2.9)	3/47 (6.4)	0.394
7	Birth defects, overall n (% live birth)	5/131 (3.8)	4/85 (4.8)***	1/48 (2.1)****	0.652
8	Maternal VL at delivery, n/N (%) a) <50 copies/ml b) <200 copies/ml	a) 104/122 (85.2) b) 111/122 (91.0)	a) 68/76 (89.5) b) 74/76 (97.4)	a) 36/46 (78.3) b) 37/46 (80.4)	a)0.116 b)0.002
9	Drug related AEs and SAEs (n, %; no. of SARs	5/138 (3.6)	3/92 (3.3); 1 SAR*****	2/46 (4.4); 0 SAR	1.00
10	*** flat cutaneous haemangioma in occipital region; left hydronephrosis and megaureter with suspicion of pelvicalyceal system enlargement; pelvicalyceal system enlargement; small umbilical hernia **** atrial septal defect *****Trisomy 13 of fetus				

Table 2.

The analysis included 138 DTG exposed pregnancies with 120 pregnancies resulting in 131 live neonates (8 multiples), 2 still births and 16 miscarriages or abortions. At baseline 109 (79.0%) women were on treatment experienced and 91 had undetectable VL (<50) (Table 1).

Of 92 (66.7%) women exposed to DTG during 1st trimester, 77 conceived while on DTG, four within the first six weeks after conception and ten after 6 weeks (one with missing information).

In 5 cases of live births, a birth defect was recorded; no birth defects were seen in stillbirths (Table 2). There were 3 TORCH infections (1 in 1st trimester, 2 in 2nd/3rd trimester). There were no reports of HIV infected infants (17.6% unknown), neural tube defects, maternal SARs or deaths.

Conclusions: While the numbers are too small to make definitive conclusions, no significant difference in frequency of birth defects was observed for first trimester exposures compared to 2nd/3rd trimester exposures with no neural tube defects in either. Most achieved viral suppression at delivery.

EPB195

Impact of point-of-care HIV viral load and drug resistance testing among pregnant and postpartum women living with HIV in Western Kenya: apre- and post-intervention study

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Background: Ensuring viral suppression (VS) is critical among pregnant/postpartum women for their own outcomes and reduction of mother-to-child transmission. The goal of the Opt4Mamas study was to determine the impact of point-of-care (POC) viral load (VL) and targeted drug resistance mutation (DRM) testing in improving VS among pregnant/postpartum women on antiretroviral therapy (ART) in Kenya.

Methods: We conducted a prospective, double cohort, pre- and post-intervention study among pregnant women on ART followed postpartum at five health facilities in Kisumu, Kenya from February 2019-August 2021. Pre-intervention women underwent standard-of-care (VL testing every 6 months, DRM restricted to second line ART failure via centralized approvals), while post-intervention women received POC VL every 3 months during pregnancy, at delivery, and every 3 months postpartum, and targeted DRM testing if VL≥1000 copies/mL. Our primary outcome was VS (VL <1000 copies/mL) 6 months postpartum.

Results: Of 820 women enrolled, the median age was 29 years (interquartile range [IQR] 24, 33), gestational age 19 weeks (IQR 13, 25), gravida 3 (IQR 2, 4), CD4 count 523 (IQR 370, 709), and time on ART 3 years (IQR 1, 6). At 6 months postpartum, 97.7% (304/311) of post-intervention and 97.4% (333/342) of pre-intervention women had VS (risk ratio (RR) 1.0, 95% confidence interval [CI] 0.98, 1.03). VS at a lower threshold of <40 copies/mL remained similar between the groups (90.7% vs. 89.8% in post- vs. pre-intervention women, respectively). Sustained VS (i.e., VL<1000 on all VLs in those with≥2 VL results) was also similar between the groups (87.8% vs. 88.9% in post- vs. pre-intervention women, respectively). 54 episodes of viremia were identified among intervention women, of which 46 (85%) samples successfully underwent DRM testing with major DRMs identified in 20 (46%).

Conclusions: Overall,VS was high in both groups and was not significantly improved among women undergoing our intervention of POC VL and targeted DRM testing. Among those with viremia, nearly half had major mutations, underscoring the need to robustly scale up DRM testing for this population, which has the additional implication for transmitted resistance to infants. Further research is needed to evaluate combination interventions that best optimize VS for pregnant/postpartum women.

EPB196

Adverse perinatal outcomes associated with protease inhibitor-based antiretroviral therapy in pregnant women living with HIV: systematic review and meta-analysis

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Background: International guidelines advice against the use of protease inhibitor (PI)-based highly active antiretroviral therapy (HAART) in pregnant women living with HIV (WLHIV), in particular lopinavir/ritonavir(LPV/r)-based HAART, citing an increased risk of preterm birth (PTB).

We aimed to assess the risk of adverse perinatal outcomes in WLHIV receiving PI-HAART and the comparative risks associated with different PI-HAART regimens.

Methods: We conducted a systematic literature review by searching PubMed, CINAHL, Global Health, and EMBASE for studies published between Jan 1, 1980, and April 20, 2020. Two investigators independently selected studies and extracted data from studies reporting on the association of pregnant WLHIV receiving PI-HAART with 11 perinatal outcomes: preterm birth (PTB), very PTB (VPTB), spontaneous PTB (sPTB), low birth weight (LBW), very LBW (VLBW), term LBW, preterm LBW, small for gestational age

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(SGA), very SGA (VSGA), stillbirth, and neonatal death. Pairwise random-effects meta-analyses examined the risk of each adverse perinatal outcome in WLHIV receiving PI-HAART compared to non-PI-based HAART (non-PI-HAART), and comparisons of different PI-HAART regimens.

Quality assessments of studies were performed, subgroup and sensitivity analyses were conducted based on country income status and study quality, and the effect of adjustment for confounding factors assessed. The protocol is registered with PROSPERO, numberCRD42021248987.

Results: Of 94,594 studies identified, 35 cohort studies including 57,672 women met the inclusion criteria. Random-effects meta-analyses showed that PI-HAART was associated with a significantly increased risk of SGA (RR 1.24, 95% CI 1.08-1.43) and VSGA (1.40, 1.09-1.81), but not PTB (1.10, 0.96-1.25), VPTB (1.30, 0.78-2.18), sPTB (1.91, 0.61-5.99), LBW (1.04, 0.86-1.26), VLBW (0.72, 0.37-1.43), term LBW (0.94, 0.30-3.02), stillbirth (1.04, 0.60-1.79), and neonatal death (1.82, 0.97-3.40), compared to non-PI-HAART.

We found no significant differences in perinatal outcomes between HAART regimens containing LPV/r, atazanavir/ritonavir (ATV/r), and darunavir/ritonavir (DRV/r), which are the most commonly used PIs.

Conclusions: PI-HAART is associated withan increased riskof SGA and VSGA, but not PTB or other perinatal outcomes. No significant differences in perinatal outcomes were found between LPV/r, ATV/r, and DRV/r.

These findings should inform clinical guidelines and further studies are urgently needed to better understand the association of different HAART regimens with adverse perinatal outcomes.

EPB197

Adverse perinatal outcomes associated with highly active antiretroviral therapy and monotherapy in women living with HIV: a systematic review and meta-analysis

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Background: Maternal HIV infection is associated with an increased risk of adverse perinatal outcomes. The global number of pregnant women living with HIV (WLHIV) receiving highly active antiretroviral therapy(HAART) is increasing and zidovudine (AZT) monotherapy has been phased out. We aimed to assess the risk of adverse perinatal outcomes in WLHIV receiving HAART or AZT monotherapy, compared to ART-naïve WLHIV and HIV-negative women.

Methods: We conducted a systematic literature review by searching PubMed, CINAHL (Ebscohost), Global Health (Ovid), and EMBASE (Ovid) for studies published between Jan 1, 1980, and April 20, 2020. Two investigators independently selected studies and extracted data from studies reporting on the association of pregnant WLHIV receiving HAART or AZT monotherapy with 11 perinatal outcomes: preterm birth (PTB), very PTB (VPTB), spontaneous PTB (sPTB), low birth weight (LBW), very LBW (VLBW), term LBW, preterm LBW, small for gestational age (SGA), very SGA (VSGA), stillbirth, and neonatal death.

Random-effects meta-analyses examined the risk of adverse perinatal outcomes in WLHIV receiving HAART or AZT monotherapy compared to ART-naïve WLHIV and HIV-negative women.

Quality assessments of studies were performed, subgroup and sensitivity analyses were conducted based on country income status and study quality, and the effect of adjustment for confounding factors assessed. The protocol is registered online with PROSPERO, number CRD42021248987.

Results: Of 94,594 studies identified, 61 cohort studies including 409,781 women met the inclusion criteria. Random-effects meta-analyses showed that WLHIV receiving AZT monotherapy were associated with a significantly decreased risk of PTB(RR 0.70, 95%CI 0.62-0.79) and LBW(0.77, 0.67-0.88), and comparable risk of SGA, compared to ART-naïve WLHIV. WLHIV receiving AZT monotherapy had a comparable risk of PTB and LBW, and an increased risk of SGA(1.16, 1.04-1.30) compared to HIV-negative women.

In contrast, WLHIV receiving HAART were associated with a comparable risk of PTB and LBW, and increased risk of SGA(1.38, 1.09-1.75), compared to ART-naïve WLHIV. WLHIV receiving HAART were associated with a significantly increased risk of PTB(1.55, 1.38-1.74), sPTB(2.09, 1.48-2.96), LBW(1.79, 1.51-2.13), termLBW(1.88, 1.23-2.85), SGA(1.80,1.34-2.40), and VSGA(1.22, 1.10-1.34), compared to HIV-negative women.

Conclusions: Pregnant WLHIV receiving HAART have a significantly increased risk of a wide range of perinatal outcomes compared to HIV-negative women.

ARV management strategies in paediatric and adolescent populations

EPB198

Optimizing ART for CALHIV by shifting PI-based ART to dolutegravir-based ART maintained and achieved viral load suppression

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Background: Dolutegravir (DTG) is recommended by the World Health Organization for children and adolescents living with HIV (CALHIV); however concerns exist around effectiveness of shifting CALHIV from protease inhibitors (PI)-based to DTG-based antiretroviral therapy (ART).
We describe the effectiveness of this approach on viral load suppression (VLS) in CALHIV across six countries in East and Southern Africa.
Methods: Retrospective chart review between 2017 and 2020 of clinical characteristics and VLS rates of CALHIV ages 10-19 years that were optimized from PI-based ART to DTG-based ART at BIPAI clinics in Botswana, Eswatini, Lesotho, Malawi, Tanzania, and Uganda. VLS was defined as VL<1000 copies/mL. Routine HIV genotyping was not available.
Results: A total of 1475 CALHIV on PI-based ART were shifted to DTG.The cohort was 45.5% (670/1475) female, median age 14.0 years (0.7% <5yo; 21.1% 5-9yo; 35.6% 10-14yo; 42.6% 15-19yo), and median time on ART prior to DTG was 9.8 years. 71.9% (1060/1475) were on lopinavir (LPVr)-based ART and 28.1% (415/1475) atazanavir (ATVr)-based ART. Average follow up period after shifting to DTG was 212 days.
By study end, 97.4% 1436/1475) remained active in care, 1.8% (27/1475) transferred out, 0.7% (11/1475) lost to follow up, and 0.07% (1/8091) died. VLS was maintained in the cohort with no loss of VLS when shifting from PI- to DTG-based ART (88.9% vs 89.8%, p=0.46). Similarly, maintenance of VLS without significant loss was seen across all subgroups of CALHIV, including analyses of prior PI regimen [LPVr to DTG (89.2% vs 91.1%, p=0.18), ATVr to DTG (88.4% vs 86.0%; p=0.34)], sex [females (87.2% vs 86.4%, p=0.69), males (90.4% vs 92.7%, p=0.13)], and age groups [5-9 year olds (93.5% vs 94.0%, p=0.82), 10-14 year olds (90.1% vs 91.4%, p=0.50), and 15-19 year olds (85.5% vs 86.9%).
Using a VLS cutoff of VL<400cp/mL produced similar findings. Among previously unsuppressed CALHIV, 67.8% (80/118) achieved VLS after shifting to DTG.
Conclusions: Shifting from PI-based to DTG-based ART was effective at maintaining and achieving VLS in CALHIV, and no loss of VLS was observed. These results support programmatic efforts to shift CALHIV from PI-based to DTG-based regimens, especially if unsuppressed on PI-based ART.

EPB199

HIV care preferences among young people living with HIV in Lesotho: a secondary data analysis of the PEBRA cluster randomized trial

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Background: Sub-Saharan Africa is home to 89% of all young people living with HIV.Young people living with HIV are a vulnerable subpopulation that face distinctive challenges and therefore need special attention. To offer suitable programs and better support for this population group, in-depth knowledge of their service preferences is required.
We evaluated HIV care preferences among young participants of a cluster-randomized trial longitudinally over the 12-month trial period.
Methods: This study is based on secondary data from the PEBRA (Peer-Educator Based Refill of ART) trial that investigated the PEBRA model vs standard of care among young people living with HIV, in care at 20 health facilities across 3 districts in Lesotho, Southern Africa. In the PEBRA model, a peer-educator regularly assessed participant preferences regarding antiretroviral therapy (ART) refill location, SMS notifications (adherence, refill, viral load) and general care support options, and delivered services accordingly. We present changes in preferences over time in Sankey diagrams.
Results: At enrolment, 44 of 123 (33.3%) chose ART refill outside the health facility, compared to 9 of 123 (7.3%) after 12 months. At the facility 70 of 123 (56.9%) respectively 57 of 123 (46.3%) picked up their medication within the Saturday clinic club. The number of participants who wished to receive an SMS reminder for adherence and/or ART refill was 51 of 123 (41.5%) at enrolment and 54 of 123 (44.7%) at the last assessment. Support by the peer-educator (i.e.

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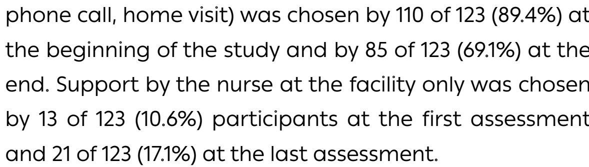

phone call, home visit) was chosen by 110 of 123 (89.4%) at the beginning of the study and by 85 of 123 (69.1%) at the end. Support by the nurse at the facility only was chosen by 13 of 123 (10.6%) participants at the first assessment and 21 of 123 (17.1%) at the last assessment.

Conclusions: Our longitudinal preference assessment among young people living with HIV showed a sustained interest in SMS notifications for adherence and refill visits as well as additional support by a peer educator.

However, ART refill outside the health facility was not as popular as expected; instead, medication pick-up at the facility, especially during Saturday clinic clubs,was favored.

EPB200

Cracking the code to increase viral suppression in children at Foyer Saint Camille Hospital from October 2020 to November 2021

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Background: At Foyer Saint Camille Hospital, October 2020 data report showed that only 83.9 % of 81 children on HAART were virally suppressed. In January 2021, the coordination of ALESIDA project of Foyer Saint Camille Hospital launched a project aiming increasing viral suppression in children less than 15 years of age from 83.9% to over 95% by September, 30 2021

Description: In January 2021, a cohort of 13 children with detectable viral load was selected. Their parents and guardians were contacted and their agreement confirmed to register in for the project.

Training on pediatric HIV care and treatment with emphasis HAART administration, adherence and viral load suppression was provided to both parents and community field workers.

Parents were involved in selecting the best person to administer ART to children which will be conducted through directly observed therapy (DOT).

The option of DOT by field agents was proposed to unavailable parents. DOT was daily monitored by phone calls and through community field agent's reports. Data was collected in an excel file for daily monitoring.

Lessons learned: All 13 children virally suppressed by November 2021. Pediatric viral suppression increased over time from 83.95% in October 2020 to 98.7% in September 2021. 46% of these 13 children received DOT through parents, precisely their mother, and 56% of 13 children on DOT with field agents.

Parental involvement of child care decisions and better education in VIH pediatric care and treatment had a positive impact in viral suppression.

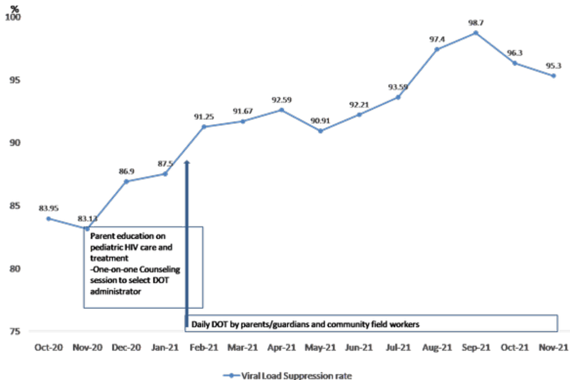

Figure. Trend of pediatric viral load suppression rate, Oct 20 - Nov 21

Conclusions/Next steps: Pediatric viral suppression can be effectively improved to achieve UNAIDS third „95" goal by offering DOT therapy to children under 15 with detectable viral load. The use of data collection tool enables data analysis to improve performance and prioritize program activities. The next phase of our intervention is the extension this strategy to all newly-enrolled HIV-infected children.

EPB201

Continuity of care among HIV-positive children and adolescents on antiretroviral therapy in Lesotho: early transfers and relocations pose challenges for follow-up

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Background: HIV continuity of care is essential for the long-term health of children/adolescents on antiretroviral therapy (ART). Transfers between health facilities and relocation may affect the continuum of care from HIV testing and ART initiation to long-term treatment retention. We reviewed patient retention data from an observational cohort of HIV-positive children/adolescents aged 0-19 years, newly initiating ART between January 2018-December 2020.

Methods: Patient characteristics, clinic visits, and outcomes were abstracted from clinical records. Participants/caregivers were interviewed every 3-months. Patients who did not return to the original care facility beyond 6 months of ART were categorized as having discontinued care early, and reasons for early discontinuation were categorized as lost to follow-up, relocation, or death. Chi-square tests and multivariable logistic regression were used to explore associations between early discontinuity of care and age, sex, district and year of ART initiation.

Results: Of 696 cohort participants, 277 (40%) were not seen again at their original care facility 6 months post-initiation; of these, 169 (61%) never returned after ART initiation. Among those who discontinued early, 139

(50%) had relocated. Loss to follow-up was highest (43%) among 15–19-year-old adolescents and mortality was highest among children 0-4 years (21.7%) (Table). Children (0-4) and older adolescents (15-19) had similar high early discontinuation rates (>=44%) compared to those 5-9 (25%, p=0.006) and 10-15 (16%, p<0.001) years. Females had significantly higher early discontinuation compared to males (43% vs 28%, respectively; adjusted odds ratio 1.6 95% CI 1.1-2.6).In adjusted analyses, age, gender, district/ region and ART initiation year were significantly associated with odds of early discontinuation from care.

N (%)	0 – 4 years (n = 60)	5 – 9 year (n = 19)	10 – 14 years (n = 14)	15 – 19 years (n = 184)	Total (N= 277)
Participant relocated	30 (50.0)	12 (63.2)	6 (42.9)	91 (49.5)	139 (50.2)
Participant died	13 (21.7)	2 (10.5)	0 (0.0)	1 (0.5)	16 (5.8)
Lost to follow – up	14 (23.3)	2 (10.5)	5 (35.7)	79 (42.9)	100 (36.1)
Other/ Unknown	3 (5.0)	3 (15.8)	3(21.4)	12 (6.5)	22 (7.9)

Table: Status of patients discontinued early

Conclusions: We found high rates of discontinuation of care from ART initiation facilities largely due to relocation and loss to follow-up. Mortality was high among children <5 years. These data underscore the importance of strengthening facility transfer procedures and community structures for retention and tracking, and leveraging technologies like multi-site electronic health registers, particularly for sub-groups with higher levels of early discontinuation.

EPB202

Higher virologic suppression in children on integrase inhibitors in Eastern Africa

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Background: Virologic suppression (VLS) is the primary goal of antiretroviral therapy (ART), but children and adolescents living with HIV (CALHIV) often have worse VLS and other outcomes compared to adults. Our objective was to estimate the proportions of CALHIV with VLS and determine factors associated with VLS in our Kenya and Tanzanian programs.

Methods: This cross-sectional study was conducted at public facilities supported by the U.S. Military HIV Research Program between 2018-2021. CALHIV (1-19 years) on ART for >6 months were enrolled. Sociodemographic and medical information were obtained, and participants underwent viral load (VL) testing at enrollment. VLS (defined as VL <1000 copies/mL) was estimated using the Wilson score method. Multivariable robust Poisson regression models were used to estimate adjusted prevalence ratios (aPRs) with 95% confidence intervals (CIs) for associations between potential predictors of VLS.

Results: Of 1,394 complete cases included in analyses, 935 (67.1%) were from Kenya. The mean age was 12±4 years, 737 (52.9%) were female, and 1,251 (89.7%) had been on ART for >24 months. 595 (42.7%), 430 (30.8%), and 369 (26.5%) were on NNRTI, PI, and iNSTI-containing regimens respectively. Prevalence of VLS was 82% (95% CI: 80%-84%), and varied by country (85.6% vs 80.2% for Tanzania and Kenya; p=0.01), ART regimen (89.7%, 81.3%, and 76.3% for iNSTI, NNRTI, and PI; p<0.001), number of missed ART doses in the past month (83.6%, 78.1%, and 64.5% for none, 1-2, and ≥3 missed doses; p<0.001), and maternal viral load (85.4%, 59.3%, and 81.1% for <1000c/ml, >1000c/ml, and unknown VL status; p=0.001). After adjustment, CALHIV on iNSTI-containing regimens were more likely to be virally suppressed compared to other regimens (aPR=1.14; 95% CI: 1.05-1.23). High maternal VL (aPR=0.72; 95% CI: 0.52-0.99), unknown maternal VL (aPR=0.95; 95% CI: 0.90-0.99), and 3 or more missed doses of ART in the past month (aPR=0.77; 95% CI: 0.66-0.91) were inversely associated with VLS.

Conclusions: In this study of CALHIV in routine HIV care, use of integrase inhibitor-containing regimen was associated with VLS, lending credence to the value of pediatric ART optimization. Strategies to improve CALHIV adherence and maternal VL suppression are needed to improve patient- and program-level outcomes.

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Uptake of raltegravir granules in newborns diagnosed with HIV in Zimbabwe during the COVID-19 pandemic

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Background: Options for newborn antiretroviral therapy (ART) are currently limited. In 2020, Zimbabwe adopted the World Health Organization recommendation to use raltegravir (RAL) granule-based regimens in newborns identified through birth testing. Implementation and lessons learned during roll-out of this formulation during the COVID-19 pandemic are described.

Description: RAL granules were introduced in 14 health facilities with capacity for point-of-care (POC) HIV birth testing in Zimbabwe. Healthcare workers (HCW) were trained on RAL use and on counseling caregivers on preparation and administration of RAL to HIV-positive newborns. Retrospective data collected from facility registers between June 2020 and July 2021 provided numbers of HIV-exposed newborns tested, HIV-positive newborns, and numbers initiated on RAL.

Lessons learned: During implementation, 3,172 (45.4%) of 6,989 HIV-exposed newborns received POC birth test results at 14 facilities (Figure).

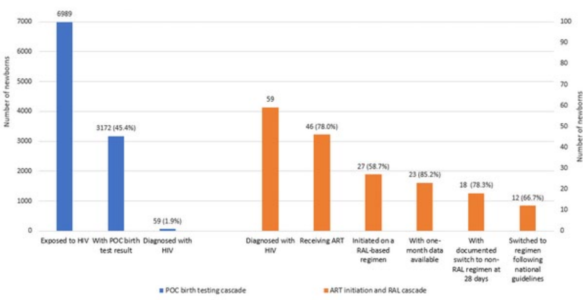

Figure. Point-of-care birth testing, ART initiation and RAL treatment cascade; N=6,989 newborns HIV-exposed in 14 health facilities.

Fifty-nine newborns (1.9%) were HIV-positive; 46 (78.0%) initiated ART at median age of 5 days. Twenty-seven (58.7%) were initiated on RAL and 19 on non-RAL regimens (nevirapine-based n=9, lopinavir/ritonavir-based n=9, dolutegravir-based n=1). Of 27 infants on RAL, 23 (85.2%) had one-month switch data; 18 (78.3%) had switched to non-RAL regimen at 28 days, 12 of whom switched to a national guideline-approved regimen. COVID-19 supply chain disruptions impacted availability of POC testing cartridges, RAL granules, and AZT/3TC backbone, which delayed testing, ART initiation, and use of alternative treatment regimens. COVID-19 resulted in shortages of trained HCW and travel restrictions limiting in-person mentorship and supervision visits.

Conclusions/Next steps: Lower than expected birth testing uptake and RAL usage were observed, in large part due to inconsistent supply chain and trained human resources shortages during COVID-19. Addressing health systems gaps for supply chain, staffing (training, retention, mentorship, and supervision), and ability to track HIV-positive newborns is needed to improve birth testing services and outcomes for HIV-exposed infants, timely ART initiation, and follow-up on optimized regimens.

EPB204

High rate of HIV virologic failure in children under the age of five in Tanzania

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Background: While many high-HIV-burden countries continue to announce freedom from maternal-to-child transmission, Tanzania still struggles with new infections among infants. Moreover, despite multiple advances in the care of HIV in young children, including increased variety of antiretroviral therapy (ART) drug formulations, children under the age of 5 years (U5) continue to lag behind older children in terms of viral suppression.

Methods: A retrospective chart review up was performed at the Baylor College of Medicine Children's Foundation – Tanzania sites in Mbeya and Mwanza. All children aged 0-15 years old who had been on ART for at least 6 months and had at least one viral load (VL) measurement recorded by July 2021 were included in the study. Viral suppression was defined as VL<1000 copies/ml.

Results: A total of 1725 children were included in the study, average age was 8.9 (SD=4.0), 50.9% were female, 66.8% had were WHO stage III/IV, and 2.9% had moderate or severe malnutrition. Most of the caregivers were parents (62.0%), 48.5% were on a dolutegravir-containing regimen, 11.6% had active TB, only 2.0% had a CD4<200 cells/mm^3, and the median age at ART initiation was 31.5 months. Overall, 10.7% of children were unsuppressed but among U5, 21.9% were unsuppressed. On multivariate analysis, U5 were 82% more likely to be unsuppressed than older children (AOR=1.82; 95%CI, 1.10-3.03; P=0.02). Compared to older children, U5 were more likely to have malnutrition (P=0.03), WHO stage III or IV (P=0.0003), be on

a protease inhibitor regimen (P<0.0001), be in the care of a parent (P<0.0001), and have severe immunosuppression (P=0.024). Among unsuppressed children, U5 started ART earlier (10.9 versus 57 months; P<0.00001), were on ART for less time (P<0.00001), and were less likely to be on dolutegravir (P<0.00001). Among U5, having TB (AOR=0.29; 95%CI, 0.1-0.8; P=0.021) and <1 year on ART (AOR=0.39; 95%CI, 0.17-0.91; P=0.028) were more likely to be associated with viral failure.

Conclusions: Young children should be considered vulnerable in terms of HIV viral failure. Providers should be prepared to address comorbidities in these children, especially TB and malnutrition. Finally, advocacy for availability of pediatric drug formulations, especially dolutegravir, will likely benefit young children.

EPB205

A community-driven approach to pediatric Dolutegravir (pDTG) based regimen transition among children of key populations living with HIV in Nigeria

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Background: In September 2021, Nigeria adopted and made available pDTG, a clinically superior, more tolerable drug formulation with the potential to improve adherence to ART and treatment outcomes in children living with HIV (CLHIV) weighing 3kg to less than 20kg. This followed the recent WHO recommendation positioning DTG-based regimens as the preferred first line for CLHIV from lopinavir/ritonavir-based regimens.

Due to poor adherence to existing pediatric ARV including less than optimal viral load suppression rates (87%), Heartland Alliance LTD/GTE (HALG) Nigeria rolled out a family centered community driven differentiated service approach to ART initiation and refills for Children of Key Populations (KPs) to achieve rapid transition to pDTG in three states: Akwa-Ibom, Cross River and Lagos states under the USAID funded Key Populations Community HIV Actions and Response (KP-CARE 1) project.

Methods: The Retention and Audit Determination Tool (RADET) was utilized from the programme' s electronic database to determine eligibility for the transitioning at the onset in October 2021. Eligible Children weighing 3kg to less than 20kgi imitated on ART with non-DTG based regimen between January and December 2021 were identified and profiled for their refill due date and location. Schedules were then drawn for Community ART teams (cART) to deliver the pDTG to the CLHIV on ART based on the profiles.

Also, those living within proximity were clustered and refilled ahead of their refill due dates considering the dynamics of the socio-economic environment of their caregivers.

Results: A total of 134 children aged less than 14years were active on ART of out of which there were 69 females (52%), and 65 males (48%). Those with weight less than 20kg were 51 with 46(90%) being initiated on Lopinavir based regimen and a total of 46 (100%) were transited to pDTG by December 2021.

Conclusions: This evidence demonstrates that a KP family-centered and community-driven ARV delivery mechanism is an effective approach to rapid transitioning to PDTG Based regimens for CLHIV of key population.There is need to compare this approach with other methods in further study.

EPB206

A comparison of antiretroviral therapy outcomes among adolescents in Teen Clubs and Standard Care Clinics: Blantyre, Malawi

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Background: HIV treatment outcomes are still poor among adolescents compared to adults. Different service delivery models are being implemented to address this, and one of them is the Teen Club model. Currently, it is clear that Teen Clubs improves adherence to treatment (short-term impact), but the gap is on the long-term impact.

The objective of the study was to compare virological suppression and virological failure rates among adolescents in Teen Clubs with those on the Standard Care model.

Methods: This was a retrospective cohort study. A total of 110 in Teen Clubs and 123 in Standard of Care from 6 Health facilities were selected using stratified simple random sampling.

The participants were followed up for 24 months. STATA, v16.0 was used for data analysis. Univariate analyses were performed for demographic and clinical variables.

A chi-squared test was used to assess the difference between proportions. Crude and adjusted relative risks were calculated using a binomial regression model. retrospective cohort study.

Results: At 24 months 56% of adolescents in the Standard of Care (SoC) arm had viral load suppression compared to 90% in the Teen Club arm.

Of those who achieved viral load suppression at 24 months, about 22.7% (SoC) and 76.4% (Teen Club) achieved undetectable viral load suppression rates. Adolescents in Teen Club were less likely to have high viral load compared to those in the SoC arm Adjusted RR 0.23, 95%CI: 0.11-0.61;*p*=0.002 adjusted for age and sex. The virological failure rates among adolescents in Teen Clubs and SoC were (3.1% vs 10.9%).

The adjusted RR 0.16, 95%CI: 0.03-0.78; *p*=0.023, those in Teen Clubs were less likely to have virological failure compared with those in SoC after controlling for age, sex, and place of residence.

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Conclusions: After identifying the impact of the Teen Club model, results can be used to advocate for the rollout of the model to other health facilities

EPB207

The *'magic bullet'* for HIV viral suppression? How fixed-dose combination Dolutegravir (DTG) antiretrovirals are improving viral suppression among children aged 10-14 years on antiretroviral therapy (ART) in Zambia

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Background: The critical endpoint to achieving HIV epidemic control is attainment of the third 95 cascade target, viral suppression, among people living with HIV, who know their status and are on treatment (UNAIDS, 2015). Globally, only 40% of children living with HIV (CLHIV) are virally suppressed (UNAIDS, 2021).
Before the change in pediatric ART guidelines in 2020, Zambia faced a similar challenge, which was compounded by limited availability of the more palatable and highly efficacious fixed-dose combination DTG-containing antiretrovirals.
Methods: In November 2020, with increased availability of pediatric DTG-containing antiretrovirals in the national ART program, the USAID DISCOVER-Health Project, implemented by JSI, started initiating on and transitioning 10–14-year-old CLHIV to DTG-containing regimens, in line with national HIV care and treatment guidelines. The data were entered into SmartCare in supported clinics in Copperbelt, North-western and Central Provinces.
Project level SmartCare data were analysed using the International Business Machine Corporation Statistical Product and Service Solutions (IBM SPSS®).
Results: The table below summarizes the findings.

Time period	CLHIV on ART	CLHIV on DTG	Virally suppressed	Not Virally suppressed	Viral Load (copies/mL)
November 2020	824	41% (n=338)	82% (n=671)	18% (n=153)	Mean=14,587, median=27, range=0-1.35 million
September 2021	697	89% (n=620)	93% (n=648)	7% (n=49)	Mean=3,865, median=20, range=0-345,983
OR 3.01, 95% CI 2.14-4.23; p=0.002					

Table.

In November 2020, 824 CLHIV, aged 10-14 years had viral load results on file ranging from 0- 1.35 million copies/mL with viral suppression at 82%. Only 41% of the CLHIV at the time were on antiretrovirals (ARVs) containing DTG.
As of September 2021, after ten months of implementation: 89% CLHIV were on DTG-containing ARVs; 971 eligible CLHIV had a VL result on file ranging from 0-345,983 copies/mL with 93% virally suppression. With a higher proportion of CLHIV on ART accessing DTG-containing ARVs, viral suppression was significantly higher than at baseline.
Conclusions: Expanded access to DTG-containing regimens is an important intervention for increasing viral suppression rates in CLHIV for good individual health outcomes, and for fast-tracking achievement of HIV epidemic control.

EPB208

Improving viral load suppression rate among paediatricpatientson anti-retroviral therapy in Central Province, Zambia

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Background: The aim of Antiretroviral Therapy (ART) is to attain and maintain Viral Suppression (VL) among People living with HIV(PLHIV). USAID SAFE program (SAFE) collaborated with the Ministry of Health (MOH) in Zambia to support facilities to ensure 95% of PLHIV on ART are virally suppressed.
The suppression rate in SAFE supported facilities differs by age, with children below 15 years having lower suppression rate than adults. USAID SAFE worked with MOH to identify and address factors that were contributing to low viral suppression among children
Description: All Children files were reviewed in 31 selected SAFE supported facilities and the following factors were identified:
1. Health Facility related factors: such as suboptimal regimens, drug under dosing and underlying infections.
2. Client related factors: Such as poor drug storage, missing of drug dosages if no food available, if caretaker not home at the scheduled time of drugs to be taken, if a parent has not disclosed the HIV status of the child to a new spouse/partner, under dosing during drug administration.
SAFE implemented following interventions to address the problems:
1. Eligible children transitioned from Efavirenz (EFV) based regimen to more efficacious Dolutegravir (DTG) based regimen.
2. Pairing unsuppressed children with specific Community Based Volunteers (CBVs) for Enhanced Adherence Counselling sessions.
3. Home visits by Clinician and Community Based Volunteer to identify factors at home.
4. Specific days for paediatric clinics for virally unsuppressed children.
5. Pairing up Mother/Caretaker clinical appointment with the child's appointment.
6. Aligning clinical appointments for paediatrics with the school calendar and conducting after hours and weekend clinics.

Lessons learned: In October 2020, out of 2,160 children infected with HIV and enrolled on ART, only 1,746 (81%) were virally suppressed and 414 (19%) were unsuppressed. Following implementation of the above interventions, the VL steadily improved to 1,590 (90%) children were virally suppressed with 183 (10%) unsuppressed children.

Conclusions/Next steps: While children may be managed at the health facility, client level factors are also key to attaining viral suppression. Therefore, MoH and all HIV treatment partners should work to identify and address both facility level and client level factors.

Cure strategies in paediatric and adolescent populations

EPB209

Joint evolution of CD4 and viral load trajectories over 2 years in an early-treated pediatric African cohort

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Background: In response to antiretroviral therapy (ART), some patients experience a discordant response, characterized either by a high CD4+ cell count despite persistent viremia or by viral suppression with low CD4+ cell count. Little is known about the meaning of discordant responses in children reported to be 10-20%. In this study, we analyze virologic and immunologic phenotypes, including a discordant response based on trajectories instead of arbitrary thresholds.

Methods: This study was done within the EARTH Cohort, a prospective cohort enrolling perinatally HIV infected infants diagnosed in the first 3 months of life and treated after diagnosis, in Mozambique and South Africa. During 2-years of follow-up, the trajectories of CD4 and VL were calculated using KmL3D R package that implements k-means dedicated to clustering joint-trajectories. Optimum number of clusters was based on the Calinski-Harabatz criterium. Comparisons between clusters were assessed by the Kruskal-Wallis and Fisher test.

Results: A total of 59 patients with at least 5 measurements of CD4 and VL were included in this study. Four robust clusters were selected.

The participants in Cluster A (23/59 (39.0%)) presented virological failure and poor %CD4 reconstitution after treatment. They were treated later, and they had high VL and low %CD4 at ART initiation.

Cluster B (19/59 (32.2%)) had participants who achieved viral suppression and had consistently high %CD4. A total of 17/59 (28.8%) patients presented discordant responses. Patients included in Cluster C (16/59 (27.1%)) presented a viral failure and high good CD4 reconstitution, and patients included in Cluster D (1/59 (1.7%)) also presented discordant response, in this case, viral suppression and poor CD4 reconstitution. Despite acceptable CD4 levels, patients with discordant responses presented higher rates of clinical progression (37.5%) (WHO stage III-IV) than those with viral suppression and good CD4 response (1/19 (5.3%)), p=0.015. Patients with discordant responses were more frequently treated with ART regimens including protease inhibitors (p=0.047).

Conclusions: A higher rate of discordant responses was present in this study (28.8%) compared to previous reports. The characterization of immunologic and virologic status of the patients could help in the design of personalized therapeutic interventions and in identifying patients for trials.

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Adherence in paediatric and adolescent populations

EPB210

Factors associated with non-adherence among children on antiretroviral therapy in Akwa Ibom, Nigeria

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Background: Adherence to antiretroviral therapy (ART) is a principal determinant of virologic suppression. We assessed factors associated with nonadherence among children living with HIV (CLHIV) with unsuppressed viral load (VL) in Akwa Ibom, Nigeria.

Methods: This retrospective study conducted by the PEPFAR/USAID-funded Strengthening Integrated Delivery of HIV/AIDS Services (SIDHAS) project, used routine program data of virally unsuppressed (VL ≥1,000 copies/mL) CLHIV ages 0–14 years). Data were collected during enhanced adherence counseling (EAC) sessions in 53 health facilities from January through March 2021. Reasons for nonadherence—missed drug intake for up to two or more days in the last 30 days—as reported by caregivers of CLHIV, were analyzed.

Caregivers were categorized as:

1. First-degree relatives (FDRs) including father, mother, and siblings;
2. Second-degree relatives (SDRs) such as grandparents, uncles, and aunts; and,
3. Third-degree relatives (TDRs), i.e., other relatives and nonrelatives.

Chi-squared statistic was used to analyze differences.

Results: Among the 343 unsuppressed CLHIV, 50.7% (n=174) were males, and 29% (n=101), 40% (n=138), and 30% (n=104) were <5 years, 5–9 years, and 10–14 years, respectively. Median (IQR) duration on ART was 21 months (14–47 months). Of the 343 caregivers, 71.7% (n=246), 16.6% (n=57), and 11.7% (n=40) were FDR, SDR, and TDR, respectively.

Among caregivers, 69.9% (172/246) of FDR, 3.5% (2/57) of SDR, and 20% (8/40) of TDR were HIV positive. Nonadherence was 98% (39/40) among children under the care of TDR, 95% (54/57) among those under SDR care, and 93% (229/246) among those under FDR care (p=0.535).

Common reasons for missing ART doses were caregivers' unavailability to administer medication (59.7%), lack of food (11%), and pill burden (9%) (FDR); caregivers' unavailability (45.6%), lack of food (25%), pill burden (9%), and unpalatability (7%) (SDR); and caregivers' unavailability (50%), lack of food (20%), pill burden (11%), and lack of transport fare (23%) (TDR) (p<.001).

Conclusions: Caregivers' unavailability to administer drugs was the main reason for ART nonadherence among virally unsuppressed children undergoing EAC. Caregiver HIV status was not associated with nonadherence. Program implementers should emphasize the role of caregivers in the management of ART for CLHIV.

EPB211

Feasibility and acceptability of video-assisted directly observed therapy for high-risk youth living with HIV

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Background: Adolescents and young adults (ages 18-34) are disproportionately impacted by HIV, and often have poor adherence to antiretroviral therapy. Directly observed therapy (DOT) as used for the treatment of tuberculosis may help to improve adherence; however, logistical challenges may be a barrier to implementation.

We conducted a pilot trial of video-assisted DOT (Video Observed Therapy [VOT]) to closely monitor youth, support efforts to develop positive adherence patterns, and improve clinical outcomes for youth enrolled at a comprehensive HIV care center in Atlanta, Georgia, USA.

Description: We enrolled 14 youth with adherence challenges and/or a detectable HIV viral load into our pilot VOT program. The VOT coach (a trained coordinator, also living with HIV) worked with participants to set a time and choose a platform (e.g., FaceTime, Zoom) for daily video calls. Participants were scheduled to receive daily (Monday-Friday) video calls for three months wherein the coach would directly observe the participant taking medication.

In addition to observation, the coach would also ask participants about medication problems or side effects and provide feedback and emotional support. We conducted post-session surveys and qualitative interviews to assess participants' experiences and provide data on VOT acceptability.

Lessons learned: The mean age of participants was 25 years, 75% were male, 89% were Black, and 69% acquired HIV through horizontal transmission. Psychosocial barriers were prominent: 42% cited transportation difficulties getting to clinic, 44% described residential instability, and 69% met clinical cutoff for depression.

Despite initial interest, most (64.3%) participants presented for fewer than half of scheduled video appointments over the three-month period. Those who did participate described VOT as feasible and acceptable in follow-up surveys (mean scores >4/5); and specifically mentioned

the importance of peer support from a coach living with HIV in interviews. Some cited physical illness and competing demands (i.e. jobs) as barriers to more active participation.

Conclusions/Next steps: Structural barriers limited uptake of VOT;however, the intervention was highly acceptable among those who did participate. Future interventions should integrate VOT with rigorous mental health and social service support to help participants navigate structural challenges as a strategy for providing additional adherence support to youth.

EPB212

Facilitators and barriers to delivery of dispensing messages to caregivers of children living with HIV at four HIV care centres in Kampala: a qualitative study

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Background: In Uganda, despite optimisation of children to more efficacious Lopinavir/ritonavir (LPV/r) based regimen like LPV/r pellets, viral suppression rates among children remain low, at 77%, way below the UNAIDS target of 95%. Moreover, viral suppression among children <5 years is even much lower at 60% and a major cause has been poor adherence to medicine. Uptake and administration of LPV/r pellets is hindered by low literacy levels among caregivers regarding how to administer the pellets. We explored facilitators and barriers to delivery of dispensing messages to caregivers at four HIV care centres in Kampala, Uganda.

Description: We conducted a qualitative study at four HIV clinics in Kampala: Baylor-Uganda clinical centre of excellence, Kisenyi HC III, Kawala HC III and Mulago National Referral Hospital- MJAP ISS Clinic. Data were collected through 7 FGDs of 6-9 participants each and 12 key informant interviews with health care workers involved in care for children between 19th October–2nd November 2021. Data was analysed using content thematic approach informed by the Capability, Opportunity and Motivation Model of Behaviour (COM-B model).

Lessons learned: Availability of skilled and knowledgeable health workers, visual messages especially flip charts, drug demonstrations on administration, use of toll-free telephone, and short message service reminders were noted as facilitators. The barriers noted included: shared counselling and clinical rooms that impede confidentiality, dispensing messages not provided routinely but targeting those initiating or not adhering to ARVs, negative attitude of some health workers, heavy client load limiting the time spent with caregivers to offer dispensing messages, lack of mentorship on dispensing messages, negative beliefs, inadequate audio-visual messages on drug administration and effects of none adherence, and COVID-19 pandemic related restrictions.

Conclusions/Next steps: There are major barriers to the delivery of dispensing messages to caregivers of children Living with HIV. Initiatives to improve dispensing messages should build on the existence of skilled and experienced health care workers at all HIV clinics and a network of expert clients who draw on their own experiences taking ARVs to educate others. Advocacy to address the broader health system challenges such as space and health workforce constraints will be critical as well.

EPB213

Association between caregivers' depression with adherence and viral suppression among HIV infected children aged < 10 years on follow up at Kenyatta National Hospital in Kenya

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Background: Depression is well described among caregivers of children with chronic illnesses and may impact the quality of care of the affected child. HIV presents unique challenges because the caregiver often is infected as well.

A study was carried out to determine the prevalence of depression among caregivers of HIV infected children, and its impact on the child's well being measured by viral suppression, adherence to ART and retention in care among children on follow up at Kenyatta National Hospital.

Methods: Using a cross-sectional study design, study participants were recruited from the hospital HIV clinic. Depression was assessed using the PHQ-9 questionnaire. Pill count record was used to assess for ART adherence among children. Children's viral load and clinic attendance were abstracted from the hospital's electronic records. Children of women with and without depression were compared to determine effect of depression on viral suppression, adherence to ART and retention in care

Results: There were 117 caregivers-child dyads and 110 (94.02%) of the care givers were female. The median age of caregivers was 35 years (IQR 31-42 years), 78 (66%) were married and 52 (44%) had secondary school level education. Regarding occupation, 38 (34.23%) were casual labourers, 38 (34.23%) self-employed, 26 (23.42%) unemployed and 9 (8.11%) formally employed.

The children's median age was 5 years (IQR 3-7 years) and 95 (81.19%) had a parent as the primary caregiver. Overall 75 (64.1%) of the children had a viral load less than 1000 copies/ml, 95 (81.2%) were adherent to ART and 113

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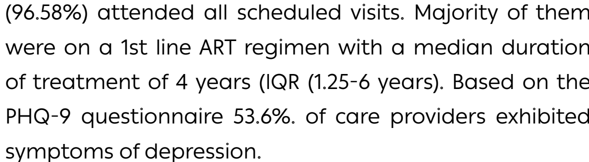

(96.58%) attended all scheduled visits. Majority of them were on a 1st line ART regimen with a median duration of treatment of 4 years (IQR (1.25-6 years). Based on the PHQ-9 questionnaire 53.6%. of care providers exhibited symptoms of depression.
Caregivers with moderate and moderately-severe depression had lower odds of having children with ≥ 95% adherence to ART, Adjusted odds ratio (AOR) 0.015 [(0.001, 0.135) p=0.000)] and increased odds of having children with viral load of >1000 copies/ml AOR=107.8 [(19.4, 599.1) p=0.000] compared to those without depression.
Conclusions: The high prevalence of depression among the caregivers of HIV infected children adversely impacts children's level of adherence and viral suppression.

EPB214

Comparison of outcomes among HIV infected children by caregiver type in Western Kenya

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Background: Antiretroviral (ART) compliance among children living with HIV (CLHIV) is dependent on caregivers. Globally, prior studies have evaluated ART outcomes among CLHIV with knowledge gaps on impact of specific caregiver types on treatment outcomes.
This study compared viral suppression (VS) and continuity in treatment among CLHIV with primary versus alternative caregivers.
Methods: We conducted a retrospective analysis to assess VS and continuity in treatment (retention in care) of CLHIV (0-14 years) in 34 public facilities supported by University of Maryland, Baltimore in Kisii and Migori counties by caregiver type. Primary caregivers were defined as biological parents while alternative caregivers as other guardians. CLHIV with ≥1 clinical visit between July 2017 and August 2021 and a documented caregiver type were included. Chi-square tests were used to test for association between caregiver type and outcomes while generalised linear models with logit link used to assess differences in outcomes by caregivers.
Results: 549 children were included, 51% (282) were female and median age at enrolment was 4.1 years (interquartile range [IQR] 2.0-6.9). Cumulatively, 256 (47%) had alternative caregivers of whom 81% (191) were aunts, 16% (37) uncles and 12% (28) siblings. At ART enrolment, 8% (18/201) and 16% (30/191) of children with primary and alternative caregivers presented with advanced HIV disease respectively. Proportion that achieved VS increased to 90% from a baseline of 70% for those with primary caregivers compared to an increase to 91% from 68% for alternative caregivers.
Overall, 97% (283) and 96% (245) of children with primary and alternative caregivers respectively continued in care as of August 2021. Children with primary caregivers were less likely to present with advanced HIV disease at enrolment (Risk Ratio (RR) 0.53, 95% CI (0.28–0.98)).
However, there was no difference in baseline VS (p=0.587), VS at last visit (p=0.671), or continuity in care (p=0.59) by caregiver type.
Conclusions: Continuity of care and proportion of children that achieved VS was high irrespective of caregiver type. However, CLHIV with alternative caregivers were more likely to present with advanced HIV disease at enrolment; hence, the need for enhanced strategies for early identification and ART initiation in this population.

EPB215

Using programmatic data to assess pediatric service coverage and HIV treatment cascades in Western region, Ghana

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Background: In 2019, 2,972 (15%) of new 20,068 HIV infections in Ghana were in children under the age of 14. Out of the estimated number of 13,616 annual deaths, 2,441 (18%) were children. To address this critical issue, opportunities for identifying and supporting infants and young children living with HIV early cannot be missed.
There is need to review program data to inform innovative strategies for testing and putting pediatrics and adolescents left behind on HIV treatment.
Methods: The USAID Strengthening the Care Continuum project (Care Continuum), implemented by JSI Research & Training Institute, Inc. reviewed program data of pediatric clients on ART from January 2019 to December 2021. Within the period we analyzed the number of: pediatric HIV testing for males and females, positivity rates, linkage and yield; ART facilities and the number offering pediatric ARVs; pediatrics who received VL results; and suppressed and unsuppressed clients.
Results: We assessed service utilization in 58 ART pediatric service facilities out of 76 ART sites (76%), testing 8,539 females and 7,601 males. The data for females and males were as follows, respectively: positivity rates of 1.98% (n=169) and 2.26% (n=172); initiation rates of 2.1% (n=179) and 2.49% (n=189); HIV yield of 28% and 26%; average linkage rate of 193.5% and 218.4%; VL suppression rates of 91% (n=597) and 88% (n=304); and pediatric client unsuppressed VL of 26% and 42%.

Data were collected through the District Health Information Management System (DHMIS), which aggregates clients who were identified as positive, plus new positive clients. This accounts for higher percentage of initiated clients than new positive clients.

Conclusions: Early initiation of antiretroviral drugs in infants with HIV can save lives. However, coverage of essential interventions remains low. This study illuminates that late VL sample receipt of VL results due to faulty PCR machines and sample transport delays VL result entry, leading to inflated linkage rates and skewed VL coverage data. This impacts decision-making. ANC units can address this by sending client folders to RCH when mothers transition to RCH for services.

EPB216

Effect of poor adherence on virological failure and genotypic changes in vertically-infected adolescents in Yaoundé: Evidence from an EDCTP prospective cohort study

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Background: HIV affects 1.7 million adolescents worldwide, with 88% in Sub-Saharan Africa (SSA) and 2% in Cameroon. Antiretroviral therapy (ART) has decreased HIV-associated mortality, but poor adherence and HIV drug resistance (HIVDR) emergence remain setbacks for treatment response in adolescents living with perinatal HIV infection (ALPHI); prompting assessment of the effect of adherence on virological response to ART and acquired HIVDR patterns in ALPHI in two hospitals in Yaounde.

Methods: A prospective cohort study was conducted amongst ALPHI aged 10-19. 214 participants were enrolled at baseline and followed up for two phases over 16 months.

Self-reported adherence (% missed doses in last 30 days) was assessed and plasma viral load (PVL) performed at each phase. If virological failure/VF (PVL>1000copies/ml), genotypic resistance testing(GRT) was performed, interpreted using the Stanford Algorithm(v.8.8). Rates of VF, once-daily ART dosing and HIVDR were compared for adherent and non adherent participants.

Statistical analysis was done on EpiInfov.7.2.4.0, using Chi-square/Fisher-exact test(categorical data), Mann-Whitney test(quantitative data).

Results: Of 214 participants, 196 and 176 were followed at second and third phases. Median age was 15±3 years; with 55.4% in the older age group (15-19 years). Self-reported adherence was 78.5%, 66.8% and 67.1% respectively. At baseline and 2nd phase, poor adherence was associated with older age; (OR=3, p=0.004; RR=1.2, p= 0.01) and once-daily regimen use (OR=3, p=0.01; RR=1.3, p=0.006). VF decreased from 41.6% to 26.1% (p=0.002), indicating increased viral suppression (VS) [58.7%-73.8%]. VF was two-fold higher with poor adherence (RR=2, p=0.0002; RR=2, p=0.004) at 2nd and 3rd phases. GRT performance increased from 75%-97.8%, with poor prescription practice from 36.2%-48.3% (p=0.15); underscoring retention on poorly-active regimens, limiting VS and prompting DRM accumulation. DRM rates were 90.9%, 79.9% and 71.1% and were higher with good adherence at 3rd phase (RR=1.7, p=0.004).

Conclusions: ALPHI in Cameroonian urban setting-shavedwindling adherence levels, worsened by older age and single-dose regimens. VF is worsened two-fold by single-dose regimens. VF decreased due to improved adherence counselling and GRT. Poor adherence increased VF two-fold and HIVDR remained high in both adherent and non-adherent adolescents on sub-optimal therapy. Poor GRT prescription practice, limits VS attainment. Hence, capacity-building on GRT result use and reinforced adherence, particularly in older adolescents and those on single-dose regimens, is paramount for VS.

HIV complications and co-morbidities in paediatric and adolescent populations

EPB217

Prevalence of malnutrition and its association with HIV-Exposure among young children in Kenya: results from the 2018-2019 Kenya Population-based HIV Impact Assessment (KENPHIA)

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Background: Malnutrition among HIV-exposed children is associated with higher risk of physiological and cognitive disability and death. We estimated malnutrition prevalence among HIV-exposed (HEC) and -unexposed (HUC) children using data from the Kenya Population-based HIV Impact Assessment (KENPHIA) 2018-2019, a nationally representative two-stage cross-sectional household-based survey.

Methods: Mid Upper Arm Circumference (MUAC) was measured among children aged 6-59 months in the sampled households. Child HIV exposure was determined us-

ing confirmed maternal HIV status. Sex and age-adjusted MUAC Z-scores were calculated by HIV exposure and categorized into 'severe malnutrition' (SM) [Z-score ≤−2 standard deviations (SD] or 'severe acute malnutrition' (SAM) [Z-score ≤−3 SDs] using WHO Growth Standards. Weighted prevalence of SM and SAM were calculated. Multiple linear regression of Z-scores from 1,949 children was conducted to identify demographic and household characteristics associated with a decrease/increase in Z-score, stratified by HIV exposure. Analyses accounted for survey design and non-response.

Results: SM prevalence was greater by 2.0% among HEC (6.4%, 95% CI: 3.4-11.9) compared to HUC (4.4%, CI: 3.3-5.8). SAM was greater by 0.8% among HEC (1.2%, CI: 0.8-1.6) compared to HUC (0.4%, CI: 0.2-0.8). Among HEC, one year increase in maternal age corresponded to a decrease in Z-score by 0.04; each additional child living in the same household was associated with an increase in Z-score by 0.26. Among HUC, one month increase in child's age corresponded to a decrease in Z-score by 0.02; those in households in the highest wealth quintile had a Z-score greater by 0.41 compared to households in the lowest quintile (Table).

	HIV-Exposed (N=110)	Adj. Coeff[2]	95% CI	p-value	HIV Un-Exposed (N=1,839)	Adj. Coeff[2]	95% CI	p-value
Male	56	0.205	-0.232, 0.641	0.34	1,001	-0.072	-0.195, 0.051	0.24
Child's Age (mos.)(Continuous)	110	-0.013	-0.029, 0.002	0.09	1,839	-0.016	-0.020, -0.013	P<0.01
Mother's Age (Continuous)	110	-0.042	-0.073, -0.011	0.01	1,839	-0.006	-0.018, 0.005	0.25
Household in highest wealth quintile(5) **compared to lowest**(1)	5	-0.085	-0.689, 0.518	0.77	151	0.409	0.122, 0.696	0.01
Household experienced food insecurity in previous 4 weeks	40	0.061	-0.297, 0.420	0.73	389	-0.031	-0.257, 0.194	0.78
# of children in household (Continuous)	110	0.263	0.151, 0.375	0.00	1,839	-0.009	-0.060, 0.043	0.73

[1] Total N (N=1,939) is less than total N with MUAC measurements (N=1,949) due to incompleteness of covariates in the model
[2] Models were adjusted for all variables shown in table above as well as household residence (urban vs. rural), wealth quintiles 2-4, household water source treatment, household sharing toilet with other households, and household head being sick (not shown above)

Table 1. Association between malnutrition, sex, age, and other variables stratified by HIV exposure among children 6-59 months old with MUAC measurements (N=1,939)[1], KENPHIA 2018.

Conclusions: Higher malnutrition prevalence was observed in HEC compared to HUC. Maternal age and number of children in the household were associated with malnutrition (lower Z-scores) among HEC, indicating higher risk for poor health outcomes.

These findings may help address gaps in child nutrition programming to improve child growth outcomes, especially among HEC.

EPB218

Hospitalisation patterns among infants with HIV in the era of universal antiretroviral therapy in South Africa

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Background: The shift to earlier antiretroviral therapy (ART) initiation in infants is expected to reduce morbidity and mortality. Studies examining hospitalisation among infants with HIV in resource-limited settings in the context of early infant diagnosis and early ART initiation are limited.

Methods: We used routinely collected data of infants who initiated ART aged <3 months (Western Cape province, South Africa; 2013-2017). We described hospitalisation from birth until 12 months post-ART initiation. Record reviews were performed in a subset of infants who attended two tertiary-level facilities.

Results: Among 840 infants, 577 (69%) were hospitalised; 297 (35%) had >1 hospitalisation. Median ART initiation age decreased from 57 days (IQR 22-74) (2013-2015) to 19 days (IQR 5-54) (2016-2017). Mortality was 4%. Early neonatal hospitalisation (age <7 days) occurred in 270 infants (32%; 164 (20%) initiated ART during hospitalisation); and represented 24% of hospitalisations (271/1125).

Overall, 441 infants (53%) were hospitalised at age ≥7 days, including 235 infants (28%) with 262 hospitalisations pre-ART initiation (210 (25%) initiated ART during hospitalisation) and 334 infants (40%) with 592 hospitalisations post-ART initiation.

Excluding early neonatal hospitalisations, infants who initiated ART at age 29-91 days vs earlier had higher hospitalisation risk (RR= 1.52; 95% CI 1.31-1.77) and fewer achieved viral load (VL) <100 copies/ml at 12 months (RR=0.79; 95% CI 0.64-0.97). Among infants with available results, 43% (187/440) and 45% (190/419) had VL <100 copies/ml at 6 and 12 months respectively. Hospitalisation post-ART initiation was more common in infants with VL ≥100at 12 months (RR=1.36, 95% CI 1.09-1.68).

Among infants whose hospital records were reviewed, reasons for early neonatal hospitalisations mostly related to prematurity or low birthweight (n=37/43; 86%) whereas

hospitalisations at age ≥7 days were mostly due to infections (n=176/210; 84%). Excluding early neonatal hospitalisations, infants who initiated ART at age 29-91 days vs earlier had higher infectious-cause hospitalisation risk (86% vs 29%, p<0.001; RR=2.95; 95% CI 2.09-4.18); intensive care was required in 22% of hospitalisations.
Conclusions: Earlier ART initiation is associated with higher viral suppression rates at 12 months and lower hospitalisation risk. High hospitalisation incidence observed pre- and post-ART initiation despite initiation age <3 months is concerning.

EPB219
Effects of integrase strand transfer inhibitors (INSTIs) on body mass index and blood pressure in children living with HIV

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Background: Integrase strand transfer inhibitors (INSTIs) have been associated with excess weight gain in adults. This study assessed the effect of INSTIs on body mass index (BMI) percentile and blood pressure (BP) of children living with perinatally acquired HIV (CLWPH).
Methods: EPIC4 prospectively enrolled and followed CLWPH from 7 Canadian centres from 2014-2018. Spline regression analysis was used to compare trends in BMI for patients with INSTI containing regimens versus age- and sex-matched INSTI naive patients. Percentages with worsening BP category (normal/elevated/stage 1/2 hypertension) were also compared using Chi-square test. Data points were assessed at time of initiation and 1 & 2 years before and after starting INSTI containing regimens.
Results: 197 children (113 INSTI-exposed; 84 controls) were included, with median age 13 years at start of INSTI (range 0.4-18.5); 53% were female. 75% had normal BMI at baseline; 20% were overweight or obese, 5% were underweight. Dolutegravir, raltegravir and elvitegravir were prescribed for 33 (29%), 43 (38%), and 37 (33%), respectively.
Viral load was detectable in 43/113 (39%) in INSTI group versus 9/84 (11%) in non-INSTI group at baseline, and in 7/61 (11.5%) and 13/73 (17.8%) after 2 years. Median CD4 count was 694 cells/uL in INSTI group vs 772 in non-INSTI group at baseline, and 772 vs 780 after 2 years.
Comparing BMI percentile over time, modest increases in BMI percentile from baseline were noted in both groups. Regression analysis demonstrated no difference in BMI percentiles between INSTI and non-INSTI groups (p=0.276), except in those taking INSTI plus protease inhibitors (n=27; difference in change in BMI percentile compared to non-INSTI at 1 and 2 years of 0.05 [p=0.014] and 0.12 [p=0.014], respectively). Percentages with stage 1/2 hypertension were not different between INSTI vs non-INSTI over time (baseline 25% vs 17%, p=0.292; 1yr 32% vs 23%, p=0.256; 2yrs 24% vs 24%, p=0.965).
Conclusions: INSTI-containing regimens do not appear to be associated with increases in BMI percentile or BP in CLWPH in Canada.

HIV-associated co-infections and malignancies in paediatric and adolescent populations

EPB220
Believe it or not: children and adolescents living with HIV receiving antiretroviral therapy can still present with severe forms of Kaposi sarcoma

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Background: In regions with high seroprevalence of *Human gammaherpesvirus* 8, children and adolescents living with HIV (CALHIV) can present with severe forms of Kaposi sarcoma despite treatment with antiretroviral therapy (ART).
Methods: Retrospective review was conducted of CALHIV diagnosed with KS between 1 March 2011 and 30 March 2020 at the Baylor College of Medicine Children's Foundation - Tanzania in Mbeya, Tanzania. Patients were treated with chemotherapy [bleomycin and vincristine (BV), BV and doxorubicin (ABV), and/or paclitaxel depending on KS disease severity] and ART.
Results: A total of 69 CALHIV were diagnosed with KS, median age of 12.6 years (IQR 9.4-15.5) and 40.6% (28/69) female. At KS diagnosis, 78.3% (54/69) were receiving ART for

a median of 6.2 months (IQR 1.3-43.7). 60.6% (40/66) met criteria for WHO severe immunosuppression, 67.6% (23/34) had viral load > 1000 cp/mL, 40.6% (28/69) had severe acute malnutrition, 27.5% (19/69) had severe anemia, and 22.7% (15/66) had severe thrombocytopenia.

T1 KS disease was observed more frequently among patients on ART > 6 months (24/29; 82.8%, *p*-value 0.0147) and lymphadenopathic predominant disease was observed more frequently among patients on ART ≤ 6 months (11/25; 44%,*p*-value 0.0467) (Table 1).

Chemotherapy was given to 94.2% (65/69) with initial regimens of BV [56.9% (37/65)], ABV [40.0% (26/65)], or paclitaxel [3.1% (2/65)]; 5.8% (4/69) died before initiating chemotherapy. 95.7% (66/69) of CALHIV received ART; 4.3% (3/69) died before ART initiation. At censure, 71.0% (49/69) were alive, none abandoned treatment, and 28.9% (20/69) died.

Median follow up was 22.6 months (IQR 7.5-51.8). At completion of initial chemotherapy, 83.3% (45/54) had HIV viral load < 1000 cp/mL, and 23.5% (12/51) had severe immunosuppression.

Clinical characteristic	Not on ART (n=15)	On ART≤ 6 months (n=25)	On ART > 6 months (n=29)	*p*-value
T1	6/15 (40.0%)	15/25 (60.0%)	24/29 (82.8%)	0.0147
I1	9/14 (64.3%)*	12/24 (50.0%)*	17/28 (60.7%)*	0.6281
SI	9/15 (60.0%)	17/25 (68.0%)	16/29 (55.2%)	0.6281
Pediatric Lilongwe Stage 1A and 1B (mild mucocutaneous disease)	3/15 (20.0%)	1/25 (4.0%)	1/29 (3.4%)	0.1184
Pediatric Lilongwe Stage 2 (lymphadenopathic disease)	5/15 (33.3%)	11/25 (44.0%)	4/29 (13.8%)	0.0467
Pediatric Lilongwe Stage 3 (woody edema)	3/15 (20.0%)	5/25 (20.0%)	13/29 (44.8%)	0.0867
Pediatric Lilongwe Stage 4 (disseminated mucocutaneous and/or visceral disease)	4/15 (26.7%)	8/25 (32.0%)	11/29 (37.9%)	0.7408
Died	5/15 (33.3%)	7/25 (28.0%)	8/29 (27.6%)	0.9139

Table 1: Comparison of clinical characteristics of CALHIV at KS diagnosis and outcomes depending on time on ART (n=69)

*1 individual missing CD4 data

Conclusions: In our cohort, treatment with ART did not preclude CALHIV from presenting with severe KS disease, but positive outcomes were feasible with chemotherapy and ART.

EPB221

"Children are not just little lymphadenopathic adults" – describing the unique clinical challenges of children with lymphadenopathic Kaposi sarcoma

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Background: The AIDS Clinical Trial Group Kaposi sarcoma (KS) tumor (T) 0 staging encompasses individuals with mild-moderate mucocutaneous disease (non-nodular oral involvement) and with lymphadenopathic disease; however, children with these presentations can experience divergent outcomes. We aim to validate that pediatric specific KS staging more precisely risk-stratifies children with KS.

Methods: Characteristics and survival of children diagnosed with KS at either the Baylor Malawi (1 July 2013 to 31 March 2020) or Baylor Tanzania Mbeya Center of Excellence (1 March 2011 to 31 Dec 2017) were analyzed. The modified Lilongwe pediatric KS staging classification was utilized in which mild-moderate mucocutaneous disease corresponded to stage 1 and lymphadenopathic predominate disease corresponded to stage 2.

Results: Of 171 children with KS, 18% (31/171) had stage 1 disease, and 33% (56/171) had stage 2 disease (Table 1). T0 classification was assigned to 77% (24/31) of those with stage 1 disease and 87% (49/56) of those with stage 2 disease. All who received T1 classification with stage 1 (7) or stage 2 disease (7) had nodular oral involvement.

Stage 1 two-year overall survival was 87% (95% CI: 69%-95%) and stage 2 was 63% (95% CI: 48-75%). Among those with stage 1 disease, 81% (25/31) achieved complete clinical remission (CCR) after initial chemotherapy. Of the remaining 6, 2 relapsed/progressed but survived after salvage chemotherapy, 1 died off- therapy, and 3 died with KS progression.

Among those with stage 2 disease, 55% (31/56) achieved CCR. Of the remaining 25, 4 died within 7 days of KS diagnosis, 6 died during initial chemotherapy, and 3 died off-therapy. Twelve relapsed/progressed, 6 survived after salvage chemotherapy and 6 died with KS progression.

	Stage 1: Mild-moderate mucocutaneous disease (n=31)	Stage 2: Lymphadenopathic disease (n=56)	Stage 3: Woody edema disease (n=33)	Stage 4: Severe mucocutaneous and/or visceral disease (n=51)	*P*-value
Age in years, median (range)	9.6 (3.6 - 19.9)	4.4 (1.7 - 20.8)	12.2 (3.5 - 22.1)	9.5 (1.9 - 20.2)	<0.01
T1 Stage, n (%)	7 (23%)	7 (13%)	33 (100%)	43 (84%)	<0.01
Hyperpigmented Skin Lesions, n (%)	19 (61%)	19 (34%)	21 (63%)	38 (75%)	<0.01
Oral Involvement, n (%)	16 (52%)	17 (30%)	8 (24%)	30 (59%)	<0.01
Nodular Oral Involvement, n (%)	7 (23%)	7 (13%)	1 (3%)	15 (29%)	0.28
Hemoglobin < 8, n (%)	4 (13%)	24 (43%)	7 (21%)	17 (33%)	0.02
Platelets < 50, n (%)	3 (10%)	23 (41%)	2 (6%)	14 (27%)	<0.01
CD4 < 200, n (%)	13 (72%)	8 (31%)	10 (30%)	18 (56%)	0.04
On ART, n (%) with denominator HIV+ only	16 (59%)	19 (45%)	25 (78%)	36 (75%)	0.01

Table 1.

Conclusions: Survival among children with lymphadenopathic KS, most of whom were classified as T0, was suboptimal, emphasizing the aggressive nature of KS in children and the need for improved treatment strategies.

Behavioural health outcomes in paediatric and adolescent populations

EPB222

Participant Acceptability and Clinician Satisfaction of Cognitive Behavioral Therapy and a Medication Management Algorithm Compared with Enhanced Standard Care for Treatment of Depression among Youth Living with HIV

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Background: Primary results of the International Maternal Pediatric Adolescent AIDS Clinical Trials Network (IMPAACT) 2002 trial showed that a Cognitive Behavioral Therapy (CBT) and Medication Management Algorithm (MMA) (COMB-R) significantly improved depression outcomes in Youth Living with HIV (YLWH) compared with Enhanced Standard Care (ESC).

Because participant perspectives and experiences of CBT are an important complement to treatment efficacy (Olsson, JBCT, 2021), we examined and compared the acceptability and satisfaction of these approaches among study participants and clinicians.

Methods: Between March 2017 and March 2019, 13 U.S. sites enrolled YLWH, ages 12-24, diagnosed with nonpsychotic depression. Using restricted randomization to balance site characteristics, sites were randomized to either COMB-R (CBT administered by a therapist and a licensed prescriber trained in the MMA) or ESC (standard psychotherapy and medication management).

After intervention conclusion at Week 24, participants and clinicians (licensed prescribers and therapists) rated their acceptability and satisfaction of the treatment in multiquestion surveys, with higher ratings indicating more desirable outcomes. Site-level means were compared using Wilcoxon tests.

Results: Overall, 69 participants were in COMB-R and 71 were in ESC. The mean age was 21.4 years, 53% were female, and 54% were living with perinatally acquired HIV. Baseline age, sex, depression levels, RNA viral load, and CD4 count were similar between groups. The distribution of site-level mean participant acceptability (quality, expectations, and overall satisfaction with treatment) was greater in COMB-R compared with ESC (Table 1).

The distribution of site-level mean licensed prescriber satisfaction (ease of using the intervention and improvement of participants' symptoms) was also greater in COMB-R compared with ESC. The distribution of site-level mean therapist satisfaction did not differ between groups.

Survey	Survey Description	COMB-R (6 sites)	ESC (7 sites)	P-value (Wilcoxon Test)
Participant acceptability	8 questions; scale from 1 to 4	3.7 (3.5, 3.9)	3.4 (3.3, 3.7)	0.04
Prescribing clinician satisfaction	2 questions; scale from 0 to 4	3.2 (2.5, 3.4)	2.4 (2.0, 3.0)	0.01
Counseling clinician satisfaction	6 questions; scale from 0 to 3	2.1 (1.9, 2.8)	2.3 (2.0, 2.6)	0.52

Table 1. Median (Minimum, Maximum) of site-level mean participant acceptability and clinician satisfaction

Conclusions: We found that mean acceptability and satisfaction for participants and licensed prescribers were significantly higher at COMB-R sites compared with ESC sites. These results further support the use of CBT and MMA in treating depression among YLWH.

Mental health and neurocognition in paediatric and adolescent populations

EPB223

Childhood adversity and depression in Ugandan adolescents with perinatally-acquired HIV: differences by HIV status and adversity exposure

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Background: Adverse childhood experiences (ACEs; abuse, neglect, household dysfunction) have been shown to predict psychiatric symptoms in adults with HIV; however, less is known about ACEs' impact on mental health among youth with HIV.

This study examined associations between ACEs and depressive symptoms and differences by HIV status and ACE exposure in Ugandan adolescents (12-20 years) with perinatally-acquired HIV (PHIV) and HIV-negative controls.

Methods: 59 adolescents (36 PHIV; 23 controls; M_{age}=15.75; 50.8% female) recruited from Kampala, Uganda completed measures of ACEs (Adverse Childhood Experiences scale) and depressive symptoms (Patient Health Questionnaire-9 [PHQ-9]). Participants were grouped by ACE exposure (Low: 0-2 ACEs; High: ≥3 ACEs) and HIV status creating four groups: PHIV Low-ACE, PHIV High-ACE, Controls Low-ACE, Controls High-ACE.

Regressions examined associations between ACEs and depressive symptoms, adjusting for covariates (age, sex, HIV status). Fisher's exact tests and Brown-Forsythe ANOVAs assessed differences across HIV-ACE groups.

Results: 83.1% of participants reported ≥1 ACE, with 37.3% (41.7% PHIV; 30.4% Controls) reporting high ACE exposure (≥3 ACEs). 10.2% of participants (13.9% PHIV; 4.3% Controls) reported clinically significant depressive symptoms (PHQ-9 scores ≥10).

Additionally, 23.7% of participants (27.8% PHIV; 17.4% Controls) reported depression in the last year. Adjusting for covariates, ACEs predicted PHQ-9 scores (B=1.48, *p*=.001), explaining 37% of the unique variance. Significant differences across HIV-ACE groups (Table 1) were found for PHQ-9 scores, $F(3, 23.35)=8.63$, $p<.001$, with the PHIV High-ACE group exhibiting higher scores than all other groups (*ps*=.001-.03).

Compared to the PHIV Low-ACE group, greater proportions of the PHIV High-ACE group had clinically significant depressive symptoms (0% vs. 33.3%, *p*=.008, OR=1.50) and depression in the last year (9.5% vs. 53.3%, *p*=.007, OR=10.86).

		PHIV (*n*=36)		Controls (*n*=23)	
		Low ACE (*n*=21)	High ACE (*n*=15)	Low ACE (*n*=16)	High ACE (*n*=7)
PHQ-9 Total	M (SD) [Range]	0.67 (0.97) [0–3]	6.27 (5.47) [0–14]	1.06 (1.81) [0–6]	2.00 (3.61) [0–10]
Clinically Sig. Depressive Symptoms (PHQ-9 ≥10)	% (n)	0.0% (0)	33.3% (5)	0.0% (0)	14.3% (1)
Depression (Past year)	% (n)	9.5% (2)	53.3% (8)	18.8% (3)	14.3% (1)

Table 1. Depression outcomes by HIV status and ACE-exposure. High-ACE was categorized as ACE scale total scores ≥3. PHIV=Perinatally-acquired HIV; ACE=Adverse childhood experiences; PHQ-9=Patient Health Questionnaire-9 scale.

Conclusions: ACEs are common among Ugandan adolescents and may increase risk of depression in adolescents with PHIV. Among PHIV participants with high ACEs, one-third reported clinically significant depressive symptoms and half reported depression within the year, suggesting screening for ACEs may be useful in identifying adolescents with PHIV at-risk for mental health struggles.

Transition of adolescents into adult care

EPB224

Trust, telehealth, and transition: factors affecting telehealth and engagement in care during health care transition of young adults with HIV during the COVID-19 pandemic

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Background: Approximately 5 million adolescents and young adults with HIV (YALWH) will transition to adult care globally in the next decade, yet only 40-50% remain in care at a year, creating public health risks and affecting long-term health. The Covid-19 pandemic demanded a shift to telehealth yet there is limited literature on trust in telehealth. We evaluated patient-provider trust and telehealth use with respect to viral load, HIV stigma, transition status, and demographic factors.

Methods: This cross-sectional study assessed patient-provider trust using the Health Care Relationship Trust scale and the Watson Patient Caring Score. Trust in telehealth was assessed using the Patient Trust Assessment Tool. Stigma was evaluated with the HIV Stigma Scale. HIV RNA PCRs and the number and types (telehealth/in-person) of visits were collected via chart abstraction for 8 months before and after Covid-19 began in Colorado, USA (3/15/2020). Data were analyzed with linear or logistic regression.

Summary of Predictors of Trust and Telehealth Use

Outcome Variable	Predictor	β	R^2	($p < .05$)	Explanation
Trust in Telehealth (PATAT[a])	Patient-provider trust (HCR[b] Trust)	0.43	0.54	< .001	As HCR Trust and WPCS increased, trust in telehealth increased
	Patient-provider trust (WPCS[c])	0.37	0.54	< .001	
Patient-provider trust (HCR Trust)	High School or GED	0.25	0.52	0.035	High school or GED had higher HCR Trust than those with higher education
Patient-provider trust (WPCS)	HIV stigma scale	-0.23	0.54	0.005	As HIV stigma increased, WPCS decreased
HIV RNA PCR (pre- and post-Covid-19 combined)	Post-transition	-0.27	0.42	0.009	Those post-transition, had SHIV and had at least one telehealth visit were more likely to be HIV-undetectable across the whole time period
	SHIV[d]	-0.24	0.42	0.021	
	Telehealth use	-0.58	0.42	< .001	
HIV RNA PCR in 8 mos. Post- Covid-19	Telehealth use	-0.42	0.32	0.002	Those with at least one telehealth visit were more likely to be HIV-undetectable post Covid-19
Total visits (pre- and post-Covid-19)	Telehealth use	-0.20	0.16	0.042	Those with at least one telehealth visit had higher total visits

Note : [a]Patient Trust Assessment Tool (PATAT), [b]Health Care Relationship Trust scale (HCR), [c]Watson Patient Caring Score (WPCS), [s]ituationally acquired HIV (SHIV)

Results: Participants (*N*= 109) were 60% male, 61% non-white, 39% living with perinatally acquired HIV, and 58% post-transition. Greater patient-provider trust was associated with higher trust in telehealth. College graduates, higher income, and people with higher HIV-stigma had lower patient-provider trust. Those who felt telehealth was "easier" were 2.88 times more likely to use telehealth. Participants who had at least one telehealth visit were more likely to have additional telehealth visits, to have more total visits (in-person and telehealth), and to have an undetectable HIV viral load (<40 copies/ml) overall.

Conclusions: During the Covid-19 pandemic, YALWH with higher patient-provider trust were more likely to trust telehealth, and those who found telehealth easier were more likely to use telehealth, which was associated with HIV viral suppression. Strengthening trusted patient-provider relationships and increasing ease of use may increase telehealth uptake which may improve engagement in care resulting in greater HIV viral suppression when transitioning care.

Clinical issues in sex workers

EPB225

Same-day testing and treatment of sexual transmission infections among female sex workers using Nucleic Acid Amplification Test (NAAT) at a point of care

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Background: Undiagnosed and undertreated sexually transmitted infections (STIs), lead to spread of these STIs in the community and facilitate the HIV acquisition.

Methods: We carried out a cross-sectional study among female sex workers (FSWs) from Madrid, Spain. A mobile unit (MU) was used to screen Chlamydia trachomatis (CT), Neisseria gonorrhoeae (NG) and Trichomonas vaginalis (TV) using a NAAT obtained from either urine or vaginal fluid swab samples at a MU with results in 90 minutes. Participants with a positive result received on site same day treatment. Further, HIV, HCV and syphilis were screened using rapid tests.

Results: 49 FSWs were included. Baseline characteristic are showed in Table 1. Three patients self-reported HIV diagnosis and were on antiretroviral therapy, and seven had HCV antibodies (three of them viremic). Excluding three HIV infected FSWs,4 (8.7%) reported any knowledge on pre-exposure prophylaxis (PreP), and none had ever taken PreP.

The prevalence of CT/NG/TV and syphilis were 15.6%, 13.0%, 45.5% and 16.7%, respectively and the prevalence of all screened STI was higher in FSW who use drugs (Figure 1). The infections produced by CT/NG/TV/syphilis were

asymptomatic in 71.4%, 50%, 70% and 62.5%, respectively. All infections except one were treated. In the multivariate logistic regression analysis, the use of drugs among FSWs was associated with the likelihood of being diagnosed with at least one STI (aOR11.7(CI 95% 1.5-90.9; P= 0.01).

	Overall (n=49)	Use of drugs (n= 39)	Non-use of drugs (n= 10)	p-value
Age, median (IQR)	40.0 (33-48)	41.0 (33-49)	37.0 (29.5-43)	0.25
Nationality: Spaniards	24 (49%)	23 (59%)	1 (10%)	0.006
Type of residence: homeless	25 (51.0%)	25 (64.1%)	0	0.001
Employment: Unemployed	46 (93.9%)	36 (92.3%)	10 (100%)	0.84
Prison history	19 (38.8%)	17 (43.6%)	2 (20%)	0.17
Ever physical or sexual violence	30 (61.2%)	27 (69.2%)	3 (30%)	0.02
Unconsistent use of condoms	27 (55.1%)	22 (56.4%)	5 (50%)	0.71
Genito-urinary symptoms	18 (36.7%)	12 (30.8%)	6 (60%)	0.08

Table.

Figure. Prevalence of sexually transmitted infections (STI) among female sex workers (FSW) from the study cohort.

Conclusions: We identified a very high prevalence of undiagnosed and asymptomatic STIs among FSWs who use drugs. STIs periodic screening using NAAT based testing and same-day result-based treatment at a MU allow avoid diagnoses delays and undertreated STIs.

EPB226

Understanding the impact of COVID-19 on retention of female sex workers on HIV treatment in Malawi

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Background: Concerns have been raised about the impact of the COVID-19 pandemic on public health interventions. One program that seems to be highly vulnerable is the HIV treatment program. Using female sex workers (FSW) as a subgroup, we assessed the effects of COVID-19 on HIV treatment in Malawi.

Methods: We conducted a retrospective descriptive study using the HIV program data generated through reported using the district health information system (DHIS2) from 4 districts in the country with FSW intervention. We looked at the interruption of treatment for FSW on HIV care and treatment three months before the COVID 19 pandemic (January to March 2020), known as the pre-COVID period, and three months after the first case of COVID was reported (April to June 2020), known as the post-COVID period. We observed the proportion of FSWs interrupting treatment to see if a huge disparity exists.

Results: The result is reported at the country level. The proportion of FSW interrupting treatment increased significantly (pre=4%, post=22%) with a difference of 18%.

Conclusions: A significant increase in FSWs Interrupting of treatment during COVID-19 was observed and it will be worth exploring the determinants of these interruption. There is a need to review the effectiveness of policies such as multi-month dispensing (MMD), differentiated service delivery (DSD), in order to pivot to a more effective and innovative patient-centered approach for addressing interruption in treatment and optimizing retention among FSWs.

Clinical issues in transgender people

EPB227

Acceptability and uptake of self-sampling for etiological diagnosis of sexually transmitted infections (STIs) among transgender women in Brazil

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Background: Sexually transmitted infections (STIs) disproportionately affect transgender women (TGW), who often lack access to healthcare due to stigma and marginalization. This study aimed to evaluate the choice of self- or provider-collection of samples from potential infection sites for testing of STIs among TGW in Brazil.

Methods: TransOdara was a cross-sectional study among TGW conducted in five capital cities representing all Brazilian regions from December 2019 to July 2021.

A total of 1317 participants aged 18 years and older were recruited using Respondent Driven Sampling, completed a standard questionnaire, and swab samples from multiple sites (genital, anorectal, oropharyngeal, and neovaginal) collected and tested for chlamydia, gonorrhea, and HPV. Participants could choose whether sample was self-collected (following instructional diagrams) or provider-collected.

Results: The preferred choice was for self-collection of anorectal swabs (75%; n=1252) (95%CI 72.8-77.6) and genital swabs (77%; n=1236) (95%CI 74.3-79.2). A lower preference for self-collection of oropharyngeal swabs (50%; n=1270) (95%CI 47.1-52.6) and neovaginal swabs (40%; n=15) (95%CI 16.3-67.7) was observed. Those who chose self-collection reported that the sample collection was 'easy' for oropharyngeal (93%; n=623), anorectal (93%; n=930), genital (97%; n=927), and neovaginal (80%; n=5) sites, and almost all indicated that the instructional diagrams were 'easy' to follow. Those who chose provider-collection reported feeling 'comfortable' with the sample collection from oropharyngeal (89%; n=617), anorectal (84%; n=299), genital (93%; n=278), and neovaginal (100%; n=9) sites.

SWAB TYPE Collection modality	Campo Grande		Manaus		Porto Alegre		Salvador		São Paulo		TOTAL		
SWAB TYPE Collection modality	n	%	n	%	n	%	n	%	n	%	n	%	95% CI
ORAL													
Self-collected	30	16.9	293	86.4	33	17.6	52	31.0	225	56.4	633	49.8	47.1-52.6
Provider-collected	147	83.1	46	13.6	154	82.4	116	69.0	174	43.6	637	50.2	47.4-52.9
Total	177	100	339	100	187	100	168	100	399	100	1270	100	
ANORECTAL													
Self-collected	115	66.5	304	89.7	150	82.9	100	61.3	273	68.9	942	75.2	72.8-77.6
Provider-collected	58	33.5	35	10.3	31	17.1	63	38.7	123	31.1	310	24.8	22.4-27.2
Total	173	100	339	100	181	100	163	100	396	100	1252	100	
GENITAL													
Self-collected	119	68.8	306	90.3	149	84.7	103	70.6	272	70.6	949	76.8	74.3-79.2
Provider-collected	54	31.2	33	9.7	27	15.3	60	29.4	113	29.4	287	23.2	20.9-25.7
Total	173	100	339	100	176	100	163	100	385	100	1236	100	
NEOVAGINAL													
Self-collected	-	-	-	-	3	100	-	-	3	27.3	6	40.0	16.3-67.7
Provider-collected	-	-	-	-	-	-	1	100	8	72.7	9	60.0	32.3-83.7
Total	-	-	-	-	3	100	1	100	11	100	15	100	

Table 1: Preference of study participants on the modality of swab collection, according to anatomical site

Conclusions: Overall, TGW chose self-sampling for testing of STIs from potential infection sites when given the opportunity and guided by illustrated instructions.

STI screening should be integrated into services for HIV and other sexual health services with self-collection methods (with appropriate guidance) offered as a choice for sample collection among TGW who seek healthcare services.

Clinical issues in people who use drugs

EPB228

Integrated STI and abscess management among PWIDs at government health facilities: a simple approach towards a great mission

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Background: Background: Clinical services for the PWIDs in Bangladesh have been covered primarily by NGOs. To mainstream PWIDs into government facilities, a major shift was made by introducing health service outlet modalities with limited clinical services to replace drop-in centers. The change is significant in terms of the larger population and geographical coverage attainable, which requires integrating clinical services with government Facilities.

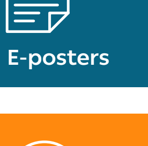
Description: Description: Integration of STI and abscess management with government health facilities started in April 2021. Previously only non-responsive and complicated cases were referred to these facilities. In this new modality, PWIDs are informed, sensitized, and motivated to go to nearby government Centers for STI and abscess management. Simultaneously, health care professionals of these centers are contacted regularly by outlet team to ensure PWIDs are treated well.

Despite these protocols, during Apr-June 2021 no PWIDs were managed through integration. In the next quarter, 17 STI and 10 abscess cases were managed through integration, and numbers increased significantly during Oct-Dec 2021 with 43 STI and 36 abscess cases managed.

Moreover, PWIDs received regular abscess dressing in government facilities resulting in cure. Challenges faced by PWIDs included long wait times, insufficient time to meet with providers, requirement to purchase some medicines, and inability to maintain follow-up appointments. Frequent change of physicians at the government hospital was also a challenge.

Lessons learned: Lessons learned: Despite some major challenges, the service uptake from the government facilities has gradually increased. Providing proper guidance to the PWIDs increased their health care seeking behavior, complemented by effective communication with government facilities ensuring a welcoming environment. SACMOs were trained on how to integrate these services smoothly.

Conclusions/Next steps: Conclusions: Scaling up integration of clinical services with government facilities will play a vital role in mainstreaming PWIDs into the health care system. Advocacy and sensitization of the relevant government healthcare professionals needs to be strengthened to ensure acceptance of PWIDs without stigma. PWIDs will also be motivated to seek health care like general populations.



EPB229

No pharmacokinetic interaction between islatravir and methadone

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Background: Islatravir (ISL) is a deoxyadenosine analog that targets HIV reverse transcriptase. ISL has a long half-life and demonstrates activity against NRTI- and NNRTI-resistant variants. Use of injectable drugs continues to be a significant risk factor in becoming infected with HIV, despite the decline in HIV infections due to intravenous drug use. People on methadone maintenance therapy may benefit from ISL, either as treatment of HIV infection or as pre-exposure prophylaxis. This clinical study evaluated the effect of ISL administration on methadone PK.

Methods: This was a nonrandomized, open-label, drug-drug interaction study in adult male and female participants on stable methadone therapy (20-200 mg QD). Participants received their standard methadone therapy during a >/=14-day run-in phase. Following enrollment, participants continued their daily standard dose of methadone for at least 15 days; ISL was administered concomitantly on Day 2. Serial blood samples were collected for methadone PK on Day 1 and Day 2.

Results: Fourteen participants (5 female) aged 26-63 were enrolled; 13 completed. The geometric mean ratios (GMRs; 90% confidence interval [CI]; ISL+methadone/methadone alone) for S-methadone AUC0-24, Cmax, and C24 were 1.03 (0.99, 1.07), 1.01 (0.94, 1.09), and 1.08 (1.04, 1.13), respectively. For R-methadone AUC0-24, Cmax, and C24, the GMRs (90% CI) were 1.03 (1.00, 1.07), 1.02 (0.96, 1.09), and 1.06 (1.03, 1.10), respectively. The GMRs (90% CI) for total-methadone AUC0-24, Cmax, and C24 were 1.03 (0.99, 1.07), 1.01 (0.95, 1.08), and 1.07 (1.03, 1.11), respectively. Coadministration of a single dose of ISL with methadone was generally well tolerated.

Conclusions: Coadministration of a single dose of islatravir did not meaningfully affect methadone PK. Study results support coadministration of these two medications.

Cure interventions

EPB230

The BAF complex inhibitor pyrimethamine induces HIV-1 transcription in ART-suppressed HIV-1-infected individuals

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Background: A central approach to eradicate the HIV-1 reservoir is the shock and kill strategy, that aims at pharmacological reactivation of latent HIV-1 transcription followed by strategies that lead to purging of infected cells in the presence of cART. Previously, we showed that inhibition of the BAF complex, a key promotor of HIV-1 latency, by the clinically approved generic drug pyrimethamine, leads to latency reversal in cells obtained from people living with HIV (PLWH).

To evaluate the efficacy of BAF complex inhibition to reactivate HIV-1 reservoirs *in vivo*, and whether the effect is potentiated when combined with the HDAC inhibitor valproic acid, we conducted a proof-of-concept randomized controlled trial: LRAs United as a Novel Anti-HIV strategy.

Methods: Twenty eight HIV-1-infected adults on suppressive cART were randomized in a 1:1:1:1 ratio to one of four arms to receive valproic acid for 14 days; or pyrimethamine for 14 days ; or both valproic acid and pyrimethamine; or no intervention. The primary endpoint was the change in HIV-1 reactivation measured as the fold change in cell-associated (CA) unspliced (US) HIV-1 RNA. Secondary endpoints included the clinical safety and tolerability of the intervention regimen and the change in inducible HIV-1 reservoir size.

Results: No serious adverse events or suspected unexpected serious adverse reactions were observed during the trial. We observed a significant fold increase in the levels of HIV-1 RNA in CD4+ T-cells isolated from individuals treated with the BAFi pyrimethamine monotherapy, but not with the HDACi valproic acid. Concurrent treatment with both pyrimethamine and valproic acid did not lead to a synergistic increase in the levels of CA US HIV-1 RNA compared to monotherapy with pyrimethamine or valproic acid. Lastly, in our study, induction of HIV-1 transcription by the BAFi pyrimethamine did not lead to a reduction in the size of the inducible reservoir.

Conclusions: Our study is the first to show that pharmacological inhibition of the BAF complex reverses HIV-1 latency in PLWH. While treatment with pyrimethamine sig-

nificantly induced HIV-1 transcription *in vivo*, combination with the HDACi valproic acid did not lead to synergistic reactivation of HIV-1, warranting exploration of other potential combinatorial approaches using pyrimethamine.

EPB231

Inhibitory, KIR/HLA-mismatched, allogeneic NK and γδ-T cells as an HIV cure strategy: proof-of-concept in 3 patients

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Background: NK and gamma/delta (γδ)-T cells are innate immune cells important in anti-HIV responses. Because antigen recognition is achieved outside of MHC-restriction in these cells, we studied inhibitory KIR/HLA-mismatched allogeneic NK and γδ-T cells as a potential adaptive cell therapy for HIV cure.

Methods:

Pre-clinical

- NK & γδ-T cells were isolated by CliniMACS from 3 HIV-seronegative volunteers, individually KIR/HLA-mismatched to 3 PWH; γδ-T cells were expanded using IL-2 & zoledronic acid.

Clinical

- IRB-approved individual-patient treatment protocol.
- Pts: 1) 41 y/o female; HIV+ 2003; pan-ART-intolerant; CD4+T cells=34/mm³; VL=1.4x10⁶cps/mL (off ART)

2) 39 y/o male; HIV+ 2002; VL<20cps/mL, ART-fatigue; CD4+ T cells=464/mm³; VL=26,000cps/mL (off ART)

3) 54 y/o male: HIV+ 1987; Long ART Hx (MDR; VL-200-1000 cps/mL); CD4+ T cells=670/mm³; VL=5025cps/mL (off ART)

Protocol: Days -5,-4,-3- fludarabine- 15mg/m²/day; Days -2,-1- IFNα- 3x10⁶IU/m²/day; Day 0- Cells infused; Days 0-4- Il-2- 6x10⁶IU/m²/day

- 25x10⁶/kg NK cells & 5x10⁶/kg γδ-T cells
- ART discontinued prior to treatment.

Results:

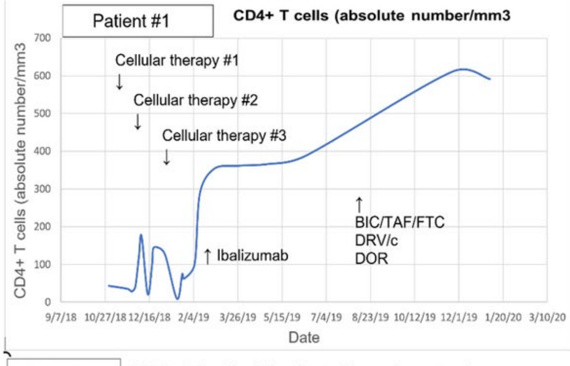
Clinical

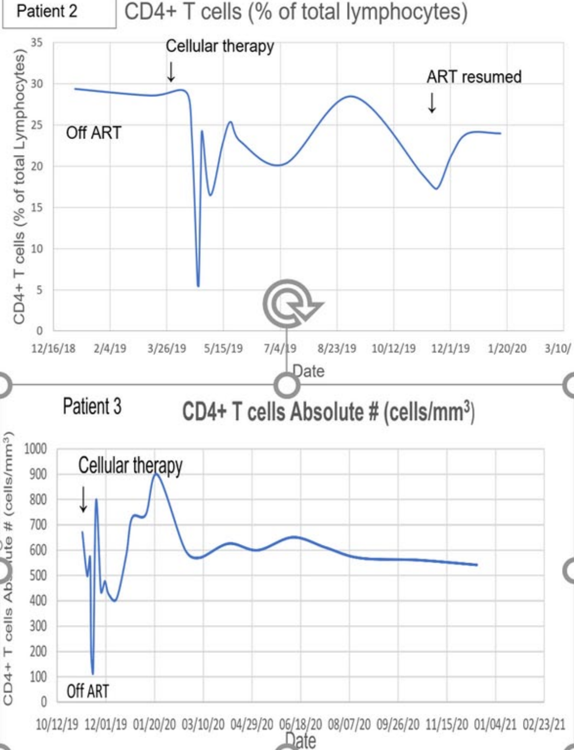
Pt 1: 3 cellular treatments (see figure). Developed IRIS-associated PJP post-treatment #2. Ibalizumab added w/ ↑ VL which suppressed <20 cps/mL on BIC/TAF/FTC +DRV/c + DOR with good tolerance.

Pt 2: VL <20 cps/mL x 16 wks, then rebounded following unprotected anal sex. ART resumed.

Pt 3: VL remained ≤ 20cps/mL x 12 mos, initiated ART to practice safe sex

All pts reported Gr 2/3 AEs typical of Il-2 treatment. All AEs resolved. No SAEs.





Conclusions: KIR/HLA-mismatched, allogeneic NK + γδ-T cell treatment is well-tolerated, suppressed HIV RNA without ART and increased CD4+ T cells. A phase 1, investigator-initiated, IND study will be submitted.

EPB232

In vitro evaluation of drug-loaded polymeric nanoparticles in the treatment of Human Immunodeficiency Virus

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Background: Human immunodeficiency virus is chronic infection known for its associated latency in the neurons and its potential for comorbidities. The use of antiretroviral therapy has significantly enhanced the quality of life of people living with HIV.

However, resistance has evolved with the use of antiretroviral therapy. Most FDA approved antiretroviral drugs do not cure the disease and no major breakthrough has been made with HIV vaccine production. The advent of nanotechnology has helped in the reformulation of exist-

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ing HIV drugs to enhance drug delivery, increase drug efficacy and minimize potential side effects. Encapsulating antiretroviral drug (Tenofovir disoproxil fumarate) in biodegradable polymer will improve the delivery of the drug to the target sites; enhance HIV treatment and reduce drug resistance.

Methods: Double emulsion solvent evaporation method was used to formulate biodegradable polymeric nanoparticles containing antiretroviral drug (TDF-PCL NPs). The formulated nanoparticles were characterized with scanning electron microscope (SEM), malvern zetasizer and fourier transform infra-red spectroscopy (FTIR).

TDF-PCL NPs was assessed *in vitro* for cytotoxicity in Vero cell lines. Viral inhibition of HIV-1 infected cells treated with polymeric nanoparticles was determined using neutralization assay.

Results: Characterization of TDF-PCL NPs showed an average particle size, PDI and ZP of 152.9±1.7 nm, 0.275, -26.9±0.3 mV respectively with an encapsulation efficiency and drug loading capacity of 84.4% and 8.3% respectively. Furthermore, FTIR reports showed successful integration of TDF in the polymer while SEM revealed that the TDF-PCL NPs have spherical morphology. The cytotoxicity assay of TDF-PCL-NPs on Vero cells showed no significant toxic effect to the cells after 24 hours of treatment.

In addition, the *in vitro* release study of TDF-PCL-NPs in PBS (pH1.5 and 7.4) showed an extended drug release of more than 48 hours when compared with the free drug. The neutralization efficacy of TDF-PCL-NPs in infected HIV cells showed an IC_{50} value of 11.44 uglmL compared to the free drug of 29.19 uglmL.

Conclusions: It is apparent that polymeric nanoparticle may be a better treatment option for HIV-1 infection as it shows less cytotoxic effects, improves the delivery of the drug to the target sites, which may as well reduce drug resistance.

Nutrition

EPB233

Impact of HIV status on nutritional outcomes in hospitalized Mozambican children

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Background: Hospitalization and HIV infection are known risk factors for worsening nutritional status in African children. The majority of the related literature has focused on specialized malnutrition wards, but little has been published about the prevalence of acute malnutrition and the impact of HIV on inpatient nutritional outcomes in other pediatric wards.

Methods: From 2020–2021, a quality improvement (QI) project focused on nurse-led nutritional screening was implemented on pediatric wards, not including neonatal or pediatric intensive care units or malnutrition wards, at two central hospitals in Mozambique. For the QI intervention, clinical and demographic data were collected after inpatient chart closure for patients selected by random sampling.

This is a preliminary, secondary analysis of the QI data for children aged 1 month-14 years with known HIV status. Anthropometric z-scores and nutritional classifications were determined using WHO standards.

Results: Of 2,217 children in the QI database, 1,608 (73%) had HIV status recorded, with 11%, 3%, and 85% HIV-positive, exposed, and negative, respectively. The prevalence of severe acute malnutrition at admission was highest in HIV-positive children (17%), followed by HIV-exposed (14%), (p< 0.001).

Overall, 24% of patients had moderate or severe acute malnutrition at admission. In patients hospitalized ≥5 days, 54% lost weight, with HIV-exposed infants most affected (74%), (p=0.049). There were no significant differences between serogroups for ≥5% body weight loss during hospitalization.

Variable	All patients	HIV-positive	HIV-exposed	HIV-negative	P-value
Median age, months (IQR)	46 (16, 96) n= 1,608	48 (18, 108) n= 183	6 (2, 9) n= 53	36 (16, 85) n= 1,372	<0.001
Weight-for-height z-score <5y, median (IQR)	-0.5 (-1.7, 0.0) n= 736	-1.4 (-2.3, -0.4) n= 68	-1.0 (-2.6, 0.6) n= 40	-0.3 (-1.6, 1.0) n= 628	<0.001
Body mass index-for-age z-score 5-14y, median (IQR)	-0.5 (-1.7, 1.0) n= 462	-1.7 (-3.1, -0.2) n= 70	0 n= 0	-0.2 (-1.3, 1.3) n= 392	<0.001
Moderate mid-upper arm circumference, n (%)	39 (4%) n= 986	9 (9%) n= 102	0 (0%) n= 25	30 (3%) n= 859	0.012
Severe mid-upper arm circumference, n (%)	58 (6%) n= 986	21 (21%) n= 102	4 (16%) n= 25	33 (4%) n= 859	<0.001
Moderate acute malnutrition, n (%)	150 (12%) n= 1,275	25 (17%) n= 143	6 (14%) n= 42	119 (11%) n= 1,090	0.064
Severe acute malnutrition, n (%)	155 (12%) n= 1,275	46 (32%) n= 143	10 (24%) n= 42	99 (9%) n= 1,090	<0.001
Admissions ≥5 days with any weight loss, n (%)	402 (54%) n= 745	57 (50%) n= 115	23 (74%) n= 31	322 (54%) n= 599	0.049
Admissions ≥5 days with ≥5% body weight loss, n (%)	199 (27%) n= 745	24 (21%) n= 115	9 (29%) n= 31	166 (28%) n= 599	0.302

Table 1. Inpatient nutritional status and outcomes by HIV status
**Italicized numbers represent denominator of patients included in the calculation of each variable.*

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Conclusions: Acute malnutrition is common in children hospitalized for reasons other than malnutrition, with higher prevalence in HIV-positive and exposed children. Weight loss during hospitalization is also common, especially among HIV-exposed infants. Enhanced nutritional care on non-malnutrition wards is needed, and introduction of admission nutritional risk-assessment tools and preventive nutritional therapy should be considered, regardless of HIV status.

EPB234

Preventing HIV positive childhood Malnutrition through mothers /caregivers' education on home-made high protein diet amongst Internally Displaced Persons (IDPs) in the conflict zone of the North West Region of Cameroon

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Background: Children living in a conflict zone are twice more likely to suffer from malnutrition than those living in a peaceful settings. This has an effect on physical and mental growth leading to about three out of every four kids experiencing stunted growth and mental retardation. The HIV positive child is already faced with nutritional challenges (breastfeeding challenges, loss of appetite, nausea and vomiting from drug side effects) and therefore the conflict situation only comes in to make a bad situation worse for the IDPs). This explains why majority of HIV positive children who are admitted in hospitals have malnutrition related conditions. Limited resources and ignorance play a great role in enhancing this situation.
This work aims at analysing the impact and mitigating the situation through education.
Description: The programmed was promoted by the by the Ministry of Public Health and local NGOs including the HIV Unit of Sama Care International. It ran for over 8 months targeting 20 households of IDPs with HIV positive children in three different locations in Bamenda, Cameroon. Semi-structured interviews were conducted with 05 selected members of staff and targeted 05 groups of 04 mothers and caregivers using audio-tapes. Touch point analysis was used to analyse information.
Lessons learned: NoBoth mother/caregivers presented similar views as to the dietary approach to managing HIV positive children. However, the 30% of mother had above secondary education presented pragmatic methods of composing high Protein diet from locally available foodstuff and fruit blends. A total of 20 different food arrangements were proposed to participants and 3 staff were designated to monitor and evaluate this implementation thereafter. 10 of these food plans are actively being used and the next planned phase is to grow them within the community and preservation methods included such as dried fruit like mango with cereal and peanut powder introduced.
Conclusions/Next steps: The impact of the study was observed in both economic and health terms. It minimised purchase of buying artificial protein diets and also health wise the children were generally healthier evidenced by less frequent admissions to hospital.

Resistance to ART

EPB235

Resistance mutations in the HIV integrase coding region among INSTI-naïve pregnant women in Argentina: a baseline survey

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Background: Argentina has reported overall moderate to high levels of drug resistance (mostly to NNRTIs) in naive HIV-infected population, including pregnant women. To date, no data exists regarding prevalence of resistance associated mutations (RAMS) in the integrase coding region in such population.
We aim to describe the prevalence of RAMS to integrase strand transfer inhibitors (INSTI) in an historical cohort of HIV-infected pregnant women, prior to INSTI use within the country, providing baseline data on this topic.
Methods: Retrospective analysis of a cohort of 89 INSTI-naïve HIV-infected pregnant women, whose pretreatment samples had been genotyped by TRUGENE (period 2008-2014) as part of a first interim survey on transmitted and acquired drug resistance. 56 samples were available for re-sequencing in the integrase coding region with Ultra Deep sequencing (UDS) using a Public Health Agency of Canada genotyping protocol on Miseq sequencer (Illumina). Bioinformatics analysis were performed by HyDRA software for a 20%, 10%, 5%, 2% and 1% UDS sensitivity threshold. INSTI-RAMS were identified according to Stanford algorithm (HIVdb version 9.0).
Results: Samples from 56 INSTI-naïve HIV-infected pregnant women were analyzed. Of them, 38 had no exposure to antiretroviral therapy (ART) and 18 had prior ART with

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non-INSTI drug classes. Predominant HIV subtype was BF (78.5%). Prevalence of INSTI-RAMS (percentage) according to UDS sensitivity threshold is shown in table 1.

UDS threshold	20%	10%	5%	2%	1%
Major mutations					
Y143C	--	--	--	1.7%	1.7%
Y143S	--	--	--	1.7%	1.7%
T66I	--	--	--	1.7%	1.7%
E138K	--	--	--	--	1.7%
E92G	--	--	--	1.7%	1.7%
Accessory mutations					
T97A	3.5%	3.5%	3.5%	3.5%	3.5%
G163R	12.5%	12.5%	12.5%	12.5%	12.5%
G163K	7.1%	7.1%	8.9%	8.9%	8.9%
Other					
V151I	5.3%	7.1%	8.9%	8.9%	10.7%
L74I	1.7%	1.7%	1.7%	1.7%	1.7%

Table 1.

Conclusions: Using 20% UDS sensitivity threshold, a high overall prevalence (23.1%) of accessory mutations in the integrase coding gene was found, mostly at expense of G163K/R RAMS, with potential impact on susceptibility to first generation INSTIs. In addition, major INSTI-mutations were detected applying 1 and 2% sensitivity thresholds.
Our study provides first evidence of RAMS in the integrase coding region in pregnant women in Argentina prior to the use of INSTIs in clinical practice. Influence of circulating subtypes and impact on virological response merit further research.

EPB236
Transmitted HIV-1 drug resistance in a RAPID ART initiation cohort Panama 2018-2020

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Background: HIV-1 drug resistance (HIVDR) testing is not routinely available for clinical management in most low and middle-income countries [1].
We conducted a pilot study for Rapid ART initiation (RAPID) in ART-naïve patients initiating ART at Santo Tomas Hospital in Panama during February 2018 –June 2020. The goal was to improve the time to ART initiation from 8 weeks to less than 7 days. As part of RAPID, baseline CD4, viral load, and genotype data were obtained.
We assessed the prevalence of transmitted drug resistance mutations (TDRM) in this cohort of patients initiating ART in Panama.
Methods: A total of 762 patients were enrolled throughout the RAPID study. We conducted genotypic testing using an in-house protocol for protease, reverse transcriptase, and integrase sequencing in all patients piloting RAPID ART. Demographic and laboratory variables were collected from the clinic database. We performed a Pearson Chi-squared test with a significance level of 5% comparing patients with no TDRM to those with a least one. TDRMs were identified according to the Stanford HIV drug resistance database.
Results: Of 762 ART-naïve patients tested for HIVDR, 146 (19.2%) had any TDRM; 112 (14.8%) had mutations that confer resistance to NNRTI, 53 (7.0%) to NRTI, 25 (3.3%) to NNRTI+NRTI, and 8 (1.1%) to PI. K103N (5.8%) and M41L (2.6%) were the most frequent mutations for NNRTI and NRTI, respectively. No INSTI mutations were identified. Comparing patients without mutations to those with at least one TDRM, we found significant differences in among sexual orientation (p=0.0085), CD4 count (p=0.025), and educational attainment (p=0.014). Within sexual orientation, we observed a higher proportion of mutations among MSM compared to the remaining population.

Feature	Total (N=762)	TDRM (n=146)	P-value
MSM	351	82 (23%)	0.0085
Non-MSM	411	64 (16%)	0.0085
CD4+ T-cell >500	229	44 (20%)	0.025
CD4+ T-cell 200-499	386	63 (16%)	0.025
CD4+ T-cell <200	146	39 (27%)	0.025

Table

Conclusions: We found a high prevalence of TDRM among patients' initiating ART in Panama. The observed mutations highlight the importance to transition away from NNRTI-based regimens to integrase-based regimens.
It is important to continue drug resistance surveillance as new drug classes are rolled out in the region.

EPB237
Factors associated with Antiretroviral therapy failure among persons living with HIV in Zambia, 2013-2020 – A retrospective cohort study

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Background: Zambia achieved high antiretroviral-therapy (ART) coverage among persons living with HIV (PLHIV), making the control of the epidemic within reach. However, unsuppressed viral load (VL) despite ART threatens Zambia's trajectory toward ending HIV. We assessed factors associated with ART treatment-failure in Zambia using national electronic health record (EHR).
Methods: A retrospective cohort study was conducted of PLHIV aged ≥15 years enrolled in the national EHR (called 'SmartCare') during 2013-2020 in Zambia. We defined treatment failure as ≥2 unsuppressed VLs ≥6 months after initiating ART and ≥6 months apart, or being switched from first- to second-line ART. We excluded participants

with unknown ART initiation dates, already on second-line ART at initiation, <2 documented VL results, and undocumented prescription lengths. Covariables included sex, age, province, rural/urban, and prescription length (categorized as <3 months, 3-5 months, and ≥6 months). We did multivariable logistic regression and Kaplan-Meier survival analysis in R.

Results: We analyzed 673,066 (55.6%) of the 1,210,156 PLHIV enrolled in SmartCare during 2013-2020. Mean age was 41 years and females comprised 65.8%. A total of 52,881 (7.86%) PHLIV failed treatment, with an incidence of 14.15/1,000 person-years. Fifty percent of those classified as failing treatment did so by 3.03 years. Compared with a prescription length of <3-months, 3-5 month and ≥6-month lengths had lower odds of treatment failure (adjusted odds ratio [aOR]: 0.49 [95% confidence interval (CI): 0.48-051]; 0.327 [95% CI: 0.27-0.29], respectively). Being male and living in an urban district were associated with higher odds of treatment failure (aOR: 1.37 [95% CI: 1.34-1.41]; aOR: 1.31, 95% CI: 1.26-1.34], respectively).

Conclusions: Longer ART prescription lengths were associated with lower treatment failure in Zambia. That PLHIV with well-controlled disease are often offered longer prescription lengths could explain lower failure among the longer prescription length groups. These findings could also be biased by the large number of excluded observations. Persons recently initiated on ART need close monitoring given that >50% failed within the first 3 years of treatment initiation. Increasing programs that target males and urban PLHIV might help improve HIV outcomes in Zambia.

EPB238

Temporal trends of pediatric HIV drug resistance and subtype in Brazil (2009-2020)

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Background: Strategies to reduce HIV mother-to-child transmission are essential but increase exposure to antiretroviral (ARV) in children born to women living with HIV. Management of resistance is challenging due to the limited number of drugs in the pediatric regimens. Hence, HIV-drug resistance (HIV-DR) remains a concern in children living with HIV (CLHIV). This study aimed to analyze HIV-DR and subtype in CLHIV from 2009 to 2020.

Methods: We analyzed temporal trends of HIV-DR and HIV-subtype between January 2009 - December 2020 using data from Ministry of Health of Brazil.

All CLHIV aged≤18 months with available genotyping tests were included. We used the Stanford HIVdb Program to assess HIV-DR and Rega HIV-Subtyping. HIV stage was categorized according to age-specific CD4⁺ counts.

Results: We included 1,191 CLHIV. Median age was 5 months (IQR 3-9). Most were girls (57.5%) and black/mixed race/skin-color (52.1%). Among those with available CD4⁺counts (n=747), 19.3% were in stage-1, 69.9% in stage-2, 10.8% in stage-3; Social Vulnerability Index was low for 54.1%, medium for 33.1%, and high for 12.8%[2].

Overall, 70% of the genotyping tests were fully susceptible; 19.4% had resistance to non-nucleoside reverse transcriptase inhibitors (NNRTI), 24.6% were resistant to at least one ARV from the pediatric regimen (nevirapine, abacavir, zidovudine, lamivudine, lopinavir). HIV-DR was higher in the 2015-2017 period, with NNRTI resistance increasing particularly after 2017. Subtype-B was the most prevalent. Resistance to integrase inhibitors was tested in 22 CLHIV, only one out of 7 tested in 2020 had mutations (Figure 1).

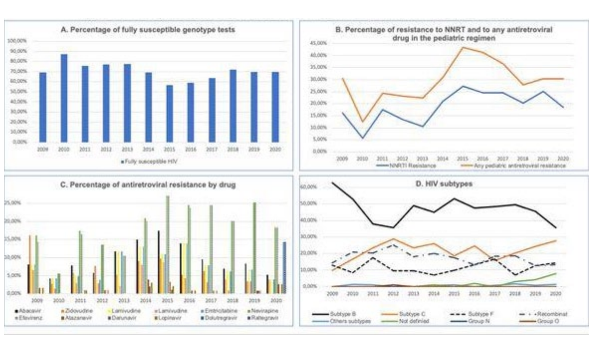

Figure 1. HIV drug resistance in children ≤18 months old living with HIV in Brazil, 2009-2020

Conclusions: The high prevalence of HIV-DR in this age group, especially to NNRTI, is concerning. Restrictions of integrase inhibitors to pregnant and women planning to conceive, along with the use of NNRTI for pediatric post-exposure prophylaxis may have contributed to those findings. Surveillance of HIV-DR in CLHIV is essential to guide treatment recommendations and to identify the impact of health policies.

EPB239

Resistance analysis of long-acting lenacapavir in treatment-naïve people with HIV at 54 weeks

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Background: Lenacapavir (LEN) is a first-in-class HIV-1 capsid (CA) inhibitor in clinical development for treatment and prevention of HIV-1 infection. CALIBRATE is an ongoing, open-label, phase 2 study evaluating subcutaneous (SC) and oral LEN, in combination with other antiretroviral agents, in treatment-naïve people with HIV-1. High rates of virologic suppression (87%) were achieved with

LEN-based regimens by FDA Snapshot analysis at Week 54 (WK54). Here we present interim resistance analyses through WK54.

Methods: Participants were randomized (2:2:2:1) to 1 of 4 treatment groups (TG). TG1 and TG2 both received SC LEN + oral daily (QD) emtricitabine/tenofovir alafenamide (F/TAF) for 28 weeks, after which virologically-suppressed participants continued a 2-drug regimen: SC LEN with oral QD TAF (TG1, n=52) or bictegravir (B, BIC) (TG2, n=53). TG3 (n=52) received oral QD LEN + F/TAF and TG4 (n=25) received oral QD B/F/TAF throughout.

Genotypic and phenotypic analyses of HIV-1 CA, protease, reverse transcriptase, and integrase were performed at confirmed virologic failure (HIV-1 RNA ≥50 copies/mL and <1 $\log_{10}$ reduction at WK10, or confirmed virologic rebound ≥50 copies/mL or >1 $\log_{10}$ increase from nadir at any visit).

Results: Through WK54, 6 of 182 participants met the criteria for resistance analysis, including 4 participants with no emerging resistance who resuppressed to HIV-1 RNA <50 copies/mL while continuing treatment.

One TG1 participant receiving SC LEN + F/TAF developed emergent resistance to LEN (Q67H+K70R in CA; LEN phenotypic fold change [FC]=20) and emtricitabine (M184M/I; FC >58) by WK10. One TG3 participant receiving oral LEN + F/TAF developed resistance to LEN (Q67H; FC=7) at WK54, with no emergent resistance to F/TAF components.

Conclusions: Emergent resistance to LEN was infrequent in treatment-naïve participants receiving SC or oral LEN (1.3%, 2/157) through one year of treatment, including when part of a multi-tablet regimen, consistent with the high rate of treatment success observed in the study. Resistance emergence was similar after 28 weeks (0.6%, previously reported) and 54 weeks of treatment.

These findings support the ongoing evaluation of LEN in combination and/or coformulation with other antiretrovirals for treatment and prevention of HIV.

EPB240

Resistance analysis of long-acting Lenacapavir in highly treatment-experienced people with HIV after 52 weeks of treatment

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Background: Lenacapavir (LEN) is a first-in-class HIV-1 capsid (CA) inhibitor in clinical development for the treatment and prevention of HIV-1 infection. CAPELLA is a phase 2/3 study evaluating subcutaneous LEN in combination with other antiretrovirals in people with HIV (PWH) currently on a failing regimen with multidrug resistance. Resistance to ≥2 agents in ≥3 of the 4 main antiretroviral classes was required for enrollment. LEN in combination with an optimized background regimen (OBR) led to 83% virologic suppression at Week 52. Interim resistance analyses through Week 52 are described.

Methods: Genotypic and phenotypic analyses of HIV-1 CA, RT, protease and integrase (Monogram) were performed at virologic failure (VF: confirmed virologic rebound ≥50 copies/mL or <1 $\log_{10}$ decline from baseline at Week 4).

Results: This interim Week 52 analysis includes all 72 participants enrolled in the study, 45 of whom had data through Week 52. 21 of 72 participants met the VF criteria for resistance analysis, including 8 participants who re-suppressed HIV-1 RNA (<50 copies/mL) and were excluded from the resistance analysis population (RAP).

Of the 12 of 13 participants with data in the RAP, 8 (8/72, 11%) developed LEN-associated resistance mutations in CA: 6 participants developed the LEN-associated CA mutation M66I alone or with other substitutions (median LEN fold-change: 234), 1 participant developed the novel K70H mutation (LEN fold-change: 265), and 1 participant had emergence of Q67H + K70R mutations (LEN fold-change: 15).

All 8 participants with CA-resistance emergence either had poor and inconsistent adherence to the OBR (n = 4; drug levels measured in plasma) or did not have any fully active agents in the OBR (n = 4) at the time of resistance emergence (i.e. functional monotherapy with LEN). No emergent resistance to agents from the OBR was observed in the RAP.

Conclusions: Emergence of LEN-associated capsid mutations occurred in the setting of functional LEN monotherapy, reinforcing the general principle that treating people with limited options should include more than 1 fully active agent whenever possible and that adherence to OBR is key to controlling HIV-1. These data indicate that LEN is a promising option for HTE PWH.

EPB241

Minimal acquired resistance to dolutegravir and bictegravir in patients failing third-line ART in South Africa

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Background: Raltegravir has been available as third-line antiretroviral treatment (TLART) in the South African public sector since 2013, with a gradual introduction of dolutegravir since 2014 and active requests to switch raltegravir to dolutegravir from 2018. In 2019, dolutegravir was introduced in first-line treatment. We assessed resistance profiles in patients failing integrase strand transfer inhibitors (INSTI)-based treatment.

Methods: Sequence data were obtained from patients with an INSTI resistance test request between January 2019 and June 2021 at the Charlotte Maxeke Johannesburg Academic Hospital laboratory. Sanger sequences were generated and submitted to Stanford HIVdb v9.0 for drug susceptibility predictions, with resistance defined as a score ≥15.

Results: Sequences were available for 43 unique patients failing TLART of which 68% were female (median age 41 years; IQR 28-48). The median viral load was 4.2 log copies/mL (IQR: 3.5-5.0). Eighteen patients were exposed to dolutegravir and 16 to raltegravir; three patients had prior exposure to INSTIs but not at the time of testing; and six patients had unknown treatment regimens.

INSTI-exposure duration was available for 25 patients (median 31 months; IQR: 21-49). Any INSTI resistance was less frequently detected in patients failing dolutegravir (3/18) versus raltegravir-based treatment (11/16, p=0.0045). In the raltegravir-exposed group, resistance to raltegravir and cabotegravir was commonly detected (n=11), whereas only six had cross-resistance to dolutegravir and bictegravir.

One patient in the dolutegravir group had high-level resistance to dolutegravir. No resistance was detected in three patients without current INSTI exposure, and one patient with unknown treatment history had INSTI resistance.

Conclusions: Given the low genetic barrier to raltegravir, a high prevalence of resistance is not unexpected in this group. However, cross-resistance to dolutegravir and bictegravir remained limited, confirming the need to replace raltegravir with dolutegravir.

Although only one dolutegravir-exposed patient presented with resistance to dolutegravir and bictegravir, three patients presented with resistance to raltegravir and cabotegravir. Despite the roll-out of dolutegravir as first-line treatment, no data from this group was available due to restricted resistance testing guidelines.

It is uncertain if similar resistance patterns will be observed in first-line dolutegravir failures, making resistance surveillance in this group essential.

EPB242

HIV genotypic drug resistance testing outcomes using Dry Blood Spot samples from patients failing second-line antiretroviral therapy and attending routine care in 3 rural districts of Zimbabwe

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Background: SolidarMed (SM), is an organization specializing in health system strengthening and assists the Ministry of Health of Zimbabwe in three rural districts. Within its larger program, SM supported HIV drug resistance testing (HIVDR) using DBS for patients requiring a switch to third-line antiretroviral (ART) regimen in routine practice, who would otherwise be unable to access such services due to logistical implications of fresh sample transport.

Methods: A cross-sectional descriptive study was done. DBS samples for HIVDR testing were collected from patients with virologic failure confirmed after 2 consecutive viral loads >1000 copies/ml and three enhanced adherence counseling sessions according to national guidelines. Viral loads were measured on plasma at Masvingo provincial hospital using Roche/Hologic panther platforms. DBS samples were collected by trained nurses at rural clinics, sent to SM offices within two weeks, and immediately shipped to a South African laboratory via courier services at ambient temperatures. Genetic resistance test (GRT) profiles were determined on proviral DNA from DBS samples using Sanger sequencing and results were communicated via secure email and relayed to clinics for further management. Proportions, medians, and interquartile ranges were used to describe the findings.

Results: 136 valid DBS samples went for testing and GRT was successful on 55% (75/136), from patients of a median age of 36 years (15-42) with 55% being women (n=39). Of these, 33(44%) were on a protease inhibitor (PI)-based second-line treatment regimen. PI drug Resistance associated mutations (RAMs) were found in 17 (52%) including atazanavir/ritonavir (52%), lopinavir/ritonavir (52%), and darunavir (24%) requiring regimen change. The median turnaround time, from blood collection to return of results, was 3.5 months (2.5 – 4).

Conclusions: HIVDR testing using DBS – despite a low sample success rate – was practical in this rural setting. Overall, a high proportion(52%) of the samples confirmed resistance to 2nd line treatment, underlining the validity of the national guidelines to identify treatment failure, and the importance of the availability of resistance testing in this setting to initiate 3rd line treatment.

The study also identified important challenges including sample transportation resulting in long turnaround time and delay in treatment switch showing the need for in-country HIVDR testing.

EPB243

Frequency of virologic factors possibly associated with CAB/RPV LAI failure

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Background: The long-acting injectable (LAI) cabotegravir (CAB) and rilpivirine (RPV) offers important advantages over oral ART. However, recent data shows that subtype A1/A6 and RPV/CAB resistance-associated mutations (RAMs) are related to CAB/RPV LAI failure. We aimed to describe the prevalence of these factors among naïve and treatment-experienced patients.

Methods: The study included 4,273 Caucasian patients (3,633 naïve, 640 non-naïve), treated in Polish centers in 1996-2021, from whom HIV-1 protease (PR) and reverse transcriptase (RT) sequences were obtained. Additionally, for 1,207 of this dataset (935 naïve, 272 non-naïve) integrase (INT) sequences were also analysed. The HIV-1 subtype was determined by phylogenetic analysis of PR/RT sequences.

Results: For PR/RT sequences at least one CAB/RPV LAI failure-related factor was observed in 16.27% naïve and 19.53% non-naïve patients, while combination of at least two factors (RPV RAM(s) or A1/A6 subtype) was observed in <1% sequences (Table 1).

Parameter	Naïve	Non-naïve
None of the two factors	3042/3633 (83.73%)	515/640 (80.47%)
Any factor:	591/3633(16.27%)	125/640 (19.53%)
RPV RAM(s) non A1/A6	197/3633 (5.42%)	84/640 (13.12%)
A1/A6 non RPV RAM(s)	375/3633 (10.32%)	38/640 (5.94%)
RPV RAM(s) A1/A6	19/3633 (0.53%)	3/640 (0.47%)

Table 1.

Parameter	Naïve	Non-naïve
None of the three factors	734/935 (78.50%)	183/272 (67.28%)
Any one of the three following factors:	201/935 (21.50%)	89/272 (32.72%)
RPV RAM(s) non A1/A6 non CAB RAM(s)	48/935 (5.13%)	30/272 (11.03%)
A1/A6 non RPV RAM(s) non CAB RAM(s)	135/935 (14.44%)	19/272 (6.99%)
CAB RAM(s) non A1/A6 non RPV RAM(s)	7/935 (0.75%)	28/272 (10.29%)
Any two of the three following factors:	11/935 (1.18%)	11/272 (4.04%)
RPV RAM(s) A1/A6	9/935 (0.96%)	0/272 (0%)
CAB RAM(s) A1/A6	1/935 (0.11%)	1/272 (0.37%)
RPV RAM(s) CAB RAM(s)	1/935 (0.11%)	10/272 (3.67%)
All three factors	0/935 (0%)	1/272 (0.37%)

Table 2.

For cases with INT/PR/RT data available 21.50% naïve and 32.72% non-naïve sequences had at least one factor associated with CAB/RPV failure with the combination of factors noted in 1.18% and 4.04% treatment naïve and experienced patients, respectively (Table 2).

The most common mutation associated with RPV resistance was E138A/G/K/Q (5.42% vs 6.41%, respectively). The most common mutation associated with CAB resistance among naïve sequences was R263K (0.64%), and N155H (7.35%) in non-naïve.

Conclusions: Despite common presence of factors associated with CAB/RPV failure they rarely occurred in combination. Defining subtype and screening for INSTI and NNRTI mutations should be performed prior to LAI treatment implementation.

EPB244

Drug resistance in children with HIV in the Democratic Republic of Congo, Equatorial Guinea and Panama

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Background: An inadequate HIV viraemia and resistance monitoring in resource-limited countries leads to uncontrolled circulation of HIV strains with drug resistance mutations (DRM), compromising antiretroviral therapy (ART) success. We described the DRM prevalence and its therapeutic impact in HIV-infected paediatric patients from the Democratic Republic of Congo (DRC), Equatorial Guinea (EQ) and Panama (PA).

Methods: Dried blood (DBS) or plasma samples were collected from 198 children/adolescents under ART, in Kinshasa, DRC (n=71, 2016-2018), Bata, EQ (n=56, 2019-2020), and PA (n=71, 2018-2019), with clinical suspicion of therapeutic failure. HIV-1 infection was confirmed in Madrid by confirmatory serological/molecular tests. After viral load (VL) quantification, pol coding region (PR, RT, IN) was sequenced, analyzing HIV-1 DRM and predicting ARV-susceptibility (Stanfordv9.0).

Results: Despite ART use, 86%/88%/100% (DRC/EQ/PA) children showed virological failure (VL>1000c/ml in DRC/EQ, >50c/ml in PA) at sampling. HIV pol sequences were recovered in at least one region in 160 (81%) children (55 DRC/43 EQ/62 PA), with 14-10-12 years median age. All children with pol sequence and available data had received nucleos(t)ide analogs (NRTI), 100%/100%/45% non-NRTI (NNRTI), 9%/16%/95% protease inhibitors (PI) and only 14 patients (1 DRC/2 EQ/11 PA) integrase inhibitors (INI).

We identified more children harboring viruses with major-DRM to at least one drug family in DRC (67%) than in EQ (63%) or PA (55%), carrying major-DRM to one (13%/16%/40%), two (47%/42%/10%), or three (6%/5%/5%) ARV families. Most of the patients were susceptible to INI and PI. M184V (45%/50%/54%) and K103N (43%/35%/32%) predominated as DRM in RT.

Considering ARV families, most had DRM to NNRTI (74%/68%/39%) or NRTI (61%/55%/59%), major-DRM to PI (8%/3%/5%), minor-DRM to INI (15%/3%/8%), and major-DRM to INI (0%/0%/6%). NRTI+NNRTI resistance happened in 45%/52%/12%. Among the HIV-infected children under ART failure, 33%/37%/45% did not have DRM, suggesting lack of adherence to ART.

Conclusions: We provide the first comparison on acquired resistance in HIV-infected treated children in DRC, EQ and PA. The lack of viraemia control after ART and the high rate of DRM could compromise the HIV control in the three countries. Periodic VL and resistance monitoring is urgent to reduce the spread of resistant variants.

EPB245

High drug resistance levels compromise the control of HIV infection in paediatric and adult populations in Bata, Equatorial Guinea

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Background: The lack of HIV viral load (VL) and resistance monitoring in sub-Saharan Africa leads to uncontrolled circulation of HIV-strains with drug resistance mutations (DRM) and compromises antiretroviral therapy (ART). This study describes, for the first time, the DRM-prevalence and its therapeutic impact in HIV-infected children and adults in Equatorial Guinea (EQ).

Methods: From 2019-2021, dried blood was collected in EQ from 178 adults (114 treated/64 naive) and 56 treated children with clinical suspicion of therapeutic failure. The HIV-1 infection was confirmed in Madrid by serological/molecular confirmatory tests.

After VL quantification, HIV-1 *pol* region was sequenced, identifying transmitted (TDR, naïve, WHO-TDR-list2009) or acquired (treated) DRM resistance and the predicted ARV-susceptibility (Stanfordv9.0).

Results: Despite ART use, 87.5%/61% of 170 treated-children/adults showed virological failure (VL>1000c/ml) at sampling. *Pol* sequences were recovered from 134 (75%) of 178 patients: 91 adults (33 treated/58 naïve) and 43 treated-children. ART information was available in 64 of 76 treated subjects, all with nucleoside (NRTI) and non-NRTI (NNRTI) retrotranscriptase inhibitors experience, 20% to protease inhibitors (IP) and 11% to integrase inhibitors (INI). They had received one (28%/39%), two (38%/28%), three (19%/21%) or four (14%/9%) different ART-regimens.

Among the 76 treated adults/children with available PR, RT or IN sequence, 64%/63% carried viruses with major-DRM, affecting one (39% /16%) or two (18%42%) ARV-families. Triple resistance appeared only in children (3%). Most harboured DRM to NNRTI (66%/68%) and NRTI (41%55%), mainly affecting nevirapine, efavirenz, emtricitabine and lamivudine. Minor-DRM to INI appeared in adults/children (19%/3%). Major-DRM to PI only in children (3%). NRTI+NNRTI resistance in 33%/52%.

Most participants were susceptible to INI and PI. 15% of treated patients with VL>1000c/ml did not carry DRM, suggesting adherence failure. TDR prevalence in 58 naïve-adults was 6.8%.

Conclusions: We provide the first pediatric resistance data in EQ, updating DRM in adults. The observed high rate of ART-failure and DRM could compromise the 95-95-95-UNAIDS targets in EQ.

Routine VL and resistance monitoring implementation is urgently required for early detection of ART-failures and optimal rescue therapy election in those carrying resistant viruses in EQ. ART regimens based on PI and INI instead of RTI can improve HIV control in that country.

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EPB246

High-level of cross-resistance to 2nd generation non-nucleoside reverse transcriptase inhibitors among patients failing antiretroviral therapy in Cameroon: implications for future ART-regimens in Africa

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Background: Etravirine (ETR), rilpivirine (RPV) and doravirine (DOR) are second generation (2Gen) non-nucleoside reverse transcriptase inhibitors (NNRTI) approved for the treatment of HIV-1 infection. In Africa, there are limited data on the resistance profile of 2Gen-NNRTI.

This study aimed to evaluate 2Gen-NNRTI resistance and their susceptibility in patients failing antiretroviral treatment (ART) in Cameroon.

Methods: A cross-sectional study was conducted from 2019-2020 among 340 patients failing ART, received at the Chantal Biya International Reference Centre, Yaoundé-Cameroon. Treatment history and immuno-virological data were obtained from patients' files.

Genotypic resistance testing was interpreted using Stanford HIVdb v8.7. The following variants were considered as resistance mutations to 2Gen-NNRTI: Y181CIV, Y188LC, V106AMI, M230L, K101EP, L234I, G190ASEQ, L100I.

The penalty scores of drug resistance were ≥60 (high-resistance); 30–59 (intermediate-resistance); <30 (susceptible). Acceptable threshold for potential drug-efficacy was set at >50% at population-level.

Results: A total of 340 patients were enrolled, of which 230 were failing first-line (1Gen-NNRTI based) and 110 second-line (protease-inhibitors) regimens. Median [IQR] CD4 and viremia were respectively 184 [60–332] cells/µl and 82,374 [21,817–289,907] copies/ml; ART-duration was 18 [10–27] months.

Overall rate of resistance to 2Gen-NNRTI was 79.70% [71.30–87.02], similar between first- vs second-lines. Prevailing mutations were: Y181C (23.52%), G190A (17.64%) and P225H (13.53%). Drug susceptibility rate was 52.05% (ETR); 43.23% (RPV), 36.17% (DOR).

Following susceptibility profile, patients failing on EFV-based regimens were more susceptible to 2Gen-NNRTI (OR=0.42; 95%CI:[0.24–0.74]; p=0.003), while those failing after receiving EFV and NVP were less susceptible to 2Gen-NNRTI (OR=4.4; 95%CI:[1.16–14.81]; p=0.02). Low viremia (≤4$\log_{10}$)was associated with susceptibility to 2Gen-NNRTI (OR=0.22; 95%CI:[0.12–0.41]; p<0.0001). CRF02_AG was the prevailing subtype (58.53%), followed by A1 (11.47%), G (7.35%); without any significant effect on 2Gen-NNRTI susceptibility (CRF02_AG vs non-AG; p=0.8).

Conclusions: After ART-failure in Cameroon, there is a high-level of cross-resistance to 2Gen-NNRTI. However, etravirine retains residual efficacy in half of the population. Thus, after ART-failure in African patients, the use of etravirine as 2Gen-NNRTI is possible, pending genotypic profiling.

EPB247

Evaluation of HIV drug resistance in virally suppressed patients in Cameroon

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Background: Viral suppression (Viral load < 1000copies/ml) is considered a therapeutic success in resource limited settings. However, several studies have shown the presence of resistance mutations at residual viral loads, which could compromise long-term therapeutic response.

We sought to assess the effectiveness of sequencing and determine the HIV drug resistance genotypic profile in virally suppressed patients (VSP) in Cameroon.

Methods: A cross-sectional and analytical study was conducted at the Chantal BIYA International Reference Centre from January 2020 to August 2021 among VSP. Sequencing was performed in the reverse-transcriptase and protease regions.

Sequences were analysed using the Stanford HIVDBv9.0 algorithm, and molecular phylogeny done using MEGAX. Sequencing success rate and occurrence of drug resistance mutations were assessed by viremia, with P<0.05 considered statistically significant.

Results: In total, 132 participants were retained; median age [IQR]: 43[33-51] years; 69% female. The median duration on antiretroviral therapy (ART) was 19 [12-34.4] months. The amplification rate was 39 (CI95%, 21.93-38.11) %, and the sequencing success rate 28.8% (38/132), thus 97.4% of amplicons.

Genotyping was more effective for patients with viremia ≥ 200 copies/ml, 47.2% (25/53) versus 16.5% (13/79) for viremia ≤ 200 copies/ml, p<0.001. Of the 38 sequences generated, the overall resistance rate was 89.74%, with 79.9% NRTI resistance, 79.4% NNRTI resistance and 15.3% PI/r resistance. This resistance rate was higher in patients with viremia ≥ 200 copies/ml, 32.0% versus viremia ≤ 200 copies/ml (7.7%),

OR 5.65; p=0.13. Seven viral clades were identified with predominance of CRF02_AG (64%). M184V (74.3%) and K103N (45.7%) were the most frequent mutations in reverse transcriptase and M46I 14.2% in protease.
The viral susceptibility profile revealed 41.1% (14/38) of participants on suboptimal therapies despite virological suppression.
Conclusions: In the Cameroonian context with broad HIV genetic diversity, sequencing appears to be effective in half of the virally suppressed patients with a viremia of at least 200 copies/ml.
Moreover, the emergence of major resistance mutations in these patients would be more considerable with a viral load ≥ 200 copies/ml. In these virally suppressed patients, nearly 4 out of 10 would need to optimise their therapy for long-term therapeutic success.

EPB248
High levels of non-nucleoside reverse transcriptase inhibitor (NNRTI) pre-treatment HIV drug resistance (PDR) in Zambia: results from the national survey

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Background: HIV drug resistance (HIVDR) negatively impacts the effectiveness of antiretroviral drugs leading to new HIV infections, increased HIV-related mortality, and antiretroviral therapy (ART) programme costs thereby reducing the gains obtained towards HIV epidemic control. The World Health Organization recommends that HIV treatment scale-up should include surveillance of HIVDR. We thus assessed the prevalence of HIVDR among HIV-positive Zambian adults initiating ART.
Methods: We conducted a country-wide cross-sectional survey among newly diagnosed pre-treatment HIV-1 positive individuals. Lack of prior ARV exposure data was not confirmed with ARV metabolites. Probability proportional to proxy size sampling method was used to select the clinics proportional to the total number of patients on ART in each clinic. Pretreatment drug resistance (PDR) testing was performed for adults newly diagnosed with HIV-1 using in-house sequencing assays in the *pol* gene and sequenced on an ABI 3130XL analyzer. HIVDR prediction was done using the Stanford University HIVdb tool. Weighted statistical analysis was performed using STATA 15.1 (StataCorp, College Station, TX, USA) following the WHO recommendations and the weighting considered the number of samples successfully sequenced.
Results: A total of 35 ART sites were selected and 208 ART initiators were enrolled in the survey. Majority (57.8%) of participants were female (95% CI: 47.8-67.2%) and 76.9% (95% CI: 69.2-83.2%) were >25 years old. HIV-1 subtype C was most frequently observed (98.8%, 95% CI: 94.4-99.8%). Adult PDR to non-nucleoside reverse transcriptase Inhibitors (NNRTIs) Efavirenz (EFV) or Nevirapine (NVP) was 16.2% (95% CI: 10.2-24.8) while adult PDR to nucleoside reverse transcriptase inhibitors (NRTIs) was 8.3% (95% CI: 3.8-16.9). No PDR to protease inhibitors (PIs) or integrase strand transfer inhibitors (INSTIs) were found. No significant difference was observed on the level of PDR to EFV or NVP between male and female (OR: 1.24, 95%CI: 0.34-4.48, p=0.737).
Conclusions: High rates of pretreatment HIVDR to EFV or NVP at 16.2% was observed in Zambia. This is above the 10% recommendation by WHO for the transitioning of ARVs from NNRTI. We recommend ARV transitioning away from NNRTI-based regimens coupled with periodic HIVDR surveillance for newer INSTIs.

EPB249
Combined effects of the K156N integrase polymorphism and 3'PPT resistance mutations against integrase inhibitors

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Background: Most antiretroviral drug regimens recommended for treatment initiation are anchored with dolutegravir or bictegravir. These two integrase strand transfer inhibitors are safe and effective, and they have a high barrier against the development of drug resistance mutations in integrase. It is suspected that resistance against dolutegravir and bictegravir may occur outside the integrase coding sequence. We were first to show this to be the case in a patient treated with dolutegravir monotherapy.
Here we further explored this alternative resistance pathway and characterized K156N, a natural integrase polymorphism found *in vivo* in combination with 3'PPT resistance mutations.
Methods: We created recombinant pNL4.3 proviral clones with the K156N natural polymorphism and clinically relevant 3'PPT mutations alone and in combination.

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We produced the corresponding viruses and characterized their infectivity, replicative capacity, and drug susceptibility. We used structural modeling to understand the effects of K156N.

Results: By itself, K156N was innocuous to HIV-1 infectivity and replicative capacity. It did not confer significant levels of resistance against integrase inhibitors. The 3'PPT mutations reduced viral infectivity and replication and conferred low levels of resistance against integrase inhibitors. Viruses that combine K156N with 3'PPT mutations had improved infectivity and replicative capacity but displayed only minor changes in resistance. K156N induced structural changes in integrase that altered its binding to HIV DNA. Specifically, DNA binding was shifted by one nucleotide, potentially allowing higher mobility of HIV DNA ends within the catalytic site.

Conclusions: K156N is a new natural polymorphism of interest that can be found in association with 3'PPT resistance mutations against integrase inhibitors. The structural changes imparted by K156N to integrase structure may facilitate the development of resistance. Further investigation is needed to evaluate the clinical significance of our work.

EPB250

Profiling integrase mutations after raltegravir salvage therapy failure in Brazil

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Background: Due to the widespread, long-term use of antiretrovirals in Brazil, many patients were exposed to sequential monotherapy and unboosted Protease Inhibitors (PIs). Until January 2017, the only Integrase Strand Transfer Inhibitor (INSTI) available in Brazil was Raltegravir, which was reserved for salvage therapy when resistance to PIs was detected.

Methods: We analyzed the mutational profile of genetic fragments of HIV-1 reverse transcriptase, protease, and integrase from 701 patients with virological failure to raltegravir and current or previous virological failure to nucleoside reverse transcriptase inhibitors (NRTIs), non-nucleoside reverse transcriptase inhibitors NNRTIs, and PIs from January 2017 to December 2018 in Brazil. Statistical analyzes were performed using the R program.

Results: All individuals were using boosted PIs and NRTIs. Some patients were also using etravirine, and/or maraviroc and/or enfuvirtide. From 701 patients, 182 (26%) resistance-associated mutations (RAMs) to INSTI, 145 (20.7%) to PIs, 339 (48.4%) to NRTIs, and 327 (46.7%) to NNRTIs. In general, 148HR pathway was found in 45 (24,72%), N155HS in 40 (21,97%), and Y143CHR in 33 (18,13%). As a proxy of early virologic failure, we analyzed the prevalence of mutations among individuals harboring only one INST RAM. We found the N155H/S pathway in 22 (12,08%) followed by Y143R/C in 7 (3,84%) (no 148 pathway detected). Among individuals with more than 1 INSTI RAM, we detected 148 pathway in 45 (24,72%), followed by 155 in 18 (9,89%), and 143 in 26 (14,28%). The longer the time of exposure to salvage therapy schemes containing raltegravir, the higher the prevalence of the 148 pathway. Viral load was lower among patients harboring wild-type INSTI strains than 1 and 2 INSTI RAMs ($p=0.023$ and $p=0.020$, respectively). There was a positive relationship between the number of previous use of cART and the number of INSTI RAM ($p = 0.0007$). There was a distinct RAM profile according to the HIV-1 clade (Table). Strains predicted as R5 present more 155 RAM ($p=0.003$), whereas non-CCR5 users present more 148 RAMs ($p=0.0002$).

Conclusions: Here, the prevalence of INSTI RAMs was low, revealing either a relatively higher genetic barrier to resistance or low adherence.

EPB251

Virological failure and acquired drug resistance among ART-experienced people living with HIV in Nepal: a nationally representative surveillance study

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Background: The implementation of test and treat—antiretroviral treatment (ART) irrespective of CD4 count— has significantly improved the number of people living with HIV on ART also in Nepal, where ART coverage improved from 22% in 2013 to 72% in 2021.The coverage of viral load testing is low in Nepal. In limited resource health systems, such as the Nepalese, the emergence of drug-resistant HIV is a potential public health threat, undermining long-term effectiveness of first-line ART regimens.

This is the first nationally representative study to estimate population viral load suppression and acquired HIV drug resistance (ADR) among people living with HIV in Nepal.

Methods: In this cross-sectional study, 1418 patients (N=713 males, 701 females, 4 transgender) from 20 ART centres in Nepal were recruited using two-stage cluster design, probability proportional to proxy size sampling from May to August 2019. Eligible participants were HIV -positive individuals on ART for 9-15 months or at least 48

months. Plasma specimens were collected and tested for HIV-1 RNA level and presence of drug resistance mutations when viral load (VL) ≥1000 copies/ml. HIV-1 genotypes have been uploaded to GenBank (MZ538450-MZ538499).
The outcome variables were the prevalence of viral load suppression (VL<1000 copies/mL) and detectable HIV drug resistance in samples with VL≥1000 copies/mL). The Stanford HIV database algorithm was used to classify drug resistance and sequences classified as low-, intermediate- or high-level resistance were aggregated as any HIV drug resistance.
Results: The prevalence of viral load suppression among those on ART 9-15 months was 95.91% (95% CI: 92.29–97.88), and 97.48% (95% CI: 95.49–98.60) on ART at least 48 months group. The prevalence of acquired HIV drug resistance with viral load ≥1000 copies/ml was 75.33% (49.79–90.39) among those on ART for 9-15 months and 89.94% (63.09–97.90) among those on ART for at least 48 months group.
Conclusions: This study suggest that improved accessibility to viral load monitoring and timely assessment of drug resistance in routine HIV programme is very important in Nepal to ascertain HIV treatment access for all in need.

EPB252

Impact of Dolutegravir (DTG) on viral load suppression and HIV Drug Resistance (HIVDR) among Zambian children on ART: Results from the pediatric Acquired HIVDR (pADR) national survey

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Background: Children living with HIV (CLHIV) continue to lag behind in access to more potent and better ARV regimens leading to sub-optimal viral load suppression (VLS) and consequent HIV drug resistance (HIVDR). There has, however, been limited monitoring of HIVDR in this population, especially in the sub-saharan region. We thus assessed VLS and HIVDR among HIV-1 positive Zambian CLHIV on ART for 12 and 36 months.
Methods: We conducted nationally representative HIV Acquired Drug Resistance (ADR) cross-sectional surveys among CLHIV (<15 years old) on ART for 12 ±3 months (ADR12) and 36 ±3 months (ADR36).Systematic sampling of clinics was performed to generate probability proportional to proxy size samples. We defined VLS as HIV-1 RNA <1,000 copies/mL. HIVDR was assessed for reverse transcriptase, protease and integrase Sanger sequences using theStanford University HIVdb algorithm.Proportions for each outcome at linearized standard error 95% confidence interval (CI) and summary estimates were determined. Results were weighted according to the study design.
Results: We enrolled 333 CLHIV in the ADR12. Majority (52%), were female and overall VLS was 69.4% (95% CI: 59.8–77.5%). Among children with VL ≥1000 copies/mL, HIVDR to non-nucleoside reverse transcriptase inhibitors (NNRTIs) was 71.0% (95% CI: 56.4–82.3%) and 66.7% (95% CI: 55.3–76.4%) to NRTIs. HIVDR to NNRTIs was 88.6% (95% CI: 67.2–96.7%) among children on NNRTIs and with VL ≥1000 copies/mL versus 3.2% (95% CI: 0.5–17.9%) for those on protease inhibitors (PIs).
We further enrolled 828 children in the ADR36 with 45.1% being female. Similarly, VLS was 68.3%, (95% CI:59.1–76.3%) but VLS was significantly higher among those on a dolutegravir (DTG)-based regimen (OR: 6.91, 95% CI: 2.48–19.29, p=0.001). Among those with VL ≥1000 copies/mL, prevalence of HIVDR to NNRTI was 81.4% (95% CI: 75.3–86.3%), 74.7% (95% CI: 67.7–80.7%) to NRTIs, 3.1% (95% CI: 1.5–6.1%) to PIs and no HIVDR to integrase strand transfer inhibitors (INSTIs).
Conclusions: To improve VLS and overall outcomes in CLHIV on ART, there is an urgent need to accelerate the transition to DTG-based ARV regimens. Programmatic gaps in the treatment cascade including routine HIVDR monitoring need to be strengthened.

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EPB253

High levels of Acquired HIV Drug Resistance (ADR) among HIV positive Zambian adults with HIV treatment failure: results from the national ADR survey

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Background: HIV drug resistance (HIVDR) testing following treatment failure assists in selection of subsequent antiretroviral therapy (ART) but is not widely available in resource-constrained settings. The World Health Organization recommends periodic national HIVDR surveillance. We therefore assessed the prevalence of acquired HIVDR (ADR) among Zambian adults on ART.

Methods: We conducted a cross sectional surveys among HIV-1 infected adults at 12 ± 3 months (ADR12) and > 48 months (ADR48) of ART. Sampling of clinics was performed using systematic sampling to generate probability proportional to proxy size samples.

We defined viral load suppression (VLS) as HIV-1 RNA <1,000 copies/mL. ADR was assessed using in-house sequencing assays in the *pol*gene and sequenced on an ABI 3130XL analyzer while prediction was done usingthe Stanford HIVdb tool.Proportions for each outcome at linearized standard error 95% confidence interval (CI) and summary estimates were determined.

Results: We enrolled 1,226 participants (ADR12: 462 and ADR48: 764). VLS was high at 89.9% (84.5%-93.5%, CI 95%) inADR12and 92.2% (87.1%-95.4%, CI 95%) in ADR48.

Majority, (60.7%) [95% CI: 55.7–65.5%] in ADR12 and 58.8% (95% CI: 49.9–67.2%) in ADR48, were receiving non-nucleoside reverse transcriptase inhibitors (NNRTI)-based ART. 38.1% (95% CI: 33.4–43.0%) in ADR12 and 34.6% (95% CI: 27.4–42.5%) in ADR48 were receiving Dolutegravir (DTG)-based ART.

Theprevalence of ADR to NNRTIs was81.1% (95% CI: 65.0–90.8%) in ADR12 and 74.5% (95% CI: 60.7–84.6%) in ADR48. ADR to nucleoside reverse transcriptase inhibitor (NRTI) was prevalent in 70.3% (95% CI: 53.8–82.8%) in ADR12 and70.2% (95% CI: 55.3–81.87%) in ADR48. Resistance to protease inhibitors (PIs) was low (ADR48: 2.1%, 95% CI: 0.3–15.3%) and no resistance to both PIs and Integrase Strand Transfer Inhibitors (INSTIs) in ADR12 was observed.

Among adults on NNRTI + tenofovir-based regimens, ADR to Tenofovir was 53.8% (95% CI: 33.7–72.8%) in ADR12 and 50.0% (95% CI: 31.9–68.1%) in ADR48.

Conclusions: High ADR to NNRTI and NRTI at early and late time points of ART was observed in Zambia.We recommend prompt switching to effective ART in those without VLS and continuous HIVDR surveillance for newer INSTI ARVs.

Impact of COVID-19 on HIV care

EPB254

Secondary impacts of the COVID-19 pandemic on Young People Living with HIV in Kenya

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Background: The impact of COVID-19 associated restrictions to contain SARS-CoV-2 on young people living with HIV (YPLWH), who are already at risk of disengagement from care and poor clinical outcomes, is unknown, particularly in resource-limited settings. We hypothesized that the COVID-19 pandemic impacted the psychological, physical, and socioeconomic wellness of YPLWH, leading to reduced antiretroviral therapy (ART) adherence and poor clinical outcomes.

Methods: Perinatally-infected YPLWH receiving care at four HIV clinics at the Academic Model Providing Access to Healthcare (AMPATH) in and around Eldoret, Kenya were enrolled between February-December/2021. In-person or phone surveys were conducted to generate three wellness measures: psychological (depression and anxiety; score 0-12), physical (illnesses and hospitalizations; score 0-5), and socioeconomic (education, employment, food, and housing; score 0-6); and ART adherence (self-reported; score 0-6). HIV viral load (VL) was determined (VL>1,000 copies/mL defined as ART failure).

The hypotheses were examined by:

1. Describing temporal patterns of wellness composite scores based on enrollment date using general additive models,

2. Investigating overall associations between wellness and adherence scores using linear regression, and;
3. Evaluating associations between adherence and treatment failure using logistic regression.
Models were adjusted for age, gender and clinic.

Results: Among 430 participants (mean age 16.5 years, range 8-24; 49% female), psychological wellness remained stable throughout the study period with 48% affected (i.e. reporting unwell); physical wellness was lowest between February-March/2021, highest between April-July/2021, and lower thereafter (66% affected); socioeconomic wellness was highest between February-May/2021, lower between June-July/2021, higher between August-September/2021, and lowest thereafter (62% affected); and self-reported adherence remained stable (75% affected). In regression analysis, higher psychological (coeff = 0.21, 95% CI: 0.12-0.30, p<0.001), physical (coeff = 0.29, 95% CI: 0.15-0.43, p<0.001), and socioeconomic (coeff = 0.17, 95% CI: 0.06-0.29, p=0.004) wellness were associated with good adherence. HIV treatment failure was associated with poor adherence Odds Ratio 1.32 per one-unit worse adherence, 95% CI: 1.00-1.73, p=0.045).

Conclusions: Societal changes imposed by the COVID-19 pandemic may have impacted psychological, physical, and socioeconomic wellness among Kenyan YPLWH, potentially resulting in lower ART adherence and higher ART failure. Findings highlight intervention opportunities to support this vulnerable population in the current and future pandemics.

EPB255

Seroprevalence of SARS-CoV-2 infection and evolution of humoral response in PLWHIV

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Background: Data on SARS-CoV-2 seroprevalence in PLWHIV are still poor. We sought to shed further light on this issue, studying the humoral immune response evolution and identifying the associated risk factors during the initial disease outbreak in patients living in the Ile-de-France area (IDF).

Methods: For this longitudinal prospective cohort study, we included all PLWHIV followed in the department of infectious diseases of the Pitié-Salpétrière hospital between April and September 2020. Patients with positive anti-SARS-CoV-2 antibodies at D0 have been evaluated at 6 and 12 months (M). Semi-qualitative detection of IgG against nucleoprotein (N) and quantitative detection of IgG against spike (S) protein were measured using a chemiluminescent microparticle immunoassay. Serum IgA against the S1 domain of the S protein were measured using enzyme-linked immunosorbent assay (anti-SARS-CoV-2 ELISA, EuroImmun). Factors associated with positive serum IgG anti-N were identified using a logistic regression model. Analyses were performed using SAS software.

Results: A total of 1901 PLWHIV were included: 64.4% of patients were male, median age: 53 years (IQR 44-60), ART duration: 13.9 years (IQR 7.5-22.2), CD4:588 cells/mm^3 (IQR 429 - 772) and 26.6% were active smokers. At inclusion, 254 (13.4%) had positive IgG anti-N and among them, 88.2% and 64.1% had serum IgG anti-S and IgA anti-S respectively. Longitudinal analysis of SARS-CoV-2 antibodies reveals the persistence of IgG anti-N, IgG anti-S and IgA anti-S in 51.9%, 87.3% and 75.4% patients respectively at M6 and 35.2%, 87.6%, and 81.2% patients respectively at M12.
Over the one year study period, levels of IgG anti-N and anti-S decreased significantly (p<0.0001 and p= 0.017 respectively), while serum IgA anti-S level increased significantly (p<0.0001). At baseline, Sub-Saharan African patients were more likely to have positive IgG anti-N in comparison with patients originated from France and other countries (OR: 4.78 (95% CI 3.39, 6.73), p<0.0001), while active smoking was a protective factor (OR: 0.57 (95% CI 0.36, 0.90), p=0.0176).

Conclusions: Our findings demonstrate a higher seroprevalence of SARS-CoV-2 in PLWHIV compared to general population in IDF (5.7%) at the same period. A higher seroprevalence was observed in African sub-saharan patients and a lower seroprevalence was observed in smokers compared to non-smokers.

EPB256

Impact of COVID-19 pandemic on HIV treatment services in 12 PEPFAR-supported sites in 8 provinces, Thailand, 2021

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Background: Thailand saw a surge of new COVID-19 infections from <10 cases/day in October 2020 to >3,000 cases/day in June 2021, peaking at >20,000 cases/day in August 2021. This surge resulted in movement restriction measures and supply chain disruptions, potentially impacting HIV treatment services among people living with HIV (PLHIV). We assessed the impact of COVID-19 on HIV treatment services in PEPFAR-supported sites.

Methods: Cross-sectional data from routinely collected indicators on HIV services from 12 PEPFAR-supported hospitals in 8 provinces in Thailand were analyzed by comparing indicators collected during Q1 (Oct-Dec 2020) to indicators during the COVID-19 infection surge in Q4 (Jul-Sep 2021).

We analyzed the number of PLHIV receiving antiretroviral treatment (ART), percent of ART coverage, number of new HIV-positive cases, median baseline CD4 of newly diagnosed PLHIV, median time between HIV diagnosis and ART initiation among PLHIV without opportunistic infection (OI), percent of multi-month dispensing (MMD), number & percent of interruption in treatment (IIT), viral load coverage (VLC), and viral load suppression (VLS).

Results: ART coverage among PEPFAR-supported sites increased from 80.8% in Q1 to 84.6% in Q4 (Table). New HIV-positive tests remained at about 450 cases with median baseline CD4 around 230 cells/mm³ at Q1 & Q4. The median time between HIV diagnosis and ART initiation among PLHIV without OI decreased from 11 days in Q1 to 6 days in Q4, while the percent of multi-month dispensing ≥3 months in Q1-4 was more than 50%. IIT increased from 4.3% to 5.0%, VLC decreased from 88.6% to 83.2%, and VLS remained constant around 98% throughout Q1-4.

	Q1 2021 (Oct-Dec 2020)	Q2 2021 (Jan-Mar 2021)	Q3 2021 (Apr-Jun 2021)	Q4 2021 (Jul-Sep 2021)
# of PLHIV Registered at the Sites	39,056	41,815	41,688	40,481
# of PLHIV on ART (% ART Coverage)	31,569 (80.8%)	34,497 (82.5%)	33,980 (81.5%)	34,230 (84.6%)
# of New HIV-Positive Tests	463	422	339	442
Median CD4 of Newly Dx PLHIV (cells/mm³)	238.5	195.0	201.0	232.5
Median Days Between HIV Diagnosis and ART Initiation among PLHIV without OI	11 (n=422)	7 (n=319)	7 (n=247)	6 (n=214)
# of OverallInterruption in Treatment (% of Overall Interruption in Treatment)	1362 (4.3%)	1091 (3.2%)	1991 (5.9%)	1716 (5.0%)
% of Viral Load Coverage	88.6%	89.1%	86.5%	83.2%
% of Viral Load Suppression	98.2%	97.6%	98.1%	98.3%
% 3-5 MMD/% ≥6 MMD/% Overall ≥3 MMD	12.9% / 38.5% / 51.4%	26.6% / 30.5% / 57.1%	21.1% / 33.8% / 54.9%	16.6% / 35.7% / 52.3%

Table. Treatment Indicators.

Conclusions: Our findings showed gaps in IIT and VLC, highlighting the need for ongoing data analysis to recognize challenges and introduce new interventions to provide treatment service continuity during the COVID-19 pandemic.

EPB257

Profile of patients hospitalized with COVID-19 with HIV and AIDS in Mozambique

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Background: The first case of COVID-19 occurred in March 2020 and immediately the Government of Mozambique declared a state of emergency to help slow the spread. This approach was effective, and the country only breached 1000 cases per day in January 2021. Until January 2022, the country had experienced 4 waves of COVID-19, resulting in 220,241 positive cases of COVD-19 and 8,300 hospitalizations.

Description: The analyses was based on evaluation of routine data from March 2020 till January 2022 (January 19th). The data were analyzed to explore the profile of hospitalized patients in terms of gender, proportion of HIV patients among those hospitalized, if they were on HIV treatment, severity of case and final outcome of the hospitalization (if they were discharged alive or dead).

Lessons learned: Out of 8,300 patients hospitalized with COVID-19, it was possible to observe that 12% (971) had HIV, of which 53% were male and 47% female. From those

88 % (853) were on anti-retroviral therapy at the time of hospitalization (HAART), 4% had abandoned treatment and 8% of the cases were newly diagnosed with HIV during COVID-19 hospitalization. In terms of severity cases for HIV positive patients: 32% of the cases was moderate (no need of oxygen), 56% severe condition (in need of oxygen therapy) and 12 % was in critical condition (need of mechanical ventilation).

Overall, for patients with the comorbidity of HIV, 55% of the patients were discharged from the hospital and 31% died of COVID-19 with the remaining 14% without a final outcome assessed. The percent of registered COVID-19 deaths for the general population, however, was only 25% during the same period.

Conclusions/Next steps: Based on the data reviewed is possible to concluded that People Living with HIV has a great risk to have severe condition and death from COVID 19.

EPB258

Analysis of the impact of COVID-19 pandemic on PrEP uptake in Toronto: a retrospective 18-month single-site chart review

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Background: The primary objective of this study was to determine the impact of the COVID-19 pandemic on PrEP uptake, comparing three time periods – 6 months prior to (T1), first 6 months of (T2), and second 6 months of the pandemic (T3), from September 2019-March 2021.

Methods: This 18-month chart review quantified PrEP uptake, STI testing, and follow-up appointment rates in Toronto based on data from Maple Leaf PrEP Clinic in three 6-month time periods. Descriptive statistics and a generalised estimating equation were used to analyse differences in PrEP uptake between time periods and associations with age, gender, ethnicity, duration in care, living in Toronto vs. not, and medication coverage status. Friedman and Wilcoxon Signed Rank Tests were used to determine changes in STI testing and clinic visit habits.

Results: Overall, 1737 patients were included in the chart review. The included patients were mostly men (99.0%) with 8.1% identifying as Black. Controlling for all examined covariates, individuals had 3.43 [2.74; 4.28] higher odds of discontinuing PrEP during T2 than T1 with no significant difference between T3 and T1. None of the covariates examined were associated with a significant increase in odds of discontinuation. For patients continuing PrEP throughout the 18 months (n=255), T2 ($p<0.001$) and T3 ($p<0.001$) visit counts were shifted lower than T1 visit counts with no difference between T2 and T3 visit counts ($p=0.394$). Similarly, T2 ($p<0.001$) and T3 ($p<0.001$) STI test counts were shifted lower than T1 STI test counts. The evidence also suggests that T3 STI test counts were shifted from T2 STI test counts ($p<0.001$) with the negative change in median difference indicating a rebound increase in T3. A significant majority of patients discontinuing PrEP cited their perceived lack of HIV risk (63.1% vs 35.4%; $p<0.001$) as their primary reason for discontinuation in post- vs pre-pandemic times.

Conclusions: The study findings indicate a significant decrease in uptake of one of the most successful HIV prevention tools. The importance of sexual health services in times of a pandemic are highlighted. Future studies should consider the health and economic consequences of decreased uptake of HIV prevention efforts.

EPB259

Depression in People Living with Human Immunodeficiency Virus During the Coronavirus Disease 2019 Pandemic in 4 African Countries

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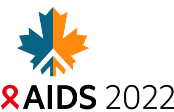
Background: We previously demonstrated transient reductions in HIV clinic attendance and food security during the COVID-19 pandemic for people living with HIV (PLWH) in the African Cohort Study (AFRICOS).

We compared the odds of depression during the pandemic compared with the pre-pandemic period in PLWH. We hypothesized that the pandemic conferred higher odds of depression on PLWH.

Methods: AFRICOS is an ongoing prospective cohort that enrolls PLWH at 12 clinics in Kenya, Uganda, Tanzania, and Nigeria. Longitudinal evaluations include the CES-D questionnaire every 6 months, with depression defined by a score ≥16.

We compared the odds of depression during the pre-COVID-19 period (1 January 2019 to 19 March 2020) and four equal divisions of the COVID-19 period (7 May 2020 to 1 September 2021).Logistic regression with generalized



estimating equations was used to estimate odds ratios (ORs) and 95% confidence intervals (95% CIs) comparing depression before and during the pandemic. Models were *a priori* adjusted for sex, age, and site.

Results: As of 1 September 2021, 2467 PLWH were considered actively engaged. Among 1992 participants with visits before and during the COVID-19 period, the median age at first visit included was 43 (interquartile range 36-51) years and 1159 (58.2%) were female. At first visit included, 62 (3.1%) had a CES-D score suggestive of depression.

Compared with the pre-pandemic period, PLWH had higher odds of reporting symptoms consistent with depression in the second and third parts of the pandemic period with ORs 1.60 (95% CI 1.07-2.41) and 1.76 (95% CI 1.21-2.56) respectively *(Figure).*

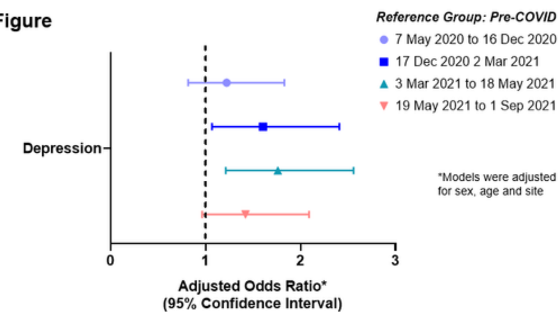


Figure. Compared with the pre-pandemic period, PLWH had higher odds of reporting symptoms consistent with depression in the second and third parts of the pandemic period.

Conclusions: Transient depressive symptoms associated with the evolving COVID-19 pandemic may have contributed to worsened HIV outcomes among PLWH. Addressing mental health issues as part of the public health response to outbreaks may improve engagement and clinical outcomes.

EPB260

Impact of the COVID-19 pandemic on pain prevalence and management among people living with HIV in Ontario

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Background: People living with HIV (PLWH) are disproportionately affected by high rates of pain with significant gaps in pain management. The COVID-19 pandemic has amplified these challenges through limited access to service providers, substance use treatment and harm reduction services, amid increased psychosocial stresses and financial burdens.

We set out to characterize the prevalence, severity, functional impact, and treatment of pain among PLWH in Ontario, Canada, prior to and during the first year of the COVID-19 pandemic.

Methods: The Ontario HIV Treatment Network Cohort Study (OCS) is an observational, open dynamic cohort of PLWH in Ontario, Canada. Interviews using a standardized questionnaire are administered on a yearly basis. Individuals who completed the OCS questionnaire in 2019 (pre-pandemic period) or 2020 (pandemic period) were included in the analysis. Pain prevalence and severity in the preceding 3 months, functional impact in the preceding week (measured as a mean of 7 interference items, each scored on a 0-10 scale) and treatment were evaluated in each study period.

Results: A total of 2874 participants with a median (interquartile range) age of 53 (43, 60) years (77% men) were included in the analysis. Prevalence of pain was 66% in 2019 and 74% in 2020, with a fifth of participants reporting severe pain.

Functional impact of pain was higher during the pandemic with 91% of those experiencing pain reporting some degree of interference with daily activities (vs 85% pre-pandemic) with a mean (standard deviation) interference score of 3.6 (1.6), compared to 3.0 (1.6) in 2019.

A total of 54% of individuals in 2019 and 62% in 2020 reported receiving formal treatment for pain. In the first year of the pandemic, utilization of prescription analgesics increased (33% vs 25% in 2019) along with use of over-

the-counter agents (55% vs 27% in 2019) and recreational substances (18% vs 10% in 2019), while use of non-pharmacological methods remained stable (21% during both periods).

Conclusions: Prevalence and functional impact of pain among PLWH in the OCS has increased during the COVID-19 pandemic with increased reliance on pharmacological and recreational substances. Addressing barriers to pain management among PLWH requires interdisciplinary, system-based strategies.

EPB261

Impact of COVID-19 on HIV care in Malawi and Uganda - a mixed methods study

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Background: The COVID-19 pandemic and the measures taken have severely disrupted health systems and medical care. PLHIV suffer from high levels of comorbidities and stigma, and often faced challenges in access to care.

The aim of this study was to explore the extent to which the pandemic and the public health measures have affected medical care for PLHIV. The study took place in two different contexts, in Arua (Uganda) and Chiradzulu (Malawi).

Methods: We conducted a multicentric mixed-methods study. The quantitative component explored patients' retention in care and viral suppression using data routinely collected from January 2018 to April 2021.

The qualitative study investigated patient perspectives and perceptions of the impact of Covid-19 on their lives and ability to manage their health, and on HIV care.

Results: From 2020 to 2021, we observed a 15% decrease in active cohort among adults on any regimen and a 17% decrease among children and adolescents in Arua. In Chiradzulu, the first- and second-line cohorts decreased in size (10% and 12% drop, respectively), while the third-line ART cohort remained stable.

We observed a reduction in ART initiations and clinical consultations at the start of pandemic (50% and 68% in Arua, 34% and 60% in Chiradzulu, respectively) and a gradual decrease in VL coverage.

In both contexts, patients and caregivers emphasized the impact of the pandemic and public health measures on livelihoods, education, access to food, food security and psychosocial wellbeing negatively, which affected their ability to manage HIV condition and to adhere. In Uganda, adolescents lost support, experienced increasing HIV stigma, and started to provide for themselves.

In Malawi, the fear of COVID at facilities and lack of communication about regarding day-to-day changes in activities was disturbing to patients and staff.

Conclusions: The COVID-19 epidemic had an important negative impact on HIV care in the health facilities and in the community. To ensure a conducive environment for patients' access to essential HIV care during future outbreaks requires continued collaboration with the authorities and advocacy for more less authoritarian ways of implementing restrictions. Innovative public health information campaigns about COVID-19, to dispel rumours and misinformation are recommended.

EPB262

Program adaptations in response to COVID-19 led to unprecedented program growth in Mozambique

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Background: Mozambique has one of the largest numbers of people living with HIV (PLHIV) globally (n=2.1 million) and its national antiretroviral therapy (ART) program has historically struggled with client retention. In the first quarter (Q1) of fiscal year (FY) 2020, preceding the COVID-19 pandemic, 8.5% of patients interrupted treatment (defined as having no clinical contact or ART pickup more than 28 days since last expected clinical contact).

COVID-19-related mitigation measures and healthcare worker shortages disrupted care delivery and necessitated increasingly innovative strategies to connect patients with care options outside the health facility and assure treatment follow-up.

We describe ART program adaptations implemented in response to COVID-19 in Mozambique, and their impact on program growth and retention.

Description: Mozambique implemented several program adaptations to increase ART program and client resilience throughout the COVID-19 pandemic. Key measures included decongesting health facilities through expanded eligibility criteria for multi-month drug dispensing (MMD) to allow individuals to pick up ART every three or more months instead of monthly, alternative drug pick-up or distribution points in patient communities, use of remote options for adherence counseling and strengthened patient tracking, and acceleration of ART optimization.

Lessons learned: Through a combination of interventions, treatment interruption in Mozambique fell for men, women and children, from an overall 8.5% of PLHIV on treatment at the start of FY20 to 3.7% by the end of FY21,

despite COVID-19. There was an unprecedented 18.8% increase in the number of PLHIV currently on ART in Mozambique between FY20 to FY21, reaching 1.6 million PLHIV, with 254,000 new patients enrolled on ART in FY21 compared with 195,000 in FY20.

Conclusions/Next steps: In Mozambique, COVID-19 served as a catalyst for inclusion of improved service delivery models into national HIV policy, program adaptations that resulted in unprecedent program growth, and improvement in patient retention.

In addition to mitigating the impact of COVID-19 on PLHIV, many of these adaptations have also increased program and client resiliency in the face of other challenges, including new availability of expanded service delivery options for clients facing displacement and facility closures in the context of recent political instability in Northern Mozambique.

EPB263

Community responsive HIV/HCV care models for Rural and Indigenous communities and associated outcomes in Saskatchewan, Canada prior to and during the COVID-19 pandemic (2018-2021)

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Background: Saskatchewan has the highest HIV and HCV rates in Canada. Rural Indigenous communities are disproportionately impacted by the epidemic with limited access to care and treatment. Two community-responsive care models were developed to address gaps in access. In an Indigenous community-led and nursing-led model, testing, care and treatment are provided directly in, and by community, and supported by an urban team. In an outreach, clinic-led model care was provided in a nearby town close to Indigenous communities by a visiting urban HIV/HCV care team. HIV outcomes and impacts of COVID-19 on both models were evaluated from 2018-2021.

Methods: Data for clients accessing care between 01/01/2018-12/31/2021 was extracted from an electronic medical records system. Demographics and clinical outcomes were described, including the proportion of active clients on treatment and virally suppressed (defined as at least one ART prescription in the calendar year and the last viral load within the calendar year <200 copies/mL, respectively) and the HCV cascade of care among clients who initiated treatment during this time period.

Results: COVID-19 restrictions, initiated in March 2020, included isolation and significantly reduced laboratory, mental health, and addiction services and on-site visits.

A virtual care approach supplemented and maintained care provision. Between 2018-2021, there were 156 HIV clients, of which 79% were HCV co-infected, and an additional 218 mono-infected HCV clients that accessed care between the two models. See table 1 and 2 for HIV and HCV cascade outcomes, respectively.

	In-community, nurse-led model of care				Outreach-based, clinic-led model of care			
	2018	2019	2020	2021	2018	2019	2020	2021
No. of active HIV clients	86	83	86	84	31	32	38	44
% of HIV clients on ART	87%	93%	92%	86%	65%	88%	84%	93%
Of those on ART, % virally suppressed	87%	82%	78%	72%	55%	64%	66%	88%
	2018-2019		2020-2021		2018-2019		2020-2021	
No. who initiated HCV treatment	44		34		50		10	
Of those who initiated HCV treatment, % who completed treatment	95%		82%		96%		90%	
Of those who completed HCV treatment, % cured	76%		61%		75%		67%	

Table 1. HIV and HCV Cascade of Care Outcomes

Conclusions: Superior outcomes in both models highlight the success of accessible community-responsive care models, emphasizing programs should be developed and adapted to local needs, strengths and resources.

Increased virtual care compensated for significant service slowdown during COVID-19, providing successful patient HIV/HCV care. Re-allocation of community HIV resources or reduced lab services may relate to reduction in viral suppression for in-community programs.

EPB264

The impact of COVID-19 pandemic on access to HIV services at urban context-based health facilities supported by CUAMM in collaboration with UNICEF

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Background: Since 2014, Doctors with Africa–CUAMM, is implementing in Beira, Mozambique, health projects focused on: healthcare workers training, data collecting, health commodities supply, and technical support to SAAJs (***S**erviço **A**migo do **A**dolescente e **J**ovem*), a network of primary healthcare centers promoting prevention and providing diagnosis, treatment, and retention in care of HIV patients. Starting from March-2020, the global spread of COVID-19 has been severely affecting public-health systems and economies worldwide. We describe the impact that COVID-19 had on the public-health projects supporting SAAJs in Beira.

Methods: A multi-center, retrospective observational study including HIV patients aged 10-24 years old attending SAAJs in Beira. Enrolled and lost to follow-up (LTFU) patients per month and HIV-viral load were considered indicators of CUAMM's implementing strategies.

Data were described with numbers and percentages. Mann-Kendall test was used to assess the monthly trend, and a linear regression model was applied.

Results: Data of eight SAAJs were analyzed from June-2019 to December-2021. The longitudinal evaluation of enrolled and follow-up subjects showed a significant increasing trend, with 35 new subjects per month treated with antiretroviral (ARV) in all SAAJs.

The overall monthly number of patients on ARV therapy in December-2021 was five-fold higher than in June-2019 (1603 vs 328), with no decline or arrest after the four pandemic waves that affected Mozambique. The number of LTFU patients showed a decline of 3‰ each month across the analyzed period (Figure). To support these findings, coherent viral suppression was achieved in most HIV-treated patients from March-2021 to December-2021.

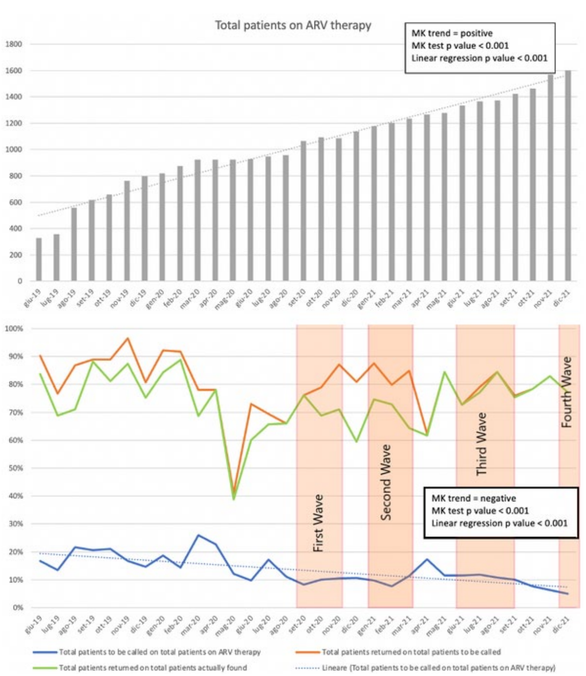

Figure.

Conclusions: All health centers supported by CUAMM projects, treating youths living with HIV in Beira, presented with a higher number of treated patients at every time point of the follow-up. The ongoing pandemic seems not to have impacted health systems implementation programs in this country. Other studies are needed to support this encouraging hypothesis.

EPB265

The in-hospital tuberculosis diagnostic cascade and early clinical outcomes among people living with HIV before and during the COVID-19 pandemic – a prospective multisite cohort study from Ghana

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Background: To describe the routine in-hospital tuberculosis (TB) diagnostic cascade among people living with HIV (PLHIV) in Ghana, with specific focus on timing of diagnosis and treatment initiation before and during the COVID-19 pandemic.

Methods: In this prospective study we recruited adult PLHIV on admission at three major hospitals in Ghana between October 2019 and July 2021, if ≥1 TB symptoms, severe illness, or advanced HIV. Data on signs and symptoms, HIV and TB status, timing and results from TB diagnostics at baseline and 8 weeks follow-up were collected. Descriptive statistics were used for analysis.

Results: We recruited 248 patients (142 before and 106 during the COVID-19 pandemic) with a median age of 41.5 (IQR34-48) years and 178/248(71.8%) being female. Pre-pandemic, 81/142(57%) were not on antiretroviral treatment at time of enrolment vs. 75/106(70.8%) during the pandemic, p=0.027. Median CD4-count (*cells*/mm^3) pre-pandemic was 62.5 (IQR22-173) vs. 94.5 (IQR31-235) during the pandemic, p=0.029.

In both periods, the far majority of patients reported≥1 WHO TB symptom, but fewer patients reported cough during the pandemic (115/142(81.0%) vs. 63/106(59.4%), p<0.001). Pre-pandemic, 72/142(50.7%) were referred to sputum Xpert MTB/Rif (Xpert) after a median 0 (IQR0-2) days on admission vs. 65/106(61.3) after a median 1 (IQR0-3) day during the pandemic (p=0.044 for the time difference). Xpert results were available for 60/142(42.3%) patients pre-pandemic and 45/106(42.5%) during the

pandemic, p>0.05. Among participants followed up, 40/246(16.3%) were referred to start TB treatment and 34/246(13.8%) initiated treatment after a median 6 (IQR4-9) days, without difference between periods. Overall 8 weeks mortality was high at 63/246(25.6%) with no difference between periods.

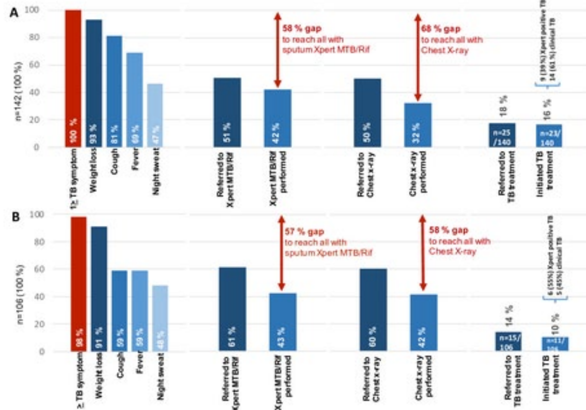

Figure 1.
A. Self-reported WHO TB symptoms and the routine TB diagnostic cascade among 142 PLHIV on admission at three Ghanaian hospitals before the COVID-19 pandemic.
B. Self-reported WHO TB symptoms and the routine TB diagnostic cascade among 106 PLHIV on admission at two Ghanaian hospitals during the COVID-19 pandemic.

Conclusions: In this cohort with severely immunosuppressed PLHIV almost all had at least one WHO TB symptom but only half were referred for routine TB investigations regardless of the pandemic. Missed or delayed TB diagnosis may be critical in this population with high mortality.

EPB266
The impact of COVID-19 pandemic on HIV service provision in Ukraine

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Background: The COVID-19 pandemic and public health response continue to have an unprecedented impact across the globe. Lives of people living with HIV (PLWH) may be particularly affected due to socioeconomic disparities, co-morbidities that increase severity of the COVID-19 disease, and disruption in receiving vital health services.

Methods: A mixed methods study assessed the trends in provision of HIV services in HIV care facilities in Ukraine to verify the impact of COVID-19 and identify service gaps. Data on key indicators were extracted from official HIV program reports by the Ministry of Health and matched with the COVID-19 epidemiologic data. Three periods (01/2019-03/2020 [pre-COVID], 04-12/2020 [early-COVID], 01-12/2021 [late-COVID]) were compared using descriptive statistics.

Results: The graphic trends in key indicators and COVID-19 epidemic are presented in Figure. The average monthly number of HIV tests in health care facilities was 206,935 in pre-COVID period, decreasing to 154,009 in early- and 160,289 in late-COVID (23% decrease). The proportion of positive tests increased from 0.9% to 1.1% and then decreased to 1%. The average monthly number of new patients on ART also decreased from 1,716 to 1456 to 1373 (20% decrease) in three periods, respectively. The average monthly number of viral load tests increased from 26,862 to 27,963 to 31,211 (16% increase). The percent of viral suppression (<1000cp/ml) increased slightly from 94.5% to 94.8% to 95.4%.

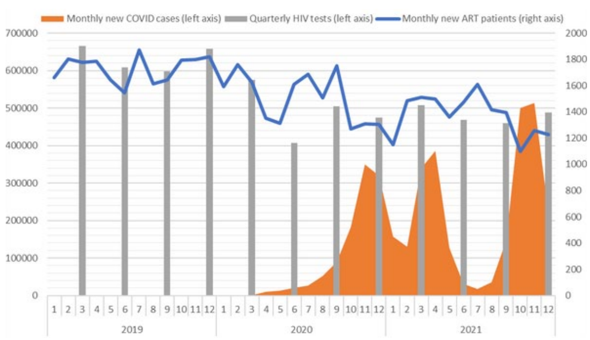

Figure. Trends in HIV testing and ART in Ukraine.

Conclusions: The pandemic had a substantial impact on the capacity of HIV clinics in Ukraine, leading to decreased number of tests and new patients on ART. The decrease did not correlate with the waves of COVID-19 transmission and was not reversed in late-COVID period. The number of PLWH who are not on ART in Ukraine remains significant (110,000 of the estimated 240,000 PLWH), therefore urgent measures should be taken to mitigate the impact of COVID-19 and restore HIV testing and treatment services.

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Clinical manifestations and features of COVID-19 and HIV co-infection

EPB267

Both typical and atypical radiological changes predict poor COVID-19 outcome in HIV-positive patients from a multinational observational study - data from Euroguidelines in Central and Eastern Europe Network Group

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Background: In countries with limited resources, people living with HIV (PLWH) may differently present lung infections hindering the differential diagnosis and the choice of treatment during coronavirus disease 2019 (COVID-19). This study aims to investigate the association between radiological changes and poor COVID-19 outcome PLWH from Central and Eastern Europe.

Methods: Since November 2020 ECEE Network Group have started collecting data on HIV/COVID-19 co-infection. In total data was submitted from 16 countries (eCRF) on 557 HIV+ patients. Analysis included patients with radiological examination performed. Logistic regression models were used to identify factors associated with death, ICU admission or partial recovery (poor COVID-19 outcome). Factors significant in univariate models (p<0.1) were included in multivariate model.

Results: Radiological data were available for 224 (40.2%) patients, 108 (48.2%) had computed tomography and 116 (51.8%) chest X-ray. Of these 211 (94.2%) were diagnosed with RT-PCR, 212 (94.6%) were symptomatic, 123 (55.6%) were hospitalized, 37 (16.6%) required oxygen therapy and 28 (13.1%) either died, was admitted to ICU or only partially recovered. By radiologist's description 138 (61.6%) patients had typical, 18 (8.0%) atypical and 68 (30.4%) no radiological changes.

In univariate models, CD4 count (OR=0.86 [95% CI: 0.76-0.98]), having a comorbidity (2.33 [1.43-3.80]), co-infection with HCV and/or HBV (3.17 [1.32-7.60]), being currently employed (0.31 [0.13-0.70]), being on antiretroviral therapy (0.22 [0.08-0.63]) and having typical (3.90 [1.12-13.65]) or atypical (10.8 [2.23-52.5]) radiological changes were significantly associated with poor COVID-19 outcome.

In the multivariate model being on antiretroviral therapy (OR=0.20 [95% CI:0.05-0.80]) decreased the odds of poor COVID-19 outcome. Having a comorbidity (2.12 [1.20-3.72]), as well as both typical (4.23 [1.05-17.0]) and atypical (6.39 [1.03-39.7]) radiological changes (vs. no changes) increased the odds of poor COVID-19 outcome.

Conclusions: Among HIV patients diagnosed with symptomatic SARS-CoV-2 infection presence of both typical and atypical radiological COVID-19 changes independently predicted poorer outcome.

		Radiological changes			
Characteristic	All n=224	Typical n=138	Atypical n=18	None n=68	P value
Age in years, median (IQR)	45 (35.0-55.0)	47.0 (38.5-57.0)	45.5 (38.0-52.0)	40 (34.5-48.5)	0.0080
BMI in kg/m2, median (IQR)	24.6 (21.4-28.7)	24.6 (21.6-29.0)	20.9 (17.8-24.4)	24.0 (21.3-29.0)	0.0044
Female sex, n (%)	77 (34.7)	44 (32.1)	7 (41.2)	26 (38.2)	0.5788
Currently employed, n (%)	133 (59.4)	82 (59.4)	10 (55.6)	41 (55.6)	0.9358
Ever smoking cigarettes, n (%)	136 (60.7)	54 (61.4)	12 (66.7)	40 (58.8)	0.8308
One or more comorbidity, n (%)	83 (37.0)	53 (38.4)	9 (50.0)	21 (30.9)	0.2848
Nr of comorbidities, median (IQR)	0 (0-1)	0 (0-1)	1 (0-1)	0 (0-1)	0.2281
HCV and/or HBV co-infection, n (%)	39 (17.7)	24 (17.5)	8 (44.4)	7 (10.8)	0.0017
MSM mode of HIV infection, n (%)	64 (28.6)	40 (29.0)	5 (27.8)	19 (27.9)	0.1342
Time since HIV diagnosis in years, median (IQR)	9 (5-14)	10 (6-15)	11.5 (1-19)	7 (3-11)	0.0107
CD4 count in cells/ul, median (IQR)	539 (307-818)	545 (370-830)	344 (140-609)	521 (268-833)	0.1017
HIV VL <50 copies/ml, n (%)	174 (77.7)	109 (62.6)	9 (50.0)	56 (82.3)	0.0114
On antiretroviral therapy, n (%)	203 (90.6)	130 (94.2)	13 (72.2)	60 (88.2)	0.0078
InSTI as third drug in cART, n (%)	134 (65.4)	81 (62.3)	11 (73.3)	42 (70.0)	0.2546
TDF or TAF in backbone, n (%)	146 (65.2)	90 (65.2)	13 (72.2)	43 (63.2)	0.7762
Any COVID-19 symptoms , n (%)	212 (94.6)	135 (97.8)	17 (94.4)	60 (88.2)	0.0160
Hospitalized, n (%)	123 (55.6)	88 (63.8)	13 (72.2)	22 (32.8)	<0.0001
Requiring oxygen therapy, n (%)	37 (16.6)	34 (24.6)	3 (16.7)	0 (0.0)	<0.0001
Died, admitted to ICU or no improvement, n(%)	28 (13.1)	20 (15.3)	5 (33.3)	3 (4.4)	0.0054

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Vaccination impact on COVID-19 related hospitalizations among PLWHIV in Argentina

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Background: COVID-19 vaccines effectively prevent severe outcomes such as hospitalization and death in the general population. People living with HIV (PLWHIV) are a prioritized population for the vaccination rollout in Argentina since they are at higher risk of developing severe complications from COVID-19. This study evaluates the association of COVID-19 vaccination with hospital admissions in a cohort of PLWHIV co-infected with COVID-19 in Argentina.

Methods: Adult PLWHIV with confirmed SARS-CoV-2 infection were enrolled in a prospective observational multicentric cohort study (COVIDARE) which evaluated hospitalizations due to COVID-19 since September 2020. Participating centers included nationwide HIV clinics and general hospitals from Argentina.

This sub-analysis includes participants enrolled in the study after the vaccination rollout started in Argentina whose vaccination status was known at the time of a SARS-CoV-2 infection diagnosis. A multivariable logistic regression model was performed to assess the impact of vaccination on hospitalization due to COVID-19.

Results: Of 508 PLWHIV that met inclusion criteria for this analysis, 13.97% required hospital admission due to COVID-19. A comparative analysis of characteristics of PLWHIV with and without hospitalization is shown in table 1.

Variables		Total N=508	Admission not required N=437	Admission required N=71	p-value
Age categories	Age<60	286 (56.3%)	258 (59.0%)	28 (39.4%)	0.002
	Age>=60	222 (43.7%)	179 (41.0%)	43 (60.6%)	
Sex	Male	335 (65.9%)	286 (65.4%)	49 (69.0%)	0.56
	Female	173 (34.1%)	151 (34.6%)	22 (31.0%)	
Viral load	<20 copies/ml	404 (79.5%)	352 (80.5%)	52 (73.2%)	0.16
	>=20copies/ml	104 (20.5%)	85 (19.5%)	19 (26.8%)	
CD4+ categories	CD4<200	27 (5.3%)	18 (4.1%)	9 (12.7%)	0.002
	CD4 200-449	147 (28.9%)	121 (27.7%)	26 (36.6%)	
	CD4 >=500	334 (65.7%)	298 (68.2%)	36 (50.7%)	
Other comorbidities	No	307 (60.4%)	273 (62.5%)	34 (47.9%)	0.020
	Yes	201 (39.6%)	164 (37.5%)	37 (52.1%)	
ART	No	15 (3%)	10 (2.3%)	5 (7.0%)	0.028
	Yes	493 (97%)	427 (97.7%)	66 (93.0%)	
Vaccinated	No	331 (65.2%)	273 (62.5%)	58 (81.7%)	0.007
	At least 1 dose	105 (20.7%)	98 (22.4%)	7 (9.9%)	
	Fully vaccinated	72 (14.2%)	66 (15.1%)	6 (8.5%)	

Table 1. Characteristics of PLWHIV that required hospitalization due to COVID-19

In a multivariable logistic regression model, the presence of other comorbidities was associated with admission (aOR: 1.70; 95%CI: 1.01- 2.87 p=0.046). Conversely, CD4+ T-cell count >=500 cells/ml (aOR: 0.25; 95% CI: 0.09-0.66; p=0.005) and vaccination (aOR: 0.47; 95% CI 0.24-0.94, p=0.039) were inversely associated with hospital admission. Sex, age, antiretroviral therapy (ART) and detectable viral load had no significant association with hospitalization in this model.

Conclusions: This is the first analysis of the COVIDARE cohort which assessed the impact of vaccination on COVID-19 related hospitalizations.

In this study, the presence of comorbidities was the only variable associated with higher odds of admission. Vaccination and high CD4+ T-cell count provide a significant reduction in the odds of hospital admission among PLWHIV.

EPB269

Humoral immune response to COVID-19 vaccination in HIV infected adults with and without prior COVID: comparison with HIV uninfected controls

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Background: Anti SARS-CoV-2 vaccines differ in protective effectiveness according to type of vaccine, viral variant and immune status of receptor. HIV infection (HIV+) is a major risk factor for immune compromise.

The objective of this study was to evaluate immune response to vaccination in HIV+ adults according to level of CD4+ lymphocytes (LCD4+), presence of prior SARS-CoV-2 infection and vaccine used, compared with HIV uninfected controls.

Methods: Neutralizing antibodies (NAb) against protein S RBD using a vesicular stomatitis-based pseudo virus (1/ID50) and commercial anti protein S antibodies (Elecsys, Roche®, U/mL) were measured in 165 HIV+ cases and 27 controls from Fundación Arriaran HIV care center in Santiago, Chile.

Results: Cases were 87% male; median age in years,42 and median vaccine-sampling interval in days,154; for controls it was 37%, 36 years and 188 days, respectively. Mean (median) Elecsys titers in U/mL were 311 (42) in HIV + cases; 230 (34) in those receiving CoronaVac and 784 (581) in BNT162b2 receptors, and 462 (80) in controls; 123 (41) in CoronaVac vaccinees and 1044(826) in BNT162b2 vaccinees, respectively; of those studied only 42% of all cases had NAb (27% in CoronaVac vaccinees and94% in BNT162b2 vaccinees, but were present in 25% and 100% of controls, respectively.

All cases and controls with prior COVID-19 had NAb. There was a significant trend to lower antibodies in HIV+ cases with LCD4 below 500 cells/mL; 87% of all NAb positive cas-

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es had > 100 U/Ml titers by Elecsys test, and 6% of those without NAb had >100 U/mL, Kappa Coefficient 0.798 (95% CI 0.685-0.910).

Conclusions: BNT162b2 induces much higher levels of anti SARS-CoV-2 antibodies and higher percentage of NAb than CoronaVac in HIV+ persons and uninfected controls. High percentage of HIV+ persons and uninfected adults lack NAbs after 5-6 months of two-dose CoronaVac vaccination. Prior COVID induces strong immune response in both groups. Elecsys test is an useful qualitative surrogate marker for NAb detection.

EPB270

Body composition and SARS-CoV-2 antibody levels among underserved populations in Miami, Florida: a rapid acceleration of diagnostics-underserved populations (RADxUP) study

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Background: Obesity is associated with a risk of morbidity and mortality from SARS-CoV-2 infection. However, there have been conflicting results regarding obesity and antibody levels.

The objective of this study was to determine if body composition was associated with SARS-CoV-2 neutralizing and nucleocapsid titers in people living with HIV (PLWH) and HIV seronegative individuals who self-reported SARS-CoV-2infection. Neutralizing antibodies are key to recovery and protection against viral disease and are related to vaccination. Nucleocapsid antibodies indicate prior infection unrelated to vaccination.

Methods: Demographics, anthropometrics, and serum were collected in an ongoing NIH RADx-UP STUDY. Participants self-reported date of infection, severity of symptoms (mild, moderate, or severe), and date of occurrence. Medical records were used to determine vaccination status and days elapsed since last vaccination in overweight (BMI≥25 kg/m^2) or lean (BMI<25 kg/m^2) groups.

ELISA kits (Epitope Diagnostics, San Diego, CA) were used for SARS-CoV-2 neutralizing and nucleocapsid quantification. Participants were selected if they reported a date of infection and had neutralizing and nucleocapsid antibody results.

Results: The mean age of the 84 post-infection participants was 56.3±11.8 years, 45.2% male, 53.8% Black, 75% overweight, 28.6% PLWH, and 64.3% were fully vaccinated. The average number of days between vaccination and serum collection was 91±51 days, and 273.3±146.8 days since reported infection; both did not differ between the overweight and lean groups (P>.05).

The overweight group had lower neutralizing (P=0.001), but higher nucleocapsid antibodies (P=0.003) compared to the lean group. Nucleocapsid antibody levels were positively correlated with severity of reported symptoms (r_s=0.242, P=0.032). The overweight group trended towards having more cases of severe symptoms or needing hospitalization (28.6%), compared to the lean group (13.3%), (P>0.05). HIV serostatus, age, and sex were not correlated with antibody titers or body composition(P>0.05). Overweight was inversely associated with neutralizing antibodies adjusting for full vaccinated status, days since last vaccination, and days since reporting positivity for SARS-CoV-2 (β=-23.21 SE=6.72; P=0.001).

Conclusions: Overweight was associated with more severe symptoms of SARS-CoV-2 infection, higher levels of nucleocapsid, and lower levels of neutralizing antibodies. HIV serostatus was not indicative of differences in SARS-COV-2 antibody titers. Additional studies are needed.

EPB271

Decay pattern of anti–SARS-CoV-2 antibodies in people with HIV

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Background: We explored decay pattern of anti–SARS-CoV-2 antibodies titers after COVID-19 vaccination in people living with HIV (PLWH).

Methods: This observational study of PLWH attending Modena HIV Clinic (Italy) compared younger (<65 years) with older (>65 years) adults included in the GEPPO cohort. PLWH with two doses of vaccine with at least one available serology two weeks after vaccination were included. PLWH with SARS-CoV-2 prior or after vaccination or who did not complete vaccination were excluded.

Anti–SARS-CoV-2 titers were expressed in BAU/ml and their decay was analyzed in relation to interaction between age (> or <65 years), sex, and day-post vaccination. HIV variables and vaccine type were added as covariates in the linear mix-effect regression model estimated through bootstrap.

Results: A total 563 PLWH, 68.7% males, median age 56, 15.5% aged >65, were analyzed. Median duration since HIV diagnosis was 18.9 years, current CD4= 681.1 µL, 94% had HIV RNA undetectable. BNT162b2, mRNA-1273, %), ChAdOx1 were used in 528 (93.8%), 22 (3.9%) and 13 (2.3%) PLWH, respectively. Median follow-up was 10.8 weeks.

Mean time from 2nd dose of vaccine and 1st available antibody titer (baseline) was 12±7 weeks. At baseline, a significant difference was observed in antibody titer in men and women (804 vs. 1334.5, p<0.001) and in geriatric vs

younger adults (678.6 vs 934.2, p=0.011). Baseline antibody titer differed by vaccine type: BNT162b2=894 (Q1-Q3:307-1838), mRNA-1273=2080 (Q1-Q3:1445-2080), ChAdOx1=325 (Q1-Q3:179-840) BAU/mL (p<0.001).

Figure shows antibody decay according to sex and age interaction with time after correction for HIV variables and vaccine type. Weekly antibody decay differed by vaccine type.

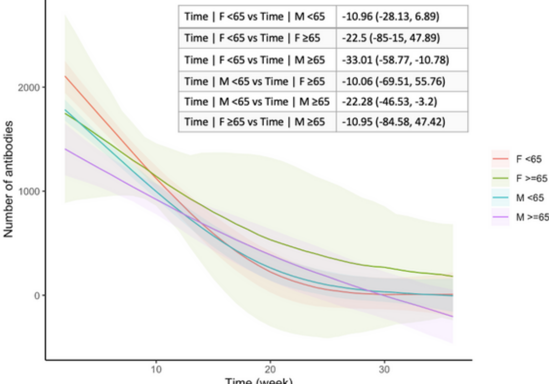

Figure.

Conclusions: PLWH aged >65 years showed lower baseline antibody titer. Men >65years displayed a lower decay over time compared to young PLWH. Further studies are needed to understand humoral and cellular response to SARS-CoV-2 vaccines in relation to age and sex in PLWH.

Track C - Epidemiology and prevention science

Natural history, morbidity patterns and survival

EPC001

The forgotten face of Advanced HIV disease in India – programmatic experience and outcomes of patients admitted to a Medecins Sans Frontieres supported facility in Bihar, India

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Background: Patients with advanced HIV disease (AHD, defined by WHO as CD4 cell count <200cells/mm3 or WHO clinical stage 3 or 4 event or children less than 5 years of age) is associated with very high mortality of up to 60%. The global recommendations for the management of AHD include timely screening and treatment of opportunistic infections, linkage to and retention in HIV care. The Indian national program does not yet have AHD guidelines, and access to critical diagnostic tools for these patients are extremely limited.

We present clinical characteristics and risk factors for mortality of a cohort of patients admitted with AHD in a Medecins Sans Frontiers (MSF) health facility in Bihar, India.

Methods: A retrospective cohort analysis was conducted using routine program data of all admitted patients with AHD from February 2019 to March 2021. Continuous variables were compared across groups using t-test and categorical variables were compared using Chi-square or Fisher's exact test. P <.05 was used to establish significance.

Results: A total of 879 AHD patients were included in the final analysis. 649 (73.8 %) were males. Median age was 38 years (IQR 32, 45). 4.9% were under 15 years of age. 19.6% were ART Naïve at presentation. Median (IQR) CD4 count was 88 (37, 167) cells/mm^3. Overall inpatient case fatality rate was 19.3% (n=170). The most common opportunistic infection associated with AHD was tuberculosis (n=590, 67%). The other common comorbidity includes Pneumocystis Pneumonia (n=115, 13%), Cryptococcal Meningitis (n=81, 12.5%) and Visceral Leishmaniasis (n=58, 6.6%). Significant risk factors associated with mortality was tuberculosis (Relative risk (RR)=1.6, 95% CI:1.1-2.1), cryptococcal antigenemia (RR=1.6, 95% CI : 1.1-2.3), and CD4 count<50 cells/mm^3 (RR=1.5, 95%CI 1.1-2.1).

Conclusions: MSF, in collaboration with the state, has implemented a program positioned within a government facility that provides treatment to critically unwell people with AHD. Our findings suggest the need for a greater focus on AHD in India, with an urgent need to improve the availability and access of diagnostics and drugs to manage the complex medical needs of these vulnerable and heavily stigmatized patients. In doing so, ultimately fatal outcomes can be effectively reduced significantly.

EPC002

Assessment of cardiovascular health using the "Life's Simple 7" among the Canadian HIV and Aging Cohort study participants: a cross-sectional observational study

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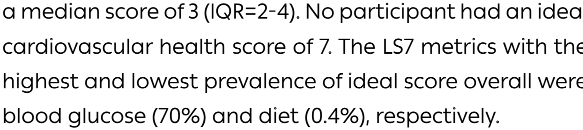
Background: There is growing evidence that cardiovascular diseases (CVD) disproportionately affect people living with HIV (PLHIV). However, little is known about overall cardiovascular health among PLHIV.

Methods: We assessed the American Heart Association (AHA)'s "Life's Simple 7" (LS7) metrics (smoking, body mass index, diet, physical activity, total cholesterol, blood pressure, blood glucose) among Canadian HIV and Aging Cohort Study, CTN 272 (CHACS) participants who completed a validated web-based food-frequency questionnaire (web-FFQ). LS7 metrics were dichotomized using a set of "ideal" cutoffs recommended by the AHA to yield an overall LS7 score ranging from 0 to 7 points. Robust Poisson regressions were used to assess the associations between HIV status and the LS7 metrics, and between HIV status and LS7 diet submetrics (fruits/vegetables, fish, fiber-rich whole grain, sugar-sweetened beverages). Analyses were adjusted for age, sex, ethnic background, education, and annual income. Effect modification by sex was also assessed.

Results: A total of 279 CHACS participants (73% PLHIV) completed the web-FFQ at a median of 55 months (interquartile range [IQR]=40-64) of follow-up. Median age was 59 years (IQR=55-66), and most participants were male (82%) and White (87%). The distribution of the LS7 score was similar between PLHIV and HIV-negative groups with



a median score of 3 (IQR=2-4). No participant had an ideal cardiovascular health score of 7. The LS7 metrics with the highest and lowest prevalence of ideal score overall were blood glucose (70%) and diet (0.4%), respectively.
Female PLHIV were over 6 times more likely to not smoke tobacco compared to HIV-negative female participants (adjusted proportions ratio [aPR]=6.54, 95% confidence interval [95%CI]: 1.66-25.76) and less likely to have ideal blood glucose concentration (aPR=0.75, 95%CI: 0.57-0.99).
Among males, PLHIV were less likely to have an ideal total cholesterol concentration compared to HIV-negative participants (aPR=0.66, 95%CI: 0.48-0.91).
No statistically significant difference was observed between PLHIV and HIV-negative participants in the proportions of ideal scores for diet submetrics.
Conclusions: Our study highlights overall poor cardiovascular health among PLHIV and HIV-negative CHACS participants alike. Further public health efforts among adults aged ≥40 years are urgently needed and should focus on behavioural risk factors for CVD.

EPC003
Survival and determinants of mortality among HIV infected persons in rural Malawi: a historical cohort study of before test and treat strategy

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Background: Malawi has one of the highest HIV prevalence in the world estimated at 10.4%. Although there is substantial research on HIV in Malawi, most have been done in urban or peri urban areas. We aimed to describe survival patterns and identify clinical determinants of mortality among HIV infected persons in rural Malawi.
Methods: We conducted a historical cohort study of 937 children aged 0-14 years and 9, 041 adults aged 15+ years HIV persons who initiated antiretroviral drugs before test and treat strategy between 2007 and 2015 in Neno district. We utilized descriptive statistics and Kaplan Meier to describe mortality rates and survival patterns and Logistic regression and cox proportional hazard models to identify predictors of mortality.
Results: We found crude mortality rates of 33 per 1000 person years and 35.5 per 1000 person years for children and adults respectively. The cumulative survival probabilities for children were 92% and 82% at 1 and 9 years follow up whereas for adults were 93% and 81% respectively.
Among children, factors associated with low mortality included age group 6 – 14 years (OR = 0.31, 95%CI: 0.18 – 0.53) and CD4 count >=300cell/mm^3(aOR = 0.36, 95%CI: 0.17 – 0.73). Increased risk of mortality was found for children not enrolled in pre-anti-retroviral (ART) care (aOR = 2.69 95%CI: 1.47 – 4.96) and presenting with diarrhea at initiation (aOR = 3.76, 95%CI: 1.13 −12.53).
Among adults, age group 46-70 years (OR = 2.19, 95%CI: 1.73 – 2.78), WHO stage 3 and 4 (aOR = 2.58, 95%CI: 2.06 – 3.24), Kaposi Sarcoma (aOR =2.44, 95%CI: 137 – 4.35) and being underweight at ART initiation (aOR = 5.11, 95%CI: 4.38 – 5.95) were associated with mortality.
Among women of child bearing age, underweight at ART initiation (aHR = 6.03, 95%CI: 4.80 – 7.56) and not enrolled in pre-ART care (aHR = 2.25, 95%CI: 1.56 – 3.25) were significant predictors of mortality.
Conclusions: Our analysis demonstrates that good survival rates are possible in rural settings in sub-Saharan Africa such as Neno district, Malawi.
Increased mortality associated with WHO staging, being underweight and Kaposi Sarcoma associated validate the requirement of a robust national test and treat strategy with expected improved mortality.

EPC004
Geographic variation in 5-year mortality following HIV diagnosis: implications for clinical interventions

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Background: Wide spatial variation in HIV prevalence has been observed across South Africa, but there is limited knowledge on spatial distribution of HIV outcomes. Providing policymakers with information on areas at increased risk for adverse outcomes is vital for appropriately targeting interventions.
We used spatial statistical analysis to identify geographic clusters and underlying factors associated with mortality in an urban South African setting.
Methods: We used data from the Sizanani trial (NCT01188941) where adults (≥ 18y) were enrolled at four Durban outpatient sites from August 2010-January 2013. We ascertained vital status via the South African National Population Register; median follow-up time was 5.8y (IQR 5.0-6.4).
We assigned geocoded residential addresses to census small area layers (SALs) with characteristics defined by 2011 South African Census data. Kulldorff's spatial scan

statistic (Bernoulli model) was used to identify mortality clusters among assigned SAL centroids. We then compared population-weighted averages of selected socioeconomic factors for SALs within and outside of mortality clusters.

Results: 1,143 participants living with HIV were assigned to 677 SAL centroids. One lower mortality cluster (n=90, RR=0.23, p=0.022) was identified. SALs within the cluster were on average younger (24y vs 25y, p<0.001), had fewer beds per household (3 vs 4, p<0.001), had higher proportions of females (52% vs 51%, p=0.013) and residents with no schooling past age 20 (4% vs 3%, p<0.001) or no schooling at all (4% vs 3%, p<0.001), and had lower proportions of residents with income >3,200 ZAR (5% vs 9%, p<0.001). SALs within the cluster also tended towards piped water that was further away from dwellings (p<0.001), less rubbish disposal (p<0.001), and lower quality toilets (p<0.001).

Conclusions: A lower mortality cluster occurred in a semi-rural area near Durban despite traditional geographic risk factors including lower education, income, access to water, rubbish disposal, and toilets. The cluster was in the catchment area of a district hospital that has conducted extensive community outreach.

Targeted expansion of support interventions such as adherence clubs or strengthened community health worker networks may improve mortality outcomes in areas with similar underlying characteristics.

EPC005

Most common causes of death among persons living with HIV — Zambia, February 2020-January 2022

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Background: With significant improvement in life expectancy among populations of countries with high HIV burden, causes of death among persons living with HIV (PLHIV) may have changed. Zambia has achieved high antiretroviral therapy (ART) coverage for PLHIV yet recent estimates of the most common causes of death are not widely available. We utilized mortality surveillance data to report on common causes of mortality among PLHIV who died in the community setting in Zambia.

Methods: The Zambian Ministry of Health conducts routine mortality surveillance of community deaths in 44 hospitals in 32 (of 117) districts. Surveillance officers at these hospitals conduct verbal autopsies (VA) with relatives or close associates of deceased persons using a standardized World Health Organization tool, which solicits information about the circumstances proximal to death. HIV status is ascertained during the VA. A probable cause of death is assigned by a validated computer algorithm (InterVA). We analyzed the top causes of death by HIV status in R.

Results: VAs were conducted for 29,593 community deaths between February 2020 and January 2022, of whom 5,220 (17.6%) were HIV positive. The median age at death was 44 years among PLHIV and 52 years for persons with no HIV infection (p<0.01).

The most common causes of death among PLHIV identified via VA were HIV/AIDS-related causes (50.7%), cardiovascular disease (12.7%), tuberculosis (7.1%), stroke (3.6%), and acute respiratory infections (3.5%). Cardiovascular disease (23.8%), stroke (9.6%), and acute respiratory infections (8.0%) were the most common causes of death among persons without HIV infection.

Conclusions: Both infectious and noncommunicable diseases are common causes of death among PLHIV in Zambia during the universal ART era. Maintaining high ART coverage and viral suppression among PLHIV are critical to controlling the HIV epidemic and reducing HIV/AIDS-related deaths in Zambia.

Additionally, introducing interventions to strengthen integrated management of noncommunicable diseases into ART clinics might help to reduce mortality from these conditions by making noncommunicable disease care more accessible and standardized. Noncommunicable diseases are also a major mortality cause among persons without HIV infection. Mortality surveillance among persons dying in the community provides important information about major public health problems in Zambia.

EPC006

Causes of death for persons with HIV in an integrated healthcare system in Northern California, 2013-2017

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Background: Causes of death (COD) in persons with HIV (PWH) have shifted from a high prevalence of AIDS-related deaths to non-AIDS-related causes, including cancer and cardiovascular disease. However, death certificates inaccurately label PWH as AIDS-related when due to these

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other causes. The aim of this study was to evaluate the COD in PWH using the Coding Causes of Death (CoDe) methodology in HIV.

Methods: We identified adult PWH who died between July 2013 and December 2017 while members of Kaiser Permanente Northern California (KPNC). Using abstracted data from electronic health records, we employed CoDe methodology for COD, with adjudication by two KPNC clinicians and with review of conflicting reports by an external clinician panel.

We classified deaths into 12 major groups, describing distributions of COD overall, and by sex, race (Black, White, Hispanic), and HIV transmission risk (heterosexual, injection drug use [IDU], men who have sex with men [MSM]).

Results: The study sample included 302 PWH with a confirmed cause of death by the State of California. Of the 302 deaths (see table), 57 (18.9%) were AIDS-related, 56 (18.5%) were cardiovascular-related, and 58 (19.2%) were cancer-related. Further analyses of COD are differentiated by sex, race, HIV transmission risk as detailed in the table.

		Sex		Race			Risk Status		
Cause of Death, n (%)	Total	Male	Female	White	Black	Hispanic	MSM	Hetero.	IDU
AIDS	57 (19%)	52 (19%)	5 (19%)	34 (18%)	13 (22%)	6 (21%)	30 (16%)	15 (33%)	3 (8%)
Cardiac	56 (19%)	51 (19%)	5 (19%)	36 (19%)	11 (19%)	6 (21%)	39 (21%)	6 (13%)	5 (14%)
Cancer	58 (19%)	54 (20%)	4 (15%)	36 (19%)	10 (17%)	7 (24%)	38 (20%)	7 (16%)	7 (19%)
Infection	36 (12%)	31 (11%)	5 (19%)	23 (12%)	9 (16%)	4 (14%)	22 (12%)	7 (16%)	4 (11%)
Other	29 (10%)	28 (10%)	1 (4%)	20 (10%)	4 (7%)	3 (10%)	23 (12%)	4 (9%)	2 (6%)
Organ/Muscle Failure	17 (6%)	16 (6%)	1 (4%)	10 (5%)	3 (5%)	1 (3%)	10 (5%)	3 (7%)	- (-)
Substance Abuse	14 (5%)	13 (5%)	1 (4%)	10 (5%)	2 (3%)	- (-)	6 (3%)	- (-)	7 (19%)
Lung Disease	11 (4%)	9 (3%)	2 (7%)	8 (4%)	2 (3%)	- (-)	7 (4%)	- (-)	3 (8%)
Hepatitis	10 (3%)	8 (3%)	2 (7%)	5 (3%)	3 (5%)	1 (3%)	3 (2%)	- (-)	5 (14%)
Behavioral Health	6 (2%)	5 (2%)	1 (4%)	5 (3%)	1 (2%)	- (-)	4 (2%)	1 (2%)	- (-)
Diabetes	5 (2%)	5 (2%)	- (-)	2 (1%)	- (-)	1 (3%)	3 (2%)	2 (4%)	- (-)
Neurological Disease	3 (1%)	3 (1%)	- (-)	3 (2%)	- (-)	- (-)	1 (1%)	- (-)	- (-)
Grand Total	302 (100%)	275 (100%)	27 (100%)	192 (100%)	58 (100%)	29 (100%)	186 (100%)	45 (100%)	36 (100%)

Table 1. Distribution of causes of death among PWH by sex, race, and risk status.

Conclusions: After adjudicating deaths, we determined that AIDS, cardiovascular disease, and cancer were the most common COD for PWH in care. We also found different proportions in COD based on sex, race, and risk status groups. Utility of such information can promote focused preventive measures including early screening, detection, and targeted reduction in comorbidities.

Epidemiology of HIV in the general population

EPC008

New challenges to reduce HIV mortality in Mexico: epidemiological trends have changed

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Background: Mortality is the best indicator for evaluating the impact of government actions to control the HIV/AIDS epidemic. From 2008 to 2017 the HIV mortality in Mexico declined 22%. However, the recent data indicates a growing increase on mortality rates. The aim is to analyze the trend of HIV mortality in the last three decades in Mexico.

Methods: We computed Age Standardized Death Rates (ASDRs) per 100,000 population by sex, age, & social security status, using official mortality records (INEGI) and population estimates (CONAPO). To analyze trends in HIV mortality, JoinPoint regression analysis software was used.

Results: The most recent trend shows an increase in HIV mortality in the general population (**Annual Percent Change, APC=4.58**), as well as in men (APC=4.27) and **people with social security (APC=7.01)**. In contrast, in women and people without social security, HIV mortality decreased (fig 1).

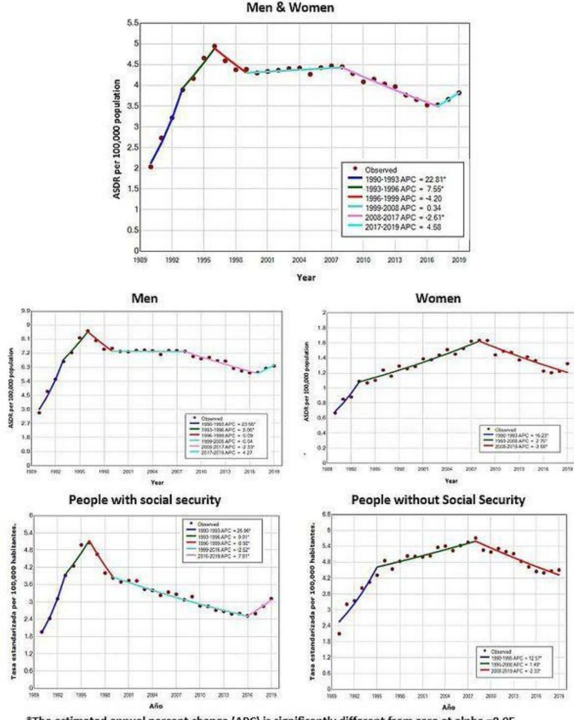
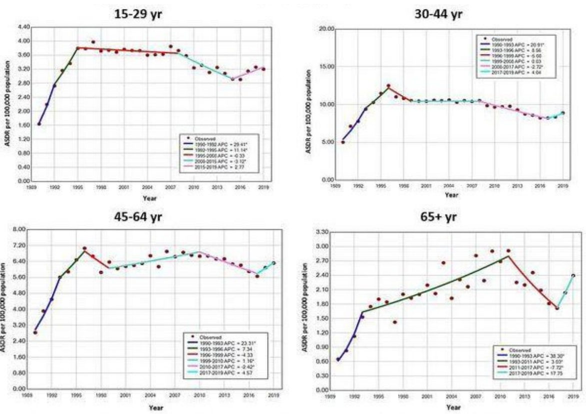


Figure 1. HIV/AIDS mortality by sex and social security status, Mexico, 1990-2019

By age, HIV mortality increased in all groups: 15-19 yr (APC=2.77); 30-44 yr (APC=4.04); 45-64 yr (APC=4.57); and 65+ yr (APC=17.71) (fig 2). Although not all increases are statistically significant, there are an upward trend (fig 2).



*The estimated annual percent change (APC) is significantly different from zero at alpha =0.05

Figure 2. HIV/AIDS mortality by age groups, Mexico, 1990-2019

Conclusions: The declining of HIV/ AIDS mortality in Mexico has been reversed in last years. The huge gaps in the timely detection of HIV in key populations, coupled with a significant shortage of antiretroviral drugs and patient monitoring, have led to an increase mortality in several groups. For a country with free and universal access to HAART, it is unacceptable. It is urgent to change course and return to the best practices that had worked.

EPC009

Change in body weight after substituting efavirenz for dolutegravir in adults living with HIV in Johannesburg, South Africa

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Background: With the introduction of the integrase strand transfer inhibitor dolutegravir (DTG) into antiretroviral therapy (ART), persons living with HIV (PLWH) in South Africa (SA) have an effective new treatment option. Previous research, comparing DTG-based ART regimens to efavirenz (EFV)-based ones, showed DTG was safe and effective, but flagged weight gain as a concern. Weight gain after starting ART in PLWH is common, but substantial weight gain may increase the risk of non-communicable chronic diseases and reduce life expectancy. We evaluated weight change in patients who substituted EFV for DTG in first-line ART regimens.

Methods: A matched cohort study in virally suppressed, adults living with HIV initiated onto tenofovir + lamivudine or emtricitabine + efavirenz between January 2010-December 2020 at Themba Lethu Clinic in Johannesburg, SA. Patients were propensity score matched 1:1 (those who stayed on EFV-containing regimen (unexposed): and those who substituted EFV for DTG (exposed)). To create the propensity scores, we predicted risk of substituting EFV for DTG using logistic regression. Predictor variables included gender, age, months on ART, first ART regimen and CD4 count. We used linear regression to assess the effect of substituting EFV for DTG on absolute and percent weight change 6-months after DTG substitution.

Results: 276 unexposed patients were matched to 276 exposed patients. Patients that remained on EFV maintained their exact weight (median 69.8kg; (IQR): 61.0-80.3kg), while those on DTG increased from a median of 68.9kg (IQR: 59.3-83.7kg) to 72.0kg (IQR: 61.6-85.5kg) by 6-months post substitution of EFV for DTG. Linear regression results show a mean change in weight of 2.7kg (95%CI: 2.0-3.4kg) and a 4.0% (95%CI: 2.5-5.5%) mean increase in weight when comparing patients substituting EFV for DTG to those who remained on EFV. We also found that females, younger patients, those with lower CD4 counts and those on ART for longer had a higher mean absolute and percent weight change.

Conclusions: PLWH on ART gained more weight after substituting EFV for DTG than did those remaining on EFV. Future studies with longer-term follow-up are needed to confirm these findings in larger cohorts and investigate the effects of cardiometabolic disease risk factors.

EPC010

Liberia adherence and loss-to-follow-up in HIV and AIDS care and treatment

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Background: Retaining patients on antiretroviral therapy (ART) has been a major challenge for many national HIV programs in resource-limited settings. We estimate the retention rates of patients along the HIV care cascade in Liberia and identify factors associated with loss-to-follow-up (LTFU), death, and suboptimal treatment adherence.

Methods: We conducted a nationwide retrospective cohort study utilizing facility- and patient-level records. Patients aged ≥15 years, first registered in HIV care from January 2016 – December 2017 at 28 facilities were includ-

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ed. We used Cox proportional hazard models to explore associations between demographic and clinical factors and the outcomes of LTFU and death, and a multinomial logistic regression model to investigate factors associated with suboptimal treatment adherence.

Results: Among the 4185 records assessed, 27.4% (n=1145) were males and the median age of the cohort was 37 (IQR: 30-45) years. At 24 months of follow-up, 41.8% (n=1751) of patients were LTFU, 6.6% (n=278) died, 0.5% (n=21) stopped treatment, 3% (n=127) transferred to another facility and 47.9% (n=2008) were retained in care and treatment.

The incidence of LTFU was 46.0 (95% CI: 40.8 – 51.6) per 100 person-years. Relative to patients at WHO clinical stage I at first treatment visit, patients at WHO clinical stage III [adjusted hazard ratio (aHR) 1.59, 95%CI: 1.21 – 2.09] or IV (aHR 2.41, 95%CI: 1.51 – 3.84) had increased risk of LTFU; whereas at registration, age category 35 – 44 years (aHR 0.65, 95%CI: 0.44 – 0.98) and ≥45 years (aHR 0.60, 95%CI: 0.39 – 0.93) had a decreased risk.

For death, patients assessed with WHO clinical stage II (aHR 2.35, 95%CI: 1.53 – 3.61), III (aHR 2.55, 95%CI: 1.75 – 3.71), and IV (aHR 4.21, 95%CI: 2.57 – 6.89) had an increased risk, while non-pregnant females (aHR 0.68, 95%CI: 0.51 – 0.92) and pregnant females (aHR 0.42, 95%CI: 0.20 – 0.90) had a decreased risk when compared to males. Suboptimal adherence was strongly associated with the experience of drug side effects – poor adherence (aOR 1.75, 95%CI: 1.11– 2.76).

Conclusions: Loss-to-follow-up and poor adherence remain major challenges to achieving viral suppression targets in Liberia. Active support and close monitoring of patients who have signs of clinical progression and/or drug side effects could improve patient outcomes.

EPC011

Geographic and population distributions of HIV-1 and HIV-2 subtypes: a systematic literature review and meta-analysis (2010-2021)

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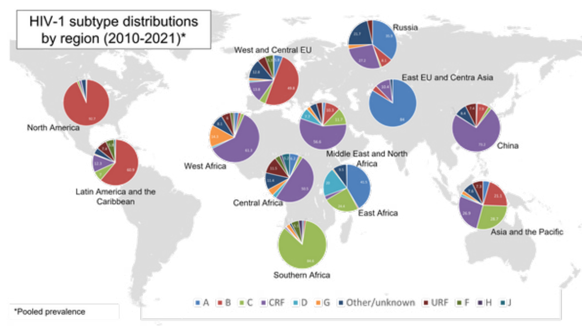
Background: Two types of HIV (1 and 2) are in circulation, with HIV-1 by far responsible for most infections. One major barrier to developing a safe and effective vaccine is the genetic diversity of HIV-1 subtypes within populations and across regions. This limits the coverage of both humoral and cellular immune responses to HIV-1 strains selected in vaccine candidates. Prophylactic vaccine development requires up-to-date knowledge of subtype diversity within populations and geographically. This review synthesized recent literature on the distribution of HIV-1 and HIV-2 subtypes.

Methods: We searched PubMed, EMBASE, and CABI Global Healthfor peer-reviewed publications reporting HIV-1 or HIV-2 subtype prevalence data between January 2010 and June 2021. We included publications in any language across all regions and in any population, irrespective of age, gender, ethnicity, CD4 count, viral load, ARV treatment regimen, or coinfections. Only data collected from 2010 onwards was included. HIV subtype data were grouped at regional and country levels, and across risk groups over time. We assessed risk of bias using an adapted Newcastle-Ottawa scale for cross-sectional studies.

Results: A total of 454 studies across 91 countries were included. Circulating recombinant forms (CRFs) accounted for 32.4% (29.0 - 35.7) of all circulating HIV-1, followed by subtype B (22.8% [19.5 - 26.2]), then C (13.1% [9.9 - 16.6). Most papers reporting risk group subtype breakdowns (n=171) focused on MSM (41%), followed by people who inject drugs (PWIDs) (29%). Among MSM and PWIDs, 52.8%(46.3 - 58.8)and 28.9% (18.2 - 39.7) of HIV infections were CRFs, respectively.



Conclusions: The HIV subtype distribution from this review generally follows those seen in previous reviews, with a high prevalence of CRFs. We found that reporting of HIV-2 data is often scarce. Other than MSM, PWIDs, and sex workers, there is little subtype reporting on other risk groups.

EPC012

Gender differentials in syphilis incidence by HIV status in a prospective rural and urban cohort study in Uganda

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Background: Information on burden and incidence of syphilis in sub-Saharan Africa in the era ofantiretroviral therapy forHIV treatment and scale up of pre-exposure prophylaxis for HIV prevention is generally lacking.
We analyzed the prevalence and incidence of syphilis by gender and HIV status, in a prospective rural and urban cohort study in Uganda and explore associations between syphilis and HIV status.
Methods: We analyzed longitudinal data from 4,519 people in the AMBSO Population Health Surveillance Cohort Study, for the period 2018 to 2020 in Wakiso and Hoima districts, Uganda. We collected Socio-demographic data and established HIV and syphilis status for consenting participants aged 13-80 years. Syphilis testing was done using Treponema pallidum test. Incident syphilis was stratified by HIV status, key demographics.
A generalized linear regression model was performed to determine the association between syphilis, HIV and other covariates.
Results: A total of 4,519(2,034 (45%) male, 2,485 (55%) female); was analyzed mean age 30.4 years (SD=13.8)). At baseline, HIV and syphilis prevalence was 7.5% and 7%, respectively. Syphilis prevalence among People living with HIV (PLWH) was three times higher compared to HIV negatives (18% vs 6%, p<0.001).
The incidence rate of syphilis at follow-up (26/1,000 persons, overall) was significantly higher among PLWH (69/1,000, 95% CI=12.9-21.6) compared to those without HIV (17/ 1,000, 95% CI=16.4-25.7).
This was consistent among both males and female (male PLWH: male PLWH, (81/1,000 persons, 95% CI=36.4-180.3) vs male HIV-(18 per 1,000 persons, 95% CI=12.3-25.6); Female HIV+ (64 per 1,000 persons, 95% CI=37.4-110.8) vs female HIV- (29 per 1,000 persons).
After controlling for age, sex and location, persons living with HIV were 3 times more likely to be syphilis positive (95% CI=1.9-3.6) than HIV- persons.
Conclusions: In this large population-based cohort, the prevalence and incidence of syphilis was consistently higher among PLWH, underscoring the importance of integrating routine syphilis screening, prevention education and treatment into HIV care and antenatal care services for HIV+ to prevent congenital transmission. Partner testing, notification and treatment for syphilis should also be prioritized to prevent reinfection.

EPC013

Profile of attendees at integrated counselling and testing centre for HIV testing at a tertiary care hospital in India during the COVID-19 pandemic

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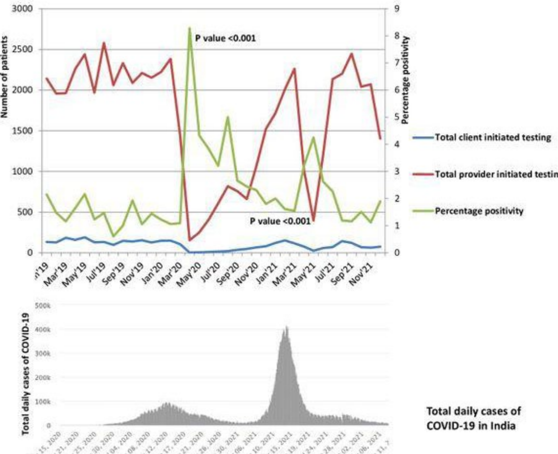
Background: The ongoing COVID-19 pandemic has severely impacted health care delivery to non-COVID-19 diseases. This study was undertaken to gauge the impact of COVID-19 pandemic on HIV-ICTC clinic attendees at a tertiary care hospital.
Methods: Retrospective observational study was carried out at HIV-ICTC centre at Safdarjung Hospital, India, wherein data of all the cases undergoing HIV testing and counselling from January-2019 to December-2021 was reviewed. The data was statistically analysed for changing trends and profile of HIV testing during the COVID-19 pandemic.
Results: During the study period, 62,809 people underwent testing for HIV, of which 5.5% were client-initiated while 94.5% were provider-initiated. Positivity was 1.69%. There was a statistically significant drop in total testing during both waves of COVID-19 along with corresponding appreciable increase in HIV positivity.
More older people underwent provider-initiated testing ($p<0.001, \chi^2=360.9$, df-1) whereas transgender experienced significantly more client-initiated testing ($p<0.001, \chi^2=163.3$, df-1).
The most common route of transmission was heterosexual exposure. Sero-concordance was 47.4% among partners of HIV-positive patients.

		Total tested	HIV Positive	p-Value
Referral	Client initiated	3477	94(2.70%)	P<0.001,x²-20.95,df-1
	Provider initiated	59332	970(1.63%)	
Sex	Male	33144	798(2.40%)	P<0.001,x²-163.3,df-1
	Female	29641	266(0.89%)	
	Transgender	24	10(41.66%)	
Age group	</= 24yrs	19516	190(0.30%)	P<0.001,x²-360.0,df-1
	25-34yrs	18452	393(2.12%)	
	35-49yrs	14177	353(2.48%)	
	>/=50yrs	10667	123(1.15%)	



Conclusions: The shift of resources towards COVID-19 and implementation of social confinement measures, limited the testing for HIV. The provider initiated testing played a pivotal role during that time as seen by spikes in positivity rates.

The key to control HIV in a population lies in prevention and early testing. Success of information, education and communication (IEC) activities is reflected in more client initiated testing in young people and high risk groups like transgender. This study reinforces the importance of IEC strengthening HIV prevention and control programme.

EPC014

HIV incidence among non-migrating persons following a household migration event: a population-based, longitudinal study in Rakai, Uganda

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Background: How migration impacts HIV incidence among non-migrating household members is poorly understood. Here, we measure HIV incidence among non-migrants living in households with and without migration in Rakai, Uganda.

Methods: We used four survey rounds of data collected during July 2011–May 2018 from non-migrant participants 15–49 years in the Rakai Community Cohort Study, an open, population-based cohort. Non-migrants were defined as those with no evidence of migration between surveys or at the prior survey.

The primary exposure was a household migration event occurring assessed from census data among all household members irrespective of age. Migrant households were those with ≥1 member moving into or out of the household from another community between surveys (~18 months) with the intention to stay. Incident HIV cases tested positive following a negative result at the preceding visit.

Incidence rate ratios with 95% confidence intervals were estimated using multivariate Poisson regressions with generalized estimating equations and robust standard errors.

We stratified analyses by gender, migration into or out of the household, and the relationship between non-migrants and migrants (i.e., spouse, child).

Results: In total, 11,318 non-migrants (5,674 women) were followed for 37,359 person-years. 28% (6,059/21,370) of non-migrant study visits reported migration into or out of the household, and 240 HIV incident cases were identified. Overall, non-migrants in migrant households were not at greater risk of acquiring HIV (Table 1).

However, in stratified analyses, HIV incidence among men was significantly higher where the spouse had recently migrated in (adjIRR:2.12; 95%CI:1.05-4.27) or out (adjIRR:4.01; 95%CI:2.16-7.44) compared to men with no spouse migration. Women with in- and out-migrant spouses also had non-statistically significant higher HIV incidence.

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	MEN				WOMEN			
	Crude IRR [95% CI]	p	Adjusted IRR[d] [95% CI]	p	Crude IRR [95% CI]	p	Adjusted IRR[d] [95% CI]	p
Any household in-migration[a]	0.98 [0.56, 1.74]	0.95	0.85 [0.48, 1.5]	0.58	0.87 [0.48, 1.58]	0.65	0.88 [0.48, 1.62]	0.68
Any household out-migration[a]	1.06 [0.67, 1.66]	0.81	1.2 [0.77, 1.88]	0.43	0.88 [0.56, 1.38]	0.58	0.98 [0.61, 1.55]	0.92
Parent with in-migrating child[b]	.	.	.	.	0.71 [0.17, 2.88]	0.63	0.62 [0.15, 2.51]	0.5
Parent with out-migrating child[b]	0.68 [0.16, 2.8]	0.59	0.79 [0.19, 3.26]	0.74	0.49 [0.22, 1.12]	0.09	0.8 [0.32, 2]	0.63
Spouse with in-migrating spouse[c]	**3.27 [1.73, 6.19]**	**<0.01**	**2.12 [1.05, 4.27]**	**0.04**	2.82 [0.88, 9.03]	0.08	2.38 [0.72, 7.89]	0.16
Spouse with out-migrating spouse[c]	**5.19 [2.93, 9.19]**	**<0.01**	**4.01 [2.16, 7.44]**	**<0.01**	2.5 [0.78, 8]	0.12	2.33 [0.72, 7.48]	0.16

Note: IRR incidence rate ratio; CI confidence interval; . regression did not converge
[a]Compared to no-migration households
[b]Compared to parents with non-migrating children
[c]Compared to spouses with non-migrating spouses
[d]Adjusted for age category, education, study round, fishing or inland community and marital status for non-spouse regressions.

Table 1: HIV incidence rate ratios for men and women

Conclusions: HIV incidence was higher among non-migrating persons with migrant spouses, especially men. Targeted HIV prevention interventions should be directed towards individuals with a spouse who recently moved into or out of the household.

Epidemiology of HIV in women

EPC015
HIV and syphilis sentinel surveillance for pregnant women attending antenatal clinics in Tanzania: a national survey based on data from routine PMTCT HIV services

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Background: Despite the prevalence of HIV declining, women are still disproportionately affected than men with prevalence of 6.2% vs. 3.2%. Syphilis also still poses a dire threat especially during pregnancy. Tracking the HIV epidemic in terms is paramount in efforts to eliminate the infection by 2030. The WHO guidelines advocate for conducting HIV surveillances using routinely collected PMTCT programme data in surveillances.
However, there have been gaps in reporting these results. Thus, we aimed to establish the HIV and syphilis prevalence among antenatal clinic attendees and measure reliability of routine PMTCT data to be used as an alternative data-source for national estimates.

Methods: We conducted a cross sectional survey to women >=15 years attending ANC for the first time in their current pregnancy between September and December 2020. The survey involved 159 sites that provides PMTCT services from all 26 regions. HIV and syphilis testing was done using an HIV-Syphilis Duo Kit. Dried blood spots were prepared from all who happened to be HIV positive or with indeterminate results; and from 5% of those with HIV negative results. The DBS were tested using ELISA. Retrospective data quality assessment was conducted to assess quality of routine PMTCT program data.
Results: Of the 39,516 eligible women 98.1% consented to participate and had their HIV and syphilis results. The overall prevalence was 6.3% for HIV and 1.5% for syphilis. A total of 173 (0.4%) participants had HIV and syphilis co-infection. Nearly two third (73.6%) of HIV positive mothers knew their HIV positive status and 93% of the known HIV infected pregnant women were on ART.
Agreement between positives results was at 93.7% and 82.1% (k = 0.66) for negative results. Data quality assessment revealed low completeness (76.3%) in some varibles. Overall validity of data was 89%.
Conclusions: HIV prevalence is still high among pregnant women indicating the disproportion impact of the infection when compared with men. The prevalence of syphilis is at alarming levels and needs an urgent intervention. Quality of HIV testing in ANC facilities needs closer monitoring. Data quality at ANC facilities needs improvement.

EPC016
Low birth weight among infants born to women living with HIV and HIV-uninfected women at CA-IeDEA sites in Rwanda

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Background: In utero exposure to HIV or to HIV and triple antiretroviral therapy (ART) are associated with preterm births and low birthweight babies (LBW). Yet, in this era of universal ART for pregnant women living with HIV (WLWH), data on pregnancy outcomes among WLWH remain limited. In this study, we describe pregnancy outcomes and assess predictors of LBW among WLWH and HIV-uninfected women.
Methods: Data from antenatal care, delivery and PMTCT registries from women, who gave birth between 2012 and 2020 at the International Epidemiology Database to Evaluate AIDS (IeDEA) sites in Rwanda, were retrospectively extracted and linked.

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The sample was restricted to women tested for HIV at admission to maternity clinics with documented pregnancy outcomes: stillbirth, preterm birth (gestational age <37 weeks), and LBW (<2500g).

For our primary outcome (LBW), we restricted our sample to singleton term births and used logistic regression models to compare LBW among WLHW and HIV-uninfected women, adjusting for significantly associated predictors, to estimate odds ratios (aOR) and 95% confidence intervals (CI).

Results: Among 11,312 women, 9.5% (n=1,079) were WLWH, 0.8% (n=90) had a stillbirth and 0.5% (n=46) had multiple births. Of 10,529 single live births, 0.7% (n=70) were preterm. Of 10,459 term births, 3.2% (n=332) were LBW including 4% (n=40) among WLWH and 3.1% (n=292) among HIV-uninfected women. In a multivariable model that included mother's age, weight, marital status, primigravida status, andHIV status, positive HIV status was associated with higher odds of LBW (aOR 1.45, 95% CI 0.83, 2.52) as was primigravidae (aOR 2.17, 95% CI 1.47, 3.21). Women's greater weight was associated with lower odds of LBW ([60-64 kg vs. <60 kg: aOR 0.5, 95% CI 0.32, 0.76] and [65+ kg vs. <60 kg: aOR 0.48, 95% CI 0.32, 0.71]).

Conclusions: Even in this era of universal ART during pregnancy, WLWH remain more likely to have LBW term babies. Lower maternal weight was also independently associated with LBW, suggesting supplementary nutrition to pregnant WLWH might help reduce LBW risk especially among primigravidae women.

Acknowledgements: This work was supported by NIAID, NICHD, NCI, and NIDA, as part of Central Africa IeDEA (U01AI096299).

EPC017

Mental health impacted antiretroviral therapy adherence among Brazilian cisgender and transgender women during the COVID-19 pandemic

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Background: Brazil was the country most affected by the COVID-19 pandemic in Latin America. Social distancing recommendations increased loneliness and mental health issues, including increased substance use, which could have impacted antiretroviral therapy (ART) adherence among people living with HIV. We aimed to evaluate self-reported ART non-adherence and its predictors among cisgender and transgender women living with HIV in Rio de Janeiro, Brazil, during social distancing period.

Methods: Cross-sectional study nested to an open, clinic-based cohort of women living with HIV (WLWH), aged 18+ years who started ART before the COVID-19 pandemic onset. Trained interviewers used structured questionnaires to collected data through telephone calls between May-July/2020. We used the Brazilian Portuguese version of UCLA Loneliness Scale (20-items, range: 0-60) to measure one's subjective feelings of loneliness and social isolation; participants with scores >36 had severe loneliness. Self-reported ART non-adherence was defined as missing at least one dose since social distancing initiation (March/2020). We used multivariate logistic regression models to evaluate predictors of self-reported ART non-adherence. Covariables were age, gender, race, monthly *per capita* income, severe loneliness, increased alcohol use during social distancing, social distancing level, current sex work and physical violence. Initial multivariate models included variables with p<0.1 in bivariate analyses and only variables with p<0.05 were retained in final multivariate model.

Results: Among 620 women enrolled (538 [86.8%] cisgender; 82 [13.2%] transgender), median age was 48 years (interquartile range:40-55), 406 (65.9%) were Black or *Pardo*/Mixed, 478 (77.0%) had an income <U$200.00, 171 (27.6%) reported complete adherence to social distancing recommendations, 24 (3.9%) were currently sex-works, and 119 (19.2%) reported physically violence during social distancing. Severe loneliness was present in 52 (8.6%); 26 participants (4.2%) reported increased alcohol use.

Only 19 (3.1%) women reported ART non-adherence between March-July/2020. Increased alcohol use (aOR=4.8 [95%CI=1.02-16.57) and severe loneliness (aOR=5.27 [95%CI=1.76-14.21]) were associated with increased odds of ART non-adherence.

Conclusions: Social distancing recommendations interfered in loneliness experience and alcohol use among Brazilian WLWH in a short-term period. Strategies tailored to WLWH with higher scores of loneliness and increased alcohol use could support ART adherence. There is an urgent need to identify long-term impacts of the COVID-19 epidemic on the care cascade continuum of WLWH in resource-constrained settings.

EPC018

Cross-generational sexual relationships as a potential predictor of HIV infection in Zambia 2018 – a cross sectional study

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Background: The number of new HIV infections amongst adolescent girls and young women (AGYW) in sub- Saharan Africa (SSA) remains high. In the 2013–2014 Zambia Demographic and Health Survey (ZDHS), 7.2% of sexually active adolescent girls reported having sexual intercourse with men 10 or more years older than them, a 60% increase from the 2007 ZDHS.
We sought to describe cross-generational sexual relationships as a potential predictor of HIV infection in adolescent girls and young women in Zambia.
Methods: We employed a cross-sectional quantitative approach using the 2018 ZDHS data. AGYW aged 15 to 24 years that responded to questions on cross-generational sexual relationships were sampled. Frequencies of the selected variables were calculated, followed by univariate logistic regression. Significant variables, at P-value of 0.05 and 95% confidence interval, together with priori variables were fitted into a multivariable logistic regression. STATA software, version 14.0 SE was used for analysis.
Results: A total of 737 AGYW aged 15- 24 years were sampled for this study. The median age was 21 years (IQR=18-23). Most resided in urban areas (75.8%) and had no or primary education (61.9%). Crude odds ratios showed AGYW who had attained secondary and tertiary education had 20% reduced odds of engaging in cross-generational sex compared to those with primary or no education.
Key Predictors of cross-generation sex included having ever been tested for HIV [AOR=0.6; 95% CI 0.36-0.89; P=0.013], age at sexual debut [AOR=3.6; 95% CI 1.04-12.18; P=0.043] and total number of sexual partners [AOR=0.6; 95% CI 0.45- 0.91; P=0.014].
Conclusions: These findings call for improved packaging of messages on HIV testing, counselling and prevention services. There's need to promote equity and access to education for AGYW in order to empower them with information on safe sex practices. Inclusion of some biomedical interventions such as pre-exposure prophylaxis (PrEP) among AGYW is also needed.

EPC019

PrEP roll out to pregnant women attending MCH clinics in Northern, Luapula & Muchinga provinces in Zambia

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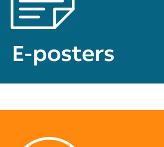
Background: HIV incidence is high in pregnant and breastfeeding women (PBFW), particularly in low-resourced sub-Saharan Africa. Oral pre-exposure prophylaxis (PrEP) can effectively reduce HIV acquisition in women during these periods and to mitigate this challenge, Right To Care Zambia (RTCZ) supports activities to eliminate Mother To Child Transmission of HIV in PBFW in Northern Zambia.
The objective for this abstract is to strengthen eMTCT, reduce mother to child transmission by following up during pregnancy and throughout the breastfeeding period.
Description: Sensitization is given during the Maternal Child Health clinics. Pregnant women are tested for HIV, if negative, they are offered PrEP and initiated if they accept. Initiated clients are followed up throughout pregnancy and breastfeeding period. The collection of this data started in FY20 Oct 2020 .Data was collected between OCT FY20 to March FY21. Pregnancy is the main inclusion criteria and the women needs to weigh ≥ 35kg to qualify for Truvada the drug used in PrEP. This programme is in rural Zambia. Women not empowered by education have difficulties in being assertive and make health decisions on their own.
Lessons learned: 830 PBFW were offered PrEP and 766 (92%) were eligible and 611 (80%) were initiated on PrEP during the reporting period. The programme started with 28 PBFW being initiated on PrEP in October 2020.
Data has shown that PBFW are more adherent to PrEP as a preventive method to their unborn child. There is strengthened integration of MCH and ART department resulting in accessibility of prevention services.
Pregnancy is an opportunity for some women to visit the health centre and opportunity to be offered PrEP. Women readily accept PrEP to protect their infant during pregnancy and breastfeeding.
Conclusions/Next steps: PrEP uptake in PBFW has improved in the Northern, Muchinga, and Luapula provinces of Zambia. MCH departments continued to function whilst adhering to Covid19 preventive measures. In April and May FY21 we saw 44% when compared to February 2021 a drop due to the rising numbers of COVID 19 cases, as observed in other indicators. It is recommended that screening for PrEP be extended to breastfeeding women as they attend Family Planning and Under-five clinics.



Epidemiology of HIV in infants and children

EPC020
The Mother-To-Child Transmission of HIV-1 and profile of viral reservoirs in pediatric population: a meta-analysis of the Cameroonian data

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Background: The mother-to-child transmission of HIV-1 (MTCT) remains on the major route of HIV-transmission among pediatric populations in Africa. Though a prevention of MTCT (PMTCT) high-priority country, data on the MTCT burdens in Cameroon remains fragmented. Our objective was to assess the pooled MTCT rate, its risk-factors, and to characterize viral reservoirs of infected-children in Cameroon.
Methods: All relevant observational cohort and cross-sectional studies conducted in Cameroon were searched from PubMed, African Journals Online, Google scholar, ScienceDirect and academic medical education databases. Heterogeneity and publication bias were respectively assessed by the I^2 statistic and the Egger/funnel plot test. Meta-analysis was performed using the random effects model. MTCT rate >5% was considered as "high". This review was registered in the Prospero database, CRD42021224497.
Results: We included a total of 29 studies and analyzed 46 684 children born from HIV-positive mothers. The overall rate of MTCT was 7.00% (95% CI = 6.07-8.51). According to regions, the highest burden was in Adamaoua-region (17.51% [95% CI:14.21-21.07]) with only one study found. PMTCT option-B+ resulted in about 25% reduction of MTCT (8.97% [95% CI: 8.71-9.24] without option-B+ versus 2.88% [95% CI: 5.03-9.34] with option-B+). Regarding risk-factors, MTCT was significantly associated with the absence of PMTCT-interventions both in children (OR:5.40 [95% CI: 2.58-11.27]) and mothers (OR: 3.59 [95% CI: 2.15-5.99]). Regarding viral reservoirs, a pro-viral DNA mean of 3.34±1.05 log_{10}/mL was observed among 5/57 children and archived HIV drug resistance mutations were identified in pro-viral DNA marker among 21/79 infected-children.
Conclusions: In spite of the dropdown in MTCT following option-B+ implementation, MTCT remains high in Cameroon, with substantial disparities across regions. Thus, in this era of option-B+, achieving MTCT elimination requires interventions in northern-Cameroon. Of note, MTCT was mostly driven by the sub-optimal PMTCT intervention among both mothers and child in the Cameroonian context. The variation in pro-viral load in infected-children underlines the relevance of characterizing viral reservoirs for possible infection control in tropical settings.

EPC021
Trends in pediatric HIV treatment continuity and the impact of COVID-19: a multi-country review of PEPFAR supported programs

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Background: Globally, 1.7 million children currently live with HIV (CLHIV), and AIDS-related deaths are the highest cause of mortality. The COVID-19 pandemic has disrupted HIV services and impacted continuity of treatment (CoT). It is critical to characterize the COVID-19 pandemic's impact on CoT for CLHIV.
Methods: We analyzed routinely collected programmatic data for CLHIV on antiretroviral therapy (ART) from 25 USAID-supported PEPFAR countries.
We compared quarterly results across two 6-month periods before (October 2019 - March 2020; Fiscal Year 2020 [FY20] Q1 - Q2) and during (October 2020 - March 2021; FY21 Q1 - Q2) the COVID-19 pandemic for the following indicators: number/percentage of overall interruptions in treatment (IIT), number/percentage of IIT by time on ART, and number/percentage of overall returns to treatment (RTT).
Results were analyzed for all children <15 years old (y/o) and by fine age bands (1-4, 5-9, 10-14 y/o). Analyses were conducted in Microsoft Excel.
Results: The proportion of children who experienced IIT in both quarters during COVID-19 was higher than in comparable quarters pre-COVID-19.
Children on ART <3 months reported less IIT in quarters during COVID-19 relative to pre-COVID-19 quarters.
Children on ART for >3 months reported more IIT in quarters during COVID-19 compared to pre-COVID-19.
Children 1-4 y/o experienced higher frequency of IIT both before and during COVID-19 compared to 5-9 y/o and 10-14 y/o, despite increases in IIT for the older groups during COVID-19. See Table 1 below for a full description of results.
Conclusions: CoT for CLHIV on ART in 25 USAID/PEPFAR countries was negatively impacted during COVID-19. IIT remains the highest among CLHIV newly initiated on treatment. CLHIV aged 1-4 are the most vulnerable to IIT relative to older children. CoT is crucial for preventing morbidity/mortality in CLHIV and interventions targeting younger children who are newly initiated are of critical importance, particularly adaptations during the COVID-19 pandemic.

		IIT % (n)						RTT % (n)
		All Children <15 y/o	All Children <15 y/o on ART <3 months	All Children <15 y/o on ART >3 months	All Children 1-4 y/o	All Children 5-9 y/o	All Children 10-14 y/o	All Children <15 y/o
Pre-COVID-19	FY20Q1	3.0% (8,047)	15.24% (1,592)	2.52% (6,455)	6.1% (2,739)	2.5% (2,283)	2.1% (2,531)	2.88% (7,185)
	FY20Q2	2.57% (6,671)	8.08% (772)	2.37% (5,899)	4.02% (1,744)	2.53% (2,215)	2.04% (2,486)	3.35% (8,729)
During COVID-19	FY21Q1	3.55% (9,272)	7.42% (565)	3.43% (8,707)	4.79% (2,122)	3.48% (3,070)	3.11% (3,286)	3.04% (7,455)
	FY21Q2	2.85% (7,219)	7.74% (595)	2.70% (6,624)	3.94% (1,706)	2.81% (2,400)	2.45% (2,917)	3.25% (8,053)

Table 1. Comparison of IIT and RTT for CLHIV Pre and During the COVID-19 Pandemic

EPC022

Temporal trends of pediatric HIV infection due to mother-to-child transmission in the state of São Paulo - Brazil, 1987-2020

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Background: In the State of São Paulo (SSP) the first cases of mother-to-child transmission of HIV (MTCT-HIV) occurred in 1987. The elimination of MTCT-HIV is close to achieve in the SSP since the implementation of ACTG-076 protocol and the others preventive measures. The aim of this study is to analyze trends in pediatric HIV infection due to MTCT-HIV in the SSP.

Methods: Trend study by polynomial regression, in three periods (1987-1997; 1998-2009; 2010-2020), using moving average (MA) of the incidence rate pediatric HIV infections due to MTCT (IR-MTCT-HIV). The dependent variable (Y) was the MA-IR-MTCT-HIV and the independent variable (X) was the time (year of birth). In order to avoid autocorrelation between the points, the time variable was centered through the midpoint of the historical series. The goodness-of-fit via r^2, analysis of residues and $p<0.05$ were used to determine which models and data were most appropriate. The IR-MTCT-HIV was estimated using the number of cases as the numerator, the population of live births (LB) as the denominator, and the ratio was multiplied by 100,000. The MA-IR-MTCT-HIV was calculated by adding the IR-MTCT-HIV of the three year and dividing by the total number of periods.

Results: There were 6,131 cases of pediatric HIV infections due to MTCT (1987-2020). In the first period, the IR-MTCT-HIV increased 3.9 times, from 15.92/100,000LB(1987) to 62.40/100,000LB(1997); in the second period it declined by 72.2%, from 52.28/100,000LB(1998) to 14.53/100,000LB(2009); in the third period the decline was 78.5%, from 10.14/100,000LB(2010) to 2.18/100,000LB(2020). For the period 1987-1997, an increasing trend in the MA-IR-MTCT-HIV was observed with first-order modeling [$Y=50.74+6.26X$; $r^2=0.98$;$p<0.001$]; however, for the second period (1998-2009) the trend was downward until 2005, stability until 2009 and a second-order modeling [$Y=18.20-3.63X+0.66$; $r^2=0.99$;$p<0.001$]. The third period (2010-2020) maintained a downward trend with first-order modeling [$Y=6.76-0.73X$; $r^2=0.91$;$p<0.001$].

Conclusions: The temporal trends of pediatric HIV infection showed the success of the Brazilian public policies. Interventions at different levels of maternal-child health care and at different moments in the life cycle, such as access to reproductive health care, antenatal care and delivery, diagnosis and treatment/prophylaxis are important to eliminate MTCT-HIV and to avoid AIDS development in children.

Epidemiology of HIV in adolescents

EPC023

Long-term virological treatment outcomes in adolescents and young adults living with HIV with perinatally and behaviourally acquired infection in the Netherlands

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Background: Long-term viral suppression on combination antiretroviral therapy (cART) is not established among all individuals living with HIV. Young adults (YA, aged 18-24 years) are recognised as a group vulnerable for suboptimal virological treatment outcomes.

The aim of this study is to evaluate longitudinal virological treatment outcomes and to identify risk factors for virological failure (VF) among YA with behaviourally (BPLWH) and perinatally (PPLWH) acquired HIV in the Netherlands.

Methods: We included adolescents and YA registered in the national ATHENA observational cohort from 2000 until 2020 who had entered care before the age of 25 years, who had received cART for at least six months with at least two available HIV RNA measurements between the age of 18 and 24 years.

To compare VF (two successive HIV RNA measurements >200 copies/ml) between age groups 12-17, 18-24 and 25-30, follow-up time was between the age of 12 and 30 years.

A multivariable generalized linear mixed model was used to evaluate risk factors for VF. Analyses were stratified by HIV acquisition mode.

Results: In total 1331 individuals were included (1174 BPLWH and 157 PPLWH, table 1). VF rates for the year 2020 were 7% in BPLWH YA and 19% in PPLWH YA. The adjusted risk of VF was significantly higher in the YA age group compared to the 25-30 age group for both BPLWH (OR: 1.27, 95% CI 1.07-1.50) as PPLWH (OR: 2.34, 95% CI 1.48-3.71)(table 2). Since the beginning of the follow-up, we observed a decrease in the risk of VF. In PPLWH, pre-treatment with mono-or dual therapy was associated with a higher risk of VF.

		BPLWH = individuals who acquired HIV behaviourally N = 1174 male gender: 762	PPLWH = individuals who acquired HIV perinatally N = 157 male gender: 80
Country or region of birth	Netherlands Sub-Saharan Africa Latin America/Caribbean Other	479 (40.8) 337 (28.7) 197(16.8) 161 (13.7)	79 (50.3) 56 (35.7) 11 (7.0) 11 (7.0)
HIV acquisition mode	MSM (men who have sex with men) Heterosexual MTCT (mother to child transmission) Other	579 (49.3) 505 (43.0) - 90 (7.7)	- - 157 (100) -
Age at diagnoses Age at cART initiation Nadir CD4+ T-cell count (cells/µl) VF ever (n/%) Cumulative time HIV RNA >200 (years)		20.8 (19.1-22.2) 21.6 (20.0-22.8) 300 (179-440) 495 (42.2) 0.9(0-12)	2.5 (0.6-6.4) 5.7 (2.3-10.00) 260 (74-415) 86 (54.8) 1.7(0-11)

EPC023 Table 1: Demographic and clinical characteristics of HIV-infected adolescents and young adults in the Netherlands (2000-2020)

Conclusions: Young adulthood is a vulnerable period, with increased risk for VF for both BPLWH and PPLWH. The risk of VF decreased over time and with aging. Interventions to support adherence in YA should take into account the possible specific developmental and psychosocial problems which drive non-adherence, as those might differ between risk groups.

EPC024
The NANI-Mental Health Project

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Background: The overall disruption caused by COVID-19 has had a far-reaching impact on vulnerable people (women, young people, people living with HIV). It is in this light, that the NANI-Mental Health project was conceived. The project integrated mental health education and awareness into the existing Sexual Reproductive Health (SRH) and HIV/AIDS program for Adolescent and Young People (AYP) which leveraged trained and certified young graduates as Community Peer Educator Trainers (C-PETS) to reach out to AYP in community and schools.

The objectives of the project were:

- To strengthen the capacity of 12 Master Trainers as Mental Health mentors
- To improve the capacity of 300NANI Ambassadors on mental health and the New Normal

Determinant		BPLWH OR	95% CI	P-value	PPLWH OR	95% CI	P-value
Gender	Male (reference)	1	-	-	1	-	-
-	Female	**2.45**	**1.35-4.45**	**.003**	0.65	0.29-1.41	.27
Age group	12-17	1.42	0.80 -2.52	.23	0.88	0.46-1.66	0.68
-	18-24	**1.27**	**1.07-1.50**	**.006**	**2.34**	**1.48-3.71**	**<.001**
-	25-30 (reference)	1	-	-	1	-	-
Calender years	2000-2004	**12.52**	**8.40-18.65**	**<.001**	**5.34**	**2.56-11.13**	**<.001**
-	2005-2009	**7.37**	**5.39-10.07**	**<.001**	1.08	0.65-1.81	.76
-	2010-2014	**3.24**	**2.55-4.12**	**<.001**	1.33	0.95-1.86	.10
-	2015-2020 (reference)	1	-	-	1	-	-
Pre-treated with mono/ dual ART	Yes	1.10	0.34-1.16	.87	**4.24**	**1.62-11.11**	**.003**
-	No (reference)	1	-	-	1	-	-
Birth country or region	Netherlands (reference)	1	-	-	1	-	-
-	Sub Saharan Africa	1.55	0.89-2.73	.12	1.86	0.78-4.43	.16
-	Latin America or	**3.20**	**1.78-5.74**	**<.001**	1.57	0.36-6.87	.55
-	Caribbean	**2.15**	**1.12-4.11**	**.02**	0.81	0.16-4.18	.80
	Other						
Nadir CD4+ T-cell count[4](*10^6/L)		1	-	-	1	-	-
-	< 200 (reference)	0.76	0.49-1.20	.24	**0.27**	**0.11-0.63**	**.002**
-	200-500	0.59	0.30-1.16	.13	**0.08**	**0.02-0.31**	**<.001**
	>500						
HIV acquisition mode		**1**	-	-	-	-	-
-	MSM (reference)	**3.18**	**1.59-6.37**	**.001**	-	-	-
-	Heterosexual	1.81	0.80-4.07	.15	-	-	-
	Other						

EPC023 Table 2: Multivariable associations with virological failure among individuals who acquired HIV behaviourally (BPLWH) and individuals who acquired HIV perinatally (PPLWH).
This table shows which factors were associated with virological failure, defined as two successive HIV viral load measurements >200 copies/millilitre, analysed using a general linear mixed model.
Definitions; OR=odds ratio; 95%CI= 95% confidence interval

- To increase the knowledge of3,000 community-based Peer Educators on mental health-related topics

Description:

1. High-level advocacy to the leadership of the National Youth Service Corps (NYSC), Ministries of Health and Education to get their buy-in, collaboration and support.

2. Content Development for training manual

3. Capacity building for 12 Master Trainers on Mental Health

4. Sensitization & Capacity Building for NANI Ambassadors was conducted at 6 NYSC camps to inform corps members of the project and get their willingness to participate. During the sensitization, we directly reached 8,785 corps members with information on mental health, HIV/AIDS and Sexual Reproductive Health and trained 447 volunteer corps members as NANI - Mental Health Ambassadors.

5. Training of Peer Educators: NANI Ambassadors reached 3,266 in-school adolescents and young people within the ages of 13 – 17 years students across 17 schools in 6 Project States with information on HIV/AIDS, Sexual Reproductive Health and mental health topics such as Bullying in Schools, Peer Pressure, Learning to Identify and Understand Emotions and Self Compassion

6. Monitoring, evaluation and reporting of the project

Lessons learned:

- Insufficient knowledge on Guidance and Counselling (G&C) department in Secondary Schools on mental health
- Lack of mental health subjects in secondary school curriculum
- Limited research on mental health in Nigeria

Conclusions/Next steps:

1. Increase in mental health awareness which will spur conversations on mental health policy development and implementation

2. The need for investment in mental health and HIV research in Nigeria

EPC025

Adherence to antiretroviral therapy bymedication possession ratio and virological suppression among adolescents and young adults living with HIV on in Dar es Salaam, Tanzania: a retrospective cohort study

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Background: Adherence to antiretroviral therapy (ART) is a strong determinant of virological suppression. We aimed to determine the magnitude of adherence as measured by medication possession ratio (MPR) as well as virological suppression, and its predictors among adolescents and young adults living with HIV on ART in Tanzania.

Methods: This retrospective cohort study was conducted using archived data from HIV care and treatment centers in Dar es Salaam, Tanzania between 2015 and 2019. Descriptive analyses were conducted to determine magnitude of adherence to ART and viral suppression. The logistic regression model assessed predictors for adherence and virological suppression.

Results: Data of 5,750 adolescents and young adults living with HIV was analysed. Of these, 1,697 (29.5%) were adolescents (aged 10-19) and 4,053 (70.5%) were young adults (aged 20-24). The majority were females; 4748 (82.6%). About 63% of adolescents and young adults on ART had good adherence with medication possession ratio of at least 85% at one year post ART initiation.Independent predictors ofART adherence were male sex, (aOR=1.3, 95% CI 1.1–1.5), CD4 >500 cells/mm^3; (aOR=0.7, 95% CI: 0.6-0.9); WHO stage III (aOR=1.6, 95% CI 1.3–1.9), and enrollment in 2019 (aOR=1.5, 95% CI 1.2–1.9). Predictors of virological suppression were MPR≥85% (aOR=2.0, 95% CI 1.6–2.4); CD4 >500 cells/mm^3 (aOR=2.4, 95% CI 1.7–3.4) and once-daily dosing (aOR=2.0, 95% CI 1.3–2.5).

Conclusions: Adherence to ART among adolescents and young adults living with HIV is suboptimal. Gender and immunological status at ART initiation are important predictors of adherence to ART and virological suppression.

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EPC026

HIV testing services (HTS) among clients 13-14 years old in recent infection surveillance, Malawi 2019-2020

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Background: Rapid tests for recent infection (RTRIs) and viral load (VL) testing comprise a recent infection testing algorithm (RITA) to characterize newly diagnosed HIV-1 infections as recent (≤12 months) or long-term. RTRI recent with VL≥1,000 copies/mL indicates RITA recent. Recent infection surveillance guidance recommends testing clients aged 15+. In Malawi, clients≥13 years can access HTS independently and are included in recent infection surveillance.

We reviewed Malawi's recent infection data to describe newly HIV diagnosed 13-14 year-olds and their impact on recent HIV surveillance, detection, and response.

Methods: Recent infection data was pooled from 155 facilities in 11 districts implementing from April 2019-April 2020. Clients reporting ART usage, previous HIV diagnosis, or had a VL<1,000 copies/mL were excluded.

Among 13-14 year-olds, we calculated proportions of RITA recent infections compared to those aged 15+, described their demographics, HTS modality, and previous testing history.

Results: Of 15,032 newly diagnosed clients, 78 (0.5%) were 13-14 year-olds, of which one (1.3%, 95% Wilson Score CI: 0.2%, 6.9%) was RITA recent, accounting for 0.2% of all 519 RITA recent infections. Comparatively, among clients≥15 years, 3.5% (518/14,954) were RITA recent.

Among 13-14 year-olds, 49 (62.8%) were female, 3 (6.1%) were pregnant, and one (2.0%) was breastfeeding at time of diagnosis. Fifty-eight (74.4%) reported no previous testing history; 20 (25.6%) reported previous negative results, of whom 18 (90.0%) reported their negative result >1 year ago. Fifty-two (66.7%) accessed HTS at voluntary counseling and testing, 12 (15.4%) at outpatient departments, 4 (5.1%) at youth clinics, and 10 (12.8%) via other modalities. Forty-two (53.8%) were diagnosed in rural settings and 49 (62.8%) at primary facilities.

Conclusions: Results suggest the proportion of clients aged 13-14 with recent HIV infection is unlikely to meaningfully contribute to recent HIV surveillance, detection, and response. Per self-report, clients were unlikely to access HTS prior to diagnosis and were primarily accessing testing and being diagnosed at primary care facilities. Age of sexual debut and testing consent may be considered when deciding to include younger ages in recency surveillance. Younger adolescents with recent infections, particularly those pregnant and breastfeeding, may face additional vulnerabilities and should be linked to psychosocial support.

EPC027

HIV incidence and risk factors associated among adolescent's men who have sex with men and transgender women enrolled in a PrEP cohort study in Brazil

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Background: Adolescent men who have sex with men (aMSM) and transgender women (aTGW) are disproportionally affected by the HIV epidemic mainly due to structural and behavioral factors, and face barriers to accessing HIV prevention and care services.

We aimed to analyze factors associated with incident HIV infection among aMSM and aTGW enrolled in PrEP.

Methods: PrEP1519 is a single-arm, demonstration cohort study of daily TDF/FTC as PrEP among aMSM and aTGW aged 15-19 years old (yo). It is ongoing in three Brazilian capital cities. Eligible are those HIV uninfected at baseline, at high risk of HIV, and no risk of kidney and liver damage.

We included those enrolled in PrEP, who had at least one PrEP dispensation and two visits at PrEP clinics, from February/2019-October/2021. Study visits occurred at baseline, weeks 4, 12, and then quarterly. Demographic

and sociobehavioural data were collected by a questionnaire. Cox regression model was used to model the time to seroconversion of a PrEP user and to estimate adjusted hazard ratios (aHR) by medication possession ratio. Participants who had PrEP pills and an HIV-negative test were right-censored at the maximum follow-up date at 96 weeks.

Results: During the follow-up, 1,043 adolescents were enrolled in PrEP. Most MSM (91.9%), 18-19 yo (80.8%), self-identified as black/brown (69.7%). HIV incidence rate was 1.7 (95%CI: 0.8-2.6) per 100 person-years. Self-reported sexually transmitted infections (aHR: 3.02; 95%CI: 1.06–8.56), PrEP initiation during thequarantine measures of the COVID-19 pandemic (aHR: 3.89; 95%CI:1.13–13.4), commercial sex in the last 3 months (aHR: 3.47; 95%CI:1.14–10.58), and fewer years of schooling (aHR: 2.22; 95%CI:0.75–6.55) were predictors of the HIV incidence.

The estimated incidence for TGW was lower than for aMSM (aHR:0.32; 95%CI:0.04–2.51), but 95%CI was wide and imprecise.Indicators of sexual practices were not associated with the incidence.

Conclusions: The estimated HIV incidence was lower when compared to adult MSM and TGW non-PrEP users in other Brazilian studies but higher compared to the rates in adults PrEP studies, which indicates more attention to adolescents in PrEP programs is needed.

EPC029
Maternal education as a driver of HIV infection in adolescents and young adults in sub-Saharan Africa: a multinational analysis of population-based survey data

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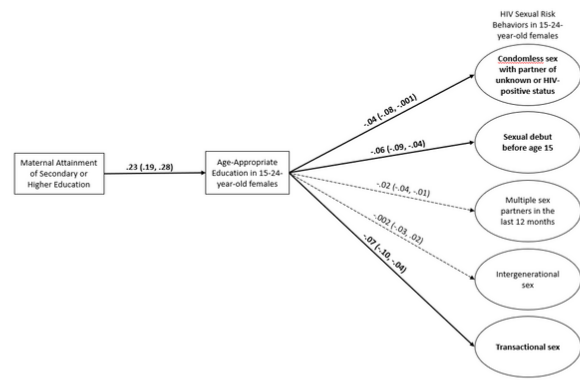
Background: Adolescent and young adults (AYA) aged 15 to 24, particularly women, remain at high risk of HIV infection. Effective HIV prevention efforts require an understanding of the mechanism by which parental factors such as education impact the HIV status of AYA.

Using data from the Population-based HIV Impact Assessment (PHIA) surveys, this analysis examined the multigenerational effect of education on HIV risk in AYA.

Methods: We pooled data from 13 PHIA surveys conducted between 2015-2019. AYA were linked to their cohabitating parents using the household roster. We examined whether maternal education was associated with AYA HIV status using logistic regression. Structural equation modeling (SEM) was used to test the mediating effect of age-appropriate educational level (being in at least secondary school for 15-17-year-olds and having completed secondary school for 18-24-year-olds) on the association between maternal attainment of secondary or higher education and AYA HIV sexual risk behaviors. Analyses were stratified by gender and by high (>10%) vs. low (≤10%) HIV prevalence countries. AYA age, marital status, urban/rural residence and country as a fixed effect were included as covariates.

Results: Data from 43,123 sons and 54,970 daughters were included. In high prevalence countries, maternal education was significantly associated with lower odds of HIV infection in girls (OR = 0.66; 95% CI = 0.47, 0.92), but not in boys. In sexually active girls, age-appropriate education significantly mediated the protective effect of higher maternal education on condomless sex with partner of unknown or HIV-positive status (β = -0.04; 95% CI = -0.08, -0.0007), sexual debut before age 15 (β = -0.06; 95% CI = -0.09, -0.04), and transactional sex (β = -0.07; 95% CI = -0.10, -0.04).



Conclusions: Our study highlights the multigenerational benefit of education for women. Governments should continue to support educational efforts, especially for adolescent girls who face difficulties staying in school.

EPC030
Artificial-Intelligence-based Predictions of HIV Prevalence in Nigeria through Testing among Adolescents and Young Adults

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Background: Adolescents and young adults (AYA) are more likely to contract HIV, and testing is essential for people who have HIV and those who don't, because the latter are more likely to adopt/encourage precautionary practices. Nigeria has a huge population of above 200 million people, but only 38% know their status. Therefore, this study is aimed at applying an artificial-intelligence based approach (i.e. the long-short-term memory recurrent neural networks (LSTM RNN) for the prediction of the nation's HIV prevalence rates using testing information and subsequently checking the accuracy using evaluation metrics such as mean squared error (MSE), root mean square error (RMSE), and mean absolute error (MAE).

Methods: The testing information/rates used in this study were gleaned from a 2016–2017 survey conducted across 37,440 households in 37 states in Nigeria. 52,690 participants took the survey but the focus is on AYAs aged 15–24

years, who constitute 18,494 participants. The data contains states, ever tested for HIV, recently tested for HIV (last year) and HIV prevalence rates. The LSTM RNN model design included the Vanilla/Stacked versions, with an 80:20 train/test split.

Results: First, the histogram, sample, correlation were generated (Figure 1). Below this figure are the variation of model hyper-parameters to get the numerous predictions of the real data (Figure 2).

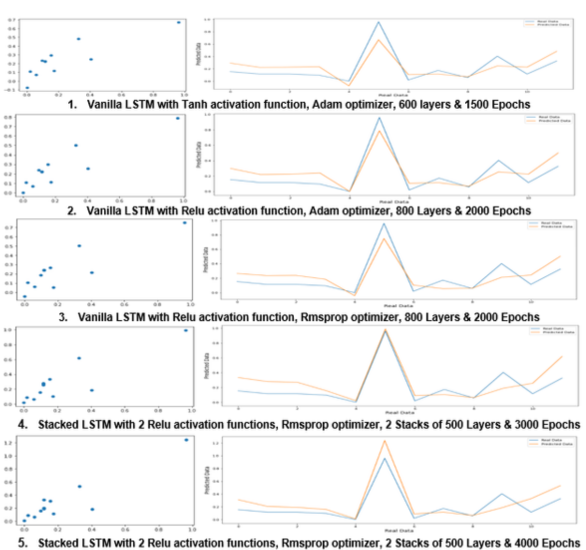
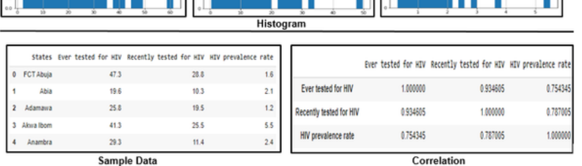


Figure 1.



	States	Ever tested for HIV	Recently tested for HIV	HIV prevalence rate
0	FCT Abuja	47.3	28.8	1.6
1	Abia	19.6	10.3	2.1
2	Adamawa	25.8	19.5	1.2
3	Akwa Ibom	41.3	25.5	5.5
4	Anambra	29.3	11.4	2.4

Sample Data

	Ever tested for HIV	Recently tested for HIV	HIV prevalence rate
Ever tested for HIV	1.000000	0.934605	0.754345
Recently tested for HIV	0.934605	1.000000	0.787005
HIV prevalence rate	0.754345	0.787005	1.000000

Correlation

LSTM/Layers/Epochs	Activation function/ Optimizer	MSE	RMSE	MAE
Vanilla/600/1500	Tanh/Adam	0.0222	0.1490	0.0988
Vanilla/800/2000	Relu/Adam	0.0229	0.1513	0.0982
Vanilla/800/2000	Relu/Rmsprop	0.0205	0.1431	0.0938
Vanilla/1000/3000	Relu/Rmsprop	0.0205	0.1431	0.0947
Stacked/2(500)/3000	2 Relu/Rmsprop	0.0151	0.1229	0.0653
Stacked/2(512)/5000	2 Relu/Rmsprop	0.0043	0.0656	0.0387
Stacked/2(512)/4000	2 Relu/Rmsprop	0.0014	0.0374	0.0262

Evaluation Metrics for the Training and Testing Experiments

Figure 2.

Conclusions: The experiments show that the 4th experiment in Figure 2 shows the best predicted values. The assumption is that HIV researchers can use LSTM models to predict prevalence data if they know how many people have been tested.

Epidemiology of HIV in key populations (e.g., gay men and other men who have sex with men, sex workers, transgender people, people who inject rugs and prisoners and other incarcerated people)

EPC031

Sexual behavior, condom use and rates of HIV and other sexually transmitted infections among male and female non-Thai sex workers in Chiang Mai, Northern Thailand

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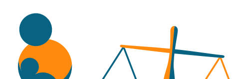
Background: About three quarters of sex workers in Thailand's northern capital of Chiang Mai are non-Thai but they are not tracked in Thai national annual sentinel surveillance systems. This study investigates sexual behavior and rates of HIV and sexually transmitted infections (STIs) in this ignored group.

Methods: This descriptive cross-sectional study was conducted among non-Thai sex workers who worked in urban and rural Chiang Mai between March-October 2019. Recruitment was via NGO staff and/or health personnel coordinating with owners/managers of sex work venues. All respondents were interviewed face-to-face by gender-matched trained interviewers. At survey sites, all participants had a blood test for HIV and Syphilis.

A subgroup of female participants had cervical secretion screening for *Chlamydia trachomatis* (CT) and *Neisseria gonorrhea* (NG). Median and interquartile range (IQR) were calculated for continuous variables. Number and proportion were computed for categorical variables, and compared by sex using Fisher's exact test.

Results: In total, 396 non-Thai sex workers (198 males and 198 females) from 23 sex work venues were interviewed. Respondents were aged 18-49 years (median 25, IQR 22-30). Male respondents were significantly younger than females (p=0.003). Most were from Myanmar (92.9%), and 63.4% had been in sex work within two years.

Three quarters had sex with up to 100 different people (median 50, IQR 15-99), with 11.6% having had more than 200 sexual partners. Their clients were mainly Thai (64.5%) and the rest were Asian foreigners. In the preceding month, 17.0% consistently used condoms with regular sex partners, 53.7% with casual sex partners (non-clients), and 87.9% with clients. Female sex workers were more likely to consistently use condoms with clients (p=0.001). Prevalence of HIV infection was 2.3% (2.5% males, 2.0% females). Syph-



ilis was found in 3.0% (4.0% males, 2.0% females). Among 100 female participants, 22% tested positive for CT and 7% for NG.

Conclusions: Among non-Thai sex workers, consistent condom use was very low with regular partners, and inconsistent with clients. Rates of HIV, Syphilis, CT and NG were higher compared to reported Thai population. Findings highlight the need for non-Thai sex works to be included in national policies for HIV and STI prevention.

EPC032

90-90-90 targets for engagement in HIV care have been met for trans women in San Francisco, yet challenges remain

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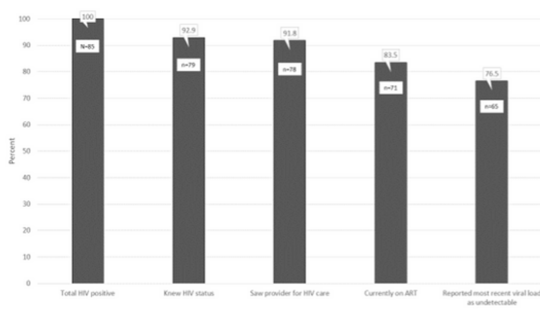
Background: Trans women have very high HIV prevalence and have lagged behind 90-90-90 targets for engagement in care. When engagement was last measured in San Francisco in 2017, 96% of trans women were aware of their status, 75% were on antiretroviral therapy (ART), and 88% had viral suppression. Since 2017, several initiatives have attempted to address these gaps, including peer navigators, free gender-affirming surgery, and affordable housing.

The current study updates HIV prevalence and engagement in care among trans women following the implementation of these initiatives in San Francisco.

Methods: We conducted a community-based, cross-sectional survey of trans women in San Francisco recruited through respondent-driven sampling (N=201, 2019-2020). Eligibility criteria were: self-identified women, trans women, or other gender and had been assigned male at birth; living in San Francisco; English or Spanish-speaking; and 18 years or older. Measures included HIV serostatus, risk factors for infection, and indicators of engagement with HIV care. Multivariable logistic regression analysis characterized associations with HIV seropositivity.

Results: Among 201 trans women enrolled, 85 (42.3%) had HIV (95%CI 35.4.-49.4). HIV was associated with having a sexual partner who injected drugs (AOR 3.30, 95%CI 1.58-6.90), ever injecting drugs (AOR 2.28, 95%CI 1.06-4.89), cost not being a barrier to healthcare (AOR 2.63, 95%CI 1.02-6.67), having emotional support from family (AOR 2.85, 95%CI 1.43-5.65), and Black race/ethnicity (AOR 2.59, 95%CI 1.16-5.69).

Of trans women living with HIV, 92.9% were previously diagnosed, 89.9% were on ART, and 91.5% reported viral suppression.



Conclusions: Trans women in San Francisco met 90-90-90 targets in 2020, at 93-90-92. Recent initiatives appear to have improved engagement in HIV care, gender-affirming care, and potentially family support. Uptake in PrEP among people who inject drugs and Black/African Americans may have a substantial impact on HIV transmission to trans women. Addressing systemic racism and intersecting stigmas may be needed to achieve 95-95-95 targets.

EPC033

Heterogeneity in HIV/STI risk and prevention among cisgender people with transgender and non-binary partners

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Background: Although transgender people have a high prevalence of HIV/STIs, less is known about the epidemiology of HIV/STIs and prevention utilization among the cisgender partners of transgender people.

Methods: We pooled data from five cross-sectional data sources in Washington State: the 2019, 2020, and 2021 annual Pride Surveys, 2017 National HIV Behavioral Surveillance among MSM, and data from the public health Sexual Health Clinic in Seattle from 2019-2020.

We estimated the proportion of cisgender participants who reported having a transgender partner in the last year, stratified by self-reported sexual minority status (e.g. gay, bisexual, queer, lesbian, or pansexual). We used Poisson regression to assess if HIV/STI prevalence, testing, or PrEP use was associated with having a transgender sex partner in the past year.

Results: Our sample included 2896 cisgender women and 7540 cisgender men. Overall, 9% of sexual minority cisgender men and 13% of sexual minority cisgender women reported having any transgender partners, most commonly non-binary partners.

Only 2% of heterosexual cisgender men reported having a transgender partner, mostly commonly transgender women. HIV/STI prevalence was highest among cisgender men who partner with non-binary people and transgen-

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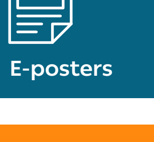
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der men, although these men were also the most likely to engage in high levels of testing and PrEP use (Table). Cisgender men who partner with transgender women were significantly less likely to have ever used PrEP (aRR 0.34, 95%CI:0.22-0.53). HIV/STI testing and PrEP use was lowest among cisgender women (Table).

In all regression models, having a transgender partner was associated with a 2-fold higher likelihood of HIV testing but was not associated with higher HIV prevalence.

	Cis Men who Partner with Trans Women n (%)	Cis Men who Partner with Trans Men n (%)	Cis Men who Partner with Non-binary People n (%)	Cis Women who Partner with Trans Women n (%)	Cis Women who Partner with Trans Men n (%)	Cis Women who Partner with Non-binary People n (%)
N	131	216	292	49	63	175
Sexual minority status	108 (82.4)	204 (94.4)	278 (95.2)	49 (100.0)	63 (100.0)	174 (99.4)
HIV Positive	7 (5.3)	29 (13.4)	40 (13.7)	0 (0.0)	0 (0.0)	1 (0.6)
Any Bacterial STI, past year	32 (29.4)	79 (43.2)	73 (31.7)	3 (13.0)	3 (10.7)	8 (10.8)
Tested for HIV, past year	73 (57.9)	133 (63.6)	173 (66.0)	15 (35.7)	21 (38.9)	55 (36.9)
Tested for STIs, past year	27 (55.1)	78 (70.9)	116 (65.2)	14 (35.0)	16 (31.4)	49 (32.9)
Ever Used PrEP	26 (25.0)	76 (49.7)	98 (43.8)	2 (5.0)	0 (0.0)	4 (2.7)
Current PrEP Use	18 (15.8)	56 (35.0)	67 (28.9)	1 (2.0)	0 (0.0)	1 (0.6)

Table. HIV/STI Prevalence and Prevention among Cisgender People with Transgender Partners in Washington State, 2019-2021

Conclusions: Sexual minority cisgender people commonly reported having transgender partners (approximately 1 in 10). There was significant heterogeneity of HIV/STI prevention utilization for cisgender men and women with transgender partners. Notably, PrEP use was low among some subgroups with high HIV/STI prevalence.

EPC034

Prevalence of HIV and STIs in Peruvian men who have sex with men (MSM) and transgender women (TGW) and factors associated with new HIV diagnosis

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Background: HIV/STI surveillance is key to steering public health efforts to control HIV. We aimed to determine the prevalence of HIV and other STIs among MSM and TGW in Peru and the factors associated with new HIV diagnosis.

Methods: In 2019, time-space sampling was used to estimate HIV/STI prevalence in 7 cities (MSM) and 10 cities (TGW) in Peru. The survey collected socio-demographics, sexual risk behaviors, substance use, self-reported STI history, HIV testing history.

Weighted prevalence and 95% confidence intervals were calculated for HIV and syphilis. Multivariate logistic models were estimated using stepwise backward selection to determine the factors associated with new HIV diagnosis, defined as unknown prior infection, among MSM and TGW.

Results: Overall, 1768 MSM and 1198 TGW were enrolled. The weighted HIV prevalence was 10.0% (95%CI=8.0-12.4) among MSM and 31.8% (95%CI=28.4-35.4) among TGW; newly diagnosed HIV was 6.2% (95%CI=4.5-8.6) among MSM and 17.1%(95%CI=14.2-20.5) among TGW; while the prevalence of recent syphilis was 4.5% (95%CI=3.3-6.3) among MSM and 44.8% (95%CI=41.0–48.7) among TGW. Among both MSM and TGW, history of syphilis and active syphilis were associated with increased prevalence of newly diagnosed HIV infection (all p-values<0.05).

Among TGW, higher education and income were associated with decreased prevalence of newly diagnosed HIV; while being a sex worker was associated with increased prevalence of new HIV (all p-values<0.05). Sexual risk behaviors, including passive anal intercourse, were associated with increased prevalence of newly diagnosed HIV infection (all p-values<0.05).

Conclusions: Peruvian MSM and TGW continue to be vulnerable populations for HIV acquisition, as it is throughout the Americas. Prevention efforts should take into account the structural vulnerabilities of TGW and continue to improve sexual health services to address risk factors for new HIV diagnosis, including syphilis infection.

	MSM:	OR	95% CI	p	TGW:	OR	95% CI	p
Higher education (Ref=having less than higher education)						0.42	0.18–0.99	0.047
More than two minimun wages montly income (Ref= less than minumum wage)						0.42	0.20–0.88	0.021
Modern/Versatile sexual role (Ref= active)		4.46	1.93–10.31	<0.001				
Pasive sexual role (Ref= active)						1.94	1.04–3.62	0.038
Condom use at last intercourse (Ref= no)						0.54	0.33–0.88	0.014
Sex with a partner with unknown HIV status (Ref= no)		2.51	1.26–5.01	0.009				
Sex worker (Ref= no)						2.23	1.35–3.67	0.002
History of Syphilis: TPHA positive (Ref= negative)		2.30	1.12–4.73	0.024		1.89	1.11–3.21	0.018
Active Syphilis: TPHA positive + RPR > 8 DILS (Ref= negative)		4.47	1.36–14.69	0.014		3.33	1.62–6.88	0.001

Table.

EPC035

Life after U=U: condom and PrEP use patterns among HIV discordant couples

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Background: Undetectable=Untransmittable (U=U) is a broad messaging campaign explaining that people living with HIV who maintain an undetectable viral load through the use of daily antiretroviral therapies cannot sexually transmit HIV.
We aim to assess whether patterns of condom or pre-exposure prophylaxis (PrEP) use may be changing among serodiscordant couples in the new era of U=U messaging.

Methods: Data come from the National Couples' Health and Time (NCHAT) Study designed to assess health of cohabitating different- and same-gender couples aged 20-60 across the United States. We utilized survey weighted logistic regression analyses to assess the association between participant/partner HIV status and use of condoms and PrEP (either Truvada or Descovy). Models were adjusted for demographics (e.g., age, race/ethnicity, and sexual orientation) and known confounders including illicit drug use and detectable HIV viral load status.

Results: Among 3,441 NCHAT participants, 83 (2.4%) self-reported a diagnosis of HIV while 68 (2.0%) reported their current spouse or partner was diagnosed with HIV. 359 (10.4%) reported condom using during their last sexual encounter, 159 (4.6%) reported ever having used PrEP, and 72 (2.1%) reported current PrEP use. Adjusting for detectable viral load status, participants diagnosed with HIV were significantly less likely to report using a condom during their last sexual encounter (aOR = 0.04; 95% CI: 0.004 – 0.50) compared to those undiagnosed with HIV.
Similarly, adjusting for detectable status, those whose partners/spouses are diagnosed with HIV were significantly less likely to use a condom relative to those whose partners/spouses are undiagnosed with HIV (aOR = 0.16; 95% CI: 0.03 – 0.81).
Finally, those in discordant relationships, relative to those in concordant relationships, were significantly more likely to have ever used PrEP (aOR = 4.19; 95% CI: 1.29 – 13.62) and to currently be on PrEP (aOR = 124.80; 95% CI: 4.40 – 3544.60).

Conclusions: These results demonstrate reduced use of condoms and increased use of PrEP among participants in HIV discordant relationships.
Taken together, these data suggest that the U=U messaging campaign is working and providing confidence among participants in discordant relationships that HIV cannot be sexually transmitted, particularly in light of PrEP use among the HIV undiagnosed partners.

EPC037

HIV prevalence among male clients and non-paying male sex partners of female sex workers in sub-Saharan Africa: a systematic review and meta-analysis

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Background: Most HIV prevention programs focus predominantly on FSW, and little is known about the epidemiology of HIV among paying male sex partners (clients) and non-paying male sex partners of FSW. We undertook a systematic review and meta-analysis to estimate the HIV prevalence among male sex partners of FSW in sub-Saharan Africa.

Methods: We searched Medline, EMBASE, The Cochrane Database, Scopus, CINAHL, and various grey literature sources (e.g., Demographic and Health Survey reports) for articles reporting HIV prevalence of clients and non-

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paying male partners of FSW published between January 2004 and October 2018. HIV prevalence estimates were pooled using a random effects model to obtain overall and regional HIV prevalence among clients in sub-Saharan Africa. Sources of between-study heterogeneity were identified using meta-regression analysis.

Results: The search identified 2045 unique citations, of which 53 studies met our inclusion criteria. Zero studies contained data on non-paying partners of FSW. Fifty-three studies, representing 12,322 clients of FSW across 31 countries in sub-Saharan Africa, were included in the pooled HIV prevalence estimate.

Overall, HIV prevalence among clients was 6.6% (95% CI: 4.9-8.5%). HIV prevalence among clients in West/Central Africa was 3.3% (2.0-4.9%, I^2=87.3%, n=27 studies); in East Africa was 8.4% (6.3-10.7%, I^2=78.3%, n=15); and in Southern Africa was 14.7% (10.6-19.3%, I^2=92.9%, n=11).

On meta-regression, region and how clients were defined were the main source of heterogeneity in HIV prevalence, with little variability attributable to year and study type in the fully adjusted model. Using West/Central Africa as the reference group, risk of HIV was higher in East (adjusted odds ratio (AOR): 2.92, 95% CI:1.68-5.08) and Southern Africa (AOR: 7.15, 95% CI: 4.25-12.03).

Conclusions: The high prevalence of HIV in clients of FSW in sub-Saharan Africa demonstrates similar patterns to overall HIV prevalence across regions. Future research on the epidemiology of HIV among non-paying male partners of FSW is also needed.

EPC038
HIV prevalence among international migrants: a systematic review and meta-analysis

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Background: Hundreds of millions of migrants cross international borders each year. International migrants may face health inequities that exposes them to a higher risk for HIV compared to native populations. Addressing these health inequities also serves to protect the health of the native populations by preventing potential spread of infections.

We aimed to conduct a systematic review to estimate the HIV prevalence in international migrants compared with native populations.

Methods: We searched five databases for publications between 2010 and March 2021. Two reviewers independently screened the studies, whilst a third reviewer resolved any discrepancies. Using a random-effects meta-analysis, we calculated the pooled HIV prevalence ratios comparing HIV prevalence of migrants with native-born populations. We estimated pooled prevalence ratios (PR) according to migrant type, region of origin, and country-income level.

Results: In total, 4,681 studies were screened and 37 included in the final analysis. Most studies (84%) were from high-income countries. Migrant populations were categorised as refugees (8%), asylum seekers (3%), undocumented people (3%) while the rest were other international migrants (86%). The pooled PR for international migrants was 1.72 (95% confidence intervals (CI) 1.10 – 2.66, I^2=99.7%), refugees was 2.37 (95% CI 0.33–16.99, I^2=99.5%), asylum seekers was 54.79 (95% CI 17.23–174.23, I^2=90.2%), whilst undocumented people was 3.98 (95% CI 0.11–143.01, I^2=94.6%). Geographically, pooled PR of migrants originating from African countries was the highest at 4.12 (95% CI 1.44 – 11.76, I^2=99.7%). Based on country-income level, the pooled PR of migrants residing in high-income countries was higher than those in low-income countries (2.25, 95% CI 1.27 – 3.98, I^2=99.8% vs 0.23, 95% CI 0.20 – 0.28, I^2=0%).

Conclusions: Overall, we found a higher prevalence of HIV among international migrants compared to native populations. To ensure that 'no one is left behind' in ongoing efforts achieve and maintain low HIV incidence, inclusive health policies and targeted strategies for delivering HIV testing, prevention and treatment services for migrant populations are urgently needed.

EPC039
HIV and risk behaviors trends among people who inject drugs in Iran, 2010 to 2020

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Background: Injection drug use is one of the main routes of HIV transmission and acquisition in Iran. We assessed HIV prevalence, risk behaviors, and uptake of prevention services among people who inject drugs (PWID) in Iran between 2010 and 2020. We also examined the individual and environmental determinants of HIV seropositivity in 2020.

Methods: PWID were recruited from major cities across the country under three national biobehavioral surveillance surveys using convenience sampling method from

harm reduction facilities and through outreach efforts in both 2010 and 2014 surveys and using respondent-driven sampling in the 2020 survey. Participants were tested for HIV and interviewed using a behavioral questionnaire that included socio-demographics, behaviors, and harm reduction service usage.

The analytic sample included 2,349 participants in 2010, 2,307 in 2014, and 2,684 in 2020. We used multivariable logistic regression models to examine risk factors associated with HIV seropositivity.

Results: Participants in the 2010 survey were younger than those in the 2014 and 2020 surveys (mean age = 34.5, 36.8, and 40.2, respectively). Participants were predominantly male in all surveys (97.8%, 97.5%, and 96.7%). HIV prevalence decreased from 15.1% (95% confidence intervals (CI): 13.6, 16.6) in 2010 to 9.3% (95% CI: 8.1, 10.5) in 2014 to 3.5% (95% CI: 2.9, 4.3) in 2020.

The prevalence of receptive needle sharing (25.2%, 10.4%, and 3.9%) and unprotected sex (79.4%, 67.9%, and 65.2%) also decreased over time. Uptake of free needle/syringe increased (68.8%, 57.4%, and 87.9%), while uptake of free condom remained relatively stable across surveys (34.3%, 36.1%, and 32.6%).

Multivariable analysis for the 2020 survey showed that history of homelessness (adjusted odds ratio (AOR): 2.10; 95% CI: 1.11, 3.95), incarceration (AOR: 2.66, 95% CI: 1.33, 5.32), and longer injecting career (AOR: 3.27, 95% CI: 1.50, 7.14) significantly increased the odds of HIV seropositivity.

Conclusions: During the past decade, HIV prevalence decreased among PWID in parallel with a reduction in drug- and sexual-related risk behaviors. PWID with a history of homelessness or incarceration and those who inject drugs for a longer period continue to have a higher prevalence of HIV and need to be provided with targeted prevention and screening interventions.

EPC040

Concordance in sexual partnership HIV serostatus and transmission prevention coverage among gay, bisexual and other men who have sex with men (GBMSM) and transgender (TG) individuals in Nairobi, Kenya

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Background: Half of GBMSM and TG individuals living with HIV have an unsuppressed viral load in Nairobi and uptake of daily oral PrEP is low. This study examines partnership HIV-seroconcordance to understand whether HIV prevention and treatment practices correspond with partnership transmission risk.

Methods: A respondent driven sampling survey (May-December 2017) recruited 618 GBMSM and TG adults with current or birth-assigned male gender resident in Nairobi County. Participants tested for HIV and viral load, reported HIV testing, HIV prevention practices, access and demand, and four most recent sexual partners/partnerships, including partner HIV status if known.

Active partnerships were classified as HIV seroconcordant, serodiscordant, or unknown seroconcordance. We examined the association between gender, age, HIV, relationship type and seroconcordance using a multinomial regression model with random effects for participant. Here we show HIV prevention behaviours stratified by participant HIV status and seroconcordance.

Results: 600/618 participants gave complete data about 2058 partners; 863 (41.4%) were one-time and 807 (39.2%) sustained and active partnerships (81.4% male, 14.1% female and 4.5% transgender). 55.0% of active partners shared their HIV status, leading to 43.0% of partnerships classified as seroconcordant, 9.3% as discordant and 47.7% of unknown seroconcordance.

Adjusted for relationship type, age and gender, participant HIV status was associated with seroconcordance (p<0.001). Within HIV strata, there was little evidence that transmission prevention coverage/access/demand was targeted to seroconcordance (Table 1).

Recent testing (p=0.002) and access to PEP (p=0.009) was less prevalent amongst discordant and unknown seroconcordance partnerships among those HIV-negative.

HIV status of participant	HIV status reported of partner:	Positive, n (%)	Negative, n (%)	Unknown, n (%)	Total partnerships, n (%)	p-value for difference by seroconcordance, accounting for clustering by participant
Positive	Condoms used	27/38 (71.1%)	49/63 (77.8%)	115/176 (65.3%)	191/277 (69.0%)	0.193
	Viral load <50 copies/ml	26/38 (68.4%)	28/63 (44.4%)	92/176 (52.3%)	146/277 (52.7%)	0.138
	Total HIV-positive, across partner seroconcordance	**38/277 (13.7%)**	**63/277 (22.7%)**	**176/277 (63.5%)**	**277/807 (34.2%)**	
Negative	Condoms used	10/12 (83.3%)	208/309 (67.3%)	142/209 (67.9%)	360/530 (67.9%)	0.555
	HIV tested in previous 6 months	5/12 (41.7%)	188/309 (60.8%)	90/209 (43.1%)	283/530 (53.4%)	0.002
	Current Pre Exposure Prophylaxis (PrEP) use	0/12 (0%)	17/309 (5.5%)	14/209 (6.7%)	31/530 (5.9%)	0.808
	Likely/Very likely to use PrEP if available	9/12 (75%)	198/309 (64.1%)	121/209 (57.9%)	328/530 (61.9%)	0.318
	Aware of Post Exposure Prophylaxis (PEP) and where to access it	5/12 (41.7%)	197/309 (63.8%)	102/209 (48.8%)	304/530 (57.4%)	0.009
	Total HIV-negative, across partner seroconcordance	**12/530 (2.3%)**	**309/530 (58.3%)**	**209/530 (39.4%)**	**530/807 (65.7%)**	

Table 1: Transmission prevention coverage by HIV-seroconcordance, 807 active partnerships.

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Conclusions: Most ongoing GBMSM and TG partnerships are either HIV serodiscordant or of unknown concordance, and many partnerships at highest risk of transmission are not covered by prevention tools.
These findings suggest value in partnerships-focused HIV testing, status sharing and prevention approaches that are under-utilised for this population in Kenya.

EPC041
Polysubstance use profiles and unsuppressed viral load among female sex workers living with HIV in Durban, South Africa: a latent class analysis

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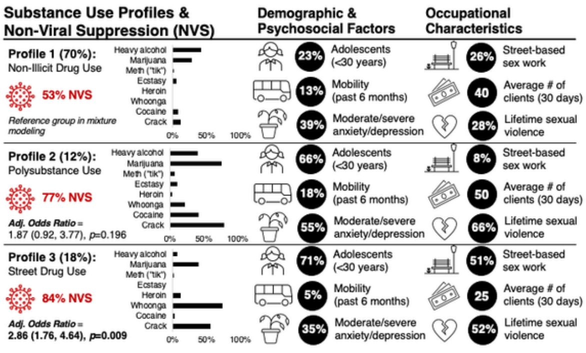
Background: Substance use can challenge HIV treatment adherence among people living with HIV. However, there has been limited study and ultimately limited services addressing substance use for female sex workers living with HIV (FSWLH) in South Africa.
In response, we used latent class analysis (LCA) to characterize the relationship between types of substance use and non-viral suppression (NVS) among FSWLH in Durban, South Africa.
Methods: FSWLH (N=1,371) completed a baseline questionnaire and viral load assessment from 2018 to 2020. We implemented LCA to partition FSWLH into discrete groups based on substances used in the past month: alcohol (heavy use: ≥5 drinks 2+ times weekly), marijuana, cocaine, crack, methamphetamines, ecstasy, whoonga, and heroin.
We calculated Wald tests to identify demographic, psychosocial, and occupational predictors of probabilistic class membership and implemented multivariable mixture modeling to describe associations of LCA-identified substance use patterns with NVS (≥50 copies/mL), adjusting for potential confounders.
Results: Substance use was common, with participants reporting use of heavy alcohol (35%), marijuana (35%), crack (27%), and whoonga (16%). Three substance use profiles emerged:
non-illicit drug use (marijuana/alcohol mostly, ~70% sample prevalence),
polysubstance use (~12% sample prevalence), and
street drug use (whoonga/crack predominantly, ~18% sample prevalence), each with distinct demographic, psychosocial, and occupational characteristics
(see Figure). Polysubstance use and street drug use were each associated with higher probabilities of NVS compared to non-illicit drug use (77% vs. 84% vs. 53%, χ^2 77.169, p<0.001). In multivariable analysis, polysubstance use (adj. Odds Ratio [aOR] 1.87, 95%CI: 0.92–3.77) and street drug use (aOR 2.86, 95%CI: 1.76–4.64) were associated with NVS relative to non-illicit drug use.



Figure

Conclusions: LCA and mixture modeling identified distinct substance use patterns and demonstrated their relative contributions to HIV viremia among FSWLH. Reducing vulnerabilities associated with polysubstance use is key to optimizing HIV treatment adherence and, subsequently, improving viral load outcomes for FSWLH.

EPC042
HIV transmission dynamics in internally-displaced people who inject drugs in Ukraine

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Background: Ukraine has a large number of people displaced from regions experiencing conflict, a high prevalence of injection drug use, and a high prevalence of HIV. Internally displaced people who inject drugs (IDPWID) might be at a higher risk for HIV if their linkage to HIV prevention and care has been affected by displacement. Intervention strategies might depend on patterns of mixing within the IDPWID community and between IDPWID and host population.
Methods: We used respondent-driven sampling to recruit IDPWID in Odessa, Ukraine, in July - September 2020. All participants were interviewed, tested for HIV with rapid tests, and asked to provide a blood sample for HIV genetic sequencing. HIV *pol* sequences were obtained through Nanopore sequencing and used to reconstruct phylogenetic trees together with publicly available HIV sequences from Odessa and IDPWID regions of origin.

Results: We recruited 164 IDPWID (19% women, median age 37), 64 (39%) of them received a positive rapid HIV test result, and 28 of them (44% of all HIV-positive) were newly diagnosed. Only 13 IDPWID (20% of all HIV-positive and 36% of those aware of their HIV-positive status) were receiving anti-retroviral treatment at the time of the survey; 8 of them (61%) were virally suppressed. 88 (54%) IDPWID moved to Odessa in 2014/2015 right after the conflict started; 36 IDPWID (22%) have not received an HIV test since relocation to Odessa.

We received 35 HIV *pol* sequences from the study participants' samples and aligned them to 251 and 107 sequences from Odessa and from IDPWID regions of origin, respectively (total N = 393). We found 6 transmission clusters that involved IDPWID: four included IDPWID sequences only (total N=9) and two included IDPWID and Odessa sequences (total N=7). All but one clusters included IDPWID from different regions of origin, suggesting transmission post-relocation to Odessa.

Conclusions: Linkage to HIV testing and treatment is low in IDPWID in Odessa. Analysis of HIV sequences showed frequent mixing of IDPWID from different regions of origin post-relocation, but limited mixing with the host population. Studying HIV transmission patterns within the IDPWID community and between IDPWID and local populations can help design targeted preventive interventions.

EPC043

Sexual risk behaviors among factory workers in Shenzhen, China: a cross-sectional study

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Background: Factory workers make up the majority of Chinese internal migrants, with Shenzhen being a leading exporter of workers. Long-term separation from their companions and therefore having sex with casual partners make factory workers vulnerable to HIV infections. This study aims to evaluate HIV knowledge, sexual risk behaviors, and associated factors among factory workers in Shenzhen.

Methods: A cross-sectional study was conducted from November 2019 to April 2020 by multi-stage stratified cluster random sampling. Eligible participants were: full-time workers; ≥18 years old; working in factories with more than 50 employees. A self-administered questionnaire was used to collect information on demographic characteristics, HIV knowledge, sexual experience, sexual risk behaviors, and non-sexual behaviors. Univariate and multivariable logistic regression were applied to examine factors associated with sexual risk behaviors.

Results: A total of 2029 factory workers were included in the study. Of them, the mean age was 37.22 (±4.39) years; 48.5% were men; 89.3% had worked for more than 1 year in Shenzhen; 59.9% had a higher level of HIV/AIDS knowledge. Sexual risk behaviors were reported including unprotective sex last time (32.3%), having more than one sex partner (11.5%), and engaging in commercial sex (44.3%) in the past year. Factors associated with having unprotective sex last time were being married or cohabitated (adjusted odds ratio [AOR] 1.53, 95% confidence interval [CI] 1.11-2.12), higher educational levels (0.62, 0.46-0.85), and not using a condom at sex debut (0.17, 0.13-0.22).

Regarding being males (3.24, 2.10-4.99 and 2.27, 1.35-3.80), being married or cohabitated (0.48, 0.33-0.70 and 0.38, 0.24-0.60), having sexual debut older than 18 years (0.16, 0.09-0.28 and 0.34, 0.17-0.69), and using drugs before or during intercourse (4.20, 2.21-7.98 and 13.35, 6.89-25.87) were associated with both having more than one sex partner and engaging in commercial sex in last year.

Conclusions: Most respondents had basic HIV knowledge, but their sexual risk behaviors were prevalent. Our findings demonstrated that programs aimed at promotion of safer sex practices should target vulnerable migrant workers.

EPC044

Assessing the association of access to opioid substitution therapy and HIV incidence among people who inject drugs (PWID) in Kachin, Myanmar, 2008-2020

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Background: Kachin is a conflict-affected region in North Myanmar, with a large population of people who inject drugs (PWID). Recent surveys among PWID have estimated HIV prevalence in Kachin to be >40%. This study aimed to examine trends in and associations with HIV incidence among PWID attending three harm reduction drop-in centres (DICs) in Kachin using routine HIV testing data gathered from these DICs.

Methods: Demographic data and information relating to HIV testing and drug use behaviours was collected from threeMédecins du Monde (MdM) DICs offering HIV

testing in Hopin, Mogaung, and Myitkyina for 2008-2020. HIV prevalence was assessed using testing data from first-time DIC visits. HIV incidence was estimated by linking subsequent test records. Cox regression was used to examine associations with HIV incidence, including the impact of opioid substitution therapy (OST).

Results: First test results were available for 13,056 PWID. HIV prevalence was high in the population at 52.0% (95%CI 51.2-52.9%). HIV prevalence peaked in 2017 at 69.7% (95%CI 67.2-72.1%), declining over subsequent years to 39.5% (95%CI 36.9-42.2%) by 2020. Data on follow-up HIV testing was available for 2,343/6,268 (37.4%) PWID testing initially negative, totalling 5988.6 person-years (py), with 466 incident HIV infections between 2009-2020.

Overall HIV incidence among PWID in Kachin was 7.8 per 100py (95%CI 7.1-8.5) and decreased from 23.9 (95%CI 16.9-33.8) in 2008-11 to 5.5 per 100py (95%CI 4.9-6.3) in 2017-20. Incidence was highest in Myitkyina (12.6 per 100py; 95%CI 10.6-14.9). Hopin and Mogaung DICs provided OST from 2008, with 65.4% of their clients followed on OST for an average of 2.5yrs. For PWID at these two DICs, a history of starting OST during follow up was associated with reduced HIV incidence (aHR 0.45, 95%CI 0.36-0.58; p<0.001), adjusting for DIC location and year of testing. Recent (≤6weeks) needle sharing was associated with higher incidence (aHR 2.23, 95%CI 1.86-2.97; p<0.001).

Conclusions: Although HIV incidence is high among PWID in Kachin, data suggests it has decreased over recent years and is reduced after starting OST. It is possible that increases in needle and syringe provision and OST access among PWID may have contributed to the observed decrease in incidence.

EPC045

Estimating the population size of transgender people in South Africa using multiple methods

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Background: National estimates of the sizes of key populations (KPs) are essential for HIV prevention intervention planning, resource allocation and for advocacy efforts. However, epidemiologic studies typically provide size estimates for only limited high priority geographic areas. Beyond Zero conducted the first study that used a range of data sources and employed multiple methods to estimate the number of adult transgender TG people in South Africa.

Methods: We implemented population size estimation (PSE) of TG people in South Africa in 2021 using several primary approaches (respondent-driven sampling, service multiplier, wisdom of the crowd) and secondary sources (administrative records, capture-recapture). Data were collected from a representative sample of 15/52 districts across all nine provinces. The estimates based on the wisdom of the crowd, service multiplier and respondent-driven sampling were loaded into the anchored multiplier calculator with their lower/upper bounds to generate the consensual estimate with their associated confidence intervals.

Results: The median of estimates was 179 327 TG people in South Africa (95% CI 174 609 to 184 059), which corresponds to 0.30% (95% CI 0.29 to 0.31) of the total population of the country. The median of the estimated population size for each province are: Eastern Cape - 21951 (95% CI 18598 to 25 489); Free State - 5967 (95% CI 3 962 to 8 518); Gauteng - 50916 (95% CI 43 823 to 53 434); KwaZulu-Natal (KZN) - 22388 (95% CI 16 524 to 25 124); and Limpopo - 18960 (95% CI 14 900 to 21 763).

Conclusions: Our estimates suggest that 0.30% (95% CI 0.29 to 0.31) of adults in South Africa might be TG people. Overall, the approaches used in this TG PSE study were robust and consistent with other estimates of adults of reproductive age who are transgender which are between 0.10% to 1.1% (UNAIDS, 2014) and 0.50%–0.90% (Poteat, 2014).

The results provide an important point for macro- and micro-level planning of HIV services at the national and local levels, and for allocating programme resources and assessing programme coverage and quality.

EPC046

In-country migration as a predictor of HIV infection among *travestis* and transgender women in Northeast Brazil

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Background: *Travestis* and transgender women (TrTW) experience high mobility mainly due to social vulnerability that drives them to seek better living conditions in Brazil, which is a continental country. This mobility may expose them to a greater risk of HIV infection. Therefore, we aimed to investigate the association between in-country migration and HIV infection among TrTW.

Methods: A cross-sectional study of 864 TrTW recruited by the respondent-driven sampling method in capitals of three States in Northeast Brazil in 2017. The eligibility criteria were: 18 years old or older and to identify herself as a travesti (emic concept to describe a specific gender identity in Brazil) or trans woman. A socio-behavioral questionary and HIV rapid tests were applied.

In-country migration was defined as having a current residence place different from the birthplace. Weighted odds ratio (OR) with a 95% confidence interval (CI) estimated the association between in-country migration

and HIV, by age groups (18-34 years old/35 and older), and adjusted by socio-behavioral variables: skin color, income, years of schooling, participation in TrTW civil society organizations, gender-based discrimination, lifetime sex work, lifetime forced sex, illicit use of industrial liquid silicone and primary health care as a usual source of care. The analysis was conducted using the library for complex samples of STATA software.

Results: 36.5% (95%CI:32.1-41.3) of TrMT reported in-country migration; and only 8.2% international migration (95%CI:5.9-11.4). The prevalence of HIV was 24.5% (95%CI:20.5-28.9).

The main reason for in-country migration was to look for work and improve the quality of life (53.7%;95%CI:45.3-62.0). The rate of in-country migration was substantial and increased the odds of HIV infection among TrTW 18-34 years old (aOR:1.84; 95%CI:1.04-3.27); and especially among those 35 years and older (aOR:3.08;95%CI:1.18-8.04).

Conclusions: Studies on the association of migration and HIV infection are recent and scarce among TrTW. The findings suggest the risk of HIV may be higher among TrTW who migrated in-country, which increases, even more, the disproportionality of this infection among them. Therefore, it becomes necessary to develop strategies and health policies that reflect the intense mobility that exists in these populations.

EPC047

Predictors of HIV risk among MSM and transgender women who report online male sexual partners: findings from a cross-sectional two-city study in India

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Background: In India, the increasing use of smartphones among MSM and transgender women (TGW) increases access to sexual partners through virtual spaces. Limited information is available on HIV risk behaviors of MSM and TGW who use virtual spaces to meet sexual partners.

We aimed to examine sociodemographics and related characteristics of MSM and TGW who report online sexual partners, and to identify predictors of condomless anal sex (CAS).

Methods: Between November 2020 and January 2021, we conducted interviewer-administered surveys with 500 MSM and 500 TGW (as part of an ongoing cohort study called 'S3') recruited through community-based organizations in Chennai and Mumbai in India.

Data were collected on the use of social media and dating apps, sociodemographics, condom use, and mental health (e.g., depression, anxiety, problematic alcohol use). Multivariable logistic regression analyses were conducted to identify factors that predict CAS among those with online sexual partners.

Results: Most MSM (59.2%) and TGW (50.4%) reported meeting male sexual partners online through generic platforms (e.g., Facebook, WhatsApp, Instagram), and/or gay apps (e.g., Grindr, Blued). CAS was not significantly different between those who had online sexual partners vs. those who did not (MSM: 31.1% vs. 40.4%; TGW: 29.9% vs. 34.5%).

Those who had completed college (MSM: aOR=1.95, p<.001; TGW: aOR=2.20, p<.01) and those in sex work (MSM: aOR=2.13, p<.001; TGW: aOR=2.50, p<.01) had higher odds of having online sexual partners. In adjusted multivariable models, having online sexual partners was not a significant predictor of CAS.

Among MSM with online sexual partners, internalized homonegativity and resilient coping were significant predictors of CAS; and among TGW with online sexual partners, internalized transprejudice and depression were significant predictors of CAS.

Conclusions: Condomless anal sex is highly prevalent among MSM and TGW who reported online sexual partners. Interventions, which can be delivered online or offline, that address internalized stigma (internalized homonegativity or transprejudice) and depression, and steps to improve resilience could decrease HIV risk among those with online sexual partners.

Given the mixing of offline and online sexual networks, online interventions need to be implemented to promote safer sex and mental health, complementing physical outreach.

EPC048

Feeling safe in a 'risk environment'? Correlates of injecting meth use among MSM who attend sexualized drug parties

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Background: The escalating rates of injecting methamphetamine (meth) use to enhance sexual pleasure are attributed to rising HIV infections. Moreover, Bangkok has become an epicenter for sexualized drug parties where injecting meth use has become common place. Using Tim Rhodes' 'risk environment' as a framework, we assessed correlates of injecting meth use among MSM who attended sexualized drug parties.

Methods: Between September and December 2021, 532 MSM who are at least18 years old and who have attended circuit or private parties, were recruited through various social media platforms related to sexualized drug parties (private LINE®chat groups, private Facebook groups,

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and private Twitter groups). Participants completed self-administered survey, that included questions on demographics, sexual behaviors and substances use. Multivariable logistic regression was used to examine the correlates of injecting meth use.

Results: Of participants, 234 (44%) reported injecting meth usein the past six months. Significant correlates of injecting meth use included having an average monthly income of >$900, (AOR: 1.70, 95% CI: 1.02-2.86), self-reported HIV status (AOR: 2.59, 95% CI: 1.58-4.24), having more than 20 sex partners in the past six months (AOR: 2.84,95% CI: 1.17-6.92), having sex without condom at last sex intercourse (AOR: 3.65,95% CI: 2.19-6.92), having received things/opportunities in exchange for sex (AOR: 3.29, 95% CI: 2.15-5.05), never used alcohol during/before sex (AOR: 4.23, 95% CI: 2.15-5.05) and feeling safe living as gay/bi/MSM/non-hetero in Thailand (AOR:2.08, 95% CI:1.35-3.22).

Conclusions: Results suggest while injecting meth use, unsafe sex, and sex exchange are common in sexualized drug parties, alcohol use is not. Remarkably, participants who attended sexualized drug parties feel safe living in Thailand as a gay/bi/MSM/non-hetero.

This juxtaposition of feeling safe amidst very harsh drug laws may be an entry point for HIV prevention and harm reduction practitioners to promote enabling environments for high-risk MSM.

EPC049

Epidemiology and cause of increasing new infection of HIV among key population in Punjab, Pakistan

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Background: Sathi Foundation is a transgender-based organization working to provide free HIV/AIDS testing and Sexually Transmitted Infections (STIs) diagnosis and treatment services among sexual minorities in Pakistan. It does through community outreach, Voluntary Confidential Counseling, and Testing. In a country like Pakistan, where keeping condoms along can get you arrested, sexual and gender minorities are living at the edge regarding their sexual lives and are forced to indulge in unprotected sexual activities due to the stigma attached to the preventions like condoms and lubricants.

Description: Under the Global Fund's project, Sathi Foundation registered 2975 individuals from Sexual and gender minorities including 1278 transgender persons and 1697 Male who sex with Male (MSM) during the tenure of July to December 2021. In total, 52 individuals tested positive for HIV (39 Transgender and 13 MSM) who reported low income, illiterate and are forced to involved in sex work to earn their bread and butter. Out of 39 PLHIVs, only individuals were able to connect to the treatment cascade reasoning the fear of status disclosure to their families of partners, poor health maintenance due to low income or no source of income, or/and lack of education and information about HIV/AIDS.

Lessons learned: Through the data conducted by Sathi Foundation and one on one interviews with the sexual and gender minority, one of the major issues highlighted by the community was an increase in the prevalence due to the increase in substance abuse specifically chemical drugs. Usage of Chemical drugs has become a common practice among young gay boys to enhance their sexual performance and it is also commonly used by the community members who are involved in sex work.

Sathi Foundation has recently started to educate the community regarding drug abuse issues and empower them through advocacy and awareness sessions to reduce drug consumption among the community.

Conclusions/Next steps: Sathi Foundation has represented its statistics to the Punjab Aids Control Program and Government to strategize the interventions and reduce drug trafficking and its consumption among the community. Sathi Foundation is conducting sessions with the community across the province (Punjab) to raise awareness about HIV/AIDS prevention.

EPC050

Exploring the descriptive epidemiology of demographics and tweet themes among gay, bisexual, and other men who have sex with men users from Twitter in the United States

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Background: Evidence suggests that an increasing number of gay, bisexual and other men who have sex with men (MSM) use open network social media (e.g., Twitter) to create and discuss topics/viewpoints related to HIV prevention and relevant lived experience related to health and social issues. However, no study has explored the demographic profiles or the tweet contents (e.g., theme) generated by MSM Twitter users in the United States (US).

We seek to use big data science and social media mining techniques to explore the descriptive epidemiology of demographics and tweet themes among this subgroup.

Methods: We used a python library (*Tweepy)* to continuously (2021.2-2022.1) collect eligible tweets (e.g., with the keyword/hashtag indication of gay and same-sex behaviors) and associated metadata (e.g., user profiles, # of followers, tweets' likes/retweets) from Twitter. We used an unsupervised machine learning model (e.g., *Latent Dirichlet Allocation) to c*haracterize themes from the collected tweets. Various artificial intelligence-based, computational inference techniques (e.g., Face++,*16-layer VGG CNN* architecture, M3-inference model) were used to infer user

demographics (e.g., location, race, age, and sexual orientation). Descriptive analyses were performed to enumerate top themes and the distribution of user demographic profiles.

Results: A total of 1,063,642 tweets from 21,015 verified, unique MSM users on Twitter were identified. Computationally inferred statistics showed that the mean age of these MSM users was 33 years, with most being White (47%), followed by Black (28%), Hispanic/Latino (19%), and other races (6%).

Overall, 73%, 12%, and 15% of the tweets were generated by users in urban, suburban, and rural areas, respectively, with most users from Los Angeles, Houston/Dallas, New York City, Chicago, and Miami metropolitan areas.

The most discussed and liked/retweeted themes included the experience of gay/HIV-related discrimination/stigma, gay pride/empowerment, sexual orientation disclosure, demands for social support, and experience of HIV prevention uptake (e.g., HIV testing,pre-exposure prophylaxis).

Conclusions: Our research highlights the feasibility of mining tweets to understand the trending topics and related user demographic profiles of MSM in the US.

These findings may yield insight into "who is talking what" and provide implications for designing targeted social media messaging to address various health-related concerns that resonate among social media-using MSM.

EPC051

Global incidence of hepatitis C virus (HCV) and HIV infection among people who inject drugs: a systematic review and meta-analysis

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Background: Data on the incidence of hepatitis C virus (HCV) and HIV infection among people who inject drugs (PWID) are key to informing prevention strategies. We conducted a systematic review and meta-analysis to synthesize global data on primary HCV and HIV incidence among PWID.

Methods: We searched MEDLINE, Embase and PsycINFO for studies published between 01/01/2000 and 14/09/2020 that estimated HCV or HIV incidence among community-recruited PWID. We also contacted the authors of 35 studies to request updated or unpublished data.

We included studies that estimated incidence by longitudinally re-testing people at-risk or by using tests for recent infection. We used random-effects meta-analysis to pool HCV and HIV incidence rates and the relative risks

of HCV and HIV acquisition among women who inject drugs compared to men who inject drugs and young PWID (defined as <20 - ≤35) compared to PWID who were not young.

Results: We retrieved 58 and 51 estimates for HCV and HIV incidence, derived from 25 and 24 countries, respectively. Globally, the pooled HCV incidence was 14.4 per 100 person-years (100py; 95% confidence interval (CI): 12.1-17.0, I^2=96.2%) and the pooled HIV incidence was 1.6 per 100py (95%CI: 1.1-2.2, I^2=98.2%) [Figure].

Relative to men, women had a higher risk of HCV and HIV acquisition [pooled relative risks: 1.20 (95%CI: 1.07-1.34; 32 estimates) and 1.30 (95%CI: 1.09-1.55; 25 estimates), respectively]. Relative to PWID who were not young, PWID who were had a higher risk of HCV and HIV acquisition [pooled relative risks: 1.32 (95%CI: 1.11-1.57; 24 estimates) and 1.42 (95%CI: 1.17-1.73; 21 estimates), respectively].

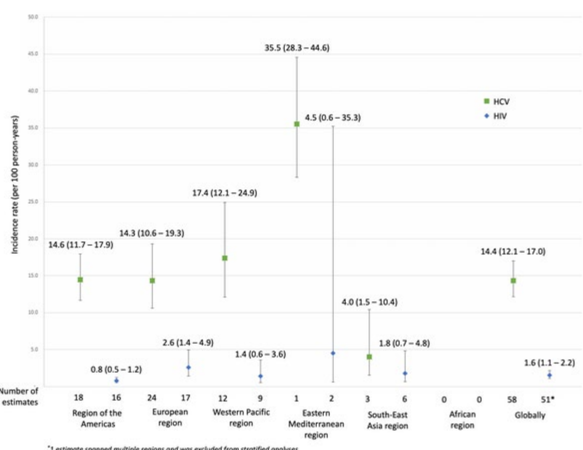

Figure. Incidence of HIV among people who inject drugs.

Conclusions: Findings indicate high HCV and HIV incidence among PWID, particularly among women and those who are young, emphasizing the importance of targeted prevention strategies. The limited data available in some regions indicate a pressing need to implement systems for monitoring HCV and HIV incidence in this population.

EPC052

HIV seroprevalence and sexual prevalence practices among men who have sex with men in southeast Nigeria

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Background: According to the Nigeria HIV/AIDS Indicator and Impact Survey, the prevalence of HIV/AIDS is 1.4% in Nigeria. Despite significant interventions to curb the spread and achieve epidemic control, men who have sex with men (MSM) are disproportionately affected by this epidemic.

Data on HIV and sexual behavior among MSM is scarce in Nigeria, therefore the prevalence of HIV among MSM in south east Nigeria.

Methods: Using a community-based cross-sectional study conducted between June 2021 and October 2021 in 54 MSM hotspots, data was collected on socio-demographics and sexual behavior of 1378 cisgender MSM by interviewer-administered questionnaires. We followed the national algorithm to perform HIV tests, and statistical analysis was done using SPSS.

Results: HIV prevalence was 13.1% among the participants of median age 24 (IQR = 21 – 30 years). Almost all respondents (97%) had adequate knowledge of HIV and transmission mechanisms, and the most common source of information was social media. However, misconceptions on prevention were found in 71.4% of respondents. 77% reported having multiple sex partners and inconsistent condom use (54.4%) in the last three months.

Conclusions: Our study demonstrated that despite high knowledge of HIV/AIDS among MSM, information on prevention is inadequate leading to unsafe sexual practices. This necessitates the need for attention to be shifted towards prevention messaging and scale up of prevention services if epidemic control is to be achieved by 2030.

EPC053

Epidemiology of HIV and hepatitis C in people who inject drugs in Nepal

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Background: People who inject drugs (PWID) are at increased risk for HIV and hepatitis C virus (HCV) due to same injection risk behaviors, including multi-person use of needles and syringes. This first nationally representative survey aimed to measure the prevalence of HIV, HCV, HIV/HCV co-infection and associated risk behaviors among PWID in Nepal.

Methods: This cross-sectional study included 1690 male injecting drug users who were recruited using respondent driven sampling from March to October 2020 in all seven provinces of Nepal. Rapid tests for HIV and HCV, and face-to-face interviews were conducted to collect biological and behavioural information. Data for male injecting drug users for each of the seven Provinces were adjusted for network size and differential recruitment and analyzed using RDS Analyst. Gile's estimate was used to calculate network weight and proportion of population. Multiplier was used to calculate aggregate weight of particular province. National and subnational HIV and HCV estimates presented as prevalence with 95% confidence intervals (CI).

Results: Nationally, 31% (n=534; CI=27.6-33.5) of male injecting drug users were between 20-24 years and 56% (n=917; CI=52.5-58.9) were 25 years and above. HIV prevalence among male injecting drug users in Nepal is 2.8% (n=37; CI=1.9-4.16) whereas the highest prevalence is in Bagmati province, 4.6%. HCV prevalence is 13.3% (n=204; CI=11.2-15.6) and the highest being in Sudurpaschim province, 26.8%. Among those who are HIV seropositive (n=37), 72% are co-infected with HCV. Less than one fourth (19% [n=369; CI=16.7-21.9]) of male injecting drug users ever shared the same needle/syringe with another person, among which 43% (n=176; CI=36.9-50.1) shared a needle/syringe with another person the last time they injected drugs.

Conclusions: More male injecting drug users have burden of HCV than HIV infection, and response to HCV is non-existent among PWID in Nepal. These findings support the need for urgent implementation of interventions to minimise the risk of HCV acquisition, including developing integrated responses for HIV and HCV among PWID in Nepal.

Risk factors for acquisition, infectivity and transmission of HIV

EPC054

Determinants of HIV infection among Out of School Youths: lessons from Northwest Nigeria

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Background: Northwest Nigeria has a demographic profile made up of largely young population with high proportion of out of school youths (OOSY). Due to sociocultural, economic and biological factors, OOSY are at risk of sexual and reproductive health issues including HIV/AIDS.

Moreover, OOSY are marginalized due to inability to assess structured and well-organized school-based HIV education and prevention programs. This study assessed HIV prevalence and its determinants among OOSY in Northwest Nigeria.

Methods: We used a cross-sectional study design. A multi-stage sampling technique that included stratification by rural and urban was undertaken. A total of 3,900 OOSY aged 15-24years was reached. Data collection including HIV testing was undertaken between June and October 2021 in five Northwest Nigeria states. Multiple logistic regression was used to assess the determinants of HIV infection.

Results: The mean age was 15.1±3.4years, 58.2% were male and 42.6% were urban dwellers. Mean age at sexual debut was 13.6±2.9years; mean age of first alcohol intake was 15.1±4.4years; and mean age at first cigarette smoking was 14.9±2.8years. About 60.5% engaged in daily intake of alcoholic drinks; 27.9% were current smokers; 70.2% had sex in the last 12 months and 33.4% had sex in the last 3 months. HIV prevalence was 2.8%.

About 34.0% used tramadol as a stimulant, 19.8% used marijuana and 7.6% injected drugs. About 18.2% were involved in transactional sex and 12.2% had symptoms of previous sexually transmitted infections.

Also, 42.8% had comprehensive knowledge of HIV/AIDS, 20.4% were involved in multiple partnership, inconsistent condom use was 29.7% and 32.0% had sex with partners older than 10years.

Determinants of HIV infection were tramadol use OR=2.5 95%CI 1.4-4.7, inconsistent condom use OR=3.9 95%CI 2.0-6.7, comprehensive knowledge of HIV/AIDS OR=0.7 95%CI 0.4-0.9 and sex with older male partners OR=3.4 95%CI 1.3-5.1.

Conclusions: Tramadol use, inconsistent condom use and intergenerational sex were determinants of HIV infection among OOSY. There is a need to design targeted HIV prevention programs with comprehensive knowledge, and education against substance abuse for them.

Additionally, OOSY programming needs to be prioritized in Northwest Nigeria due to their higher HIV prevalence compared to the national youth prevalence.

EPC055

Prevalence and incidence of sexually transmitted infections in a cohort of female sex workers in San Pedro, Côte d'Ivoire (ANRS 12381 PRINCESSE)

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Background: The ANRS 12381 PRINCESSE study is an interventional single-arm cohort. Participants recruitment started in November 2019.

The study aimed to evaluate a comprehensive and community-based care offer among FSWs aged ≥ 18 years in the San Pedro area.

Methods: Care services included quarterly syndromic screening for STIs, as well as vaginal and anal swabs for the screening of *chlamydia trachomatis* (CT) and *neisseria gonorrhoea* (NG) by polymerase chain reaction (PCR) at M0, M12 and M24. At the same visits, identification of dysplasias and precancerous lesions of the cervix was performed by visual inspection after applying acetic acid and Lugol's iodine. STIs were managed according to the national algorithm. We describe:

i. The characteristics of cervical lesions as well as the prevalence of STIs (syndromic and PCR) and associated symptoms and;

ii. The incidence of syndromic STIs during follow-up.

Results: In November 2021, 372 FSWs were included. The median age was 29 years, 34% had never been to school, 56% were Ivorian, and the median duration of sex work was 2 years. At inclusion, 4.7% [95% confidence interval: 2.8-7.5] had cervical lesions with 3.5% leukoplakia and 2.2% haemorrhagic cervical junction zone.

The prevalence of syndromic STIs was 17.2% [13.0-22.6]; associated clinical signs were vaginal discharge (13.7%), vaginal ulceration (2.1%), lower abdominal pain (4.3%) and cervical inflammation (2.6%). The prevalence of anovaginal CT and NG were 8.7% [6.2- 12.1] and 10.4% [7.6- 13.9], respectively; clinical signs were found in 2.4% of CT-positive and 12.2% of NG-positive FSWs. Most FSWs with syndromic STIs did not have CT or NG infection.

During the follow-up, 82 cases of syndromic STIs were observed per 209 person-years, i.e. an incidence of 39.1% [31.1-49.0]. PCR data at M12 and M24 are being consolidated and will allow estimating the incidence of CT and NG.

Conclusions: A high prevalence and incidence of syndromic STIs were observed among FSWs, highlighting the importance and the interest of a regular follow-up. The results also showed the predominantly asymptomatic nature of STIs discovered by PCR in this at-risk population and, therefore, the importance of coupling syndromic screening and PCR analyses.

EPC056

Co-occurring substance use and mental health conditions and syndemics of HIV and HCV among people with opioid use disorders in a Fast-Track City in the United States

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Background: The rising opioid use crisis in the United States has resulted in heightened risk of HIV and HCV transmission among people with opioid use disorders (OUD). Research is lacking that investigates the association between co-occurring substance use and mental health disorders and risk of HIV and HCV infection among people with OUD.

Methods: This cross-sectional study examined electronic health records from inpatient, emergency department, and ambulatory patient encounters and lab test results at a large metropolitan hospital network of 7832 people with OUD from 2018-2021 in St. Louis, Missouri.

Multinomial regression analyses with generalized linear modeling was used to identify significant relationships between mental health substance use disorders, and relative risk of HIV, HCV infection and co-infection after adjusting for race, age, sex, and recent STI.

Results: Results: The prevalence of HIV infection was 2.3% (n=181) and HCV infection was 15.6% (n=1225). HCV co-infection among those with HIV and OUD was 44.8% (n=81). Stimulant use disorder was associated with being diagnosed with HIV (RR=1.9, 95%CI=1.2, 3.2, p=.007), HCV (RR=2.0, 95%CI=1.7, 2.3, p<.001), and HIV-HCV co-infection (RR=1.9, 95%CI=1.1, 3.1, p=.017).

Depressive disorders were associated with HIV (RR=2.4, 95%CI=1.6, 3.7, p<.001), HCV (RR=1.5, 95%CI = 1.2, 2.0, p<.001) and HIV-HCV co-infection (RR=4.7, 95%CI=2.7, 8.3, p<.001).

African American people were at significantly greater risk of being infected with HIV (RR=3.6, 95%CI=2.3, 5.6, p<.001) and co-infected with HIV-HCV (RR=3.2, 95%CI=2.0, 5.6, p<.001) compared to white people. Injection drug use was associated with HCV (RR=6.2, 95%CI=5.1, 7.6, p<.001) and HIV-HCV co-infection (RR=9.1, 95%CI=5.3, 15.6, p<.001).

Having an STI in the past year was associated with HIV (RR=3.1, 95%CI=1.8, 5.6, p<.001), HCV (RR=1.6, 95%CI=1.2, 2.1, p=.002) and HIV-HCV coinfection (RR=4.7, 95%CI=2.7, .8.3, p<.001). Comparing people who were co-infected with HIV and HCV to those infected only with HIV, those co-infected

were more likely to have a diagnosis of depression (RR=2.0, 1.05, 3.7, p=0.035, engage in injection drug use (RR=13.6, 95%CI=3.9 47.4 p<.001).

Conclusions: Findings from this study underscore the importance of addressing co-occurring substance use and mental health disorders to redress syndemics of HIV-HCV infection among people with opioid use disorders.

EPC057
Sustained HIV viral suppression among people living with HIV in Trinidad and Tobago

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Background: Suppression of the human immunodeficiency virus (HIV) (<200 copies/mL) among people living with HIV (PLHIV) is essential to prevent HIV transmission. However, HIV viral suppression is typically assessed using a single viral load test rather than examining sustained viral suppression. Extant literature shows that sustained viral suppression significantly reduces the risk of HIV transmission, thus this study aims to identify sociodemographic factors associated with sustained viral suppression.

Methods: We conducted a retrospective analysis of secondary data from 586 PLHIV who attended the Medical Research Foundation of Trinidad and Tobago (MRFTT), which is a treatment and care site that serves PLHIV 18 years and older, between 2017 and 2021. Sustained viral suppression was defined as having a HIV viral load <200 copies/ml in all viral load tests between 2017-2021.

Descriptive analysis performed for all variables, followed by a regression model of the statistically significant variables (p ≤ 0.05), and sustained viral suppression. Of the 586 PLHIV 22 passed away during the reporting period leaving the surviving cohort at 564.

Results: The average age was 45 years (SD = 11.25), and each patient had an average number of 98 visits (SD = 38.81) to the clinic over the study period. 172 (30.5%) of patients achieved sustained viral suppression. Patients with a sustained viral suppression had an average age of 46 years (SD = 11.84), and an average number of 101 visits (SD =33.26). Patients who were on anti-retroviral therapy for more than 5 years (OR=1.655; 95% CI= 1.029 - 2.662), and were enrolled at the clinic for more than 5 years (OR=2.396; 95% CI= 1.221-4.701) were more likely to achieve sustained viral suppression.

Conclusions: Despite access to free HIV treatment and care, significant disparities exist in sustained viral suppression among PLIV in T&T. Addressing these disparities may improve the ability of PLIV to sustain viral suppression and substantially reduce their risk of transmission.

EPC058
Spatio-temporal estimates of risk group proportions for adolescent girls and young women across 13 priority countries in sub-Saharan Africa

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Background: The UNAIDS Global AIDS Strategy 2021-2026 sets forth adolescent girls and young women (AGYW) as a priority population for HIV prevention and recommends differentiating intervention portfolios geographically based on local HIV incidence and individual risk behaviours.

We developed district-level estimates for proportions of young women in each risk category across thirteen Global Fund AGYW priority countries in southern and eastern Africa.

Methods: We analysed forty national household surveys conducted between 1999-2018 in thirteen priority countries. The proportion of AGYW in three sexual risk categories (not sexually active, cohabiting with a single partner, and non-regular partners) was modelled using a spatio-temporal small-area estimation model.

We considered variation resulting from age, space, time, and space-time interaction effects. Our model utilised the multinomial-Poisson transformation, facilitating inference with R-INLA.

Results: Data consisted of 498,248 female survey respondents aged 15-29. There was substantial variation in the risk group proportions across countries and between districts within each country (Figure 1, bottom). 26.1% (95% CrI: [8.38, 57.8]) of 15-29 year-olds were in the highest risk category.

Among 20-29 year-olds, we found a geographic delineation, north of which in the east of the continent, cohabiting (61.3%) is more common than non-regular partners (23.1%), and south of which, non-regular partners (56.8%) are more common than cohabiting (26.7%) (Figure 1, top).

Overall 57.4% of 15-19 year-old adolescent girls were not sexually active, but in Mozambique early sexual debut is common, with 37.9% already cohabiting.

Conclusions: The proportion of AGYW in each risk category varied substantially between age groups and within and between countries, but did not change substantially over

time. Our estimates provide data for HIV programmes to implement a stratified HIV prevention approach, and set targets as proposed in the Global AIDS Strategy.

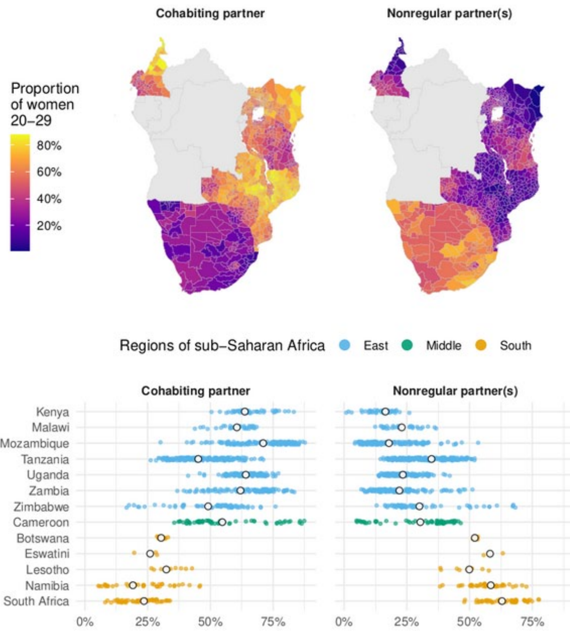

Figure 1.

EPC059

Female genital schistosomiasis and STI prevalence among at-risk women for HIV in Zambia

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Background: Young women remain disproportionately affected by HIV in sub-Saharan Africa with prevalence as much as eight times higher than men of matching age groups. In a cohort of HIV- young women at increased risk of HIV at Center for Family Health Research in Zambia (CFHRZ), the HIV incidence of 3/100 PY. Female genital schistosomiasis (FGS) and STIs are associated with risk of HIV infection among women. We conducted a cross-sectional survey to ascertain the prevalence of FGS and its risk factors and STIs among women.

Methods: From March 2020-December 2021, we surveyed women in the cohorts at CFHRZ in Lusaka and Ndola, Zambia, and assessed FGS risk factors and positivity using colposcopy. We also collected genital samples and tested them for Chlamydia, Gonorrhea, and Human Papilloma Virus (HPV) using Gene Xpert. We evaluated factors associated with FGS positivity using logistic regression.

Results: Among 536 women, overall FGS prevalence was high at 23.5%. The most common FGS indicators on colposcopy were abnormal blood vessels and homogenous yellow sandy patches.

From the survey, factors associated ($p<0.1$) with FGS positivity included: living in a village or rural area prior to the age of 16, younger age at first intercourse, menstruating less than once per month, not using disposable sanitary pads or reusable cloths/towel during menstruation, and use of the hormonal contraceptive implant.

On physical examination, associated factors included: presence of bilateral inguinal adenopathy, cervicitis, non-bloody discharge from cervix, and cervical nodules. FGS co-infection with a high-risk HPV type was common (36%), with Chlamydia (9%) and with Gonorrhea (5%) but the difference in prevalence of these infections compared to women without FGS was not statistically significant. These genital abnormalities were mostly asymptomatic.

Conclusions: This is one of the first studies to report that the prevalence of FGS in young HIV- women living in urban areas in Zambia is concerningly high. Further, it is not uncommon for women with FGS to have other genital pathology and this exacerbates their risk of HIV acquisition. This study underscores the need for focused interventions to address genital abnormalities among young women in sub-Saharan Africa to mitigate the risks of HIV acquisition.

Epidemiology of AIDS events (e.g., AIDS-related opportunistic infections and cancers)

EPC060

Prevalence and determinants of reduced glomerular filtration rate in HIV-infected patients on antiretroviral therapy at Bafoussam Regional Hospital in Cameroon

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Background: Chronic kidney disease (CKD) one of the major problem in patients on Antiretroviral Therapy (ART), and can lead to loss of kidney function, leading to complications and end-stage kidney disease requiring kidney replacement therapy. The purpose of this study was to determine the prevalence and determinants of reduced glomerular filtration rate in HIV-infected patients on ART at the Bafoussam Regional Hospital (BRH).

Methods: This was a cross-sectional study conducted from January to April, 2021, targeting HIV-infected patients on ART at the Treatment Centre of BRH by consecutive sampling. Data on socio-demographic and clinical factors were collected using a semi-structured questionnaire administered face to face.

Statistical analysis was performed by estimating the prevalence using the CKD-EPI (Chronic Kidney Disease Epidemiology collaboration) equation and logistic regression models to identify potential factors associated with glomerular filtration rate reduction.

Results: Of the 1268 participants targeted, 846 (92.66%) consented to participate in the study. The female gender represented about 430 (50.83%). A total of 105 (12.41%) participants had an eGFR <60 ml/min/1.73 and 80(16.91%) were on TDF-based regimen.

The factors found to be significantly associated with reduced glomerular filtration rate were: male gender (aOR=1.76, 95%CI: 1.01-3.08, P=0.045), HBV coinfection (aOR=2.27, 95%CI: 1.30-3.97, P=0.001), HCV coinfection (aOR=3.24, 95%CI: 2.01-5.97, P=0.001), diabetes (aOR=3.79, 95%CI: 2.15-2.15, P=0.001), hypertension (aOR=3.41, 95%CI: 1.95-5.98, P=0.001), WHO stage [stage III (aOR= 3.15, 95%CI: 1.35-7.33, P=0.01) and stage IV (aOR= 23.4, 95%CI: 10.6-51.8, P=0.001)], ART regimen [AZT+3TC+LPV/r (aOR=6.2, 95%CI: 1.53-25.16, P=0.01) and TDF/3TC/DTG (aOR=4.10, 95%CI: 1.02-16.43, P=0.04)].

Conclusions: High prevalence of reduced eGFR was observed among patients with HIV-infected patients at BRH. This GFR reduction was associated with history of diabetes, hypertension, HBV/ HCV coinfections, WHO stage III/IV, and patients on AZT+3TC+LPV/r and TDF/3TC/DTG. Thus, decision makers should regulate routine monitoring, screening and management of eGFR in HIV-infected patients especially those with these clues.

EPC061

Cancer treatment and survival among cervical cancer patients living with or without HIV in South Africa

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Background: Cervical cancer is the most common cause of cancer-related deaths among women in South Africa and women living with HIV are disproportionally affected.

We compared cancer treatment and all-cause mortality between HIV-positive and HIV-negative cervical cancer patients in South Africa.

Methods: We used reimbursement claims data from a private open medical aid scheme in South Africa from 01/2011–07/2020. We included women with ≤2 ICD-10 codes for cervical cancer (C53) on separate days, who had received cancer treatment within 180 days of diagnosis. We assessed treatment provision using logistic regression and factors associated with all-cause mortality using Cox regression. We assigned missing values for histology and ethnicity using multiple imputation.

Results: Among 483 women with cervical cancer, 136 (28%) were HIV-positive at cancer diagnosis (median age: 46 years) and 347 (72%) were HIV-negative (median age: 54 years). Most HIV-positive patients were Black (96%), compared to 61% among HIV-negative patients, although 79 patients had missing information on ethnicity. Among 285 patients with available ICD-O-3 morphology claims codes, the proportion with adenocarcinoma was substantially lower in HIV-positive (4%) than in HIV-negative patients (26%). Most HIV-positive patients (71%) were on antiretroviral therapy at cancer diagnosis. HIV-positive patients were more likely to receive radiotherapy (adjusted odds ratio [aOR] 2.28, 95% confidence interval [CI] 1.29-4.02) or chemotherapy (aOR 2.39, 95%CI 1.13-5.06) and less likely to receive surgery (aOR 0.48, 95%CI 0.28-0.82) than HIV-negative patients. HIV-positive cervical cancer patients were at higher risk of death than HIV-negative patients (adjusted hazard ratio [aHR] 1.50, 95%CI 1.04-2.16). Other factors associated with higher all-cause mortality included older age (>60 vs <40 years, aHR 2.26, 95%CI 1.45-3.54) and cancer stage at diagnosis. Patients with metastasised cancer had a 4-fold higher risk of death than those with localised cancer during the ≤9 months after cancer diagnosis (aHR 3.95, 95%CI 2.47-6.31); whereas >9 months after cancer diagnosis the risk of dying became similar (aHR 1.38, 95%CI 0.73-2.60).

Conclusions: HIV-positive cervical cancer patients were at increased risk of death compared with HIV-negative patients. The higher all-cause mortality in HIV-positive cervical cancer patients may be explained by differences in tumour progression, clinical care, and HIV-specific mortality.

EPC062

Knowledge of Kaposi sarcoma among oncology and HIV providers in Kenya

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Background: In sub-Saharan Africa (SSA), the burden of HIV-associated malignancies such as Kaposi Sarcoma (KS) remains high, despite widespread access to antiretroviral therapy. KS diagnoses are often made in late stages of disease, when interventions are less effective with poor prognoses. Delayed diagnoses and poor outcomes in cancer have been linked to low provider knowledge, though little is known about provider knowledge regarding KS in SSA. We aimed to assess clinical knowledge of KS among providers who treat KS in Kenya.

Methods: We approached all healthcare providers working in either oncology referral clinics or selected HIV primary care clinics in the AMPATH network in Kenya from August 2019-January 2020. KS knowledge was assessed using a self-administered structured questionnaire adapted from prior experience in East Africa, which included 38 questions regarding KS classification, morphology, symptomatology, diagnosis and management (example question: true/false, each of the following can be used to effectively treat KS (ART/amputation/chemotherapy/antibiotics/radiation/dexamethasone).

Results: Of 196 healthcare workers enrolled (76% HIV providers, 24% oncology providers), the median age was 37 (IQR 31,42) years, 62% were male and most had a university (37%) or tertiary/vocational degree (50%). Range of provider cadres included medical/clinical officers (MO/CO) (26%), nurses (20%), peer mentors (13%), social workers (7.7%) and pharmacists/pharmacy technicians (7.2%).

On average, oncology providers had an overall score of 65.8% correctly answered questions, while HIV providers had a mean score of 60.2%. MO/COs had high overall mean knowledge scores, with 79.2% questions answered correctly *(Table 1)*; these were 86.0% for oncologists and 76.9% for HIV MO/COs. Across most healthcare provider groups, respondents scored lowest on the section assessing knowledge of KS treatment/management (range: 42.5-71.9%).

	All (n = 196)	MO/CO* (n = 51)	Nurse† (n = 38)	Pharmacist§ (n = 14)	Counsellor (n = 16)	Peer Mentor (n = 25)	Social Worker (n = 15)	Health Info Officer (n = 12)	Other Staff (n = 23)
Total Score[a]	61.4 (17.9)	79.2 (12.7)	65.5 (14.7)	56.2 (8.5)	51.2 (14.1)	48.8 (14.7)	51.1 (9.7)	50.7 (13.8)	52.6 (16.1)
Classification of KS Score[b]	63.7 (21.9)	80.6 (17.6)	70.0 (18.4)	56.5 (18.5)	51.6 (18.1)	50.3 (22.3)	53.3 (17.2)	54.9 (16.8)	56.2 (19.8)
Morphology of KS Score[c]	73.6 (27.5)	88.7 (22.0)	75.0 (24.7)	73.2 (26.7)	71.9 (28.7)	65.0 (25.0)	56.7 (30.6)	64.6 (27.1)	65.2 (31.7)
Symptoms of KS Score[d]	58.2 (29.8)	78.8 (24.8)	63.7 (28.2)	44.3 (19.5)	48.8 (24.2)	44.8 (29.6)	52.0 (28.1)	40.0 (25.6)	47.0 (29.9)
Diagnosis of KS Score[e]	67.6 (25.1)	89.7 (14.3)	69.1 (22.8)	67.9 (18.2)	53.1 (23.9)	54 (24.7)	60 (15.8)	43.8 (21.7)	58.7 (25.7)
Treatment of KS Score[f]	54.9 (19.2)	71.9 (16.6)	58.1 (16.5)	51.6 (8.2)	44.7 (13.8)	42.5 (15.1)	44.1 (14.4)	48.7 (13.3)	45.8 (19.9)

[a] total 38 item survey; [b] 12 item survey; [c] 4 item survey; [d] 5 item survey; [e] 4 item survey; [f] 13 item survey
*Medical or clinical officer titles; †nurse or nurse manager; § pharmacy tech or pharmacist

Table 1. Knowledge regarding KS amogst health care professionals in Kenya by provider type. Values refer to mean % answered correctly (SD) per group, with 100% being maximum score per topic.

Conclusions: Assessing gaps in KS-specific knowledge among diverse cadres of health professionals may be especially important in resource-limited areas, where burden is high and lower-level cadres are often providing front-line HIV and cancer care.

EPC063

Causes of outpatients before diagnosis of HIV infection in people living with HIV (PLHIV) based on the real-world data

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Background: Late diagnosis of HIV infection is associated with poor responses to antiretroviral treatment and higher prevalence of comorbidities in people living with HIV (PLHIV). Herein, we describe the distribution of diseases in outpatient setting within 5 years before diagnosis of HIV infection in PLHIV.

Methods: A retrospective cohort study was conducted in Yinzhou District, Ningbo City of China during 2009-2020. Based on the diagnoses of outpatients, we estimated the number of clinic visits per 100 person-years of diseases by gender and age and assessed its association with late diagnosis using time-dependent Cox regression mode

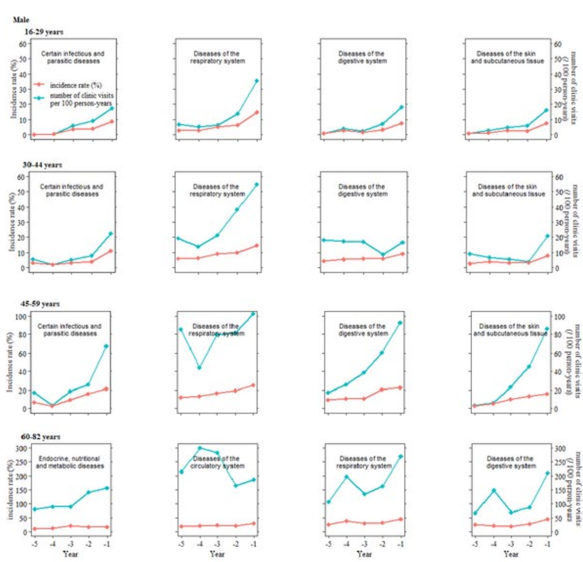

Figure 1. Distribution of diseases within 5 years before diagnosis of HIV infection in males

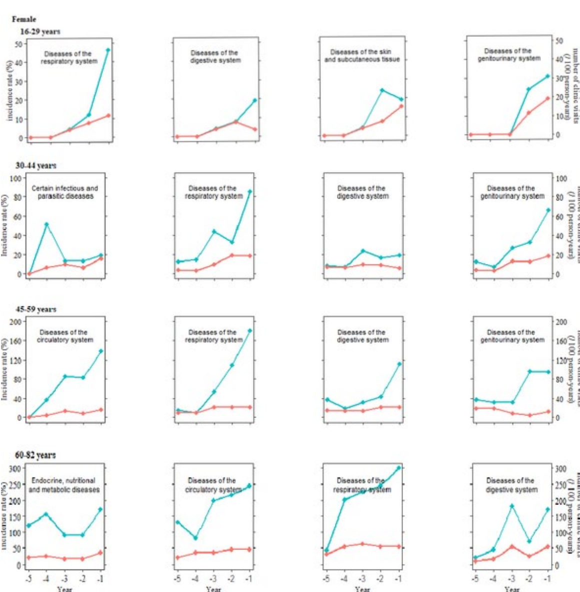

Figure 2 Distribution of diseases within 5 years before diagnosis of HIV infection in females.

Results: Among the 789 PLHIV, almost are males with 696 males vs, 93 females. Large percentage of PLHIV had late diagnosis of HIV infection, especially in the age groups 45-59 (84.46%) and 60-82 (83.37%). These diseases increased rapidly before diagnosis in HIV-infected males of all ages, including diseases of the respiratory system, certain infectious and parasitic diseases, diseases of the digestive system, and diseases of the skin and subcutaneous tissue.

Conclusions: We found HIV cases went to outpatients for some certain diseases before diagnosis of HIV infection considerably. These diseases may be helpful for early diagnosis of HIV infection.

EPC064

Cervical cancer screen and treat program in women living with HIV, Chiengi and Nchelenge districts, Luapula Province, Zambia, January to September 2021

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Background: Zambia has the third-highest age-standardized incidence of cervical cancer at 22.9 per 1,000 women in Sub-Saharan Africa. Cervical cancer contributes 25% of the cancer burden in Zambia. Women living with Human Immunodeficiency Virus (WLHIV) have a five-fold risk of cervical cancer. We investigated the positivity of cervical intraepithelial neoplasia (CIN) and suspected invasive cervical carcinoma (ICC) and its associated factors in Chiengi and Nchelenge Districts.

Methods: This was a cross-sectional study of WLHIV screened for cervical cancer using visual inspection with acetic acid (VIA) in Chiengi and Nchelenge Districts, January to September 2021. CIN are treatable pre-malignant lesions. CIN1 has <70% lesions, and CIN2+ has >70% lesions. ICC is deep tissue malignant lesions. Data collected from VIA sites included the outcome (tested positive [CIN and suspected ICC] or negative), age, and geographical location. Backward stepwise logistic regression was used to identify the best predictors. Analysis was performed in R, and the odds ratio was the measure of association.

Results: Nchelenge and Chiengi Districts have a total of 7793 and 3202 WLHIV, with cervical cancer screening coverage of 12% and 36%. Data for 1622 clients were analyzed. The median age was 36 (interquartile range [IQR]: 27-44) years. 25% (407) tested positive, of the positives; 14% (57) had CIN1, 84% (343) had CIN2+ and 2% (7) had suspected ICC. Chiengi's positivity was 36% (365) and Nchelenge, was 12% (42). Both districts had one VIA site. Chiengi offered treatment for CIN1. Nchelenge offered treatment for CIN1 and CIN2+.

All suspected ICC are referred. WLHIV of Chiengi had increased odds of CIN and suspected ICC compared to WLHIV of Nchelenge (AOR=7.4,95% CI: 5.3-10.5). Compared to WLHIV above 45, WLHIV in age-groups 16-30 and 31-45 years had higher odds of CIN and suspected ICC (AOR=1.7, 95%CI: 1.2-2.5, AOR=1.5, 95%CI: 1.1-2.2, respectively).

Conclusions: CIN positivity was high, and the screening coverage was low. Scaling up cervical cancer screen and treat services, conducting targeted screen and treatment in areas with high positivity, training adequate staff to screen and treat CIN, and messaging on the importance of cervical cancer screening to reduce cervical cancer-related morbidity and mortality in WLHIV.

EPC065

Socio-economic inequalities in the coverage of cervical cancer screening among women living with HIV in Low- and Middle-Income Countries between 2010 and 2019

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Background: Women living with HIV (WLWHIV) are at a higher risk of developing cervical cancer and the World Health Organisation recommends that they are screened from the age of 25 years. There is a need to describe inequalities in access to screening. We described the coverage of and socioeconomic inequalities in cervical cancer screening among WLWHIV in LMICs.

Methods: We conducted a weighted multi-country secondary data analysis of the 2010 – 2019 cross-sectional Demographic and Health Surveys (DHS) completed in Cameroon, Ivory Coast, Lesotho, Namibia, and Zimbabwe. These countries tested women for HIV and had questions on cervical cancer screening. Our analysis included WLWHIV aged 25 to 49 years.

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Absolute and relative socioeconomic inequalities were calculated using the Slope Index of Inequality (SII) and Concentration Index (CIX) respectively by wealth quintile..

Results: A total of 2,950 WLWHIV from five countries were included in this study. The proportion of women who had heard about cervical cancer ranged from 41.0% to 86.9%. The proportion of women who had ever screened for cervical cancer was highest in Namibia (35.7%) and lowest in Ivory Coast (1.8%.) The pooled estimate of the coverage of cervical cancer screening in the five countries was 16.5% [95% Confidence interval (CI): 6.1 – 27.0].

In all the countries, higher proportions in the richest wealth quintile were screened compared to those in the poorest wealth quintile. In all the countries, higher proportions of WLWHIV in the urban areas were screened compared to those in the rural areas. In all the countries except Cameroon, the coverage of screening showed pro-rich inequalities.

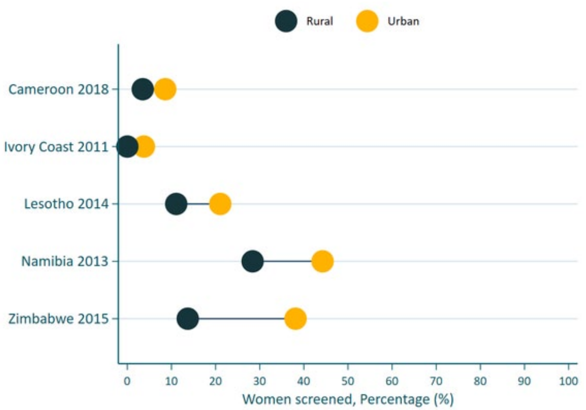

Figure. Coverage by type of place of residence.

Conclusions: There exist inequalities in the utilization of cervical cancer screening by the wealth index and type of place of residence. Cervical cancer screening programs in LMICs need to reduce these inequalities among WLWHIV.

Epidemiology of non-AIDS infections and communicable diseases (e.g., viral hepatitis, STIs, TB, COVID-19)

EPC066

Depressive symptoms and health services utilization in the HIV-Hepatitis C co-infected population in Canada

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Background: Depression is highly prevalent among people living with Hepatitis C (HCV) and HIV, which can contribute to high health services utilization (HSU). HCV cure have benefits in preventing liver disease and beyond, which could have an impact on HSU.

Thus, we examined the relationship between depressive symptoms and HSU in the HIV-HCV co-infected population in Canada and how it was affected by sustained virologic response (SVR).

Methods: We used data from the Canadian Co-infection Cohort, a multicentre prospective cohort, and its associated food security sub-study. We predicted Centre for Epidemiologic Studies Depression Scale-10 classes for depressive symptoms using a random forest classifier and corrected for misclassification.

The HSU outcomes were number of self-reported inpatient visits (hospital stays, emergency room)and outpatient visits (general practitioner, HIV clinic, specialist, walk-ins) in the past 6 months. We restricted the analysis to the 2ndgeneration direct acting antiviral (DAA) era (post-November 2013).

All HCV-RNA+ participants were followed until death, withdrawal or end of study period (July 2020). Participants achieved SVR if they had undetectable HCV-RNA at least 12-weeks after end of treatment. We used an adjusted zero-inflated negative binomial model accounting for overdispersion and excess zeroes.

Results: We included 1,153 participants, of which 530 were treated for HCV and 504 (95%) achieved SVR. The median number of inpatient visits was 0 (IQR:0-1) and outpatient visits was 3 (IQR:1-6).

Among those who had not achieved SVR, inpatient visits were 17% higher among those with depressive symptoms than those without; outpatient visits were 5% higher. Among those who achieved SVR, there was no evidence of an association between depressive symptoms and HSU. SVR was associated with 24% lower inpatient visits, however outpatient visits remained the same post-SVR.

Outcomes Outcomes	SVR		Depressive symptoms - Among those who achieved SVR		Depressive symptoms - Among those who did not achieve SVR	
	Incidence Rate Ratio (IRR)	95% Confidence Interval (CI)	IRR	95% CI	IRR	95% CI
Inpatient visits	0.76	0.70-0.84	1.03	0.89-1.19	1.17	1.06-1.29
Outpatient visits	1.00	0.97-1.02	1.01	0.97-1.05	1.05	1.02-1.08

Table 1: Effect of depressive symptoms and SVR on HSU

Conclusions: Depressive symptoms were associated with an increase in HSU, indicating depression contributes to poor health outcomes in the co-infected population. SVR was associated with a reduction in inpatient visits but not outpatient visits. SVR appears to attenuate the effect of depressive symptoms on HSU.

EPC067

Risk factors and outcomes for syphilis coinfection among men and women living with HIV in KwaZulu-Natal, South Africa

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Background: The prevalence of syphilis co-infection among people living with HIV (PLHIV) in South Africa was reported to be ~1.6% among adults. Syphilis co-infection may accelerate clinical progression and lead to worse health outcomes. We sought to compare the risk factors for syphilis co-infection for PLHIV, and to determine if syphilis co-infection altered health outcomes among men and women in KwaZulu-Natal, South Africa.
Methods: We conducted a prospective cohort study of adult PLHIV participants at the iThembalabantu Clinic in Umlazi Township, South Africa from September 2013 to April 2017.At initial HIV diagnosis and 12 months later, we collected information on demographics, clinical data, as well as biological specimens like the rapid plasma reagin (RPR) test for syphilis. In the analysis, we used Fisher's exact and t-tests for independent samples were used to examine associations between cohort demographic characteristics and outcomes.
Results: Among 2,580 adult PLHIV, 123 (4.7%) were concurrently positive for treponema pallidum by RPR titers. PLHIV with a syphilis co-infection were younger (31.2 years vs. 33.4 years, p<0.01) than PLHIV without syphilis.
There was no difference in co-infection prevalence across genders. The prevalence of tobacco usage (p<.03) and having a partner who had also tested positive for HIV (p<.03) were both higher in PLHIV with syphilis.
Once identified at 0 months, participants with syphilis were treated with a penicillin regimen. At 12 months after initial HIV/syphilis diagnosis, there were no significant differences in mean CD4 count, rates of hospitalizations, deaths, other opportunistic infections, or HIV-related cancers.
Conclusions: In our cohort, syphilis co-infection was higher than reported in population surveys, and may have been related to younger age, an HIV-positive partner, or tobacco use. Identifying these age and risk-taking behavior differences may help diagnose those with both HIV and syphilis earlier, which is crucial in regions with healthcare access barriers within South Africa. As all syphilis co-infected participants were promptly treated, the efficacy of syphilis treatment was valuable in preventing differences in disease progression, mortality, or health outcomes.

EPC068

The impact of travel distance to rifampicin-resistant tuberculosis treatment sites on outcomes of all-oral RR-TB treatment regimens in South Africa

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Background: People living with HIV (PLWH) are disproportionately affected by South Africa's high rates of rifampicin-resistant tuberculosis (RR-TB). Older RR-TB research linked increased distance from home to treatment site with increased risk for death; however, regimens were much longer in duration. Newer, all-oral RR-TB treatment regimens decrease treatment duration and lessen the frequency of healthcare visits.
Here, we examine the relationship between distance traveled and treatment outcomes with new treatment regimens.
Methods: We retrospectively analyzed 271 RR-TB patients treated with all-oral regimens at nine South African public RR-TB hospitals between 2015 and 2019. We linked patients to their residential ward using location data reported to the National Health Laboratory Service. Travel distance was calculated from each patient's ward centroid to their RR-TB treatment site using the *georoute* command in Stata. Binary logistic regression was used to model the relationship between RR-TB treatment outcome and travel

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distance with unsuccessful outcomes (i.e., death, treatment failure, and loss to follow-up) compared to successful outcomes (i.e., cure, treatment complete).

Results: Out of 271 participants, there were 187 PLWH (69.00%), and 80 (29.52%) unsuccessful outcomes. The median age was 40 (IQR:31-51) years, 59.04% male, 59.77% unemployed, and 79.25% had not completed secondary school. The median travel distance was slightly longer for PLWH (32.01km, IQR:11.34-58.29) compared to those who were not (29.27km, IQR:9.96-54.74).

In the final model, travel distance was not significantly related to RR-TB treatment outcomes (OR: 0.997, 95% CI [0.988, 1.006]) when adjusting for other relevant covariates, including HIV status, age, gender, education level, employment status, number of children, government assistance, informal housing, rural residence, and rural treatment site.

Conclusions: These null findings may indicate that all-oral RR-TB regimens lessen the burden of increased distance from a treatment site, but more research is necessary. Geospatial analyses in South Africa present several challenges, including changing municipal and ward borders and the use of multiple address formats.

For future analyses of distance to treatment, we recommend using GPS coordinates to record the location of a patient's residence. When GPS data collection is not feasible, we recommend recording the patient's address, ward, and the nearest school.

EPC069

Epidemiology of Human Papillomavirus genotypes and prevalence of cervical precancerous lesions among women living with HIV: results from a pilot cervical cancer screening program in Uganda

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Background: There is lack of data on distribution of human papillomavirus (HPV) genotypes among women living with HIV (WLHIV) in Uganda. Yet, WLHIV are more likely to be infected with human papillomavirus (HPV) and to have persistent HPV progressing to cervical pre-cancer and/or invasive cervical cancer compared to HIV negative women. Information on epidemiology of high-risk HPV (hrHPV) infections and prevalence of specific HPV genotypes is very vital in mounting an effective response to the growing challenge of cervical cancer in Uganda.

Methods: A pilot cervical cancer screening program was conducted between September and April 2021. HPV testing using self-collected vaginal samples was offered to WLHIV aged 25-49 attending antiretroviral clinics in 10 high-volume hospitals. Samples were processed using GeneXpert and Hologic Panther devices. HPV+ women were referred for Visual Inspection with Acetic acid (VIA) triage, and those having precancerous or cancerous lesions were treated with cryotherapy, thermocoagulation, LEEP or referred for further management. Data was collected from hospital registers to determine the distribution of HPV genotypes and prevalence of cervical precancerous lesions among HPV positive WLHIV.

Results: Across the 10 pilot sites, 6,611 WLHIV were offered screening and 6,012 (91%) had a valid result. HPV positivity rate was 30% (1,817). Of the HPV+ women, 214 (12%) were HPV16 positive, 187 (20%) were HPV 18/45 and 1,203 (66%) had other hrHPV genotypes as a pooled result including HPV 31, 33, 35, 39, 51, 52, 56, 58, 59, 66 and 68. 213 (12%) of the women had multiple infections with hrHPV genotypes.

823 (45%) of the HPV+ women were effectively linked to care and triaged with VIA and 173 (21%) were found with precancerous lesions, of whom 137 (79%) were treated as appropriate. Fourteen women were found to be suspicious of cancer and referred for further management.

Conclusions: HrHPV infections are common among WLHIV, including HPV16 and HPV18 that cause majority of cervical cancer. A significant proportion of women have infections that progress to cervical pre-cancer. HPV+ WLHIV found to have no lesions need to be proactively followed-up to ensure that non-regressive infections are appropriately managed. Cervical cancer efforts need to intensify screening among WLHIV.

EPC070

Self-reported TB testing according to HIV status and TB symptoms in urban communities in Blantyre, Malawi

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Background: Identifying the "missing millions" with undiagnosed TB is critical to meeting TB elimination goals. Intensified TB testing efforts are focused on symptomatic individuals and high-risk groups including people living with HIV (PLHIV), but uptake can be suboptimal.

Methods: Between May 2019 and March 2020, we conducted a TB-HIV prevalence survey among adults in urban residential Blantyre, Malawi, including questions about TB testing (chest X-ray or sputum). Using log-binomial regression, we investigated factors associated with recent (past 12 months) and lifetime (ever-tested) self-reported TB testing. We investigated associations with HIV (negative, positive-on-ART, positive-no-ART), age group, sex, and additionally for recent TB testing, current TB symptoms (cough, fever, night sweats, weight loss).

Results: Extended questionnaires were completed by 2,043 randomly selected prevalence survey participants, of whom 310 (15.2%) had tested for TB at least once (ever-

tested) including 145 (46.8% of ever-tested) recent testers. PLHIV on ART were more likely to have ever-tested for TB than HIV-negative people (aRR 2.01, 95% CI:1.62-2.47). There was no association with sex, but older people were more likely to have ever-tested. For recent testing, associations were similar to ever testing for HIV status, sex, and age. Current TB symptoms, reported by 307/2043 (15.0%), were associated with increased testing in the past 12 months compared to asymptomatic participants (aRR 1.98, 95% CI:1.41,2.7). Uptake appeared suboptimal, with only 14% of those symptomatic recently tested.

	Number in group	Number TB tested (%)	Univariate RR (95% CI)	Multivariable aRR (95% CI)
Lifetime TB testing				
HIV negative	1,761	206 (12%)	Ref	Ref
HIV positive on ART	249	95 (38%)	3.26 (2.65-3.98)	2.01 (1.62-2.47)
HIV positive not on ART	33	9 (27%)	2.33 (1.20-3.82)	1.71 (0.89-2.7)
Recent TB testing				
HIV negative	1,761	97 (5.5%)	Ref	Ref
HIV positive on ART	249	44 (18%)	3.21 (2.28-4.43)	2.05 (1.43-2.90)
HIV positive not on ART	33	4 (12%)	2.20 (0.70-4.85)	1.70 (0.55-3.68)
Current TB symptoms	307	42 (14%)	2.31 (1.63-3.20)	1.98 (1.41-2.74)

Table 1: Ever-tested for TB and Recent TB testing: univariate and multivariate risk ratios
**Multivariable aRR also adjusted for age group and sex*

Conclusions: Few PLHIV in Blantyre recalled ever testing for TB, although lifetime reporting of having tested was substantially higher for PLHIV on ART than for HIV-negative people, possibly reflecting screening at ART visits. Tracking trends in lifetime and recent TB testing reported by PLHIV could provide a valuable indicator of the intensity of case-finding efforts.

EPC071
Impact of COVID-19 lockdown on testing for and diagnoses of sexually transmitted infections in Bangkok, Thailand

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Background: Thailand's third and largest COVID-19 wave started in April 2021 and resulted in a complete lockdown in July, with curfews and tight gathering and movement restrictions. We assessed the impact of these measures on sexually transmitted infection (STI) testing and diagnosis patterns at the Pribta-Tangerine clinic in Bangkok.

Methods: We analyzed data from clients visiting the gender-friendly and comprehensive sexual health clinic from January to September 2021, including those testing for syphilis serology and/or *Neisseria gonorrhoeae* and *Chlamydia trachomatis* by nucleic acid amplification.
Weekly changes in number of clients and STI tests, proportion of clients coming for STI testing, and percent positivity before and after lockdown were analyzed with interrupted time series analysis and further disaggregated by population and age.

Results: From January 1 to September 30, 2021, 3,658 clients visited Pribta-Tangerine; 1,840 (50.3%) had an STI test. Lockdown resulted in a 47.5% and 43.9% decrease in overall STI testing and diagnoses, respectively (Figure 1); the same was seen for each STI.
STI testing decreased among men who have sex with men (58.8%, incidence rate ratio [IRR] 0.412; 95% confidence interval [CI] 0.256-0.663) and transgender people (50.2%, IRR 0.498; 95%CI 0.299-0.831), but not the general population.
Among clients ≥30 years of age, STI testing (34.7%, IRR 0.653; 95%CI 0.472-0.904) and diagnoses (57.4%, IRR 0.426; 95%CI 0.301-0.603) decreased; among those <30 years, STI testing decreased (54.6%, IRR 0.454; 95%CI 0.285-0.725), but diagnoses remained unchanged. No significant changes were observed in proportion of clients coming for STI testing or proportion of positive STI tests.

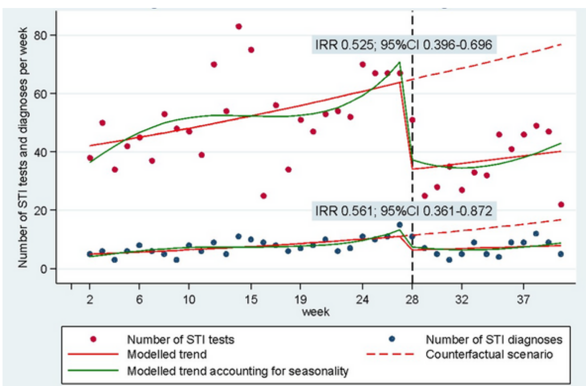

Figure 1. Number of STI tests and diagnoses.

Conclusions: The significant decrease in STI testing and diagnoses during COVID-19 lockdown in Bangkok is likely due to reduced clinical visits rather than a reduction in STIs. It is essential for sexual health services to continue under COVID-19-related measures, and that people are encouraged to get tested.

EPC072

Self-sampling strategies (with/without digital supports) for *Chlamydia trachomatis* and *Neisseria gonorrhoeae*: evidence from a meta-analyses

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Background: The COVID-19 pandemic has majorly disrupted screening services for sexually transmitted infections (STIs) including common bacterial STIs such as *Chlamydia trachomatis* (CT) and *Neisseria gonorrhoeae* (GC), resulting in increased infections and ongoing transmission. Rapid, accurate, contact-free, self-sampling-based tests, with confirmatory Nucleic Acid Amplification tests (NAATs) either alone or combined with digital supports (websites, text messages, apps) provide a convenient contact free solution. Evidence on all outcomes is not synthesized, so we conducted a systematic review and meta-analyses to fill this gap.

Methods: For the period Jan 2000-Dec 2021, two reviewers searched three databases (Pubmed, Embase, LILACs) and assessed all outcomes (i.e., accuracy to impact). We performed a bivariate random-effects meta-analysis in R with accuracy data.

Results: Of 37 studies, 35 were observational (95%) while two were (6%) RCTs. Of 37, 9 (24%) used digital interventions. Populations studied were: women (n=11/37, 30%); men who have sex with men (n=5/37, 14%); HIV-positive (n=2/37, 5%); bisexual women (n=1/37, 3%); correctional-facility detainees (n=1/37, 3%). Outcomes studied included Accuracy (n=17/37, 46%); Acceptability/Preference; n=22/37, 59%); Feasibility (n=9/37, 24%); Impact (n=10/37, 27%).
Self-sampling reached 54-70 % of first-time testers, with a high acceptability (83-100%), variable preference (23-84%) and high linkage to care (89-100%) improved by digital supports.
Stratified bivariate meta-regression analysis (n=12 studies), revealed consistently high specificities (with 95%CI) for both CT (99% [99-100%]) and GC (99% [99-100%]). It also revealed a gradient in sensitivity (Sn) estimates (with 95%CI) by sampling sites. For CT, Sn by site were: 91% [82-96%] for rectal, 89% [82-93%] for vaginal and 87% [84-91%] for pharyngeal; while for GC, Sn were: 94% [87-97%] for pharyngeal, 91% [84-95%] for rectal and 90% [83-94%] for vaginal, respectively.

Conclusions: Self-sampling for CT and GC reached first-time testers, was accepted, preferred and reported high linkages to care with digital supports. Self-sampling followed by NAATs was highly accurate across all sampling sites. To plug screening gaps recently intensified by the COVID-19 pandemic, we recommend a greater use of self-sampling strategies for CT and GC together with digital supports, worldwide.

EPC073

Risk factors and outcomes of bloodstream infections among people with HIV: a longitudinal cohort study from 2000-2017

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Background: People with HIV (PWH) experience higher rates of serious bacterial infections compared to the general population. Despite advances in HIV care, bloodstream infections (BSI) in PWH remain a significant and poorly studied source of morbidity and mortality.
We characterize the epidemiology, microbiology and clinical outcomes including reinfection, hospitalization, and mortality rates of both community-acquired and hospital-acquired BSI in PWH.

Methods: Linking data from laboratory and clinical databases, all BSI between 01/01/2000-31/12/2017 in PWH in care at Southern Alberta Clinic (SAC) were identified. Crude incidence rates (IR) per 1,000 person-years (PY) for BSI and death were calculated. Cox proportional hazards models estimated crude and adjusted hazard ratios (aHR) and 95% confidence intervals ([,]) to conduct a risk factor analysis of BSI in PWH.
Logistic regression models with generalized estimating equations to allow for multiple BSI episodes within one individual estimated crude and adjusted odds ratios (aOR) to identify characteristics associated with a 1-year mortality following BSI.
Adjusted models included age, sex, race/ethnicity, HIV acquisition risk, CD4 nadir and CD4 most recent to BSI, ART use, BSI category and source, polymicrobial BSI and Charlson comorbidity index (CCI).

Results: Among 2,895 PWH, 396 BSI episodes occurred among 228(7.8%) PWH. There were 278(71.8%) Gram-positive and 109(28.2%) Gram-negative BSI. The IRs of BSI decreased with time but remained higher among PWH than the reported IRs of the general population in our region. PWH with lower CD4 nadirs, higher CCI scores and Hepatitis C coinfection were at highest risk for BSI.
Long-term all-cause mortality was greater in those experiencing BSI (HR 5.25[4.21,6.55]). CD4 count <200cells/mm^3 measured closest to the time of BSI was associated with

1-year mortality following BSI (aOR-3.88[1.78,8.46]). Repeat episodes (42.2%) and polymicrobial BSI (18.6%) were common.

Conclusions: BSI continue to occur at a greater rate among PWH than the general population with high reoccurrence rates, and associated morbidity and mortality. To risk stratify and develop targeted interventions we identified PWH at greatest risk for BSI. PWH with low CD4 counts at the time of BSI are at highest risk of poor outcomes and should be followed closely to identify and manage complications.

EPC074

Hepatitis C virus (HCV) acquisition risk among people who inject drugs Montreal: high-risk neighbourhoods and implications for HIV monitoring and targeting of pre-exposure prophylaxis

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Background: HCV incidence among people who inject drugs (PWID) in Montreal, Canada remains high despite longstanding presence of harm reduction in the city. Recent changes to the drug scene, notably, the increased use of prescription opioids, may have implications for HIV prevention. Harm may be concentrated in specific neighbourhoods; geographic targeting of these areas may improve cost-effectiveness of efforts such as PrEP.

We estimated the association between residence in social injection hotspots and HCV infection among PWID in Montreal.

Methods: Data were drawn from HEPCO, a prospective cohort study involving three-monthly HCV testing and interviews with active PWID in Montreal (2010-2017). At each visit, participants reporting injection with other PWID in the past month reported the location (postcode) of their latest social injection episode.

We first used these postcodes to identify areas exhibiting heightened clustering of social injection activity ("hotspots"). All cohort participants at risk of HCV were then categorized as residing (or not) in a social injection hotspot, based on where they had slept most often in the past month. Incident HCV infection was defined as a positive antibody/RNA test among those previously-negative.

The association of interest was estimated using inverse-probability weighted marginal structural models to adjust for time-dependent confounding and non-differential dropout by age, gender, housing and income stability, opioid agonist treatment, incarceration and prescription opioid injection.

Weights were estimated using pooled logistic regression; hazard ratios were obtained from a weighted Cox model. Follow-up was censored at three years from the first HCV-negative visit.

Results: Participants were mostly white (89.8%) and male (79.8%) with a median age of 40. Hotspots, which covered an area of 5.78 square kilometres, were located in downtown/Ville-Marie. At baseline, participants residing in hotspots were older and generally more vulnerable than those residing in outer areas. 99 infections were observed over 956.0 person-years (rate: 10.4/100py [95%CI: 8.5-1.3]). Weighted models estimated a two-fold risk of infection in hotspots vs. areas outside (95%CI: 1.20-3.44).

Conclusions: Risk of HCV was elevated in social injection hotspots, supporting prioritization of blood-borne virus prevention efforts, including PrEP, to select geographic areas. Prevention may further require modifying structural determinants of harm among PWID.

EPC075

Effect of the COVID-19 pandemic on rates of sexually transmitted infections among youth living with HIV in Washington, DC

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Background: Sexually transmitted infection (STI) trends during the COVID-19 pandemic among youth in the United States (US) showed an initial overall decline, followed by a resurgence of gonorrhea and syphilis. Limited data exists on STI dynamics among youth living with HIV (YLHIV) during the pandemic.

We report and compare STI rates during the pandemic and pre-pandemic periods among YLHIV aged 13-24 years in care at Children's National Hospital (CNH).

Methods: Descriptive statistics were used to analyze demographics and positivity rates of syphilis, and genital (urine) and extragenital (oral, rectal) gonorrhea and chlamydia tests among YLHIV seen at CNH during the pandemic (03/2020-02/2021) and during an analogous pre-pandemic period (03/2019-02/2020).

Results: During the pre-pandemic period, 105 YLHIV (54.3% female, median age 19.4 years, 93.3% Black, 18.1% men who have sex with men (MSM), 23.8% horizontally-infected) had STI testing at 225 individual encounters. Ten YLHIV (50% female, 100% Black, 50% MSM, 70% horizontally-infected) tested positive.

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The positivity rate for syphilis was 3.5% (3/86). Positivity rates for gonorrhea were high from oral (10.8%, 4/37) and rectal (8.7%, 2/37) sites, and low from genital sites (0.9%, 2/221).
During the pandemic, 107 YLHIV (47.7% female, median age 20.4 years, 87.9% Black, 30.0% MSM, 38.3% horizontally-infected) had STI testing at 205 encounters. Twenty-six YLHIV (26.9% female, 100% Black, 69.2% MSM, 80.8% horizontally-infected) tested positive for STIs. The positivity rate for syphilis was 5.3% (6/114). Positivity rates for gonorrhea were high from oral (18.9%, 7/37) and rectal (12.9%, 4/31) sites compared to genital sites (3.5%, 6/171).
Overall, the positivity rate for any STI increased from 7.6% (pre-pandemic) to 13.7% (during the pandemic). The positivity rates of chlamydia pre-pandemic and during the pandemic were similar: genital (3.6% vs 3.5%), oral (2.7% vs 2.7%), and rectal (13.0% vs 12.9%).
Conclusions: Higher numbers of YLHIV in our care had STIs during the pandemic, driven by higher positivity rates for syphilis and gonorrhea during the pandemic compared to pre-pandemic period. During both periods, extragenital STI positivity rates were higher compared to genital sites.
Further research is needed to better understand the STI dynamics among YLHIV, particularly for MSM and youth with horizontally-acquired HIV.

EPC076
The influence of HIV pre-exposure prophylaxis (PrEP) on the changing epidemiology of Lymphogranuloma venereum (LGV): 2016-2021

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Background: Lymphogranuloma venereum (LGV), caused by invasive subtypes of *Chlamydia trachomatis,* is a sexually transmitted infection (STI) increasingly being seen among men who have sex with men (MSM).
Initially, most cases were among symptomatic MSM living with HIV with more recent cases seemingly in asymptomatic, HIV-negative MSM, potentially owing to routine STI screening for people using HIV pre-exposure prophylaxis (PrEP). Given this apparent change in presentation, we assessed the epidemiology of LGV in the period pre- and post- widespread, publicly-funded PrEP in British Columbia (BC), Canada.

Methods: A retrospective chart review of all LGV cases in BC from 01/01/2016-31/12/2021 was performed. Since 07/2011, all chlamydia-positive rectal specimens were routinely tested for LGV. We collected information pertaining to risk-factors, PrEP use, LGV and sociodemographics. Binomial logistic regression was completed to compare the clinical presentation of LGV pre- and post- publicly-funded PrEP coverage (i.e. pre-PrEP, post-PrEP) in BC on 01/01/2018.
Results: Among the 321 LGV cases, 80 (24.9%) and 241 (75.1%) occurred pre-PrEP and post-PrEP, respectively. Among pre-PrEP cases, most cases were among individuals living with HIV (56.4%; 44/78) and were symptomatic (67.2%; 39/58).
A minority experienced co-infection with gonorrhea (22.7%; 17/75) or syphilis (10.7%; 8/75). In contrast, most post-PrEP cases were among HIV-negative individuals (65.2%; 154/236) who were taking PrEP (68.6%; 105/150) with a mean HIRI-MSM score of 24.6 (95% confidence interval [CI] 22.9, 26.4).
A minority experienced co-infection with gonorrhea (14.5%; 35/241) or syphilis (7.0%; 17/241) and were less frequently symptomatic in presentation (58.6%; 123/210). Infections were more likely in HIV-negative individuals post-PrEP compared to pre-PrEP (odds ratio [OR] 2.43; 95% confidence interval [CI] 1.44, 4.09). PrEP users were more likely to experience asymptomatic LGV infection relative to HIV-negative PrEP non-users (OR 2.33; 95% CI 1.15, 4.72). There was a trend towards asymptomatic presentation among HIV-positive individuals, post-PrEP relative to pre-PrEP (OR 1.60; 95% CI 0.61, 4.27).
Conclusions: Since the implementation of publicly-funded PrEP programs, coupled with frequent STI screening, LGV's increasingly asymptomatic presentation highlights the importance of frequent asymptomatic STI screening combined with reflex LGV testing for chlamydia-positive rectal specimens. Further work is needed to determine the cause of this increase in cases.

EPC077
Incidence of sexually transmitted infections among adolescent's men who have sex with men and transgender women enrolled in a PrEP cohort study in Brazil

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Background: Adolescent men who have sex with men (aMSM) and transgender women (aTGW) are disproportionately affected by HIV and other sexually transmitted infections (STI).

However, studies on the incidence of STI among adolescents enrolled in PrEP are still scarce. We aimed to estimate the incidence of *N. gonorrhoeae, C. trachomatis, M. genitalium, M. hominis, U. urealyticum* and *U. parvum* among adolescents PrEP users.

Methods: PrEP1519 is a single-arm demonstration cohort study of daily TDF/FTC as PrEP. It is ongoing in 3 Brazilian capital cities among aMSM and aTGW aged 15-19 years-old (yo), recruited from February 2019-September 2021, with the following eligibility criteria: HIV uninfected, high risk of HIV, and with no risk of kidney and liver damage. They completed a questionnaire, and swab samples from multiple sites (oropharyngeal, anal, and urethral) were provider-collected and tested for each STI by using qPCR, at PrEP initiation and weeks 4, 12, and then quarterly through week 96.

For this analysis, we included participants who had a minimum of 2 consecutive visits at the Salvador site and provided a swab sample at PrEP initiation and at least one more during follow-up. Case of STI was defined as positive-qPCR from any anatomical site. STI incidence rate per person-year (PY) of follow-up and 95% confidence intervals (95%CI) were estimated.

Results: At PrEP initiation, participants were mostly MSM (91%) and 18-19 yo (84%). Median age of sexual debut was 14 yo (IQR:12-16), and 56% of participants did not use or did not remember using a condom at first sexual intercourse. Incidence measures of bacterial STI after initiating PrEP in Salvador (Brazil) are presented below. The incidence of *U. urealyticum* was particularly high.

	Total N	Incident cases	Sum of PY	Incidence rate per 100 PY	(95% CI)
N. gonorrhoeae	132	19	219.2	8.7	(5.5-13.6)
C. trachomatis	132	22	246.5	8.9	(5.9-13.6)
M. genitalium	137	11	204.5	4.6	(2.5-8.3)
M. hominis	133	19	224.3	8.5	(5.4-13.3)
U. urealyticum	128	43	186.3	23.1	(17.1-31.1)
U. parvum	137	10	253.9	3.9	(2.1-7.3)

Conclusions: Important rates of STI among adolescents in PrEP1519 indicate that innovative approaches to decrease STI incidence are much needed. Point-of-care STI testing should be an essential component to help decrease STI incidence among aMSM and aTGW PrEP users followed by appropriate STI treatment.

EPC078

Prevalence of tuberculosis in transgender women and according to HIV status in Lima, Peru

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Background: The high prevalence of HIV in transgender women (TW), their socioeconomic vulnerability, and their limited access to the health system, places them at risk of becoming infected with tuberculosis. A study in Brazil reported a high prevalence of tuberculosis in TW regardless of their HIV status. Although Peru is one of the countries with the highest burden of drug-resistant tuberculosis in the world, little is known about the prevalence of tuberculosis in TW.

This study aimed to determine the overall prevalence of tuberculosis in TW of Lima-Peru, and according to their HIV status.

Methods: A cross-sectional study was conducted between May and June 2021 in adult TW who participated in a previous study and in TW members of a non-profit civil association in Lima. Radiographic diagnosis and identification using GeneXpert were carried out to determine the frequency of tuberculosis.

The frequency of HIV infection was determined through HIV testing (rapid and confirmatory) and by verifying the HIV status among those who reported a previous positive diagnosis.

Results: A total of 277 TW were approached, 103 of which agreed to be tested for tuberculosis with a mean age of 32.7 (±9.9) years. Of the 103, 3 TW (2.9%) were diagnosed with tuberculosis. Of 35 TW living with HIV who were tested for tuberculosis, 2 were positive (5.7%). Of 49 TW without HIV who were tested for tuberculosis, 1 resulted positive (2%).

Conclusions: The study shows a high prevalence of tuberculosis (2.9%) in TW. Although the sample is small, the results suggest that the prevalence of tuberculosis is not only high in TW living with HIV (5.7%), but also in those without HIV (2%), compared to the prevalence in the general population (0.1%).

More studies with stronger designs are required to assess whether TW have a higher burden of tuberculosis that warrants prioritizing this community within tuberculosis control activities in Peru.

EPC079

Stopping syphilis transmission in Arctic communities through rapid diagnostic testing (STAR study): a field diagnostic accuracy study

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Background: Intense transmission of syphilis has emerged in some Canadian Arctic communities despite prevention efforts. Remoteness and limited diagnostic infrastructure yield long delays between screening and treatment of cases, with an estimated 50% of infectious contacts occurring during this interval in the region.

We assessed the field diagnostic accuracy of a rapid dual diagnostic test (RDT) for syphilis, evaluating both whole blood and centrifuged serum specimens, as a means of eliminating the screening-treatment interval and breaking syphilis transmission chains in remote Arctic communities.

Methods: In this REB-approved prospective multisite field evaluation, sexually active individuals aged ≥14 years were tested at the point-of-care by non-laboratory trained registered nurses in Nunavik and Nunavut, from 1 Jan 2020 to 31 Dec 2021.

Whole blood and serum specimens were concurrently collected for rapid testing with an RDT containing both treponemal and non-treponemal components (*ChembioDPP® Syphilis Screen & Confirm*) and compared to laboratory-based reference testing.

Reference laboratories performed reverse sequence algorithm testing for syphilis with enzyme immunoassay (EIA) and rapid plasma reagin (RPR) testing.

Results: A total of 176 participants were recruited (median age 29 years (IQR 23-38) and 61% female), of which 46 (26%) were confirmed new syphilis cases.

Overall, treponemal-RDT sensitivity compared to EIA was similar for serum (74% (95%CI 59-86%)) and whole blood specimens (77% (95%CI 61-89%)). Sensitivity of both specimen types increased to ≥93% for patients with RPR≥1:8, a threshold consistent with infectious syphilis. Specificity for the treponemal-RDT was 99% (95%CI 95-100) for both specimen types.

Relative to RPR, the non-treponemal-RDT sensitivity for serum was 95% (95%CI 83-99%) and increased to 100% (95%CI 89-100%) for RPR ≥1:8. The non-treponemal-RDT sensitivity relative to RPR for whole blood was 80% (95%CI 63-92), and 93% (95%CI 76-99) for RPR≥1:8.

Conclusions: In remote Arctic communities, *Chembio DPP® Syyphilis Screen & Confirm* had acceptable sensitivity and excellent specificity when performed by unsupervised non-laboratorians. Whole blood and serum yielded similar performance, making implementation feasible in communities where no centrifuge or calibrated pipettes are available. If used in addition to standard reference testing, implementing this RDT could shorten time-to-treatment by up to 3 weeks, without missing any cases.

EPC080

Systematic review and meta-analyses of the interaction between HIV infection and COVID-19: two years' evidence summary

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Background: During the COVID-19 pandemic, people living with HIV (PLWH) were considered to be at risk of worse COVID-19 outcomes once infected. However, the existing evidence is insufficient and inconsistent. This systematic review and meta-analysis aimed to summarize the existing evidence on comparing the risk of SARS-CoV-2 infection, severe COVID-19 symptoms, and mortality among PLWH and patients without HIV.

Methods: The articles included studies published in PubMed, Medline, Embase, and Cochrane between December 1st, 2019, and December 1st, 2021. We used the combination of 1) "HIV", "human immunodeficiency virus*", "AIDS", "acquired immunodeficiency syndrome" and 2) "COVID-19", "SARS-CoV*", "2019-nCoV", "nCoV" and "novel-coronavirus" as search strings.

We included the original studies published in English focusing on observational studies assessing the risk of SARS-CoV-2 infection, severe COVID-19 symptoms, and mortality among PLWH. Two reviewers independently screened each article, and a third reviewer was consulted for reconciliation.

Data were extracted by two independent reviewers. STrengthening the Reporting of OBservational studies in Epidemiology-Modified (STROBE-M) checklist was used for quality assessment. For the results with heterogeneity I^2>75%, a random-effects model was employed. The outcomes were risk ratios of SARS-COV-2 infection, severe COVID-19 symptoms, and mortality between people with and without HIV.

Results: We included a total of 32 studies and 71,779,737 study samples, of whom 797,564 (1.11%) were PLWH. Compared with COVID-19 patients without HIV infection, PLWH had comparable risk of SARS-CoV-2 infection (adjusted Risk Ratio=1.07, 95% CI: 0.53-2.16, I^2=96%, number of studies k=6, sample size n=20,199,805) and risk of developing severe COVID-19 symptoms (aRR=1.06, 95% CI: 0.97-1.16, I^2=75%, k=10, n=2,243,370).

PLWH, if infected with SARS-CoV-2, were found to have an increased risk of mortality compared with people without HIV (aRR=1.30, 95% CI: 1.09-1.56, I^2=76%, k=16, n=71,032,659). This finding was consistent across different subgroup analyses. There was no significant publication bias identified.

Conclusions: PLWH are at increased risk of COVID-19 mortality once infected. The local health system should one hand strengthen COVID-19 prevention and clinical management among PLWH to avoid infection and on the other hand, sustain the HIV care continuum of PLWH for HIV management.

EPC081
Clinical and demographic characteristics of tuberculosis patients in health care facilities in Botswana: a retrospective analysis

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Background: Tuberculosis (TB) disease is the most common opportunistic infection affecting people living with HIV (PLHIV). In Botswana, HIV is the main driver of TB disease, accounting for about half of all TB cases in 2019. The demographic and clinical characteristics of all TB patients in 53 PEPFAR-supported facilities were evaluated between October 2020 and September 2021.

Methods: A retrospective analysis of all TB patients documented in Manual TB registers in 53 Bummhi supported facilities was conducted for demographic and clinical characteristics. TB diagnoses were made through GeneXpert, chest X-ray, microscopy or culture. Data extracted included age, gender, type of TB test, HIV status, ART status and mortality. Statistical analyses were conducted using SAS version 9.3 (SAS Institute Inc., Cary, NC, USA).

Results: A total of 1,073 TB cases were identified, of which 676 (63.2%) were male. The median age was 40 years (interquartile range (IQR): 29 – 52 years). Overall, 557 (51.9%) patients were HIV-co infected and 46 (4.3%) had no documented HIV status at time of TB treatment initiation. Of those HIV-co infected, 136/557 (24.4%) were HIV newly diagnosed, of whom 116 (85.3%) were initiated on ART. Nearly 90% (378/421) of the known HIV positive prior to TB diagnosis were already on ART. Only 9/1,073 (1.2%) of the total TB patients were documented as dead, including 1 (11.1%) who died prior to ART initiation. TB cases were predominantly diagnosed through GeneXpert and proportions of patients and type of TB diagnostic test is shown in Figure 1.

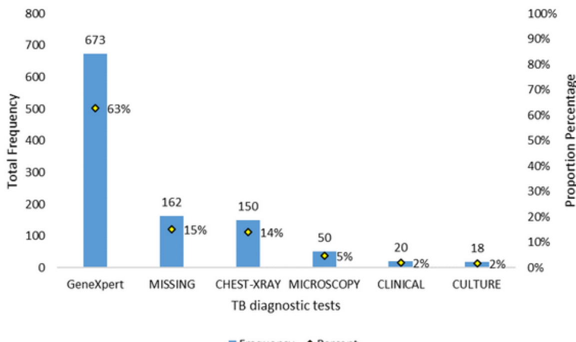

Figure 1.

Conclusions: A high proportion of TB patients were newly diagnosed HIV patients, implying that identification of PLHIV before acquiring a severe opportunistic infection needs to be improved to reach epidemic control. There is need to improve GeneXpert access for initial testing of presumptive TB cases.

EPC082
Declining trends of HIV and syphilis seroprevalence at integrated counselling and testing centre in a tertiary care hospital in North India: a six year study

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Background: Globally, 37.7 million people were living with HIV at the end of 2020. HIV and Syphilis are major public health issues in India. This study was undertaken to analyse the changing trends of HIV and Syphilis seroprevalence in Integrated Counselling and Testing Centre (ICTC) attendees over 6 years.

Methods: A retrospective study was conducted at ICTC centre, Safdarjung Hospital, New Delhi, India; wherein patients' records from January 2016 to December 2021 were analysed and trends in HIV and syphilis seroprevalence were recorded. Cases were classified according to HIV status, gender; referral from sexually transmitted infections(STI) clinic and non-STI attendees.

HIV tests and interpretation were done according to National AIDS Control Organisation(NACO) guidelines, and syphilis serological assays were done as per classical testing strategy.

Results: Of 131115 patients tested for HIV, 2.8% males while 1.08% females were positive($x2$=474.58,P<0.0001). HIV seroprevalence showed a declining trend from 2.68% in 2016 to 1.76% in 2021($x2$=39.676,P<0.0001).

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Similarly, syphilis sero-positivity decreased remarkably from 1.06% to 0.58%(x2=25.040,P<0.0001). Both HIV and syphilis showed a slight rise in the year 2020 (2.08% for HIV and 1.08% for syphilis) with remarkably less ICTC registrations due to Covid-19 pandemic.

The decrease in syphilis sero-positivity was minimal in people living with HIV/AIDS (PLHA), (1.62% to 1.43%, P=0.57), whereas significant in HIV negative attendees(1.04% to 0.57%, P<0.0001). Syphilis sero-positivity in PLHA was not notably higher than in HIV negative attendees (P=0.4168). Against this, syphilis prevalance in STI clinic attendees referred to ICTC was significantly higher than in non-STI clinic attendees (p < 0.0001).

Conclusions: Significant decline in HIV and syphilis sero-positivity points towards the successful implementation of HIV and STI prevention and control programmes in the region. The overall seroprevalence of HIV and syphilis in both groups increased abruptly in 2020, attributable to the COVID pandemic and lockdown that reduced the flow of low risk population attending hospitals and testing centres.

EPC083

Prevalence of non-communicable diseases among HIV-infected persons in sub-Saharan Africa: a systematic review

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Background: Multimorbidity is a global public health concern, as non-communicable diseases (NCDs) are becoming an increasing burden for persons living with HIV as they live longer due to antiretroviral therapy. People living with HIV (PLHIV) have been found to have a higher risk of having non-communicable diseases. Non-communicable diseases (NCDs) are diseases that are not transmissible from person-to-person and include cardiovascular disease, diabetes, chronic respiratory disease, cancers, and mental health conditions.

To appropriately identify and treat non-communicable diseases (NCDs) among persons living with HIV (PLHIV) in low-and-middle-income countries (LMICs), it is imperative to understand the burden of NCDs among PLHIV in sub-Saharan and the current management of the diseases.

Methods: We examined peer-reviewed literature published between 1 January 2016 and 31 December 2020 to assess currently available evidence regarding HIV and three selected NCDs (cardiovascular disease, cervical cancer and diabetes) in sub-Saharan Africa. The inclusion criteria were: written in English; based in LMICs with a focus on sub-Saharan Africa, data on prevalence. The databases; PubMed/MEDLINE, and Scopus, were searched to identify relevant literature. Pooled estimates for prevalence were generated using random fixed-effects models.

Results: A total of 1,303 abstracts were reviewed. Out of this, 200 had potentially relevant prevalence data and 31 were selected for quantitative analysis. Pooled estimates for NCD prevalence among HIV-infected persons were hypertension 33.2%, invasive cervical cancer 3.9% and diabetes 18.3%. Gender (p = 0.002) was found to be significantly associated with the development of NCDs. Geographical location was a significant risk factor as those in urban areas were more likely to develop hypertension as compared to rural areas (p = 0.001).

Conclusions: Improved data collection and surveillance of NCDs among PLHIV in sub-Saharan Africa are necessary to inform integrated HIV/NCD care models.

Although efforts to integrate care exist, impactful research to better understand the complexities around developing, testing, and implementing appropriate approaches for effective diagnosis, prevention and integrated clinical care for HIV-associated non-communicable diseases is needed.

EPC084

High prevalence of anal high-risk human papillomavirus infectionin HIV-negative French men who have sex with men during 12 months of Pre-exposure prophylaxis uptake:potential efficacy of Gardasil-9® vaccination

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Background: Despite the efficacy of Pre-exposure prophylaxis (PrEP), men having sex with men (MSM) taking PrEP become at risk for anal high-risk human Papillomavirus (HR-HPV) infection. We aim to assess the dynamic of anal HR-HPV infection in MSM during more than one year of PrEP uptake.

Methods: From 2017 to 2021, 164 MSM [mean age, 36.3 years (range: 18-68)] seeking for PrEP at the infectious diseases outpatient consultation service of the "*Centre Hospitalier Régionale d'Orléans*" in France, were prospectively recruited and screened by Anyplex™ II HPV 28 real-time PCR, for anal HPV.

Among them, 91 were followed-up during at least 12 months of PrEP uptake, and 40 received also the first and the second dose of Gardasil-9® HPV vaccine, and 24 received the 3rd dose.

Results: At the inclusion, anal HPV prevalence was 82.3%, including 67.1% of HR-HPV, 53.6% being caused by Gardasil-9® vaccine HR-HPV. HR-HPV33 (25.2%) and HPV16 (20.7%) were the predominant HR-HPV and HPV18 (10.4%) was less detected.

After 12 months of PrEP, anal HPV prevalence still very high (81.3%), including 61.5% of HR-HPV, 43.9% being caused by Gardasil-9® vaccine HR-HPV. HPV33 (9.9%), HPV18 (3.3%), HPV52 (8.8%), were strongly reduced, while HPV16 (20.8%) and the other HR-HPV remained as high as at the inclusion.

When comparing HR-HPV distribution in vaccinated MSM, at first dose and 3 months after the 3rd dose of G9, we observe a reduced prevalence of vaccine HPV16 (20% to 17.3%), HPV18 (from 12.5% to 0%), HPV33 (from 17.5% to 0%), HPV45 (from 7.5% to 4.3%), and HPV52 (from 12.5% to 4.3%), as well as the non-vaccine HPV35 (from 10% to 4.3%).

On the other hand, we observed an increase frequency of non-vaccine HPV39 (from 12.5% to 21.7%), HPV51 (from 10% to 13.04%), HPV56 (from 10% to 13.04%), HPV59 (from 5% to 8.7%), and HPV68 (from 12.5% to 13.04%), as well as vaccine HPV31 (from 7.5% to 8.7%) and HPV58 (from 7.5% to 8.7%).

Conclusions: HIV-negative MSM taking PrEP are at high risk of getting anal HR-HPV infection and introducing Gardasil-9® vaccination in the PrEP package would help preventing the acquisition of the most carcinogenic HPV genotypes.

EPC085

Scale-up of tuberculosis preventive therapy among people living with HIV in Uganda: initiation, completion, and TB disease notification rates, April 2017–September 2021

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Background: Tuberculosis (TB) is a leading cause of death globally, with 1.5 million deaths in 2020, including 214,000 among people living with HIV (PLHIV). TB preventive therapy (TPT) completion lowers incidence and mortality.

In 2016, Uganda, a WHO-designated TB high-burden country, began expanding TPT among PLHIV. We describe TPT scale-up between 2017-2021 to guide continued expansion.

Methods: We analyzed aggregated patient data from PEPFAR DATIM to describe quarterly and semiannual trends of reported TPT initiation and completion, and TB disease among PLHIV receiving PEPFAR-supported antiretroviral treatment (ART) during April 2017–September 2021. TPT initiation was defined as receiving prophylactic isoniazid (INH) with pyridoxine (semiannually), TPT completion rate as the proportion of those without ≥2 consecutive months of interruption among all who initiated TPT 6 months prior (semiannually), and TB disease notification rate as number of clinically and/or bacteriologically confirmed cases reported among PLHIV on ART (quarterly).

Using R version 4.1.2, we conducted descriptive analyses by age group, sex, and district. Temporal trends were described using time series plots.

Results: As of September 2021, a total of 1,266,588 PLHIV were on ART. TPT initiations increased from 18,394 during April–September 2017 to 122,969 in April–September 2021. TPT completion rates increased from 28.6% (5,264/18,394) during April–September 2017 to 92.1% (113,296/122,969) in April–September 2021.

On average across all semiannual periods, TPT completion rates were higher among PLHIV aged ≥15 years (median [interquartile range] = 86.1% [71.1–88.3%]) compared to those aged <15 years (median = 85.6% [63.9–86.7%]), and similar by sex (men = 86.5% [65.6–91.6%]; women = 86.2% [69.6–88.6%]).

The overall average district TPT completion rate was 75.5% (63.6–95.7%), with the highest rate in Lango region (82%) and lowest in the Teso region (66%). TB disease notification rates decreased from 59 per 100,000 persons during April–September 2017 to 47 per 100,000 persons during July–September 2021.

Conclusions: In 4 years, Uganda achieved high and increasing TPT completion rates among PLHIV; followed by a decline in TB notification rates. Ensuring all PLHIV complete TPT will likely require additional people-centered services, including scale-up of 3-month courses of TPT.

EPC086

HPV prevalence and risk factors in HIV-negative and HIV-positive South Africa adolescent girls: results from the HOPE study

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Background: Women living with HIV (WLH) experience high rates of Oncogenic (HR-HPV) infection, pre-cancerous lesions and cancer. Prevention strategies rely on HPV vaccination and cervical cancer screening.

Methods: From June to December 2019, we surveyed adolescent girls and young women (AGYW) aged 17-18 years at 18 sentinel clinics in four South African provinces (Gauteng, Mpumalanga, Free State, and Northwest) as part of an HPV vaccine impact study.

This age group were ineligible for the vaccination programme in 2014. Eligible participants completed a self-administered demographic and risk factor questionnaire,

underwent HIV counselling and rapid testing, and provided a self-collected vaginal swab for HPV testing using SeeGene Anyplex™ II HPV28 assay.

Results: Of 770 respondents, 636 had ever had vaginal sex. Of those, median age of sexual debut was 16 (IQR 16-17 years), 6% (25) reported sexual debut <15 years, 75% (480) reported 2+ lifetime sex partners. Of the 770, 30% were HIV positive.

Adolescent WLH were more likely to have had sex <=15 years (13% vs 4%), and less likely to be on contraception (72% vs 81%); 91% (217) were on anti-retroviral treatment (ART) (median duration ART 23.6 (6.3-83.5 months). HR-HPV was detected in 59% (376) of AGYW; with higher rates observed in adolescent WLH compared to their HIV negative peers (68% vs 56 % P=0.002).

Vaccine-specific type HPV 16/18 prevalence was two-fold higher in WLH (compared to HIV negative girls (53/171, 31% vs. 88/467, 19%; [1.90, 95% CI: 1.28-2.83). HR-HPV types associated with vaccine cross-protection including HPV 33 (8% vs 2% p=0.000), 35 (17% vs 11% p=0.021), 52 (20% vs 11%; p=0.001), and 58 (18% vs 8%; P=0.000) were also more common in WLH, except for HPV31 (11% vs 7% P=0.056)

Conclusions: HR-HPV infection is common in young WLH in South Africa. These data highlight the importance of high HPV vaccination coverage in populations with high HIV prevalence, as well the potential value of early and sustained ART initiation in ensuring clearance of infection and prevention of cervical cancer. The data also highlights the need for cervical cancer screening among WLH, particularly those that will have missed out vaccination programmes.

EPC087

High incidence of HIV and STIs in late pregnancy: compelling evidence for repeat etiological testing

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Background: Adolescent girls and young women (AGWY) in South Africa (SA) are at especially high risk of acquiring sexually transmitted infections (STIs) including HIV-1 during late pregnancy. While repeat testing for syphilis and HIV-1 are routinely performed to prevent congenital syphilis and perinatal HIV infection, there is no evidence for need of repeat testing for other STIs in pregnancy. We determined the incidence of HIV-1 and STIs in pregnant AGYW through repeat testing for HIV, HSV-2, *T.vaginalis (TV), C.trachomatis (CT)* and *N.gonorrhea (NG)*in the 3rd trimester.

Methods: Pregnant women who tested negative for HIV-1 <28 weeks gestation at antenatal clinics in SA were enrolled in a cohort study during Feb 2017-Mar 2018.

At baseline (2nd trimester) a research nurse examined the participant for symptoms of STIs, collected vaginal swabs for BV and STI testing, and drew blood for HIV-1 and syphilis testing. Symptomatic women were treated syndromically. These procedures were repeated in the 3rd trimester. Vaginal swabs were stored for later testing for *CT, NG, MG*, HSV-2, and *TV*using PCR.

Results: Of 752 pregnant HIV-negative AGYW (180 adolescents 15-19 years), 39.3% tested positive for BV, 15.3% (*TV*), 5.7% (*NG*), 9.7% (*CT*), 3.5% (*MG*), 2.4% (HSV-2) and 0.5% (Syphilis) in the 2nd trimester. 460 (61.2%) women (106 adolescents) retested in the 3rd trimester, 18.4% tested positive for BV, 14.8% (*TV*), 13.0% (*NG*), 16.5% (*CT*), 4.8%(*MG*), 2.4% (HSV-2), 0.3% (syphilis) and 1.5% for HIV-1.

More than 85% were new cases; incidence rate of 41.7/100py for *TV*, 40.2/100py (*NG*), 50.3/100py (*CT*), 7.9/100py (HSV-2), 0.7/100py (Syphilis), 16.5/100py (BV) and 5/100py for HIV-1. Incidence rate for any STI in the 3rd trimester was 142.9/100py for adolescents and 137.9/100py for older women. 43.3% (95%CI 37.1-49.8) of women with any STI in the 2nd trimester and 20.7% (95%CI 15.2-27.1) in the 3rd trimester were symptomatic.

Conclusions: Repeat testing in the 3rd trimester of pregnancy revealed a high incidence of HIV-1 and other STIs, with 80% of women with a STI being asymptomatic.

We provide compelling evidence for the need for repeat aetiological testing of STIs in pregnant AGYW in a high HIV endemic setting.

Epidemiology of non-AIDS non-communicable diseases (e.g., non-AIDS cancers, CVD)

EPC088

Burden of chronic comorbidities among people living with and without HIV: disability-adjusted life years in British Columbia, Canada

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Background: To describe the burden of chronic comorbidities among people living with and without HIV (PLWH vs. PnLWH) in British Columbia (BC), Canada, we estimated disability-adjusted life years (DALY) related to these comorbidities.

Methods: From a population-based cohort in BC, antiretroviral-treated adult PLWH were matched by age and sex to four PnLWH at baseline and followed for ≥1 year during 2001-2012. DALY combines years of life lost to premature mortality (YLL) and lived with disabilities (YLD).

YLL were yearly death counts multiplied by standard life expectancies at death, while YLD were yearly prevalent counts multiplied by severity-specific weights.

DALY associated with non-AIDS-defining cancers, diabetes, osteoarthritis, hypertension, non-HIV-related dementia, cardiovascular (CVD), chronic kidney, chronic liver and chronic obstructive pulmonary diseases (COPD) were measured for 2008-2012 cumulatively.

Non-parametric bootstrapping estimated the credible intervals (CI) of YLL; for YLD, probabilistic resampling was conducted considering literature-derived disease-specific severity distribution.

Results: At baseline, our matched cohort consisted of 82% males with a median age of 40 years (25th-75th percentiles: 34-47). At any point between 2008-2012, 7042 PLWH and 30,640 PnLWH were alive, leading to 5356.5 and 10,945.7 in estimated DALY, respectively (rate: 770.2 [95%CI: 710.2, 831.6] vs. 359.0 [336.0, 382.2] years/1000 people; Figure 1[C]).

Similar to trends observed in Canada, cancers and CVD predominantly contributed the DALY. Except for hypertension, osteoarthritis (both populations) and dementia (PLWH only), the burden of most comorbidities was driven by YLL rather than YLD (Figure 1[A-B]).

COPD and chronic liver contributed the third and fourth highest DALY among PLWH, as did diabetes and COPD among PnLWH.

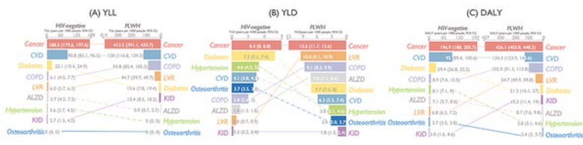

Figure 1. YLL, YLD and DALY associated with nine chronic comorbidities among people living with and without HIV in BC, Canada (2008-2012)

Conclusions: PLWH experience disproportionate burden of chronic comorbidities compared to PnLWH. The observed disparities may relate to socioeconomic and lifestyle differences, residual HIV-related inflammation, and ART-related toxicities. Our findings highlight the need to enhance prevention and management of comorbidities as part of HIV care.

EPC089

Incidence and predictors of clinical bone fractures among people with HIV on antiretroviral therapy

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Background: People with HIV (PWH) have higher incidence rates of bone fracture compared with the general population. Use of antiretroviral therapy (ART) containing tenofovir disoproxil fumarate (TDF) is associated with lower bone mineral density (BMD) in PWH, but the relationship between use of TDF and incident bone fractures in PWH has not been well described.

Methods: We estimated the incidence rates (IR, per 1000 person-years) of clinical bone fractures in a cohort of PWH (age ≥40 years) who initiated ART between January 1, 2000 and September 1, 2015 at Kaiser Permanente in California and Mid-Atlantic States (D.C., Maryland, Virginia).

We extracted sociodemographic and clinical data from electronic health records. Patients with a history of dialysis, kidney transplant, metastatic cancer, or parathyroid abnormalities were excluded. The association of TDF use at baseline with the risk of incident fractures during

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follow-up was estimated using Cox proportional hazards regression, adjusted for sociodemographic characteristics, history of substance use, clinical factors (nadir CD4 count, baseline HIV viral load, comorbidities), and study site.

Results: Among 6,508 PWH (5,689 male, 819 female) followed for 27,646 person-years (median: 3 person-years), we identified 232 incident fractures among those who used TDF (IR:14.0 per 1000 person-years, 95% CI: 12.2-15.8) and 128 fractures among those who did not use TDF (11.5 per 1000 person-years, 95% CI: 9.5-13.5). TDF use was not significantly associated with increased risk of clinical fractures (aHR 1.21, 95% CI: 0.93-1.57).

Significant risk factors for fractures included older age, chronic liver diseases, history of alcohol use disorder, history of drug use disorder and smoking (Figure 1).

Risk Factors	aHR (95% CI)
TDF use at baseline	1.21 (0.93-1.57)
Age	1.03 (1.01-1.04)
Gender	
Male	Reference
Female	1.32 (0.94-1.84)
Race/Ethnicity	
non-Hispanic White	Reference
non-Hispanic Black	0.61 (0.46- 0.83)
Hispanic	0.73 (0.54-0.98)
Asian	0.37 (0.15-0.89)
Other/Unknown	0.93 (0.61-1.43)
Chronic Liver Diseases	1.38 (1.01-1.89)
History of alcohol use disorder	1.61 (1.23-2.11)
History of drug use disorder	1.39 (1.06-1.81)
History of smoking	1.32 (1.05-1.65)

Adjusted Hazard Ratio

0 0.5 1 1.5 2 2.5

Figure 1. Predictors of clinical bone fractures among PWH on antiretroviral therapy

Conclusions: We did not observe a significantly increased risk of fractures associated with TDF use. To reduce the burden of bone fractures, healthcare providers and PWH should focus on key modifiable risk factors, including alcohol and drug use, chronic liver disease, and smoking.

EPC090

Gaps in the type 2 diabetes care-cascade and how HIV and/or TB disease impact movement through its stages: a national perspective using South Africa's National Health Laboratory Service(NHLS) database

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Background: Research out of South Africa(SA) suggests care for diabetes is poor. We evaluated the diabetes care cascade in SA using NHLS data and assessed how HIV and/or TB impact movement through its stages.

Methods: The NHLS cohort (n=373,909) included patients with a first hemoglobin A_{1c}(HbA$_{1c}$), plasma glucose(fasting(FPG) or random(RPG)) lab measured January 2012-March 2015.

Lab-diagnosed diabetes was defined as HbA$_{1c}$>6.5%, FPG ≥7.0mmol/l, or RPG ≥11.1mmol/l. Controlled diabetes was defined as HbA$_{1c}$<7.0% or FPG <8.0mmol/l or RPG <10.0mmol/l.

Cascade stages post diabetes diagnosis were linkage to care (having a diabetes lab within 12-months) and controlled diabetes at 12- and 24-months. We estimated gaps in the cascade nationally and by HIV and/or TB status.

Results: Nationally, 50% of patients screened for diabetes met lab-based criteria for the disease(Table). Of those with diabetes, 19% were linked to care, 5% were controlled at 12-months and <2% remained controlled at 24-months. We saw >70% loss in the transitions between stages.

Among those with diabetes, 19% linked to care (81% loss), among those 26% had their diabetes controlled within 12-months (74% loss), and among those 29% were controlled at 24-months (71% loss). The proportion of diabetes among PLWH was half that compared to HIV-uninfected, 29% and 54%, respectively.

Around 20% of patients, regardless of HIV and/or TB status linked to care within 12-months. A higher proportion of PLWH (vs. HIV-uninfected) had their diabetes under control at 12-months, while controlled diabetes at 24-months was comparable between groups.

		no. patients tested n (%)	lab-diagnosed diabetes n (%)	linkage to care within 12-mo. n (%)	cont. diabetes within 12-mo. n (%)	cont. diabetes within 24-mo. n (%)
sub-groups	HIV+/TB-	52,033 (100%)	15,190 (29.2%; 28.8-29.6%)	3,256 (21.4%; 20.8-22.1%)	992 (30.5%; 28.9-32.1%)	297 (30.0%; 27.1-32.9%)
	HIV+/TB+	4,702 (100%)	1,099 (23.4%; 22.2-24.6%)	203 (18.5%; 16.3-20.8%)	63 (31.0%; 25.0-37.7%)	21 (33.3%; 22.5-45.6%)
	HIV-/TB-	313,740 (100%)	168,439 (53.7%; 23.5-23.9%)	31,281 (18.6%; 18.4-18.8%)	7,904 (25.3%; 24.8-25.8%)	2,238 (28.3%; 27.3-29.3%)
	HIV-/TB+	3,434 (100%)	1,948 (56.7%; 55.1-58.4%)	444 (22.8%; 21.0-24.7%)	86 (19.4%; 15.9-23.2%)	20 (23.3%; 15.2-33.0%)
transition between stages		373,909 (100%)	186,676 (49.9%; 49.8-50.1%)	35,184 (18.8%; 18.7-19.0%)	9,045 (25.7%; 25.3-26.2%)	2,576 (28.5%; 27.6-29.4%)
overall care cascade		373,909 (100%)	186,676 (49.9%; 49.8-50.1%)	35,184 (18.8%; 18.7-19.0%)	9,045 (4.8%; 4.7-49.4%)	2,576 (1.4%; 1.3-1.4%)

Table. The transitions between the stages in the diabetes care cascade stratified by sub-group (n=373,909).

Conclusions: Diabetes care in our cohort of patients undergoing lab-based testing for the disease was poor, with >70% loss in the transitions between stages and <2% of those with diabetes achieving control within 24-months post diagnosis. PLWH had a lower proportion of diabetes compared to HIV-negative patients.

Although, still poor, PLWH had higher rates of completion of the cascade stages, possibly due to PLWH being integrated into HIV care.

EPC091

Prevalence of chronic kidney disease stratified by HIV, TB, and diabetes status: a national perspective using South Africa's National Health Laboratory Service (NHLS) database

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Background: Complications like diabetes and chronic kidney disease (CKD) have replaced opportunistic infections as leading causes of mortality in people living with HIV (PLWH).

We evaluated the prevalence of lab-diagnosed CKD in South Africa (SA) using nationwide NHLS data and assessed how CKD risk is affected by HIV and diabetes.

Methods: The NHLS cohort (n=87,707; HIV-uninfected=74,607; PLWH=13,100) was limited to patients ≥30 years from government facilities with first creatinine measured between January 2012-December 2016. Diabetes was defined as hemoglobin A_{1c}≥6.5%, fasting plasma glucose≥7.0mmol/l, or random plasma glucose≥11.1mmol/l around date of first creatinine.

We used the CKD Epidemiology (CKD-EPI) equation to estimate glomerular filtration rate(eGFR) and defined CKD as 2 eGFR CKD-EPI measurements <60 ml/1.73/m^2 3- to 12-months apart. Log-binomial models were used to assess predictors of CKD, with interaction terms between diabetes/HIV and diabetes/TB.

Results: Prevalence of CKD was 20.7% (95%CI:20.4-21%) in HIV-uninfected and 23.9% (95%CI:23.2-24.7%) in PLWH. Prevalence increased with age. HIV-uninfected males had higher prevalence of CKD than HIV-uninfected females regardless of age group and diabetes status, while PLWH males had higher prevalence of CKD than PLWH females depending on age group but not diabetes status. Diabetics showed slightly higher prevalence of CKD than non-diabetics.

In adjusted analysis, PLWH had twice the risk of CKD. Older patients, males (vs. females) and diabetics (vs. non-diabetics) had an increased risk of CKD. Interaction terms had significant positive coefficients, suggesting that the effect of the combined action of diabetes/HIV and diabetes/TB is more than the sum of the individual effects.

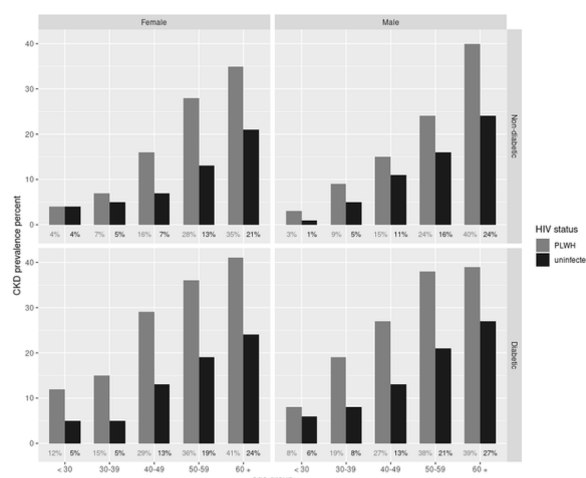

Figure. National prevalence of CKD stratified by HIV status, gender, age and diabetes status.

Conclusions: Prevalence of CKD was >20% in our cohort, with PLWH having higher rates than HIV-uninfected. SA has a high burden of HIV, TB and diabetes, all factors which drive CKD. As such, close monitoring of kidney function is warranted in all patients, even more so in those with diabetes, HIV and/or TB.

EPC092

A propensity-score matched cohort study investigating the impact of HIV infection on the ageing process

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Background: It is unclear and much disputed whether HIV infection causes pathophysiological damage that intensifies (i.e. accelerates age) or remains stable over time (i.e. accentuates age). Understanding the impact of HIV on the ageing process is imperative for develop-

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ing therapeutic tailored interventions to ensure healthy ageing. We aimed to identify whether people living with HIV (PLWH) experience accelerated or accentuated ageing by investigating differences in age of onset for various non-communicable diseases between people with and without HIV in the UK.

Methods: Between January 2000 and January 2020, all PLWH and people without HIV aged 18+ identified from the IQVIA Medical Research Database were eligible. Outcomes included cardiovascular disease (CVD), hypertension, diabetes and chronic kidney disease (CKD). All conditions were identified by Read codes and age at diagnosis was the date of the Read code assignment. For each outcome being investigated, people with and without HIV were excluded if they had the outcome of interest at baseline. PLWH and people without HIV were then matched based on propensity scores (1:1 ratio). For each outcome that occurred during prospective follow-up, linear regression was used to report unadjusted and adjusted p-values for any difference in age at diagnosis between people with and without HIV.

Results: 8880 PLWH were matched with 8880 people without HIV and were found to have an earlier onset of CVD (adjusted p-value 0.002). Similarly, PLWH had an earlier onset of hypertension (adjusted p-value 0.002). However, no difference between the age of onset was found for diabetes or CKD (adjusted p-values 0.368 and 0.483, respectively).

	Sample size; N	No. of events (%)	Mean age at diagnosis (SD)	Unadjusted models Coef.	P-value	95% CI	Adjusted models Coef.	P-value	95% CI
Cardiovascular disease[a]									
People without HIV	8880	167 (1.9)	56.8 (10.1)	Ref.			Ref.		
People with HIV	8880	207 (2.3)	54.5 (11.3)	-2.396	**0.032**	-4.580, -0.213	-3.370	**0.002**	-5.477, -1.263
Hypertension									
People without HIV	8520	417 (4.9)	51.4 (9.4)	Ref.			Ref.		
People with HIV	8520	456 (5.4)	49.7 (9.3)	-1.651	**0.009**	-2.894, -0.408	-1.850	**0.002**	-3.042, -0.658
Diabetes									
People without HIV	8926	162 (1.8)	52.6 (10.2)	Ref.			Ref.		
People with HIV	8926	197 (2.2)	53.4 (10.1)	0.707	0.513	-1.415, 2.829	0.932	0.368	-1.100, 2.963
Chronic Kidney Disease									
People without HIV	9135	89 (1.0)	58.1 (11.9)	Ref.			Ref.		
People with HIV	9135	160 (1.8)	57.6 (12.2)	-0.550	0.730	-3.683, 2.584	-1.117	0.483	-4.245, 2.012

[a] Models are adjusted for the following baseline variables: sex, ethnicity, smoking status, body mass index, deprivation, study-entry date, substance use, lipid-lowering drug use and events for cardiovascular disease, hypertension, diabetes, chronic kidney disease, depression, anxiety and severe mental illness (the event being investigated was removed from the model)
[b] Cardiovascular disease comprises peripheral vascular disease, stroke, myocardial infarction, ischaemic heart disease and heart failure

Table 1. Unadjusted and adjusted differences in age at diagnosis for cardiovacular disease, hypertension, diabetes and chronic kidney disease.

Conclusions: The earlier development of CVD and hypertension in PLWH compared to people without HIV indicates accelerated ageing and is likely due to persistent immune response, chronic inflammation and/or ART exposure. These mechanisms may not have the same impact on organ decline.

EPC093

Risk factors linked to age-related comorbidities among people living with HIV aged over 40 years

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Background: Since the inception of the combined antiretroviral therapy, remarkable improvements have been witnessed regarding HIV outcomes, but this has led to a rise in chronic comorbidities usually associated with ageing. We described the factors associated with the most prevalent comorbidities in a cohort of people living with HIV (PLWH) aged over 40 years.

Methods: We conducted a retrospective cohort study using data from the Catalan PLWH cohort (PISCIS) between January 1, 2010, to December 31, 2019. Only patients who were aged 40 years as of the start of the study period were included in the analysis. Chronic conditions were coded according to the Swedish National study of Aging and Care in Kungsholmen (SNAC-K).

We used multivariable Cox regression models to assess factors associated with considered comorbidities (dyslipidemia, chronic liver diseases (CLD), hypertension, cardiovascular disease (CVD), solid neoplasms, and diabetes).

Results: The study included 6565 PLWH at baseline. By the end of the study period, 51.2% patients were without any of the selected comorbidities, while 47.0% had dyslipidemia, 33.6% CLD, 32.1% hypertension, 20.9% CVD, 16.9% solid neoplasms, and 12.4% diabetes.

Age was associated with an increased risk for all comorbidities except for solid neoplasms. Heterosexual men (HTX) and people who inject drugs (PWID) presented higher risk for CVD (HR=1.19 [CI=1.04-1.358], HR=1.99 [CI=1.72-2.30]) respectively; diabetes (HR=1.43 [CI=1.14-1.78], HR=1.69 [CI=1.32-2.15]), and solid neoplasms (HR=1.52 [CI=1.15-2.01], HR=9.08 [CI=7.20-11.47]).

We observed a lower risk of hypertension among PWID (HR=0.57 [CI=0.47-0.69]) compared to men who have sex with men (MSM). Moderate/severe economic deprivation was linked to a higher risk of CVD (HR=1.17 [CI=1.05-1.31]), hypertension (HR=1.21 [CI=1.06-1.38]), and CLD (HR=1.24 [CI=1.06-1.46]). Migrants had a lower risk of diabetes (HR=0.62 (0.49-0.79]) and hypertension (HR=0.74 (0.63-0.86]), while women had higher risk of CVD (HR=1.32 [CI=1.07-1.62]) and hypertension (HR=1.37 [CI=1.04-1.79]).

Conclusions: Apart from ageing, there are several sociodemographic factors associated to a higher risk of chronic comorbidities, such as female sex, lower socioeconomic status, being HTX, PWID or of Spanish origin. These factors are crucial in understanding the future health needs of an ageing PLWH population and could be vital in planning public health interventions.

EPC094

High-risk HPV infection in women living with HIV: experiences from a Zimbabwean HIV cohort

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Background: Cervical cancer (CC) is preventable yet remains the most common gynaecological cancer in Zimbabwe. Persistent infection with high-risk human papillomavirus (hrHPV) has been established as the necessary cause of CC. High prevalence rates of HPV have been described in women living with HIV (WLHIV) in sub-Saharan Africa, but there is limited data from Zimbabwe. The 2021 WHO guidelines for the screening of cervical pre-cancer and cancer recommend the detection of HPV DNA as the primary test. This study was conducted to describes the HPV prevalence and type distribution in an urban Zimbabwean cohort.

Methods: 2708 women were screened for hrHPV infection between January and December 2021. Data analysis of women with a positive hrHPV test included the type, associated risk factors and clinical diagnosis of cervical disease. The prevalence of hrHPV and type were calculated, and the chi square test was used to assess the relationship between type and clinical diagnosis. Predictors of HPV infection were analysed using logistic regression.

Results: The median age was 45 years (interquartile range [IQR] 37-52). 1433 (53%, 95% CI 51-55) were positive for HPV. The hrHPV types 58 (11.4%), 35 (10.3%) and 52 (10.1%) were most prevalent, followed by 16 (9.3%) and 18 (8.3%). The prevalence rates of other types (68, 56, 33, 51, 45) varied between 5 and 7%. 56 women had confirmed histological diagnosis of cervical precancer and 9 cancer. In women with precancer, type 52 was the most common, 15/56 (27%), and type 16 in women with CC, 7/9 (78%). In multivariable analysis, women with a detectable HIV viral load (>=1000copies/ml), were more likely to have hrHPV infection (aOR4.2, 95%CI 2.2-8) compared to those with an undetectable viral load(50copies/ml).

Conclusions: The high prevalence of hrHPV in this cohort highlights the necessity of CC screening in WLHIV. . Optimal HIV disease control is important in CC prevention, and . Pprimary prevention of HPV infection through vaccination programmes is highly recommended if the goal of elimination of CC in Zimbabwe is to be attained.

EPC095

Predictors of incident renal insufficiency and chronic kidney disease in people living with HIV and diabetes using South Africa's National Health Laboratory Service (NHLS) database

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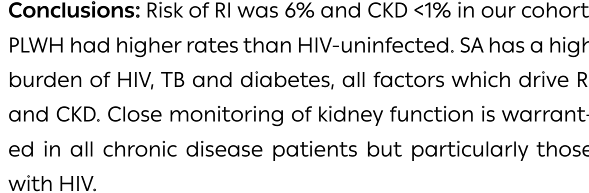
Background: Non-communicable chronic diseases, like diabetes and chronic kidney disease (CKD), are leading causes of mortality in people living with HIV (PLWH).
We evaluated incidence of lab-diagnosed renal insufficiency (RI) and CKD in South Africa (SA) using national laboratory data and assessed how RI and CKD risk is affected by HIV and diabetes.

Methods: The National Health Laboratory Service cohort (n=13,104; HIV-uninfected n=8,669; PLWH n=4,435) included patients ≥30 years from government facilities whose first creatinine was measured between January 2012-2015 and was normal. Diabetes was defined as hemoglobin A_{1c}≥6.5%, fasting plasma glucose ≥7.0mmol/l, or random plasma glucose ≥11.1mmol/l around first creatinine.
We used the CKD Epidemiology (CKD-EPI) equation to estimate glomerular filtration rate and defined RI as 1 CKD-EPI<60 ml/1.73/m^2 and CKD as 2 CKD-EPI<60 ml/1.73/m^2 3-12 months apart. All patients had 24 months of potential follow-up. Mixed effects Poisson regression models were used to assess predictors of RI and CKD.

Results: 24-month risk of RI was 5.2% [95%CI:4.7%-5.7%] in HIV-uninfected and 6.5% [5.8%-7.3%] in PLWH, while CKD incidence was 0.6% [0.5%-0.8%] in HIV-uninfected and 1.0% [0.7%-1.3%] in PLWH.
Models for both outcomes found older patients (≥40 vs. 30-40) had an increased RI and CKD risk, with those ≥60 having the greatest risk (RI risk ratio (RR): 3.9 [95%CI:3.0-5.0]; CKD RR: 3.0 [1.7-5.2]). PLWH compared to HIV-uninfected had a 2.5-fold [2.1-3.2] and a 3-fold [1.7-5.2] increased risk of RI and CKD, respectively.
We found an increased risk of both outcomes in those with TB (RI RR: 1.8; [0.9-3.6]; CKD RR: 1.1; [0.8-1.5]). Male gender and diabetics had a small decreased risk of RI and slight increased risk of CKD. Both groups were less likely to have a follow-up lab measure, possibly suggesting a higher rate of loss in those groups.



Conclusions: Risk of RI was 6% and CKD <1% in our cohort. PLWH had higher rates than HIV-uninfected. SA has a high burden of HIV, TB and diabetes, all factors which drive RI and CKD. Close monitoring of kidney function is warranted in all chronic disease patients but particularly those with HIV.

EPC096

Improved access to cervical cancer screening and treatment for women living with HIV in Central Zambia

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Background: Cervical cancer is preventable and curable, as long as it is detected early and managed effectively, yet it is the fourth most common form of cancer among women aged 15-49 years old in Zambia. Women living with HIV (WLWH) are six times more likely than uninfected women to develop cervical cancer, and should be targeted for screening and treatment.

Description: The USAID SAFE program supports the Ministry of Health (MOH) in conducting cervical cancer screening and treatment services with specific focus on WLWH in selected project supported sites in the Central province. The USAID-SAFE increased cervical cancer screening and treatment through two main strategies;

1. Enhanced screening and treatment of precancerous lesions through outreach activities in hard to reach and hardly reached facilities.

2. Enhanced support for the same day treatment of precancerous lesions. USAID SAFE conducted trainings of MOH staff in VIA, LEEP and mentorship in cervical cancer in order to build local capacity for service providers.

Lessons learned: The initial focus on the provision of the cervical cancer screening and treatment only at static facilities led to the non-achievement of the set targets in the previous fiscal years due to reduced coverage of women accessing the services. Expanded service provision through outreach activities in rural and hard-to-reach areas increased coverage of eligible women accessing cervical cancer screening and treatment services. This led to an achievement of 94% screening against the set target of 23,836 in FY21. Further, this led to improved treatment rate from 62% in September, 2020 to 87% in September, 2021.

Conclusions/Next steps: Integration of cervical cancer into HIV services and promoting same day screening and treatment through static and outreach services improve access for women who are eligible. Instead of focusing only on static services, MOH and implementing partners should embark on identifying women in hard to reach areas to ensure increased access to cervical cancer screening and treatment services.

Describing the spread of HIV through molecular epidemiology

EPC097

HIV acquisition prior to entry into formal sex work: inference from viral next generation sequencing

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Background: HIV/STI programs tailored for self-identified sex workers reach women on average 2 years after formal engagement in sex work; and do not reach high-risk adolescent girls and young women (AGYW) who do not self-identify as sex workers. Yet epidemiological and programmatic data suggest that AGYW engaged in sex work, and/or other forms of transactional sex, experience vulnerabilities associated with HIV acquisition early in their sexual life course.

However, there are limited data on the timing of HIV acquisition among AGWY engaged in sex work or transactional sex. We estimated the time since infection in AGYW using molecular data and estimate the timing of HIV acquisition among AGWY engaged in sex work.

Methods: Dried blood spot (DBS) specimens were collected from AGYW living with HIV in Mombasa, Kenya (n=67) recruited from "hotspot" locations associated with sex work (as part of the 2015 *Transitions Study*).

A portion of the *pol*gene was sequenced from DBS using an in-house next generation sequencing HIV drug resistance mutation genotyping assay.

Estimated time since infection was inferred using a web-based tool as described by Puller et al. (2017) freely available at https://hiv.biozentrum.unibas.ch/ETI/.

Results: The majority of DBS samples (n=51, 76.1%) were successfully sequenced. Among the n=27 women engaged in sex work, the mean difference between estimated time since infection and first sex, first transactional sex, and

first self-identified as a sex worker was 0.5, -1.2, and -1.9 years, respectively, where negative values indicate that infection occurred before the corresponding event.

It was estimated that 74.1% (20/27) of AGYW who sell sex acquired HIV prior to entry into formal sex work. The median time since infection was similar between women who engaged in sex work (3.4 years, IQR: 1.7, 6.3), transactional sex only (3.6 years, IQR: 2.9, 8.2), and neither (4.8 years, IQR: 2.4, 7.0).

Conclusions: The majority of AGYW who self-identified as sex workers acquired HIV prior to entry into formal sex work. Current prevention programs tailored for sex workers may be missing out on key opportunities for HIV prevention. Our findings suggest the need to reach high risk AGYW earlier on in their sexual life course.

Surveillance of HIV in key populations

EPC098

Comprehensive clinical care disruption for criminally-justice involved people living with HIV following implementation of Shelter-in-Place and decarceration

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Background: In March 2020, to protect against SARS-CoV-2 transmission in the county jail, the City and County of San Francisco (CCSF) implemented a decarceration policy, which reduced the jail census by 40%. However, decarceration policies could potentially exacerbate barriers to care for criminally-justice involved (CJI) PLWH during Shelter-in-Place (SIP) because incarcerations provide opportunities for improving health access and engagement.

We used an interrupted time series analysis to quantify disruptions in care received in and out of jail among CJI PLWH in the CCSF following decarceration and SIP.

Methods: Using county administrative data we constructed a retrospective cohort of adults with HIV booked at the CCSF jail with at least one clinic encounter (primary care, mental health, substance use or acute care) from January 2018 to December 2019. We estimated changes in clinic encounters following SIP (March 2020 to December 2020) using unadjusted and adjusted Generalized Estimating Equation (GEE) log-binomial and logistic regression models, controlling for race/ethnicity, gender, age, trimorbidity, and homelessness. Incarcerations greater than 6-days were coded as clinic encounters because clinical care in CCSF jail continued following SIP.

Results: We included 437 people: mean age was 43.1 years (standard-deviation 11); 88% were cisgender-male; 39% white; 59% were homeless; 65% had trimorbidity.

We observed reductions in HIV (aRR=0.77; 95% CI: 0.67, 0.90) and Substance Use (aRR=0.83; 95% CI: 0.70, 0.99) encounters immediately following SIP. Reductions continued in each subsequent month for HIV (aRR=0.96; 95% CI: 0.93,0.99), Substance Use (aRR=0.95; 95% CI: 0.91, 0.99), and Mental Health (aRR=0.97; 95% CI: 0.94, 1.00) encounters. We observed no changes in Acute Care encounters.

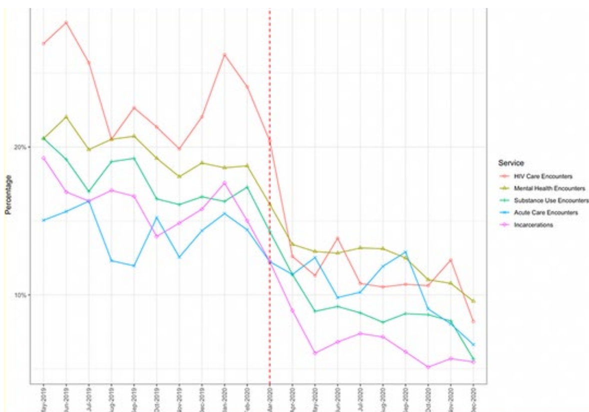

Figure. Time series of proportional engagement in clinic encounters among Criminal-Justice Involved People Living with HIV, San Francisco County.

Conclusions: Clinic encounters for CJI PWLH in CCSF significantly declined across multiple encounter domains and worsened during the COVID-19 pandemic. Efforts to End the HIV Epidemic during the COVID-19 pandemic must include strategies to (re)engage this key population outside of common institutional care settings.

EPC099

Estimation of the population size of gay, bisexual and other men who have sex with men in Canada, 2020

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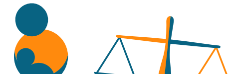
Background: Gay, bisexual (GB) and other men who have sex with men (MSM), both an identity- and behaviourally-based community, account for over half of new HIV infections in Canada. Reliable population size estimates are necessary to allocate resources to meet prevention needs and for modelling the HIV epidemic. Previous Canadian estimates were solely identity-based, which did not ac-

count for GB-identified men not willing to reveal that on a government survey. A nuanced understanding of the epidemic among GBMSM has been limited by the challenges estimating this population size.
Our objective was to develop national behaviour- AND behaviour- and identity-based population size estimates of GBMSM.
Methods: Estimates for males aged ≥15 years were drawn from Statistics Canada's population size estimates, a 2020 national cross-sectional government population-based health survey, and a 2019/2020 national cross-sectional community-based survey of GBMSM. Estimated proportions of GB identity, those not likely to disclose GB identity, and MSM that do not identify as GB were applied to ≥15 male population estimates.
We then considered prior year anal sex history to specify estimates of those sexually active. Calculations were stratified by rural/non-rural geography, using a population cut-off at 1,000 residents. We present estimates with upper- and lower-bounds.
Results: We estimate that 3.5% of the ≥15 male population identified as GB, 13.5% of GB males would not disclose their sexual identity on a government survey, and 0.2% of non-GB identified males reported past year anal sex with a man. The national GBMSM population size in 2020 is estimated at 640,785 (617,263-664,307), 4.1% (3.9%-4.2%) of the Canadian male ≥15 population. A
mong these, an estimated 560,575 were in non-rural centres (4.2% of ≥15 males), and 80,210 were in rural areas (3.1% of ≥15 males). The estimate of GBMSM reporting past-year anal sex was 432,267 (361,984-502,549), representing 2.7% (2.3%-3.2%) of the male ≥15 population.
Conclusions: Combining data from multiple sources, these population size estimates included GBMSM previously unaccounted for in Canada.
These estimation methods may be scaled/adapted to other regions to derive robust and comparable estimates that capture previously-uncounted individuals.
Stratification of results by rural/non-rural environments provides additional information to guide health promotion and care services.



EPC100
HIV and syphilis surveillance survey and population size estimation among transgender women in Ulaanbaatar, Mongolia, 2021

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Background: Mongolia has little known about HIV prevalence, access to health care, including HIV testing, and sexual behaviors among transgender women (TGW). In the 2019 HIV biological behavioral surveys conducted among men who have sex with men (MSM), 11 participants (0.7%), reported as being TGW in Ulaanbaatar. In 2021, Mongolia had only two reported cases of TGW living with HIV. TGW in Mongolia is extremely hidden due to social stigma, discrimination, and frequent round-ups by police.
The objectives of these studies were to assess HIV and syphilis prevalence, HIV knowledge and testing, sexual risk behaviors, stigma, and discrimination among TGW in Ulaanbaatar, the capital of Mongolia.
Methods: We used respondent-driven sampling (RDS), an effective sampling method for recruiting and deriving population estimates of hidden populations. Beginning with 1 seed, the sample reached a total of 100 TGW.
Results: Most TGW had their sexual debut in their teens and just under half reported having anal penetrative sex with multiple male partners in the previous month. Seventy-one percent of TGW said they would be (71.3%) "very likely" to use PrEP if available. Almost all TGW reported ever having an HIV test (90.9%) and 96% have had an HIV test in the past 12 months and received their results.
Sixty-three percent of TGW have experienced verbal or physical abuse and 28% have been denied entry or ejected from a house and experienced sexual abuse and assault believed to be due to their TGW identity or presentation. One-third of TGW are ashamed to be TGW and 29% have attempted suicide because of their TGW identity. HIV prevalence was 5.4% and active syphilis prevalence was 12.8%. No TGW who were HIV antibody-positive were co-infected with active syphilis. There is an estimated 800 TGW living in Ulaanbaatar.
Conclusions: TGW practice risky sexual behaviors and face high amounts of stigma and discrimination because of their TGW identity. The scale-up evidence-based HIV prevention interventions targeting TGW, which include comprehensive mental health counseling and support, and allow access for those under the age of 18 years without parental consent is needed.

EPC101

Toward achieving the 95-95-95 targets among key populations in Eswatini: results from an integrated bio-behavioral surveillance survey

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Background: In 2014, the Joint United Nations Programme on HIV/AIDS (UNAIDS) launched the 95-95-95 targets to be achieved by 2030. We conducted an integrated-biobehavioral-surveillance-survey (IBBSS) in Eswatini among key populations (KPs) to quantify HIV prevalence, knowledge of HIV status, treatment uptake, and viral load (VL) knowledge and status.

Methods: Between October 2020 and January 2021, FHI 360 LINKAGES project and Swaziland National AIDS Program conducted a cross-sectional-study among 416 men who have sex with men (MSM) and 676 female sex workers (FSWs) in Eswatini. Participants were recruited via respondent-driven sampling, a network-based peer-referral method designed for hard-to-reach populations.

We included FSWs who reported majority of their income in the past 12 months was from sex-work and MSM who reported having had anal sex with another man in the past 12 months. All participants were ≥18year, able to provide informed consent, and willing to undergo HIV testing and viral load (VL) testing if identified HIV positive. Participants completed a survey. The study was approved by Eswatini and FHI 360 ethics committees.

Results: Most KP individuals (99% FSWs, 98% MSM) were tested before. 60.7% FSWs tested HIV positive in the study and 86% already knew their status, while 27.1% MSM tested HIV positive and 58% already knew their status.

Antiretroviral therapy (ART) uptake was higher among FSWs, 97.7% (345/353), than MSM, 93.9% (63/66), while treatment-adherence was 99.7% (344/345) among FSWs and 99% (62/63) among MSM. Though 86.9% of FSWs and 87% of MSM reported previous VL testing, knowledge of VL status was low, with 33.6% of FSWs and 3.7% of MSM aware. Only 2.6% of FSWs and 1.8% of MSM reported VL suppression. However, VL testing from the study was 75% suppression for MSM and FSW but only 2.2% were aware they were suppressed.

Conclusions: Eswatini's KPs have not yet reached all 95-95-95 (80%, 97%, 94%, respectively) targets. MSM were lower in all outcomes except ART adherence, indicating a need for programs to focus on MSM outcomes.

Knowledge of VL status was very low and programs should look for innovative strategies to increase access to VL testing and improve KPs VL knowledge.

EPC102

Counting that counts: the success story of the Ghana Key Population Unique Identification System (GKPUIS)

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Background: Ghana's National HIV Strategic Plan provides a framework for the implementation of a comprehensive package of services specifically to reach Key Populations (KP): Female Sex Workers (FSW), Men who have Sex with Men (MSM) and other vulnerable groups. In tracking the services provided to them, KP Program Managers are faced with how to determine which KP client has received which service and how to reduce double counting of KP clients to the barest minimum.

An effective unique identification system called the Ghana Key Population Unique Identification System (GKPUIS) was developed to address these challenges especially considering their mobility.

Description: The Ghana AIDS Commission (GAC) in collaboration with its partners developed the GKPUIS to improve the data management processes associated with KP programming in Ghana. The GKPUIS is a web-based system which uniquely identifies KPs with a system generated 16 alphanumeric code. The system was launched in April 2019 and is currently being used by 20 KP Implementing Organizations to capture and report KP programmatic data.

Lessons learned: From 1st October 2020 to 30th November 2021, 9,251 unique KP clients have been registered and approved in the GKPUIS. This is made up of 4,590 FSW and 4,661 MSM.

Data from the system also revealed that out of the registered KP clients 4,258 FSW and 3,526 MSM were offered any 4 out of the 6 minimum package of services (Prevention Information, education on HTS, STI SGBV, TB and Condom promotion and distribution) for a client to be classified as reached. In the case of FSW, 60.8% of those reached were tested with 11.9% positivity and 90.6% of those testing positive initiated on ART Treatment.

Also 94.9% of MSMs reached tested for HIV with a yield of 6.8% and and ART initiation of 96.8%.

Conclusions/Next steps: The rollout of the GKPUIS is providing real time data to support HIV prevention, treatment and care for KPs. There are currently ongoing modifications to the system to integrate features such as an offline mode for data capturing. Also the data from GKPUIS is being considered for the mapping and size estimation for KPs.

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EPC103

HIV prevention and care indicators for Saskatchewan First Nation communities before and during the COVID-19 pandemic, 2018-2020

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Background: The COVID-19 pandemic brought numerous restrictions and challenges, and has significantly impacted other public health priorities including HIV prevention and care. Saskatchewan, a Canadian prairie province, has had among the highest HIV rates in Canada for over a decade, with Indigenous people being overrepresented in the HIV epidemic.
This study aims to describe key indicators in HIV prevention and care among Saskatchewan First Nation communities before (2018-2019) and during (2020) the COVID-19 pandemic.
Methods: Data gathered for this analysis includes newly diagnosed HIV cases (captured in the Panorama public health surveillance system) and HIV testing in or near First Nation communities (captured via the provincial laboratory). The HIV cascade of care outcomes among individuals who resided in First Nation communities at the time of diagnoses (captured via the Annual HIV Public Health Review) include:
1. Linkage to care, defined as the time from diagnoses to the earliest HIV care bloodwork (HIV Viral Load (VL) or CD4 count);
2. On treatment, defined as at least one antiretroviral (ARV) dispensation in the calendar year; and,
3. Viral suppression, defined as the most recent VL in the year being less than 200 copies/mL.
Results: After a rising trend in HIV tests performed in and near First Nation communities, the testing rate decreased by 22% in 2020 compared to 2019.
The HIV diagnoses rates decreased accordingly in 2020 compared to 2018 and 2019. The proportion of persons living with diagnosed HIV who were on treatment remained stable in all three years, while the proportion who achieved viral suppression decreased by 7% in 2019 and a further 1% in 2020. See table 1.

	2018	2019	2020
HIV Tests Performed	10,025	10,915	8,538
HIV diagnoses rates (per 100,000)	32.1	31.7	27.7
Persons linked to care with 1 month of diagnosis (South Central First Nation communities only)	100%	78%	88%
Persons living with diagnosed HIV on treatment	79%	80%	79%
Of those on treatment, proportion virally suppressed (<200 copies/mL)	81%	74%	73%

Table 1. HIV Indicators for Saskatchewan First Nation Communities, 2018-2020

Conclusions: While the rates of testing and new diagnoses decreased in 2020, these high-level HIV cascade of care outcomes remained similar to pre-COVID-19 outcomes, highlighting the resiliency of HIV programs in Saskatchewan First Nation communities. However, further in-depth assessments are needed.

EPC104

A population level application of a novel method for estimating the timing of HIV acquisition among migrants to Australia

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Background: New HIV diagnoses have been declining in Australia, predominantly among Australian-born men who have sex with men, with no decline in the number of new diagnoses among people born-overseas (migrants). Accurate assessment of the timing of HIV acquisition relative to the date of migration will help inform the development of HIV testing and prevention programs.
A novel method for estimating the timing of HIV acquisition among migrants is presented, using surveillance data from the Australian National HIV Registry (NHR).
Methods: We developed a novel algorithm that incorporates a CD4+ T-cell decline back projection model, testing history, clinical status, as well as the clinician estimate for the place of acquisition. This algorithm was applied to all new cases of HIV diagnosed between 1 January 2016 and 31 December 2020, among migrants aged 15 years and older, with the objective of estimating whether HIV infection occurred before or after arrival in Australia.
Results: By augmenting the CD4+ T-cell decline back projection model with testing history and clinical status in the algorithm; the proportion of HIV diagnoses able to be estimated with a place of diagnosis increased from 56% to 60%.
By further augmenting the algorithm with the clinician estimate for the place of HIV acquisition, the proportion able to be estimated increased from 60% to 93%.
Of the 1,909 migrants newly diagnosed with HIV, 995 (52%) were estimated to have acquired HIV after migration to Australia, 772 (40%) before migration and another 142 (7%) were unable to be classified.
Conclusions: Two-fifths of migrants newly diagnosed with HIV likely acquired HIV before arrival to Australia, while more than half likely acquired HIV after arrival. Focused testing and prevention programs for migrant communities are needed to limit HIV transmission and achieve better health outcomes.

Our method offers increased objectivity and completeness for place of HIV acquisition estimates in surveillance data, allowing for a more representative picture of the local HIV epidemiology. The data fields used in our algorithm are used by many countries with similar HIV epidemic profiles, enabling adaptation of the algorithm for use elsewhere.

EPC105

Substantial improvement in HIV outcomes among men who have sex with men (MSM) in Baltimore, Maryland from 2008-2017

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Background: Historically, Baltimore has reported exceedingly high HIV prevalence and persistent racial disparities in HIV outcomes among MSM. We examined trends in HIV testing, prevalence, and care by race over time among MSM in Baltimore to inform Ending the HIV Epidemic (EHE) efforts and identify residual disparities.

Methods: Using National HIV Behavioral Surveillance data from Baltimore: 2008, 2011, 2014, 2017, we examined prevalence of HIV testing, prevalence, new diagnoses, care, and anti-retroviral therapy (ART) use and potential socio-demographic disparities using unadjusted and adjusted logistic models calculated across time.

Separate analyses were also run for Black (BMSM) and White (WMSM) MSM and we compared marginal probabilities to evaluate time effects.

Results: In 2017, WMSM and bisexual or heterosexual MSM were less likely to report past year HIV testing, and test HIV-positive compared to BMSM and gay MSM. There were no demographic differences in new diagnoses, care, or ART use. Average predicted probability improved between 2008 and 2017 for each outcome and most shifts were statistically significant.

Among BMSM, recent testing and prevalence was lower among bisexual or heterosexual MSM (AOR: 0.33, 95% C.I. 0.16, 0.69 and AOR: 0.26, 0.14, 0.49). Among WMSM, recent testing was lower among those over 30 (AOR: 0.22, 95% CI 0.06, 0.80).

No other demographic differences were observed. Average predicted probability for each indicator improved over time among BMSM and WMSM, with most shifts attaining statistical significance.

Predicted probability of recent testing notably increased among BMSM (0.58, 95% C.I. 0.52, 0.66 to 0.76, 95% C.I. 0.39, 0.62) compared to WMSM (0.50, 95% C.I. 0.39, 0.62 to 0.58, 95% C.I. 0.45, 0.72). Disparities remain in predicted probability of HIV-positive test results (BMSM 0.42 95% C.I. 0.36, 0.49; WMSM 0.15, 95% C.I 0.08, 0.26) in 2017.

	2008	2011	2014	2017
Ever HIV test	0.91 (0.88, 0.94)	0.91 (0.88, 0.93)	0.94 (0.91, 0.96)	0.96 (0.94, 0.98)
HIV test past year	0.57 (0.52, 0.62)	0.48 (0.42, 0.53)	0.53 (0.48, 0.58)	0.73 (0.68, 0.78)
Positive test result	0.40 (0.34, 0.45)	0.42 (0.37, 0.46)	0.33 (0.28, 0.38)	0.35 (0.30, 0.39)
Unrecognized HIV	0.27 (0.22, 0.31)	0.27 (0.23, 0.32)	0.13 (0.10, 0.16)	0.07 (0.04, 0.10)
HIV care past year	0.85 (0.65, 0.94)	0.79 (0.54, 0.91)	0.88 (0.82, 0.95)	0.98 (0.92, 1.00)
Taking ARV	0.25 (0.12, 0.37)	0.72 (0.50, 0.86)	0.89 (0.79, 0.95)	0.86 (0.76, 0.96)

Table. Average Predicted Probability (95% CI)

Conclusions: HIV outcomes have improved substantially among MSM in Baltimore. There is a continued need to address racial disparities and support sustained HIV prevention and care.

EPC106

Review of the Mother-to-Child Transmission Indicators between 2010-2020

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Background: Significant improvements in the prevention of mother-to-child transmission (PMTCT) of HIV have been achieved throughout the years. Yet, there remain many cases worldwide of mother-to-child transmission (MTCT) of HIV. According to UNICEF, there are four components for a comprehensive PMTCT program.

We focused on two components:

1. The prevention of transmission from a woman living with HIV (WLHIV) to her infant, and;
2. The provision of appropriate treatment, care, and support to WLHIV and their families.

Methods: We retrieved two different datasets from UNICEF with MTCT related indicators. The dataset included data from 147 countries, and we focused on the indicators, evaluating the two components mentioned above. The datasets were triangulated along with the World Bank's Gross National Income (GNI) dataset to integrate the income groups classification.

We analyzed the change in the MTCT rate and the percent of pregnant WLHIV receiving effective ARVs for PMTCT between 2010 and 2020.

Results: We visualized the geographic distribution of the two indicators in 2010 and 2020, in figure(1). For countries with the complete data, we found that in 11 out of 99 countries, the MTCT rate increased, of which 7 are from low and lower-middle-income countries.

While in the percent of pregnant WLHIV receiving effective ARVs for PMTCT, 11 out of 86 showed decreasing figures, of which 7 are from low and lower-middle-income countries. Meanwhile, 7 countries are deteriorating in both indicators. Four countries (Gambia, Niger, Sudan, and Yemen)

are from the low-income group, two (Algeria, Honduras) from the lower-middle-income group, and one (Georgia) from the upper-middle-income group.

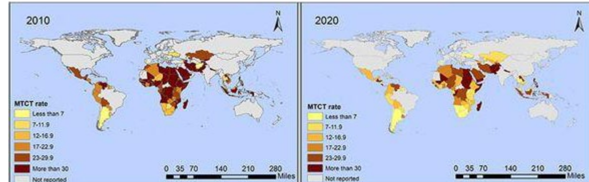

Figure. Estimated mother-to-child transmission (MTCT) rate

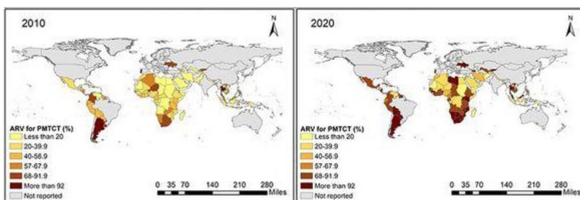

Figure. Percentage of pregnant women living with HIV receiving effective ARVs for PMTCT (excludes single-dose nevirapine)

Conclusions: In conclusion, inequality remains between different income groups. Some countries have alarming statistics, showing deteriorating figures in the transmission and prevention of MTCT. Such numbers require immediate action, given the expected deterioration with the ongoing burden on the health services, posed by the COVID-19 pandemic.

EPC107

Population shifts in detectable HIV viral load in rural Kwa-Zulu Natal

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Background: HIV viral load trends monitoring at populational level is crucial to assess current impact of HIV related health interventions and identify population groups for which efforts should be intensified. We aimed to investigate demographic shifts in detectable HIV viral load between 2011 and 2018 to determine the changing dynamics of HIV and new population sub-groups at risk in rural KwaZulu-Natal, South Africa, a region which has one of the highest HIV prevalence in the World.

Methods: The Africa Health Research Institute (AHRI) has been running a population- based cohort study among ~140,000 adults over 15 years in rural KwaZulu-Natal since 2004, which is currently the World's largest ongoing population-based HIV cohorts. Annual home-based HIV testing is offered to every resident of the study area (~4000 HIV positive individuals each year and approximately 33,000 samples in total).

The evolution of detectable viral load (>1500 copies/mL) obtained from dried blood spots collected between 2011-2018 was analysed by demographic characteristics (age-group, sex, gender, marital status).

Results: The overall population prevalence of detectable viral load declined on from 53.8% [95% CI 50.2%-54.6%] in 2011 to 33.5% [95% CI 28.9%-36.2%]. This prevalence declined more quickly among females compared to men (-22 pts vs -18 pts respectively, $p<0.05$). Age group 15-20 for both males and females continued to have the highest prevalence of detectable viral load over the study period (~68% in 2011, ~43% in 2018). The results also showed that males over 40y had were emerging as groups at risk.

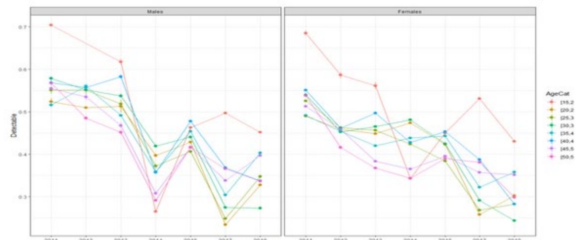

Figure 1. Age changes in detectable viral load.

Conclusions: Our findings have unraveled emerging groups at risk of viral non-suppression. This tracking is essential in detecting anomalies which will in turn help not only to inform novel intervention strategies for vulnerable groups but also determine what existing strategies are not working.

EPC108

Progress against the 2030 UNAIDS HIV elimination targets in Canadian Federal Correctional Institutions

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Background: Correctional Service Canada (CSC) is responsible for providing essential health care services for people incarcerated in federal institutions in Canada. This includes access to screening and treatment for human immunodeficiency virus (HIV). CSC is committed to the global HIV elimination targets set by UNAIDS. This study aims to measure CSC progress against these targets.

Methods: Data were extracted from the electronic medical records for the population incarcerated as of January 12th, 2022. The first target, awareness of HIV status, was defined as the proportion of the population who reported a previous HIV test or accepted an HIV test while incarcerated, the second, as the proportion of those living with HIV on treatment, and the third, as the proportion treated who achieved viral suppression (viral load below 250 copies/ml).

HIV cases were defined as those who received a positive serology result while incarcerated or self-reported receipt of a previous positive test result. Data were analyzed using SAS Enterprise Guide version 7.1.

Results: Overall, 91% of inmates had been tested for HIV, and the overall prevalence was 1.4% (n=165). Of those living with HIV 98% were receiving treatment and 94% of

those treated had achieved viral suppression. HIV prevalence was higher among indigenous people (1.9% vs 1.1%, p<0.05) who represented 46% of all cases and 94% had been tested for HIV. Among indigenous offenders living with HIV 100% were receiving treatment and 94% had achieved viral suppression. HIV prevalence was significantly higher among women compared to men (3.7% vs 1.2%, p<0.0001). Awareness of HIV status was higher among women compared to men (96% vs 91%). Among women living with HIV 100% were receiving a treatment and 100% had achieved viral suppression.

Conclusions: This analysis demonstrates continued progress towards global HIV eradication goals and the significant public health contribution made by CSC. While HIV disproportionately affects vulnerable groups including indigenous and women offenders, these populations do as well or better in HIV treatment cascade indicators.

EPC109

Prioritization of HIV services for young key populations in Ghana: Desk analysis of new evidence for programming

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Background: In 2020, young people aged 15-24 accounted for 28% of new HIV infections in Ghana. Addressing this challenge calls for evidence-based tailored interventions for adolescent and young key populations. This desk review is to contribute evidence to inform interventions in this regard.

Methods: This was a secondary analysis of data from the integrated bio-behavioural surveillance survey (IBBSS) conducted among FSW in 2019 across the 16 regions of Ghana. Data was analysed using Stata IC 12. Descriptive statistics including frequencies & proportion for categorical data were calculated.

Results: Among 6,773 FSW who participated in the study, over 90% of respondents were under the age of 35 years. Of those aged 16-24 years, comprehensive knowledge on HIV was 32% and 4% expressed accepting attitudes towards Persons Living HIV. In the 12 months preceding the survey, 16% of young FSW reported having experienced forced sex whereas only 44% had benefited from education from a peer educator. In the past 3 months, about half (47%) of young FSW reported having received counselling on condom use and safe sex through an outreach service, drop-in center or sexual health clinic. One-third (33%) of young FSW reported being affiliated to a social network site or online community. While about 20% solicit for clients on the Internet or social media. Nearly 60% indicated their willingness to use an app that provides information on HIV.

Conclusions: Low comprehensive knowledge and accepting attitudes towards PLHIV calls for intensified education among the target group.

High level of violence experienced among young FSW heightens their risk of HIV acquisition and transmission and therefore requires remedial interventions. There is the need to empower health peer-educators and broaden their reach to cover more FSWs.

Virtual/internet space is a fertile ground to reach FSWs as one in every 5 (20%) already use it and a lot more (60%) are willing to patronise it. Development of KP Standard Operating Procedures for adolescent and young key population is necessary to give strategic guidance on the age-specific interventions.

EPC110

Did Nigeria achieve the UNAIDS 90-90-90 treatment target among key populations? An analysis of the national HIV treatment cascade

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Background: Key populations contribute significantly to the burden of HIV in Nigeria. In 2014, the UNAIDS and partners set the '90-90-90' targets; aimed at diagnosing 90% of all HIV positive people, providing antiretroviral therapy (ART) for 90% of those diagnosed and achieving viral suppression for 90% of those treated, by 2020.

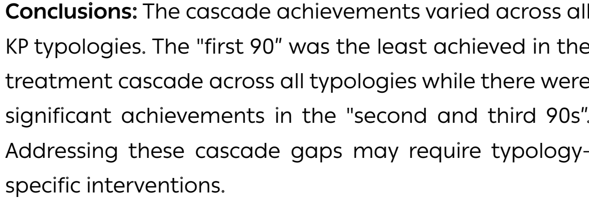
We analyzed the HIV treatment cascade among key populations (KPs) in Nigeria to assess the impact of programmatic efforts and identify gaps to inform more effective strategic interventions.

Methods: We conducted a biological behavioral survey in 12 states of the country between September to November 2020. A multi-stage sampling method was used to select sates and respondents. Blood samples were collected from consenting respondents after an interview. HIV status test and viral load test were done, guided by the national algorithm for HIV testing.

Data collected were analyzed using four stages; total HIV positive people, diagnosed, on treatment and virally suppressed.

Results: We surveyed 4974 female sex workers (FSW), 4397 men who sex with men (MSM), 4414 people who inject drugs (PWID), and 4190 transgenders (TG). The mean age of respondents was between 24-30 years across all typologies, with the TG group having the youngest population while the PWID group had most of the older population. The 90-90-90 HIV treatment cascade showed that 26.7%, 38%, 19% and 12% of FSW, MSM, TG and PWID that were diagnosed knew their status respectively.

Among those who were diagnosed and knew their status about 89%, 90%, 84% and 68% of the FSW, MSM, TG and PWID were on ART while 86%, 78%, 75% and 75% of the respective KPs on ART had achieved viral suppression.



Conclusions: The cascade achievements varied across all KP typologies. The "first 90" was the least achieved in the treatment cascade across all typologies while there were significant achievements in the "second and third 90s". Addressing these cascade gaps may require typology-specific interventions.
More importantly, further studies are needed to identify the factors associated with the poor achievement rate of the "first 90" across all typologies, and also to identify effective models that would scale-up HIV testing service delivery among KPs.

Determining the incidence of HIV

EPC111
HIV incidence in heterosexual sex work networks in the Middle East and North Africa

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Background: HIV incidences in female sex workers (FSWs) and clients, and contribution to the growing epidemic in the Middle East and North Africa (MENA) are unknown. We filled this gap using mathematical modelling based on systematically assembled data on HIV prevalence, sexual and injecting behaviors, and risk group size estimates.
Methods: We constructed an agent-based mathematical model to describe HIV transmission dynamics in heterosexual sex work networks (HSWNs) and estimate HIV incidence and impact of interventions in 12 MENA countries with sufficient data to conduct the modeling.
Results: Current annual number of new HIV infections was lowest in Djibouti and highest in South Sudan ranging from 21-2,345 in FSWs, 29-5,167 in clients, and 22-3,978 in clients' spouses. Incidence rate was lowest in Yemen and highest in South Sudan ranging from 0.4-34.3 per 1,000 person-years in FSWs, 0.03-2.5 in clients, and 0.07-6.7 in clients' spouses. HSWNs contributed >25% of total HIV incidence across MENA.
Even where HIV prevalence in FSWs was low (range: 0.8-2.2%), contribution to total incidence in the population ranged from 6.4-24.4%. Contribution reached 72% in high prevalence countries. Less than a third of incidence in HSWNs occurred in FSWs, the rest was split among clients and their spouses. Single and combination prevention interventions targeting only FSWs substantially reduced incidence in FSWs, clients, and clients' spouses.
A moderate intervention package targeting only FSWs averted 45%, 63%, and 34% of HIV incidence in FSWs, clients, and clients' spouses, respectively.
Conclusions: A large proportion of HIV incidence occurs in HSWNs in MENA. Substantial incidence in general population women arises through unprotected sex with HIV-positive clients. Scale-up of interventions among FSWs is critical to achieve UNAIDS 2030 targets.

EPC112
Reaching zero new HIV infections among key populations in Québec: monitoring elimination targets using mathematical modelling of routine surveillance data

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Background: Montréal, Québec's HIV epidemic epicentre, was Canada's first Fast Track City. Reaching and maintaining zero new HIV infections and the 95-95-95 targets requires epidemic monitoring, especially among men who have sex with men (MSM) and people who inject drugs (PWID), groups disproportionately impacted by the epidemic. Using a back-calculation model, we estimated HIV incidence and other epidemic indicators among MSM and PWID in Montréal and across Québec.
Methods: We developed a deterministic, compartmental mathematical model stratified by HIV-status and stages of disease progression and clinical care, including testing and antiretroviral treatment (ART). Local epidemiological studies and scientific literature informed parameterization. With provincial surveillance data, we calibrated to AIDS cases and HIV diagnoses, self-reported time since

last negative HIV test, and CD4 cell count at diagnosis (stratified by region, exposure category, sex, and age). Using a cubic M-spline, we modelled HIV incidence curves for both MSM and PWID over 1975-2020. We also estimated prevalence, percent undiagnosed, percent diagnosed that took ART, and median time to diagnosis. Since the COVID-19 pandemic disrupted testing, we excluded 2020 data in sensitivity analyses.

Results: HIV incidence in both populations peaked early in the epidemic. In 2020, 56 (95%CrI: 26-121) and 140 (95%CrI: 63-281) new infections were estimated among MSM in Montréal and Québec, respectively.

Among PWID, 1 (95%CrI: 0-7) and 9 (95%CrI: 2-26) new infections were estimated. Without 2020 data, these estimates approximately doubled, except among Québec PWID, whose decreased.

Across all populations, the median time to diagnosis shortened to <2 years and the percentage undiagnosed decreased to <10%. The estimated percentage was higher in younger MSM, with 14.4% (95%CrI: 8-25%) of 15-24 year-olds living with HIV in Montréal and Québec undiagnosed by the end of 2020.

Conclusions: HIV incidence appears to have drastically decreased over time in MSM and PWID across Québec, alongside significant improvements in diagnosis and treatment coverage. Nevertheless, HIV transmission persists, and efforts to halt and diagnose new infections, especially among younger MSM, are still needed to achieve elimination.

Work exploring the population-level impact of preventive interventions that could be scaled-up, such as pre-exposure prophylaxis, could inform effective and sustainable elimination policies.

EPC113

Very high HIV incidence observed among men who have sex with men (MSM) and transgender women in Bali, Indonesia: a retrospective observational cohort study

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Background: There are few longitudinal data on HIV incidence in Indonesia, and no such data among men who have sex with men (MSM) and transgender women (also known as *waria*) populations specifically.

We aimed to estimate HIV incidence among MSM/*waria* in Bali, Indonesia. Secondary aims included estimating the HIV retest rate and HIV prevalence.

Methods: We conducted a retrospective observational cohort study using routinely-collected medical record data from four private/non-government sexual health clinics in Bali, Indonesia. We reviewed all HIV tests among self-reported MSM/transgender women aged ≥18 years and who resided in Bali at the time of HIV testing from 1 January 2017–31 December 2019. We calculated baseline HIV prevalence from the first visit.

Those with initial HIV-negative test and ≥1follow-up test were included in the longitudinal incidence rate and person-years (PY) at risk calculation. Person-years at risk was calculated since first observed negative test until seroconversion or last recorded negative test at which point the observation was censored.

Results: A total of 2,896 eligible individuals with 4,697 visits were included. Of those individuals, 626 tested HIV-positive at their first visit, resulting in a baseline HIV prevalence of 21.6% (95% confidence interval [CI]: 20.1-23.1). 2,270 patients (78.4%) tested negative for HIV at their first visit. Of these, 826 (36.4%) had repeat HIV testing during the study period, ranging from 2 to 13 HIV test visits, with a retest rate of 228.9 per 100 PY (95% CI: 202.9-381.1). The incidence rate was 8.4 per 100 PY (95% CI: 3.0-13.9) from 784 PY of observation.

Conclusions: In the first longitudinal study of HIV incidence among MSM/transgender women populations in Indonesia, we observed a very high HIV incidence rate. The observed HIV prevalence was much higher than in the general population of Indonesia.

Given the high risk and the relatively low repeat testing rate, measures to encourage regular HIV testing and effective use of HIV prevention methods are an urgent priority. In particular, access to HIV pre-exposure prophylaxis (PrEP) must be prioritised.

EPC114

Use of the recent infection testing algorithm to estimate background HIV incidence in micro-epidemic areas within Uganda

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Background: Accurate estimates of HIV incidence are critical for site selection for pre-exposure prophylaxis (PrEP) clinical trials such as PURPOSE 1 (NCT04994509) which will use the novel counterfactual background HIV incidence

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(bHIV) design to evaluate the efficacy of lenacapavir and of emtricitabine/tenofovir alafenamide for PrEP in adolescent girls and young women (AGYW) in South Africa and Uganda. High bHIV (>3.5/ 100 person years) is required for this design.
We sought to characterize bHIV in two locations with socioeconomic characteristics suggesting increasing HIV incidence (increased migrant workers and commercial sex), in Mityana/Mubende and Hoima regions, in Uganda that we were evaluating for inclusion in the PURPOSE 1 study.

Methods: A cross-section of AGYW aged 16-25 years of unknown HIV status and with no HIV testing in the past 3 months were recruited from HIV testing sites and commercial sex venues in Hoima (n=372) and Mityana/ Mubende (n=371). Participants were diagnosed and confirmed with HIV using Alere Determine HIV-1/2 and Oraquick HIV-1/2 tests.
Positive samples were further assessed for recent infection with the Sedia HIV-1 Limiting Antigen Avidity EIA (Sedia Biosciences, Beaverton, OR) and the following recent infection testing algorithm (RITA) parameters; cut-off time of 1 year, viral load threshold of >75 cp/mL, a normalized optical density cut-off of ≤ 1.5, mean duration of recent infection of 166.8 days, and a false recency rate of 6.47%.

Results: Thirteen percent of AGYW in Hoima(N=47) and 39% in Mityana/Mubende (N=144) were diagnosed with HIV. (Of the 47 AGYW with HIV in Hoima, 7 were classified as recent infections; of the 144 in Mityana/Mubende, 30 were recent. The estimated HIV incidence calculated from these recency results was 3.11 per 100 person-years (95% CI: 0.84-11.5) for Hoima and 23.2 per 100 person-years (95% CI: 13.1-41.2) for Mityana/Mubende.

Conclusions: We used a RITA incorporating viral load to estimate HIV incidence in AGYW in two micro-epidemic sites. Despite similar socioeconomic factors and a high incidence at both sites, Mityana/Mubende's was significantly higher and met criteria for participation in PURPOSE 1. These findings support the use of recency assays for identifying areas for recruiting participants for PrEP trials.

EPC115

Incidence of HIV infection and its burden of transmission among populations: a case study of Jos, North-Central Nigeria

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Background: Controlling the spread of HIV/AIDS among populations requires the availability of real-time incidence data that will help inform intervention strategies. With HIV/AIDS prevalence in Nigeria still one of the highest in the world, this study aims to look at the incidence of HIV infections and the age group currently responsible for the burden of transmitting this disease in Jos, North-Central Nigeria.

Methods: HIV Rapid Testing for Recent Infection (RTRI) was introduced in Plateau State in August 2020 at three (3) Healthcare facilities in Jos. Randomly presenting individuals for HIV Testing Services between December 2020 and December 2021, who tested positive for HIV after screening were offered the RTRI Services.
Clients who consented to the RTRI services were serologically screened for HIV Recent Infection using the Asante® HIV Recent Infection Kit. Clients with Recent Asante® results were bled for HIV viral load assay on the Roche Cobas Ampliprep® and Cobas Taqman® Systems.
Participants with Recent Asante® test results and HIV viral load above 1000copies/ml were classified as True-Recent; while those with Recent Asante® results and HIV viral load below 1000copies/ml were classified as False-Recent. Collated data were analyzed using simple descriptive statistics.

Results: 839 clients participated in this surveillance exercise, of which 25% (n=208) had Recent Asante® test results. 77% (n=160) of the Asante® Recent clients were females while 23% (n=48) were males.
Of the 208 Asante® Recent clients, only 92 (44%) were True-Recent HIV infections (Incidence Cases), with 116 (56%) of the clients having False-Recent HIV Infections. Of the 92 HIV Recently infected clients, 62 (67%) were females with a mean age of 34 years; while 30 (33%) were males with a mean age of 37 years. The mean age of the population with Recent HIV Infection was 35 years.

Conclusions: The availability of Recent HIV Infection data can help guide our surveillance and intervention activities among communities and key demographics with active HIV transmissions.
This study shows that the burden of HIV disease still remains high among the female populations; while the age group responsible for the burden of transmission has significantly shifted from adolescents to the middle-aged populations.

EPC116

HIV Incidence among people who inject drugs in Nepal

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Background: In routine surveillance surveys the prevalence of HIV has been used for many years to assess epidemic patterns and trends of HIV among key populations

like people who inject drugs (PWID) in many countries. However, such evidence is not much useful to understand the rate at which new HIV infections are acquired over the period due to increased coverage of HIV treatment services and improved survival among people living with HIV in many low-and middle-income countries like Nepal.

This first nationally representative surveillance survey aimed to assess recent infection (RI) among HIV positive samples to distinguish recently infected person from long-term infection (LTI).

Methods: This cross-sectional study included 1840 PWID (male: 1690, female: 150) who were recruited from March to October 2020 in all seven provinces of Nepal. Respondent driven sampling was used to recruit male injecting drug users whereas female injecting drug users were recruited using purposive sampling. Rapid tests were conducted to collect sample for HIV testing. An HIV recency test was eligible for those who had positive HIV test results for the first time.

Further confirmation of false RI was ruled out by a viral load more than 1000 copies/ml. Recency test was not performed for those PWID who have already known HIV positive status before survey. HIV incidence was defined as per the Recent Infection Testing Algorithm (RITA) and recency tests performed using Sedia Asante Rapid Recency Assay.

Results: HIV prevalence among male injecting drug users was 2.8% (n=37; CI=1.9-4.16) and the HIV recency test was done to all eligible HIV Positive cases, and all had HIV LTI. HIV prevalence among female injecting drug users was 2%, among which all (100%) had acquired LTI.

Conclusions: Study findings suggest that new HIV infections is almost nonexistent among Nepalese PWID, and this might be attributable to positive impact of harm reduction services in the country.

In addition, this study also provide evidence to include recency tests in routine surveillance surveys conducted among key populations in low-and middle-income countries.

Detecting and monitoring acute and recent HIV infections

EPC117
First national HIV recent infection surveillance in Lao PDR

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Background: Given the global interest in integrating recent infection testing into routine services, Lao People's Democratic Republic (Lao PDR) developed a recent infection surveillance system at all antiretroviral treatment sites nationwide.

Description: HIV recent surveillance was integrated into HIV testing services in all 11 antiretroviral therapy (ART) sites and four point-of-care ART sites in October 2021. The Asante Rapid Test for Recent Infection (RTRI) with GeneXpert viral load (VL) test were used to determine recent infection testing algorithm (RITA) recent patients.

A health informatics tool was developed to link and analyze individual level data from the DHIS2 VCT Event and DHIS2 ART Tracker platforms for visualization with a real-time dashboard to identify and monitor recent and ongoing HIV transmission trends in population groups to inform and develop a public health response.

Lessons learned: From the first 2 months of implementation, 153/196 (78.1%) newly HIV diagnosed adults eligible for recency testing consented for RTRI. Of those, 7 cases (4.6.%) were RTRI-recent, 6 cases (3.9%) were confirmed RITA-recent with 1 case awaiting VL result, and 146 classified as RITA long-term (LT).

The preliminary data showed high recent infections in Vientiane Capitalcompared to other provinces. Men who have sex with men (MSM) (5/56 cases; 8.9%) had the highest proportion of RTRI recent infections compared to other groups. Close monitoring continues to confirm this finding.

Decentralized VL testing supports real-time RITA return of VL results to ART sites for real-time dashboard monitoring. Individual record linkage at the national level between the two DHIS2 systems enables real-time identification of newly diagnosed HIV cases, minimizes duplicate records, identifies pre-ART loss gaps, and provides more accurate ART linkage results. Recent infection data could inform resource allocation at the population level

to direct and prioritize targeted interventions to high-risk populations and to geographic areas where they are needed the most.

Conclusions/Next steps: HIV Recency is the first national surveillance program in Lao PDR using DHIS2 data and links to national dashboard for real-time HIV epidemic monitoring. Lessons learned from Lao PDR could guide countries currently implementing HIV recency surveillance to monitor HIV recent infection trends for strategic interventions.

EPC118

Concordance between laboratory serologic testing and HIV-1 RNA testing among participants who acquired HIV in the DISCOVER trial

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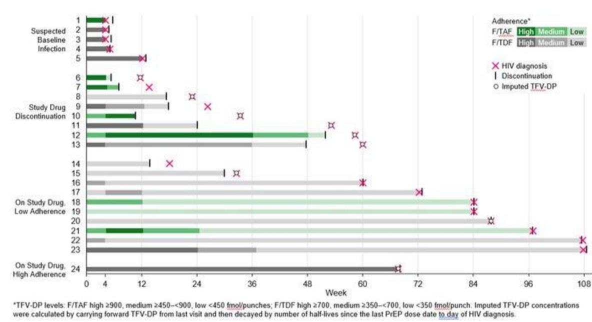
Background: DISCOVER demonstrated the non-inferior efficacy of oral daily emtricitabine (F)/tenofovir alafenamide (TAF) compared to F/tenofovir disoproxil fumarate (TDF) for HIV pre-exposure prophylaxis (PrEP) in men who have sex with men and transgender women. We characterized the longitudinal adherence of participants who acquired HIV in DISCOVER and evaluated concordance between rapid point-of-care and laboratory serologic HIV testing and HIV-1 RNA assays.

Methods: Participants underwent rapid HIV (Ab or Ab/Ag) and laboratory HIV testing (Ab or Ab/Ag) at Screening, rapid HIV testing only at Day 1 (<30 days after Screening), and rapid plus laboratory HIV testing at Week (W) 4, 8, 12, and every 12 weeks thereafter through W96. HIV-1 RNA was evaluated for all participants with a positive rapid or laboratory HIV test during follow-up. We measured tenofovir diphosphate concentrations from stored dried blood spots (DBS) and assessed HIV test results for participants who acquired HIV.

Results: 24 participants acquired HIV through W96, 8 in the F/TAF arm and 16 in the F/TDF arm. Of these, 5 were retrospectively determined to have had suspected unrecognized baseline infection; 8 discontinued study drug ≥30 days before HIV diagnosis; 10 had DBS consistent with low adherence preceding diagnosis; only 1 had DBS consistent with high adherence at time of diagnosis, however this value was imputed due to a missing DBS sample (Figure). Seven cases had a negative rapid HIV test on the same day that laboratory HIV testing was reactive. There were no discrepant results between laboratory HIV testing and HIV-1 RNA tests.



Conclusions: F/TAF and F/TDF are highly efficacious for PrEP if taken as directed. Rapid HIV testing alone may miss HIV diagnoses in persons on PrEP. There were no discrepancies between laboratory HIV testing and HIV-1 RNA testing, suggesting that laboratory HIV Ab/Ag testing is appropriate for monitoring people on daily oral PrEP.

EPC119

Recent HIV infection surveillance and partner testing outcomes in Cambodia from March 2020 through September 2021

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Background: Cambodia has been implementing recent HIV infection surveillance since March 2020 to support identification of populations and geographies with ongoing HIV transmission and to accelerate achievement of the UNAIDS 95-95-95 targets. To assess the efficacy of recency testing, we compared HIV testing outcomes of partners of individuals with recent HIV infection (within 12 months) to those with long-term infection.

Methods: We used HIV testing and partner notification data collected in the National Voluntary Counselling and Testing (VCT) and treatment database from March 2020

through September 2021. Newly diagnosed HIV-positive clients (index) aged ≥15 years, males and females, were offered recency testing using the Asanté HIV-1 Rapid Test for Recent Infection (RTRI) at 66 facilities in 25 provinces countrywide. Recent Infection Testing Algorithm (RITA)-recent clients were those who tested recent on RTRI with a viral load ≥1000 copies/ml.

All index clients received recency results and were offered partner testing. Their sexual contacts were elicited to receive partner notification and VCT services. We compared HIV testing outcomes in partners of RITA-recent and RITA-long-term (RITA-LT) index clients using chi-square tests in STATA-16.

Results: Of 4,009 index clients with RITA results linkable to partner notification data, 198 individuals (5%) were RITA-recent and 3,811 (95%) were RITA-LT. Sixty-seven RITA-recent index clients (41%) named 66 partners (avg=0.99 partner/index) while 1,115 RITA-LT index clients (47%) named 1,060 partners (avg=0.95 partner/index).

Of partners of RITA-recent clients with unknown HIV status, 42/59 (71%) were tested and 15 (35.7%) were newly diagnosed with HIV-infection; among partners of RITA-LT clients, 690/960 (72%) were tested and 206 (29.9%) were newly diagnosed with HIV-infection (p=0.6) (Table).

Indicators	RITA-Recent clients (n=198)	RITA-Long-Term Clients (n=3,811)	p-value
Index clients offered partner notification services	162 (80.6%)	2,365 (62.8%)	<0.01
Index clients accepted	67 (41.4%)	1,115 (47.2%)	0.38
Partners elicited	66 (98.5%)	1,060 (95.1%)	0.84
Partners with previously reported HIV infection	7 (10.6%)	100 (9.4%)	0.77
Partners with unknown HIV-status	59 (89.4%)	960 (90.6%)	0.77
Partners tested	42 (71.2%)	690 (71.8%)	0.96
Partners newly diagnosed with HIV infection	15 (35.7%)	206 (29.9%)	0.56

Table: Testing outcomes of partners of clients testing RITA-recent and RITA-LT, March 2020-September 2021.

Conclusions: Results-to-date suggest that recent HIV infection may be an important biomarker to efficiently identify PLHIV through partner notification services.

Continued recency surveillance and data triangulation will help to better understand populations at-risk for ongoing transmission.

EPC120

Prevalence of reclassification of HIV infection from recent to long-term among newly diagnosed clients and associated factors in Nigeria, March 2020 – September 2021

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Background: Nigeria's HIV surveillance program uses an antibody-based rapid test for recent infection (RTRI) which distinguishes recent from long-term infection. Reclassification from recent to long-term occurs if the viral load measured at diagnosis in the recent infection testing algorithms (RITAs) is <1000 copies/mL. Previous ART-use, variability in HIV-1 subtypes and immune response, advanced HIV disease have been reported to affect recency assay performance.

However, there is limited information on predictors of reclassification of recent to long-term infection. We determined the prevalence of re-classification from recent to long-term HIV infection and associated factors.

Methods: We conducted a cross-sectional analysis of consented clients aged ≥15 years,who were classified as RTRI-recent and had a documented viral load between March 2020 and September 2021 across 216 facilities from 20 states in Nigeria.

We used bivariate log-binomial regression models to estimate prevalence ratios (PR) for factors associated with reclassification from recent to long-term. Variables associated with the outcome at a significance level of ≤0.20 in the bivariate analyses were included in the multivariable analysis.

Results: Among the 1,190 clients included in the analysis, 60.5% were women, and 40.8% were aged 25-34 years. A total of 529 (44.5%) clients were reclassified as long-term. In the multivariable analysis, testing at South-East (aPR

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1.76, 95% CI 1.36-2.28), South-West (aPR 1.48, 95% CI 1.16-1.88) and North-Central regions (aPR 1.63, 95% CI 1.30-2.04) compared to South-South, having more than one sex partner in the last three months (aPR 1.26, 95% CI 1.06-1.50), and not being previously tested for HIV compared to testing negative within the past year (aPR 1.38, 95% CI 1.12-1.70) were associated with increased likelihood of reclassification.

Conclusions: Nearly half of the clients identified as RTRI-recent were reclassified. Clients with more than one sex partner and those who had not had an HIV test in the past year were more likely to be reclassified.

Promotion of frequent testing, scale-up of biometrics to identify clients already on treatment at testing points, enhanced pre- and post-test counseling to test only eligible clients, and re-training on assay interpretation may help reduce the proportion of reclassification.

EPC121

Sociodemographic factors associated with recent HIV infection in Burundi

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Background: In Burundi, about 82% of people living with HIV (PLHIV) are aware of their HIV status with the goal of reaching 95% by 2030. The Ministry of Health and PSI Burundi launched a real-time monitoring of recent HIV infections surveillance system using rapid tests for recent infections (RTRI) and viral load in 2021. Recent HIV infections are defined as infections acquired in the last 12 months. Results will be used to inform HIV transmission prevention strategies in Burundi.

Methods: A descriptive, cross-sectional study in 17 HIV testing sites with a sample of 517 newly diagnosed PLHIV was carried out from July 15, 2021, to December 31, 2021. The sample was composed of 16% sex workers and 1% MSM with a mean age of all study participants of 35 (± 12 years old). Newly diagnosed clients were eligible to participate if they were at least 15 years old with no known previous HIV history. Venous samples were analyzed at five laboratories in Bujumbura with Asante RTRI and viral load testing. Multivariate and bivariate analyses using logistic regression were used to identify key sociodemographic characteristics associated with recent infection.

Results: The results showed that 6.8% of newly diagnosed HIV infections were recent. The data showed 25% of the men who have sex with men (MSM) and 7% of female sex workers (FSW) had a recent infection compared to 6.8% in the overall sample. The only factor associated with HIV recent infection after multivariate analysis was key population group (p=0.03). The results showed that FSW were 95.7% more likely to have a recent HIV infection compared to the general population, while MSM were 97.1% more likely to have a recent HIV infection.

Conclusions: The results from the newly established HIV recency surveillance system in Burundi suggest that HIV prevention programs for MSM and FSW need to be strengthened, with a focus on targeted prevention interventions, including early identification of PLHIV, viral load monitoring, and improved access to pre- and post-exposure prophylaxis.

EPC122

Comparing HIV risk profiles of recent and long-term HIV infection cases using Population-based HIV Impact Assessment (PHIA) data from 12 countries in sub-Saharan Africa

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Background: National HIV testing programs are increasingly using tests that distinguish recent HIV infections (RI, acquired in ≤12 months) from long-term infections (LTI, acquired >12 months prior). We hypothesized individuals with RI, compared to LTI, have characteristics associated with elevated risk of HIV acquisition and/or transmission.

Methods: We compared characteristics of adults (15 y+) with RI and LTI using publicly available PHIA data from Cameroon, Côte d'Ivoire, Eswatini, Ethiopia, Lesotho, Malawi, Namibia, Rwanda, Tanzania, Uganda, Zambia, and Zimbabwe (2015-2019). RI and LTI were unaware of their HIV status (self-report), tested HIV-positive during the survey, had viral load (VL) ≥1000 copies/mL and no evidence of selected antiretroviral drugs in their blood sample. Survey response frequencies and VL were compared using chi-square and t-statistics, accounting for complex survey design.

Results: There were 288 RI and 4874 LTI included from 12 countries. Compared to LTI, RI were more likely to be female, <30 y, report ≥1 partner and an HIV test within the preceding 12 months (Table 1).

Characteristic		Recent Infections (%) N=288	Long-term Infections (%) N=4874	p-value
Female sex		199 (66.5)	2894 (56.4)	0.018
Age (years)	15-29	160 (50.3)	1690 (33.4)	< 0.001
	30-39	77 (30.7)	1560 (31.3)	
	40+	51 (19.0)	1624 (35.2)	
Last HIV test in past 12 months		134 (44.6)	1272 (24.1)	< 0.001
Last HIV test more than 12 months ago or never tested		137 (55.4)	3332 (75.9)	
Report ≥1 sexual partners in last 12 months		238 (86.8)	3634 (78.7)	0.025
Report sexually transmitted infection (STI) symptoms in last 12 months		26 (27.2)	432 (19.0)	0.096

Table 1. Self-reported demographic characteristics and risk factors of recent and long-term HIV infection cases at diagnosis.

RI also more frequently reported STI symptoms in the last year. RI mean VL was higher in 7/10 countries evaluated (Figure 1), reaching statistical significance in Malawi, Namibia and Tanzania. LTI had a significantly higher VL in Zimbabwe.

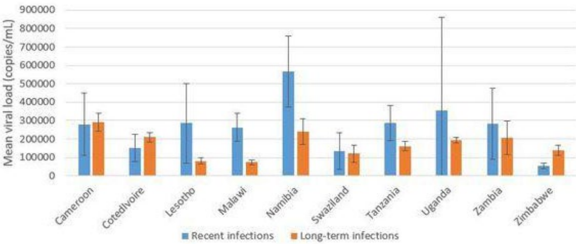

*Figure 1. Mean VL by country and recency status**
**Ethiopia and Rwanda were excluded from this analysis due to small numbers (<10) of recent cases.*

Conclusions: More individuals with RI, compared to those with LTI, reported HIV testing and risk-behavior in the year before diagnosis, with VL that reflects ongoing transmission risk. Programs implementing recency testing at scale should consider this risk profile when triaging services for RI and their partners, including prioritization for pre-exposure prophylaxis.

EPC123

The sociodemographic characteristics of HIV recent infections in Benue State, Nigeria

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Background: Benue state has the second-highest HIV prevalence of 4.9% in Nigeria and is currently one of the subnational units in the country with >81% ART coverage by UNAIDS estimates. The CDC-funded APIN program initiated the HIV recency surveillance in Benue in March 2020 to monitor trends in recent infections, identify hotspots of potential active transmission of HIV, and guide tailored interventions across geographical settings and subpopulations to mitigate new infections. This study aims to determine the distribution pattern of the recent HIV infection in Benue State, Nigeria.
Methods: A descriptive analysis of retrospectively abstracted data of newly diagnosed HIV-positive individuals ≥15 years offered Recency testing in 95 activated Testing Points in Benue state using the Asante™ rapid test kits. The patients with recent Rapid Test for Recent Infection RTRI results and unsuppressed HIV viral load (VL) results (>1000 copies/ml) were classified as 'true' recent. Proportions of confirmed recent infections were deduced by sex, age group, marital status, geographical settings. Geospatial maps were generated using every patient's address and Geo-coordinate.
Results: A total of 10,738 newly diagnosed HIV-positive clients were tested for recent infection, out of which 10,607 (98.78%) were classified as LongTerm while 131 (1.22%) were classified as recent infections.
Analysis shows that 102 (0.95%) females testing HIV positive were true recent compared to 39 (0.36%) males. Confirmed recent infections were highest among age groups 25-29 and 20-24, with new infections as 27 (0.25%) and 26 (0.24%), respectively. District-level analysis shows that Benue Northwest senatorial district with 102 (0.95%) contributed 77.86% of the confirmed recent cases. The Recent infections were higher among the married population 93 (0.87%) followed by individuals who never married 40 (0.37%).

		Clients with Long-term infections (%)	Clients with 'True' Recent infections (%)
Sex			
	Female	6746 (62.77)	102 (0.95)
	Male	3861 (35.92	29 (0.36)
Age Group			
	15-19	215 (2.00)	7 (0.07)
	20-24	967 (9.00)	26 (0.24)
	25-29	1895 (17.63)	27 (0.25)
	30-34	2250 (20.93)	23 (0.21)
	35-39	1860 (17.31)	22 (0.20)
	40-44	1417 (13.18)	14 (0.13)
	45-49	938 (8.73)	11 (0.10)
	50+	1065 (9.91)	11 (0.10)
Senatorial Districts			
	Benue Northeast	5289 (49.25)	25 (0.23)
	Benue Northwest	5099 (47.49)	102 (0.95)
	Benue South	219 (2.04)	4 (0.04)
Marital Status			
	No Response	264 (0.10)	1 (0.01)
	Divorced	107 (1.00)	2 (0.02)
	Living with partner	5 (0.05)	0 (0)
	Married	8081 (75.19)	93 (0.87)
	Never Married	1766 (16.43)	40 (0.37)
	Separated	138 (1.28)	1 (0.01)
	Widowed	246 (2.29)	4 (0.04)

Table.

Conclusions: Recent infections are more common among females and young people in Benue State, with LGAs in Benue Northwest Senatorial district having higher recent infections.

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Measuring HIV through population-based surveys (including the undiagnosed fraction)

EPC124
Fine-resolution estimates of HIV prevalence in Blantyre, Malawi: a Bayesian modelling analysis of survey, health facility, and household testing data

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Background: HIV transmission increasingly occurs in cities, and is highly unevenly distributed by age, sex, and neighbourhood. We leveraged HIV prevalence data from multiple sources to develop fine-resolution estimates of people living with HIV (PLHIV) in Blantyre District, Malawi to better focus diagnosis, care and prevention services.

Methods: Between April 2019-March 2020, we did an HIV prevalence survey among 11,705 adults in randomly selected households in urban densely-populated areas of Blantyre City in Malawi ("MLW survey").

We combined MLW survey data (age, sex, and location) with Blantyre District data from two national surveys (MPHIA and MDHS 2015-16) and clinic antenatal prevalence data. We fitted a spatially-explicit Bayesian regression model to estimate age-, sex-, and location- (500m x 500m grid) HIV prevalence and uncertainty.

We used an offset term to account for differences in prevalence between 2015 (MPHIA and MDHS) and 2019, adjusting for temporal trends using Spectrum.

Results: HIV prevalence within the urban Blantyre City area was 15.2% (95% credible interval [CrI] 14.2–16.3%) among adults age 15-49y. This was higher than Blantyre rural (12.2%, 95%CrI 11.1–13.4%).

Within Blantyre City, prevalence was highest in women aged 49 years (44.8% HIV-positive, 95%CrI 40.6–48.9%) and among men prevalence was highest in men aged 54 (44.5% HIV-positive, 95%CrI 38.7–50.1%). HIV prevalence was highest in peri-urban areas around Blantyre City and lower in more central areas of the city. Across neighbourhoods in the MLW survey – all of which were in Blantyre City - prevalence ranged from 12.1% to 20.1%.

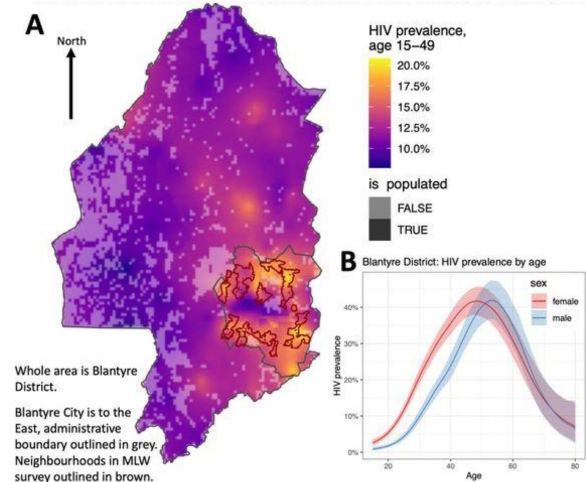

Figure. HIV prevalence Blantyre district (A) by neighbourhood and (B) by age and sex.

Conclusions: The age and sex distribution of prevalent HIV reflects heterogenous historical transmission dynamics and current HIV risk exposure across the city, and underscores the ageing population of people living with HIV. Highly spatially and demographically resolved estimates of HIV prevalence are useful for strategic service planning and understanding progression of HIV epidemic.

EPC125
Population sizes and characteristics of Men Sex with Men (MSM) in several cities in Afghanistan in 2019

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Background: Men Sex with Men (MSM) is known populations at risk for HIV, but little is known about their population size, locations and characteristics in Afghanistan.

The objective of this study was to provide these critical data for MSM populations in six cities and extrapolation to other major cities in Afghanistan.

Methods: Eligible MSM were interviewed at hotspots (public places like street corners, parks, etc).

We estimated their population size by several methods including:

i) Key informant interviews, mapping and enumeration with revers tracking method,

ii. The unique object and service multipliers,

iii. Capture-recapture,

iv. Wisdom of crowds, and

v. A Bayesian synthesis of the estimates from above methods.

Using the final estimates in the studied cities and their correlation with proxy indicators (population density, literacy, etc.), we estimated the population size for each

key population in 31 major cities in Afghanistan. Then, we added population size estimates across all major cities to estimate the overall prevalence estimates in adult population.

Results: We found 286 hotspots for MSM across the six cities. Majority of MSM were 25-34 years of age (41.2%), single (40.8%), exchanged sex for money in last 12 months (89.5%), and knew their HIV status (64.6%). The self-reported HIV prevalence was 3.2% (ranged from 0% to 9.2%). For MSM, the total number in 31 cities in Afghanistan was estimated to be 10,108 (95%CI 7,916 to 12,618) persons, which corresponds to 0.53% (95%CI 0.42% to 0.66%) of the adult male population.

Conclusions: Using multiple methods, our study provided basic characteristics and estimates for the population of MSM in major cities in Afghanistan. These estimates should be used for advocating and planning services for these vulnerable at-risk population in Afghanistan.

EPC126

Potential HIV-1 elite controllers in Malawian population and their impact on HIV epidemic control estimates

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Background: Countries have scaled up strategies to monitor progress towards achieving HIV epidemic control. However, it is not clear whether inclusion of elite controllers (ECs) affects accuracy of epidemic control estimates. Globally, <1% of people living with HIV (PLHIV) are ECs. We used data from 2020-21 Malawi Population-based HIV Impact assessment (MPHIA) to examine the role of potential ECs in achieving epidemic control.

Methods: The 2020-21 MPHIA was a cross-sectional multi-stage cluster probability-based sampling household survey targeting people 15 years and older. HIV diagnosis was conducted in the household and all HIV positive participants were tested for CD4, viral load (VL) and antiretroviral (ARVs). In this analysis, potential ECs were defined as HIV-positive individuals without ARVs detected in their serum (Dolutegravir, Atazanavir, Efavirenz or Nevirapine) but with suppressed VL (<50 copies/mL). Community viral load suppression was defined as the proportion of VL suppression among PLHIV. All analyses were weighted for sampling design, and we used STATA v16 svy commands to characterize ECs and compare them with unaware ART naïve HIV-positive individuals with unsuppressed VL.

Results: Prevalence of potential ECs was 3.8% (80/2464) among HIV positive individuals, with a median age of 32.2 years (95% CI: 28.8-35.6) and similar distribution by gender (51.5% were males 48.5% were females).

When compared to ART naïve-VL unsuppressed individuals, 80.5% (63/80; 95% CI: 70.0%-88.0%) of ECs had CD4 count above 500cells/mm^3 and 93.9% (74/80; 95% CI: 85.3%-97.6%) lived in rural areas, unlike 26.4% (85/301; 95% CI: 22.0%-31.5%) and 63.8% (197/301; 95% CI: 57.2%-70.0%) respectively for ART naïve VL unsuppressed individuals.

There was no difference in gender and education status between ECs and ART naïve VL unsuppressed individuals.

When ECs were removed from standard analysis, community viral load suppression reduced insignificantly from 87.3% (95% CI: 85.7%-88.7%) to 86.8% (95% CI: 85.1%-88.3%).

Conclusions: Prevalence of potential ECs is higher in the Malawian population compared to global estimates and this needs to be further characterized. However, their inclusion in epidemic control estimates may not affect accuracy of the results. Our study was limited in that ECs were defined based on single point VL testing.

EPC127

Implementation of web-based respondent-driven sampling among transgender people: Lessons learnt from the national transgender population size in South Africa

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Background: There is limited evidence on the use web-based respondent-driven sampling (WebRDS) use among transgender (TG) people in South Africa. This paper reports on the recruitment processes and the challenges and enablers of the WebRDS methodology as part of a multi-method national population size estimate (PSE) study for adult TG people (>18years) in South Africa.

Description: Beyond Zero conducted a PSE study between May and October 2021, during various lockdown restrictions which minimized the movement of people for non-essential services. Primary approaches (WebRDS, service multiplier, wisdom of the crowd) and secondary sources (administrative records, capture-recapture) were used to estimate the number of adult TG people. Pre-fieldwork formative assessment explored WebRDS suitability in each district (n=15).

WebRDS data collection was conducted using an online link shared via WhatsApp. Three digital coupons, determined using cellphone numbers as unique identifiers, were provided to each seed for use to recruit three TG within their social network, with successive waves of recruitment. Seeds were selected to ensure diversity based on age and gender identity (transmen, transmen, trans-

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women, nonbinary, gender-queer, and gender non-conforming). Compensation was given for participating (equivalent to approximately US$6).

Post the PSE, we analysed process evaluation data collected by the field teams. In addition, we conducted virtual key informant interviews (KI) with field team members who identified as TG. Audio-recordings were transcribed verbatim, with data analysed using thematic content analysis.

Lessons learned: Using WebRDS resulted in significant improvements in the recruitment rate during the lockdown period. The formative assessment was critical as it provided key insights into the suitability of WebRDS. Key themes emerging from the data analysis include:

1. Compensation improved participation;
2. The approach made it easy to track and trace the network virtually;
3. WebRDS may have missed those without internet access;
4. Some participants only accessed the compensation and did not recruit any new participants.

Conclusions/Next steps: WebRDS is an effective and efficient method to recruit participants in resource-limited settings such as South Africa (internet penetration 63% and WhatsApp penetration 58% of the population). The potential effect of missing those without internet access should be considered when selecting the most appropriate data collection method.

Measuring the population impact of prevention and treatment interventions

EPC128

Factors associated with non-use of ART among HIV-positive men in South Africa: findings from a 2017 population-based household survey

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Background: Although South Africa has been a part of the World Health Organization's recommended Test and Treat program since 2016, treatment initiation and retention remain below target. In 2017, an estimated 56.3% and 65.5% of HIV-positive men and women, respectively, were on antiretroviral therapy (ART). We aimed to investigate determinants of low male use of ART in South Africa.

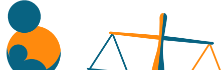
Methods: Utilizing data from the fifth South Africa National HIV Prevalence, Incidence, Behavior and Communication (SABSSM V) cross-sectional survey conducted in 2017, HIV-positive male records were extracted and stratified based on presence/absence of antiretroviral drugs (ARVs) detected in dried blood spot samples. Data was weighted to be representative of the national population, and a multivariate logistic regression was performed. Records with missing values were excluded and $p<0.05$ was considered significant.

Results: A total of 6,920 males age ≥15 years were enrolled in the study, and 953 (13.8%) had a laboratory confirmed HIV-positive result. Among those HIV-positive, 810 had a known ARV test result: 470 (58%) had ARVs detected, and 340 (42%) did not have ARVs detected.

Adjusting for age (and other known covariates), non-use of ART in males was associated with high alcohol use (AOR=4.15, 95%CI: 1.13-15.25, p=0.03), being a widower compared to being unmarried (AOR=7.28, 95%CI: 1.59-33.38, p=0.01), and having drug-resistant HIV (AOR=26.17, 95%CI: 12.90-53.08, p<0.001). Increased age (AOR=0.63, 95%CI: 0.44-0.91, p=0.01), residence in rural tribal localities compared to urban localities (AOR=0.39, 95%CI: 0.19-0.79, p=0.01), being too sick/disabled to work (AOR=0.02, 95%CI: 0.00-0.29, p<0.001), or having a co-morbidity such as tuberculosis or diabetes (AOR=0.07, 95%CI: 0.03-0.16, p<0.001) were negatively associated with ART non-use.

Conclusions: Young HIV-positive men, particularly those with high alcohol use, should be targeted for HIV programming at a greater scale to reach the UNAIDS 95-95-95 targets by 2030. Exposure to a health facility, whether by previous illness or co-morbidity, increases the likelihood of being on ART.

Identifying interventions that are effective at linking these men to ART and continuing to improve knowledge about HIV treatment will help reduce the national burden of disease and enable South Africa, a country with disproportional burden of infection, to finally reach epidemiological control.



EPC129

Self-reported antiretroviral therapy use and detection of antiretrovirals: findings from sequential population surveys in Malawi

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Background: Accurate estimates of the 90-90-90 HIV care continuum require identifying people receiving antiretroviral (ARV) therapy (ART) and determining viral suppression among those on ART. We compared the prevalence of self-reported ART use with and without adjustment for detectable antiretrovirals (ARVs) among adults (15-64 years) living with HIV (ALWH) in two sequential Malawi Population-based HIV Impact Assessments (PHIA) MPHIA.

Methods: Participants from randomly selected households in the 2015-16 and 2020-21 MPHIA surveys provided demographic, clinical information, and whole blood for household HIV testing. Household HIV+ results were laboratory-confirmed. Viral load suppression was defined as VL < 1000 cp/mL, and ARV non-adherence, as missed ARV doses ≥ one day in the past month.

Most prescribed first- and second-line ARVs, efavirenz, atazanavir, lopinavir in 2016, and dolutegravir in 2021, were assayed in dried blood spots.

Results: Of all participants aged 15-64 (17,187 in 2015-2016 and 21,208 in 2020-2021),2,227 ALWH were identified in 2016 and 2,340 in 2021. ART use was reported by 65.4 % (95% CI: 62.9-67.7%) in 2016 and 83.3% (95% CI: 81.5-85.0%) in 2021. Among those reported ART use, ARVs were not detected in 3.6% (95% CI: 2.5%-5.1%) and in 4.1% (95% CI: 3.3%-5.2%), respectively.

Among those who reported ART use but had no detectable ARVs, 23.0% (95% 7.5%-52.3%) in 2016 and 39.4% (95% CI: 26.0%-54.8%) in 2021 reported non-adherence, of whom 83.4% (95% CI: 76.8%-88.3%) and 45.2% (95% CI: 27.7%-64.0%) in 2016 and 2021, respectively, were without viral suppression. In 2016 and 2021 respectively, 4.0% (95% CI: 3.1%-5.3%) and 2.9% (95% CI: 2.1%-3.9%) of ALWH reported not being on ART but had detectable ARVs.

Controlling for the survey year and demographic covariates, ALWH were significantly less likely to have VL suppression if reported ART use but had no detectable ARVs (adjusted odds ratio: 0.15, 95% CI: 0.1-0.2, P<0.001).

Conclusions: The findings indicate consistency between self-reported ART use and ARV detection with evidence of high ART adherence. Unwillingness to disclose HIV+ status and ART use was rarely noted.

Measuring the population-level impact of policy-level HIV interventions

EPC130

Effect of cash transfer programs on HIV outcomes: a systematic review and meta-analysis

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Background: Both poverty and social inequality play important roles in the HIV/AIDS epidemic. Trials assessing the impact of cash transfer programs (CTP) on HIV outcomes yielded divergent results.

This review aims to summarize the findings from randomized controlled trials evaluating the effects of CTP on some HIV outcomes.

Methods: A systematic review and meta-analysis was conducted in fifteen databases in August/2021 following the Cochrane and PRISMA guidelines. The study protocol was registered on PROSPERO [#CRD42021274452]. The intervention, CTP, was defined as monetary transfers for poor families aiming to alleviate poverty and provide social protection. We focused on CTP with education (i.e., children's school attendance) and health (i.e., uptake of health services for HIV testing) conditionalities.

The outcomes were HIV incidence and retention in HIV health care. The risk of bias and quality of evidence were evaluated by Cochrane Risk of Bias and GRADE, respectively. Meta-analysis was used for pooling risk ratios (RR). Sensitivity analyses were performed using the type of conditionality as subgroup.

Results: Seven studies conducted in Africa fulfilled inclusion criteria (n=5,241) with mean value of U$13.5 per family. CTP was associated with lower HIV incidence when receiving money was conditional on the uptake of health services for HIV testing (RR=0.74, 95%CI=0.56-0.98). There was no effect when the conditionality was school attendance (RR=1.13, 95%CI=0.78-1.64). CTP beneficiaries had higher retention in HIV health care vis-à-vis non-beneficiaries (RR=1.29, 95%CI=1.06-1.56). Evidence for both outcomes was moderate.

Conclusions: CTP had a positive effect in mitigating HIV incidence and increasing the retention in HIV health care. Our results show the potential of CTP on HIV prevention and treatment especially among people in extreme poverty, highlighting its importance when developing policies for HIV/AIDS epidemic control as stipulated by the UNAIDS Fast-Track 90-90-90 and 95-95-95 Target of HIV Care Continuum.

Monitoring and evaluation of health systems along the HIV cascade

EPC131

Measuring engagement with HIV care for people on antiretroviral treatment in sub-Saharan Africa: a scoping study

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Background: Engagement in HIV care is a multi-dimensional, dynamic process, critical to maintaining successful treatment outcomes. However, measures are not standardised nor comprehensive, undermining our understanding of intervention impact and complicating patient and programme-level decision-making. This study attempted to organise measures of engagement to support more consistent and comprehensive evaluation.

Methods: We conducted a scoping study to systematically identify and categorise measures the health system could use to evaluate engagement with antiretroviral care. Key terms were used to search literature databases (Embase, PsychINFO, Ovid Global-Health, PubMed, Scopus, CINAHL, Cochrane and the World Health Organization Index Medicus), Google Scholar and stakeholder-identified manuscripts, including English evidence published from sub-Saharan Africa since 2014. Data were extracted and measures organised by category, then sense-checked with key stakeholders.

Results: We screened 14 885 titles/abstracts, included 118 full-texts and identified 110 measures of engagement, categorised into three dimensions: 'retention', 'adherence' and 'active self-management' (Table 1).

As a consequence of engagement, 'treatment outcomes' (e.g. viral load) reflect a summary that engagement occurred. Adherence was measured by a range of primary and secondary measures. Retention reflected status in care, continuity of attendance and timing of visits. Active self-management reflected people's involvement and self-management. Three overarching use-cases were identified: research to make recommendations,clinical assessment of individuals and routine monitoring for quality improvement and strategic decision-making.

Engagement with services	Engagement with treatment		Engagement with both services and treatment	
Retention (18) *Sub-category (n)*	**Adherence (59)** *Sub-category (n)*		**Active self-management (18)** *Sub-category (n)*	**Treatment outcomes (8)** *Sub-category (n)*
• In care (5) • Continuity (7) • Timing of retention (3) • Composites of retention measures (3)	PRIMARY ADHERENCE (prescription not filled) • Pharmacy refill (5)	SECONDARY ADHERENCE (medication not taken as directed) • Antiretroviral concentrations (6) • Laboratory tests (5) • Healthcare-worker-assessed measures (2) • Pill counts (5) • Self-reported quantification of pill-taking through recall (13) • Self-reported timing (2) • Composite self-reports (13) • Composite of different adherence measures (8)	• Active involvement (4) • Self-care and self-management (14)	• Laboratory results (5) • Quality of life and health status (3)
Composites of different elements of engagement (7)				

Table 1. Sub-categories of measures of engagement with HIV care for people on antiretroviral therapy and the number of measures organised into each.

Conclusions: Heterogeneity in conceptualising engagement is reflected by the broad range of measures identified and the lack of consensus on 'gold-standard' indicators. This review organises options into four categories; further work could identify a standardised, minimum set of measures useful for comprehensive evaluation of engagement with HIV care for different use-cases.

Measurement of engagement could be advanced through assessment of multiple categories for more comprehensive evaluation, conducting sensitivity analyses with commonly-used measures for more comparable outputs and using longitudinal measures to evaluate nuanced patterns of engagement.

EPC132

Assessing the impact of coronavirus (Covid-19) on reflex cryptococcal antigenaemia (CrAg) testing in South Africa

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Background: Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus, first reported from the city of Wuhan, China. Subsequently, it spread globally and was declared a pandemic in March 2020 by the World Health Organization. Many countries, including South Africa introduced social distancing and lockdown rules to limit transmission.

These lockdown strategies negatively impacted pathology services/laboratory testing, especially the diagnosis/treatment of patients with advanced HIV-disease (CD4<200 cells/µl) that could potentially develop crypto-

coccal disease. In South Africa, reflexed cryptococcal antigenaemia (CrAg) testing followed by pre-emptive antifungal therapy is recommended before antiretroviral initiation for patients with a CD4<100 cells/µl. The objective of this study was to assess the impact of Covid-19 on CrAg testing in South Africa.

Methods: Specimen-level CrAg data for a CD4<100 cells/µl was extracted for individuals ≥15 years from the corporate data warehouse for the period between January 2018 and December 2021. Test volumes (annual and monthly) and CrAg positivity were calculated by gender. The percentage change in annual and monthly CrAg test volumes for 2020 and 2021 with lockdown levels imposed were compared to data reported for 2018.

Results: Data for 1,306,456 reflexed CrAg samples were analysed. The number of reflexed tests performed reduced by 22.4% and 27.8% for 2020 and 2021 respectively relative to 2018. There were 23,670 CrAg positive outcomes reported in 2018 compared to 21,399 (-9.6%) and 17,847 (-24.6%) in 2020 and 2021.

During the Covid-19 waves, a reduction of 36.6%, 35.5%, 36.1% and 13.3% in CrAg tests performed were reported for August 2020 (1st wave), January 2021 (2nd), August 2021 (3rd) and December 2021 (4th) respectively, relative to the respective monthly volumes reported during 2018. CrAg positivity in vulnerable tested patients increased from 6.3% in 2018 to 7.5% for 2020, but reduced to 6.5% by 2021. During 2020, CrAg positive outcomes peaked at 8.0% in April between Covid-19 waves.

Conclusions: This study reports substantial reductions in reflexed CrAg testing due to the Covid-19 lockdown levels. An increase of CrAg positivity amongst vulnerable patients in 2020 may indicate that individuals presented later for care during this period.

EPC133

Potential impact of the COVID-19 pandemic on UNAIDS 95-95-95 targets in 10 Fast-Track Cities

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Background: Fast-Track Cities are committed to attaining 95-95-95 targets by 2025. Access to critical services could have been affected during the COVID-19 pandemic resulting in impact on progress against the 95-95-95 targets.

Methods: 95-95-95 data from 10 Fast-Track Cities in North America (4) and Europe (6) were included in this analysis using the following parameters:

1. Reported all three 95 targets in 2018, 2019, and 2020;
2. COVID-19 first detected in the country between Jan-Mar 2020.

The average of each "95" target was taken for 2018, 2019, and 2020. The difference for each of the three targets was calculated for the following time periods: Dec 2018-Dec 2019 and Dec 2019-Dec 2020.

Results: The first 95 target across the 10 cities ranged from 73%-95% in 2018; 67%-95% in 2019; and 76%-96% in 2020. The second 95 target ranged from 67%-98% in 2018; 68%-98% in 2019; and 67-98% in 2020. The third 90 target ranged from 86%-97% in 2018; 85%-97% in 2019; and 88%-98% in 2020.

In North America the average 95-95-95 targets across the four cities was 87.5-79.0-89.0 in 2018, 88.3-78.5-91.3 in 2019, and 88.3-77.8-91.0 in 2020. In Europe the average 95-95-95 targets across the six cities was 87.0-90.5-95.8 in 2018, 86.8-93.2-95.5 in 2019, and 88.7-93.7-95.7 in 2020.

North American Cities (n=4)			
	Difference in First 95 Average	Difference in Second 95 Average	Difference in Third 95 Average
From Dec 2018 to Dec 2019	+.08 percentage points	-.5 percentage points	+1.5 percentage points
From Dec 2019 to Dec 2020	0 percentage points	-.7 percentage points	-.3 percentage points
European Cities (n=6)			
	Difference in First 95 Average	Difference in Second 95 Average	Difference in Third 95 Average
From Dec 2018 to Dec 2019	-.2 percentage points	+2.7 percentage points	-.3 percentage points
From Dec 2019 to Dec 2020	+1.9 percentage points	+.5 percentage points	+.2 percentage points

Table. Difference in Average 95-95-95 Targets.

Conclusions: Based on this assessment, the COVID-19 pandemic did not significantly impact progress towards the 95-95-95 targets through the end of 2020 in the ten cities. Limitations included the fact that most of the cities were high performing (targets >80%) and that data were collected between nine to eleven months during the respective local COVID-19 epidemics.

Future assessments including lower performing cities and cities in the global south; as well as data through the end of 2021, may provide more information on the potential impact of the COVID-19 pandemic on the 95-95-95 targets.

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Understanding county-level variation in ART coverage as Kenya approaches epidemic control

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Background: The next U.S. President's Emergency Plan for AIDS Relief (PEPFAR) Strategy names six countries at epidemic control, with implications for future funding and programming. Among them, Kenya has made significant progress establishing people living with HIV (PLHIV) on antiretroviral therapy (ART). However, program data suggest sub-regional variations in epidemic dynamics and program results.

Description: We collaborated with PEPFAR country teams and county-level Ministry of Health (MOH) and other leaders to analyze program results against county-level population estimates of PLHIV (UNAIDS NAOMI). We also conducted a rapid assessment in each county using a standardized questionnaire on an online platform. ART coverage was calculated as the number of PLHIV on treatment divided by the estimated number of PLHIV in that county. We similarly compared county-level measures of program results and performance.

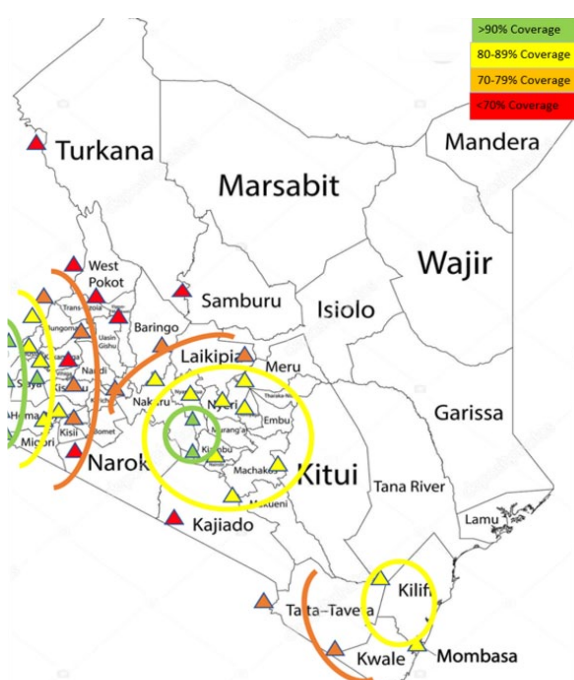

Figure 1. ART coverage gap in Kenyan counties, Dec. 2020

Lessons learned: More than 90% of the estimated PLHIV in five counties around Lake Victoria are on ART; with sustained high transmission, these counties now comprise 27% of PLHIV in Kenya. More broadly, fifteen counties, in concentric arcs surrounding Lake Victoria, account for 54% of undiagnosed PLHIV in Kenya. Eleven counties near Nairobi have an ART coverage of >80% and contribute 16% of Kenya's undiagnosed PLHIV. With about 16% of the undiagnosed PLHIV in the country, Rift Valley counties have less than 70% ART coverage, lesser levels of program investment, and poorer results across a range of measures.

Conclusions/Next steps: As PEPFAR's support and Kenya's epidemic evolve, systematic planning is essential to ensure that undiagnosed PLHIV are not left behind. We employed publicly available program results and population estimates to generate signals for interpretation locally. When integrated with other ongoing workstreams, for example, a recent review of human resources, these findings lay a basis for the next generation of case-finding services in Kenya, providing lessons for other counties planning similar transitions.

Describing the spread of HIV through geographical information systems

EPC135

Impact of HIV/AIDS epidemics in the Brazilian border strip

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Background: HIV does not recognize international borders. Despite its importance, HIV infection rates have been little explored in Brazil's border strip. The primary goal of this work is to analyze HIV/AIDS detection rate in Brazil's border strip.

Methods: An ecological and cross-sectional evaluation was performed in 2020, employing data from Brazilian Health's Ministry databases. The municipalities in the border strip were grouped by their geographical region (North, Central-west and South). Cases of HIV/AIDS were obtained from the National Notification Systems (SINAN, SIM, SISCEL and SICLOM) to analyze socio-demographics in the border and borderless areas. Historical series of HIV/AIDS incidence in adults and children under five years-old were collated.

Results: Brazil reported32,701 HIV cases and 29,917 AIDS cases in 2020 with AIDS incident rate of 14.1/100,000 persons. Analysis of the HIV data has shown that the Northern border (19.0/100,000) presented a higher detection rate than the other areas (Southern border (15.6/100,000), Central-western border (15.8/100,000) and borderless area (15.5/100,000).

Analysis of the AIDS data has shown that the Central-western border presented a higher incidence rate (15.5/100,000) than the other areas (Southern border (13.8/100,000), Northern border (13.1/100,000), and borderless area (14.3/100,000).

Among AIDS cases reported, the average sex ratio incidence in Brazil's strip border was two men per each woman, with the northern region presenting the highest rate (2.5). The most affected age group was 25-44 years-old. Historical trends have shown that there is an upward trend in HIV detection in all areas.

In general, the border rates remained below the rate of the corresponding geographical region. Unlike adults, HIV and AIDS detection rates in children under 5 in the three strip border regions remained above than the national average.

Conclusions: In 2020, Brazilian strip border had higher HIV AND aids detection rates than borderless areas. Nevertheless, the rates were different when compared the different regions. In 2010, notification of HIV infection was incorporated into the National Information System, which justifies the sharp increase in the HIV curve after 2015. These results show the importance to plan regional strategies and intervention in the strip border area.

EPC136

Geographic and risk variation in transmission clusters of HIV test recipients in Nagoya, Japan

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Background: The number of people living with HIV (PLWH) in Japan continues to increase. That more than 30% of these patients are being diagnosed with AIDS suggests that the first step of the United Nations' "90-90-90" HIV treatment program does not work well in Japan.

Working with local government of Nagoya city, the National Hospital Organization Nagoya Medical Center has held HIV testing campaigns targeting men who have sex with men (MSM).

To assess the need for reframing the target audience, we compared sociological characteristics, geographical information on residential and activity areas, and transmission cluster connections of HIV-positive persons in Nagoya city with those of newly diagnosed persons from nearby cities who visited our clinic.

Methods: We recruited HIV-positive first-time visitors to the Nagoya Medical Center from 2019 through 2021. Sociological and behavioral information and motives for visiting the Center were collected in a patient questionnaire. Place of residence was extracted from patients' medical records with their consent. Information about HIV transmission clusters was obtained through genetic distance-based analyses of HIV pol gene sequences conducted by the Japan HIV Drug Resistance Network.

Results: Of the participating patients, 723 (81.6%) and 163 (18.4%) were recruited from the test campaign and the other sources, respectively. Individuals diagnosed outside of the campaign showed a significantly higher median age (35 vs. 32 years old, p<0.01) and a higher heterosexual proportion (11.6% vs. 1.7%, p<0.01).

While individuals in the largest cluster TC2 (n=47) generally lived in the center of Nagoya city, the second most common cluster TC3 (n=43) was more likely to have lived in Nagoya's suburbs.

However, campaign-associated individuals did not show statistically significant clustering; 5.9% of patients diagnosed with AIDS were also non-clustered and mostly lived in the suburbs.

Conclusions: Our study found that individuals within a transmission cluster were more likely to live in the city center, while those outside of clusters were more likely to live in the suburbs and have a late diagnosis. Continued research is needed on measures to convey the importance of HIV testing to PLWH who cannot be identified through clusters.

Advances in public health surveillance and new approaches

EPC137

Precision is key: improving HIV prevalence and risk estimates by a Bayesian small area estimation modelling approach

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Background: Reliable HIV surveillance in areas with small population density (e.g., due to a decline in HIV infections) or lack of data is challenging. Therefore, this study proposed a Bayesian small area estimation (SAE) approach to unravel robust estimates of people with HIV (PWHIV), using data from an MSM population in the Netherlands on the Public Health Services (GGD) region level as an example.

Methods: Data from the European-MSM-Internet Survey 2017 (EMIS-2017, Dutch subsample, n=3,459) and the "Survey Men&Sexuality" 2018 (SMS-2018, n=5,653) were utilized. We first calculated the observed prevalence of MSM with HIV (MSMHIV) and the standardized prevalence ratio

through the frequentist approach to compare the observed risk of MSMHIV per GGD region. We then applied a Bayesian SAE approach accounting for a hierarchical spatial connection among GGD regions.

This hierarchical structure assumed that each region influences the risk of MSMHIV by sharing the border or by proximity. We first modeled the relative risk (RR) of MSMHIV by only considering spatial connections and the random effects, assuming the observed HIV cases in each GGD region to follow a Poisson distribution.

We then conducted a spatial ecological regression modelling (uni-/multivariably) to include known areal determinants of HIV such as HIV testing history, age, number of sex partners, injecting drug use, condom use and prevalence of other STIs to explore how the other spatial information impacts on the RR estimations.

Results: Results of the prevalence and risk estimations from EMIS-2017 and SMS-2018 revealed an overlapping estimation with minor differences. Both estimations converged that the risk of MSMHIV is heterogeneous within the Netherlands with some GGD regions, such as GGD Amsterdam [RR=1.21 (95% credible interval 1.05-1.38) by EMIS-2017, RR=1.39 (1.14-1.68) by SMS-2018], having a higher-than-average risk. Results from our regression modelling revealed significant areal determinants (e.g., lack of HIV testing) which can increase HIV risk.

Conclusions: Our proposed Bayesian SAE approach can obtain a smoother and more stable estimation over the frequentist observation, illustrating the feasibility and applicability of this approach for a better future HIV surveillance for local prevention in the context of the declining epidemic or due to data gaps.

EPC138

Estimating National and sub-National population size of men who have sex with men in Mexico

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Background: Population size estimates of gay, bisexual, and other cisgender men who have sex with men (MSM) are critical to calculating disease rates, illustrating disparities, and planning services. Yet, this information is either unavailable or often outdated for many countries. The most recent MSM population size estimates for Mexico are based on a 1992-1993 household survey in Mexico City. To guide HIV prevention strategies among MSM, we produced national and state-level estimates of MSM population size in Mexico using more recent nationwide data.

Methods: The 2017 National Survey on Discrimination (ENADIS) from 39,101 households measured the prevalence of same-sex sexual attraction among respondents, including gender, age, and urbanicity. Sampling weights were used to calculate MSM percentages among adult men by age group, urbanicity level, and state.

MSM percentages in the 32 states were multiplied by the number of adult men in each state to estimate the number of MSM, summing the state-level estimates to create a national estimate. The total adult male population by age group was obtained from the 2020 Mexico Census.

Results: Results estimated 1.3 million MSM in Mexico, comprising 3.5% of the adult male population. This is an increase in the percentage of MSM compared to the most recent estimates reported to UNAIDS (3.0%), most notably in the younger populations (18-24: 5.8%, 25-29: 4.3%). The largest percentage of MSM was observed in suburban areas (4.4%). Seven states represent 53.5% of the MSM population.

Rank	State	Adult males, N	MSM, n	MSM among adult men, %
1	Jalisco	2,788,221	183,186	6.6%
2	Mexico	5,714,023	114,852	2.0%
3	Yucatan	799,663	106,595	13.3%
4	Mexico City	3,363,182	98,205	2.9%
5	Michoacan	1,525,563	85,126	5.6%
6	Chihuahua	1,272,037	66,528	5.2%
7	Baja California	1,353,389	49,805	3.7%

Table 1. But only 40.1% of the adult male population. Yucatan and Jalisco had the largest MSM percentages.

Conclusions: Using publicly available data, we generated more recent population size estimates for MSM in Mexico and provided state-level estimates to facilitate epidemiological research and service planning.

The large variability observed in the proportion of MSM across Mexico, and by age groups, supports the need for more refined surveillance that would allow for estimating MSM population by smaller geographic areas.

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EPC139

Phylodynamic structure of the Botswana HIV epidemic

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Background: Botswana has one of the world's highest HIV prevalence and incidence despite a successful program for free antiretroviral treatment (ART). Understanding population-level patterns of HIV transmission is vital for effective public-health-interventions.

Methods: As part of the Botswana Combination Prevention Project (BCPP), 20% adults residing in 30 villages were tested for HIV-1 between 2013-2018. Extensive demographic data was collected from participants and next-generation full-genome HIV sequences were generated from HIV positive participants (n=4,164), 78% were on ART.

We inferred the stage of infection (< or >1 year) among HIV cases based on nucleotide diversity and clinical data using a previously trained machine learning model.

We reconstructed time-resolved pol phylogenies from BCPP sequences (n=4,164), other Botswana cohorts (n=352) and publicly available sequences that were genetically close to those from Botswana (n=448).

We statistically evaluated phylogenies for subtrees with diverging patterns of coalescence and estimated viral effective population size through time, a measure of viral incidence.

Finally, we compared the demographic makeup and clinical characteristics across subtrees using $\chi 2$ test, ANOVA and tukey analysis.

Results: We identified eight subtrees within the pol phylogeny with different patterns of coalescence, indicating divergent patterns of transmission from sequences across Botswana. Four subtrees displayed a recent origin (post-1995), with rapid growth followed by rapid declines ("group 1) (figure 1).

Another four subtrees ("group 2") originated earlier (pre-1990) and continued to grow steadily. Two subtrees in group 2 showed a recent rise in growth (post-2016) continuing until present day.

Group 2 participants had the most recent infections ($p < 0.001$), while group 1 participants were mostly chronically-infected and on ART. Sequences from outside Botswana (99%) clustered in group 2 subtrees.

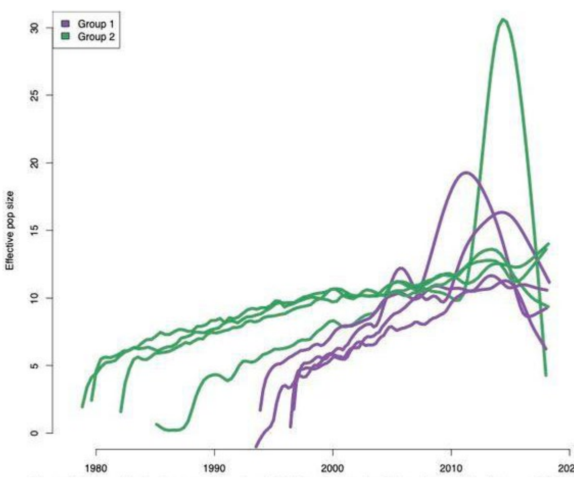

Figure 1. Estimated effective population size (Ne(t)) through time for eight subtrees in the Botswana HIV-1 phylogeny. The Ne(t) was estimated using the mlesky method with precision parameter Tau = 10.

Conclusions: Phylodynamic analysis suggests that geographically targeted HIV interventions may not work in Botswana because of high mobility of the population. Transmission rates appear to be slowing in segments of the population with high access to ART. However, transmission is ongoing in sub-epidemics that include recent infections and sequences from participants outside Botswana.

EPC140

Programmatic non-retention in prevention of mother-to-child transmission (PMTCT) programs: estimated rates and cofactors using different measures

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Background: Because PMTCT programs include women continuing and starting ART in pregnancy, and follow-up aligns with delivery rather than ART initiation, conventional HIV care retention measures assessed from time of ART initiation are challenging to apply.

In the absence of a standard definition for PMTCT non-retention, we evaluated three measures of programmatic non-retention in Kenyan women living with HIV from pregnancy to 2-years postpartum. We also identified cofactors for each measure.

Methods: This cohort study used data from the Mobile WAChX trial. Outcomes included loss to follow-up (LTFU) (no visit for ≥6 months), incomplete visit coverage (<80% of 3-month intervals with a visit), and late visits (% of visits >2 weeks late). Predictors were determined by site-adjusted Cox proportional hazard, Log-binomial and GEE models, respectively.

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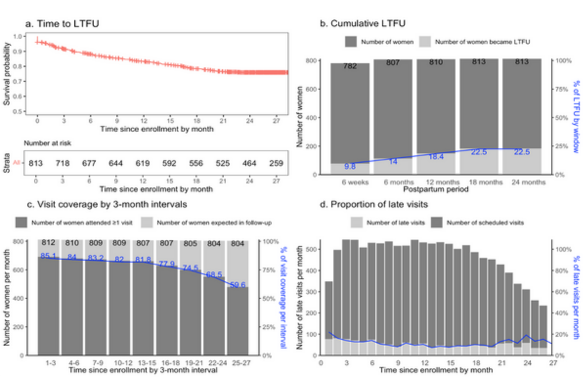
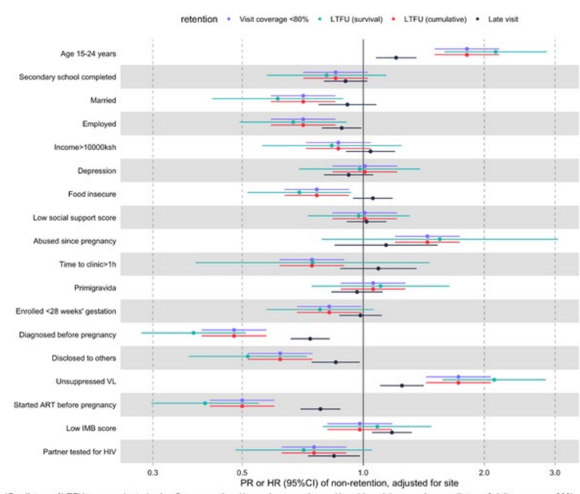
Results: Among 813 women, incidence of LTFU was 13.6/100 person-year. By 2-years postpartum, 22.5% women were LTFU. 35.5% of women had incomplete visit coverage. Among 794 women with 12,437 scheduled visits, a median of 11.1% of visits per woman were late (IQR 4.3%-23.5%).
Younger age, unsuppressed viral load, unemployment, ART initiation in pregnancy, and non-disclosure were significantly associated with higher rates of non-retention for all measures. Partner involvement was associated with better visit coverage and timely attendance. LTFU was higher among women with ≥10% of previous visits being late (25.8% vs. 14.5%, p<0.001).



a. Time-to-LTFU (no visit for ≥6 months since last visit) was described by Kaplan-Meier survival curves; b. cumulative incidence of LTFU was calculated as the proportion of women ever LTFU among women in follow-up; c. visit coverage was calculated as the proportion of 3-month intervals with a visit; d. late visit was defined as no visit within 2 weeks of scheduled date.

Figure 1. Retention over the follow-up period using the 3 measures (loss to follow-up, visit coverage, late visits).



*Predictors of LTFU were evaluated using Cox proportional hazards regression and Log-binomial regression; predictors of visit coverage <80% were evaluated using Log-binomial regression; predictors of late visit were evaluated using Generalized estimating equations clustered by women, with log-binomial link and exchangeable correlation structure. Study site (Nairobi versus Western Kenya) was identified as an a priori confounder in all regression models to account for potential geographical differences in maternal characteristics and underlying retention in care. All models used robust standard errors.

*Figure 2. Forest plot of cofactors for non-retention, by non-retention measure**

Conclusions: Late visit is a potentially sentinel indicator predicting LTFU. Assessing visit timeliness and coverage may enhance retention evaluation. Distinct cofactors identified using different measures highlight the need for standardized assessments of retention in PMTCT programs.

Measuring and evaluating quality of service provision and health outcomes through public health surveillance

EPC141

Factors associated with viral load non-suppression among children living with HIV in four provinces in Mozambique

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Background: Globally, children are lagging behind the UNAIDS' "third 95" target, in which 95% of people on treatment have a suppressed viral load (VL). Only 40% of children initiated on antiretroviral therapy (ART) achieve VL suppression, compared to 67% among adults(UNAIDS, 2021). Despite improvements enrolling children on ART and increased access to testing, Mozambique is still far from achieving the 2030 UNAIDS target.
This study investigates the factors associated with VL non-suppression among children under 15 in four provinces in Mozambique supported by USAID's Efficiencies for Clinical HIV Outcomes (ECHO) project.

Methods: This is an observational cross-sectional study of routine data collected from electronic medical records. ECHO extracted data such as age, sex, ART regime, ART duration, inclusion in multi-month dispensing, and availability of at-risk child consultations from 118 health facilities for the period between September 2019 and May 2021. All children aged 0-14 with at least 6 months on ART and a VL result registered during this period were included.
Descriptive analysis was done to describe study sample characteristics, and to determine the prevalence of the outcome variable (VL non-suppression, defined as a VL ≥1,000 copies/ml after at least 6months on ART). We used a logistic regression to assess factors associated with VL non-suppression among children.

Results: 1,261 children were included; 56% were female, 55% were children aged 0-5,and 77% began ART in 2020. The overall non-suppression rate was 45%; 51%of children non-suppressed were male, 65%wasaged 0-5 years old and 52% had a non-optimized ART regime(without DTG).
Being Female (OR = 0.71; 95%CI: 0.604,0.829), age ≥2 years (OR = 0.716; 95%CI: 0.557,0.920),in monthly ART dispensing (OR = 3.078; 95%CI: 2.313,4.097) and health facility without at-risk children consultation (OR = 2.032; 95%CI: 1.086,3.804) were significantly associated with VL non-suppression.

Conclusions: Non-suppression of VL was associated with being female, age ≥ 2 years old, being in monthly ART dispensing and in a health facility without at-risk children consultation.
Our findings suggest a need for age-specific interventions, as well as scaling-up the provision of multi-month ART dispensing for all eligible children and increasing the availability of at-risk children consultations.

EPC142

Trends in HIV annual test uptake and retesting among gay and bisexual men and other men who have sex with men in Australia with no evidence of PrEP use between 2013-2021

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Background: Frequent HIV testing and timely diagnosis and treatment are key parts of Australia's HIV prevention strategy. Monitoring test frequency and adherence to guidelines that recommend three-monthly testing for sexually active gay and bisexual men and other men who have sex with men (GBM) is complicated by the rapid scale of PrEP, where HIV testing also occurs at recommended three-monthly PrEP visits.
Using data from clinics in the ACCESS sentinel network, we examined trends in HIV retesting among HIV-negative GBM with no evidence of PrEP use (GBM-NeverPrEP).
Methods: HIV testing data were extracted from 29 specialist general practice and sexual health services across Australia. GBM-NoPrEP were classified as having no evidence of a PrEP prescription at any point between 2013-2021. HIV test uptake (individuals tested/individuals attended) and mean number of tests/individuals (among those tested) were calculated per calendar year.
Annualised three- and 12-month retesting rate was calculated as the proportion of GBM-NoPrEP whose last HIV test within a calendar year was preceded by at least one test within three and 12 months. To account for impacts of the COVID-19, Poisson regression assessed trends from 2013-2019 and 2019-2021.
Results: Of 88,258 HIV-negative GBM who attended services between 2013-2021, 58,942 (67%) were GBM-NeverPrEP. Between 2013 and 2019, annual HIV test uptake among GBM-NeverPrEP increased from 53% to 64% ($p<0.001$), and declined to 55% in 2021 ($p<0.001$). From 2013 to 2019, mean number of tests increased from 1.4 to 1.5 per year ($p<0.001$), declining to 1.4 in 2021 ($p<0.001$).
Between 2013 and 2019, the proportion of GBM-NeverPrEP retested within three months increased from 16% to 19% ($p<0.001$) and declined to 16% in 2021 ($p<0.001$). Between 2013 and 2019, the proportion retested within 12 months increased from 46% to 50% ($p<0.001$) before declining to 43% in 2021 ($p<0.001$).
Conclusions: While there were modest increases in HIV test uptake and retesting rates among GBM who have never used PrEP, an overwhelming majority were not testing at recommended frequencies. Testing frequency was further impacted during the COVID-19 pandemic. A renewed focus on HIV risk and the importance of regular testing in GBM not using PrEP is required.

Modelling the impact of prevention strategies on the HIV epidemic

EPC143

Modeling HIV infections averted by treating urban, adult Zambian women at high-risk for HIV and female genital schistosomiasis

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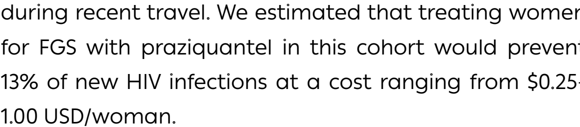
Background: Female genital schistosomiasis (FGS) is one of the most common neglected tropical diseases. The WHO estimates that 56 million women and girls are living with FGS in sub-Saharan Africa. FGS causes infertility, pregnancy complications, lost productivity, extreme stigma, and is associated with a doubling in HIV risk.
Despite an urgent call by WHO for treatment of FGS in adults, adult praziquantel coverage is currently low at 14% and most healthcare professions still view FGS as a disease affecting children in rural areas. FGS prevalence in adult women in urban Africa, where HIV risk is highest, is largely unknown, including in Zambia where schistosomiasis is endemic.
Methods: From March 2020-October 2021, we recruited adult HIV-negative female sex workers and single mothers and assessed FGS risk factors and positivity using colposcopy. This cohort was recruited in the two largest cities in Zambia. We evaluated factors associated with FGS positivity using logistic regression.
We also used data from a recent meta-analysis, the HIV seroincidence rate observed in our cohort, and current drug prices for praziquantel in Zambia to parameterize a compartmental model outputting the number of HIV infections prevented by treating women for FGS and the cost to prevent these infections.
Results: Among 400 urban adult women, we found an unexpectedly high prevalence of FGS (25%). HIV seroincidence in this cohort was also high at 2.7/100 person-years. Factors associated ($p<0.05$) with FGS positivity included younger age, history of pregnancy disturbances, menstrual irregularities, vaginal hygiene, incontinence, childhood freshwater exposure, and exposure to freshwater



during recent travel. We estimated that treating women for FGS with praziquantel in this cohort would prevent 13% of new HIV infections at a cost ranging from $0.25-1.00 USD/woman.

Conclusions: We found a concerningly high prevalence of FGS in adult women living in urban Zambia who were concurrently at high-HIV risk. It is urgent that FGS diagnosis and praziquantel coverage, which is an inexpensive drug with few side-effects, improve among urban adult populations in schistosomiasis endemic countries.

Understanding factors associated with FGS positivity could lead to development of a simple diagnostic screening algorithm. Given that this high FGS prevalence was observed

EPC144

Hepatitis C virus elimination among people who inject drugs living with HIV in Montreal, Canada, by 2030: a modelling study

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Background: People who inject drugs (PWID) and those living with HIV (LHIV) are priority populations for the elimination of hepatitis C virus (HCV), defined as reducing chronic HCV incidence by 80% and HCV-related mortality by 65% from 2015-2030.

We assessed the potential of various interventions to achieve HCV elimination among PWID and PWID LHIV by 2030 in Montreal, Canada.

Methods: We used a model of HCV-HIV co-transmission among PWID calibrated to local epidemiological data (2003-2018). Informed by literature reviews, we simulated the following interventions from 2022-2030, comparing them to status quo: increased HCV diagnosis rate (gradual increase from 10-30 per 100 person-years [PY] in 2022 to 100 per 100 PY as of 2024), increased treatment rate (from 85 to 200 per 100 PY), and increased harm reduction coverage (from 33% to 40% opioid agonist therapy coverage; from 83% to 95% needle and syringe program coverage).

We also varied priority populations (all PWID/PWID LHIV; active/ever-injectors regardless of HIV status), totalling eight scenarios. HCV outcomes modelled included reductions in chronic incidence, prevalence, and mortality from 2015-2030, and proportions of chronic cases and HCV-related deaths averted over 2022-2030.

Results: Status quo intervention levels were insufficient to achieve elimination targets in PWID and PWID LHIV, and accelerating HCV diagnosis made little difference (Table).

Despite preventing new infections, greater harm reduction coverage did not lead to elimination by itself. Scaling-up treatment was key to reaching targets among PWID, regardless of HIV status. Including ex-injectors in this scenario was important to prevent HCV-related deaths.

Conclusions: In settings with moderately high diagnosis rates and relatively high harm reduction coverage, scaling-up HCV treatment among all PWID is the key to eliminating HCV among both PWID and PWID LHIV.

Scenario (priority population) Scenario (priority population)	Median reduction in chronic HCV incidence from 2015-2030 (95% credible interval)		Median reduction in chronic HCV prevalence from 2015-2030 (95% credible interval)		Median reduction in HCV-related mortality from 2015-2030 (95% credible interval)		Median proportion of cumulative chronic HCV infections averted from 2022-2030 (95% credible interval)		Median proportion of cumulative HCV-related deaths averted from 2022-2030 (95% credible interval)	
	All PWID	PWID LHIV	All PWID	PWID LHIV	All PWID	PWID LHIV	All PWID	PWID LHIV	All PWID	PWID LHIV
Status quo	55% (29-80)	57% (31-82)	60% (34-82)	64% (37-87)	74% (46-90)	86% (66-96)	Referent	Referent	Referent	Referent
Increased diagnosis (all PWID)	57% (31-83)	59% (33-84)	62% (37-84)	65% (38-88)	75% (48-91)	86% (67-96)	1% (0-4)	1% (0-4)	2% (1-5)	1% (0-3)
Increased diagnosis (PWID LHIV)	56% (29-80)	57% (31-83)	60% (35-82)	64% (37-87)	74% (46-90)	86% (66-96)	0% (0-1)	0% (0-1)	0% (0-0)	0% (0-1)
Increased coverage of NSP and OAT (all PWID)	65% (42-86)	65% (39-87)	65% (40-86)	68% (40-89)	75% (51-91)	87% (68-96)	12% (7-18)	12% (6-18)	3% (2-6)	4% (1-8)
Increased coverage of NSP and OAT (PWID LHIV)	58% (31-82)	62% (36-85)	61% (36-83)	66% (39-88)	74% (47-90)	86% (67-96)	3% (1-7)	7% (2-13)	1% (0-2)	2% (0-5)
Increased treatment (all PWID)	94% (90-97)	95% (90-98)	95% (92-98)	97% (94-99)	98% (96-99)	99% (98-100)	45% (39-51)	41% (33-49)	59% (50-65)	61% (51-68)
Increased treatment (PWID LHIV)	78% (56-92)	83% (61-95)	74% (54-89)	91% (82-97)	81% (62-93)	97% (93-99)	24% (8-39)	20% (0-42)	15% (9-20)	55% (42-65)
Increased treatment (active injectors only, regardless of HIV status)	94% (90-97)	95% (90-98)	95% (92-98)	97% (94-99)	92% (83-97)	97% (88-99)	45% (39-51)	41% (34-49)	37% (32-40)	40% (29-47)

EPC144 Table. Simulated outcomes among people who inject drugs in Montreal, Canada from 2003-2030, under different intervention scenarios.

NSP=needle and syringes programs; OAT=opioid agonist therapy.

EPC145

Supporting achievement of the state of Georgia's 25% HIV incidence reduction target among MSM: a mathematical model to evaluate the potential impact of long-acting preexposure prophylaxis in Atlanta

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Background: Despite ambitious US HIV incidence reduction goals at national and regional levels, new infections remain high in numerous communities and demographics, including among men who have sex with men (MSM) in the US South. The Georgia Department of Health has targeted a 25% HIV incidence reduction among MSM, with specific focus on increasing use of preexposure prophylaxis (PrEP) to 50% of indicated MSM. We used mathematical modelling to estimate the impact of introducing long-acting (LA) PrEP among MSM in Atlanta, Georgia on achieving such a target.

Methods: We expanded a previously developed dynamic network model of HIV transmission (EpiModelHIV) calibrated to the HIV epidemic among MSM in Atlanta by incorporating the HPTN083 results and association between demographic characteristics and PrEP utilization based on real-world US PrEP studies. We investigated 10-year HIV incidence reductions resulting from plausible LA-PrEP use ranges between 5% to 25% of indicated MSM while maintaining daily-oral (DO)-PrEP use at current levels. HIV incidence and infections averted were estimated in the overall MSM population and by race and age sub-groups.

Results: Baseline HIV incidence in the overall MSM population before the introduction of LA-PrEP was 1.28 per 100 person-years (100py), with DO-PrEP use varying by age and race. Increases in LA-PrEP usage up to 25% in indicated MSM resulted in overall MSM population incidence reductions between 7.0% and 28.1% (*Figure*). Over 10 years, with 25% LA-PrEP usage, most infections averted (73.2%) occurred in the Black MSM community, with incidence falling from 2.67/100py to 1.94/100py. PrEP benefits were also captured by non-PrEP users among all MSM, who experienced a 15% incidence decline (1.38/100py to 1.17/100py).

Figure. Proportion of PrEP-indicated MSM population using PrEP by modality and resulting 10-year reduction in HIV incidence in overall MSM population.

Conclusions: LA-PrEP has the potential to contribute to substantial reductions in HIV incidence among MSM and can support achievement of regional reduction targets at plausible usage levels by decreasing primary and secondary infections.

EPC146

Achieving the 95-95-95 HIV cascade of care targets will not be enough to meet the incidence reduction goal among MSM in Cyprus

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Background: The 95-95-95 strategy aims to end the AIDS epidemic by 2030 by diagnosing 95% of all people living with HIV (PLHIV), by administering antiretroviral therapy (ART) to 95% of the diagnosed, and by achieving viral suppression (VS) on 95% of those on ART. Mathematical modeling predictions highlight that the aforementioned targets could reduce the HIV incidence by 90% in 2030 compared to 2010. However, several studies have underlined that in high-income countries, HIV cascade of care (CoC) targets may be insufficient to achieve the incidence goal and that additional interventions, like pre-exposure prophylaxis (PrEP), will be needed. Currently, PrEP is not available in Cyprus.

In Cyprus, men who have sex with men (MSM) is the most prevalent HIV risk group, accounting for more than half of all diagnoses. This study aims to estimate the expected reduction in HIV incidence under the status quo scenario and to highlight the required healthcare interventions to achieve the UNAIDS incidence target.

Methods: A previously published stochastic, dynamic mathematical model was used to simulate HIV transmission among MSM (Gountas, PLOS 2021). The population was stratified by risk behaviours according to the EMIS study (high=15.1%/medium=28.7%/low=56.2% and 42.5% are willing to use PrEP if offered). The model was calibrated to match the trajectories of the HIV CoC in the years 2014-2020. Infection rate, diagnosed probability, and ART initiation probability were varied until the model reproduced the observed HIV epidemic.

Results: The model showed that although the MSM could reach the 95-95-95 target in 2030, this would not be enough to achieve the 90% reduction in HIV incidence (estimated reduction of 58.9% in 2030 compared to 2010). Launching a PrEP intervention only for those who are willing to use it (i.e., without any awareness campaigns), would cause a modest reduction (69.0% in 2030 compared to 2010). To achieve HIV elimination by 2030, the 95-95-95 target should be achieved, and awareness campaigns should be implemented so all the high-risk MSM be on PrEP by 2030 (Figure).

Conclusions: Reaching the 95-95-95 CoC targets among MSM is not enough. To achieve HIV elimination, gradually all high-risk MSM should be on PrEP by 2030.

EPC147

The impact of prevention-effective PrEP use on HIV incidence: a mathematical modeling study

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Background: Models that project the impact and cost-effectiveness of HIV pre-exposure prophylaxis (PrEP) must specify how PrEP use aligns with HIV exposure. We hypothesize that varying PrEP use according to individual-level partnership dynamics rather than prioritization to population subgroups based on average risk will result in larger HIV incidence reductions and greater efficiency.

Methods: We used an individual-based network transmission model calibrated to HIV dynamics in Eswatini to simulate PrEP use among individuals ages 15-34 between 2022 to 2031 under two paradigms of PrEP delivery: "Risk Group" and "Partnership." In the "Risk Group" paradigm, we varied PrEP coverage by risk groups (low, medium, and high) defined by average partnership frequency and concurrency. In the "Partnership" paradigm, all individuals are potentially eligible for PrEP, but we assumed use occurs only during partnerships and varied prioritization by partner HIV status (no prioritization to high prioritization with HIV-positive partners). We calculated person-time on PrEP and incidence relative to a no PrEP scenario and estimated efficiency as the person-years of PrEP needed to avert one additional infection (NNT).

Results: In the Risk Group paradigm, restricting PrEP to the high-risk group was the most efficient (NNT = 17), but the number of infections averted was limited by the small size of the high-risk group. Expanding PrEP use to all risk groups averted up to three times more infections but with lower efficiency (NNT = 202). PrEP use under the Partnership paradigm was 2 to 6 times more efficient (NNT = 33 to 102) than the Risk Group paradigm with all groups eligible for PrEP. A 33% reduction in incidence among 15-34-year-olds was achieved at 46% (95% CI: 39%-53%) PrEP coverage in the Risk Group paradigm and 6% (95% CI: 5%-7%) to 17% (95% CI: 14%-20%) in the Partnership paradigm.

Conclusions: Modeling PrEP use based on risk groups resulted in a sharp tradeoff between PrEP efficiency and impact, whereas PrEP use predicated on partnerships resulted in much higher efficiency for widespread PrEP availability. Model estimates of PrEP impact and cost-effectiveness in generalized epidemics are strongly influenced by assumptions about how PrEP use aligns with individual-level HIV exposure heterogeneity.

EPC148

Modelling how strengthening HIV prevention cascade could impact the HIV epidemic in Manicaland, Zimbabwe

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Background: HIV prevention cascades offer valuable insight into barriers to accessing prevention methods such as pre-exposure prophylaxis (PrEP), voluntary male medical circumcision (VMMC), and condoms. We need to understand how these barriers influence and sustain HIV epidemics in real-world situations.

Methods: We use an individual-based model of HIV transmission (PopART-IBM), parameterised using sexual behaviour, prevention, and treatment data from Manicaland, Eastern Zimbabwe, and calibrated to seven survey rounds of HIV prevalence and treatment data by age and sex. The model represents HIV prevention cascades for each priority population (men aged 15-29/30-54; women 15-24/25-54) as probabilities that individuals are motivated to use a prevention method (condoms, PrEP, VMMC), have access, and use it effectively.

We estimate the extent to which these probabilities may be increased by plausible real-world interventions to reduce the associated barriers (Table 1 contains the parameters for 15-29-year-old men for illustration). We examine the reduction in HIV infections over a 10-year period resulting from these interventions compared to the observed cascade probabilities from the latest Manicaland survey.

	Current situation (Manicaland survey)			With plausible intervention		
	Conditional Probability (Motivation)	Conditional Probability (Access)	Conditional Probability (Effective use)	Conditional Probability (Motivation)	Conditional Probability (Access)	Conditional Probability (Effective use)
PrEP (probability of using at current time)	0.048	0.500	0.043	0.300	1.000	0.900
VMMC (annual probability of getting VMMC)	0.115	0.184	0.092	0.185	0.205	0.185
Condoms (probability of using within a partnership)	0.639	0.933	0.742	0.650	1.000	0.750

Table 1.

Results: Figure 1 shows the percentage of infections averted by interventions to reduce barriers for each method in each priority population. Overall, women aged 25-54 experience the greatest barriers to uptake of prevention methods.

Across all methods, reducing "effective use" barrier leads to the largest decrease in infections. Addressing all barriers for all methods would avert 50% of infections in Manicaland over the next ten years.

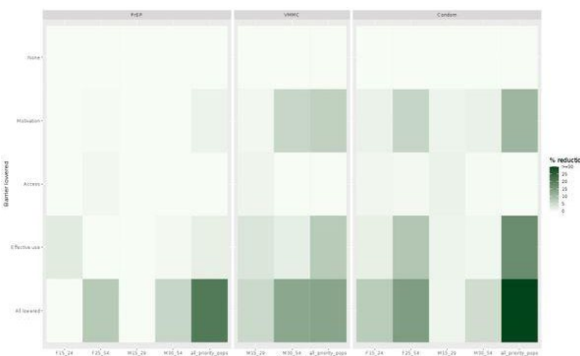

Figure 1.

Conclusions: These findings highlight the need for multi-layered interventions addressing multiple barriers to effective use of prevention methods.

EPC149

Rethinking resources for HIV prevention: the need for couples-based testing in Zambia

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Background: Zambia has experienced tremendous success by achieving the UNAIDS Fast Track targets, 90-90-90, by 2020. However, there has been a recent decline in domestic and international monetary investment for HIV which may threaten the country's progress. In response to these funding uncertainties, innovative and cost-effective strategies are needed in Zambia to reach the 95-95-95 Fast Track goal, and to ultimately end the epidemic.

Methods: We modeled 10-year projected epidemiologic and economic impacts of nationwide scale-up of two HIV testing scenarios in Zambia using EMOD-HIV, an agent-based model calibrated to simulate the HIV epidemic in Zambia. From a payer perspective, we compared the current standard of care (SoC) for HIV testing and treatment, in which adults who test positive for HIV are eligible to initiate ART immediately, to a counterfactual testing program incorporating couples voluntary counseling and testing (CVCT) with the SoC by encouraging married and cohabitating couples to receive HIV testing together (SoC+CVCT). We estimated HIV incidence, HIV infections averted, HIV deaths averted, quality-adjusted life years (QALYs), and incremental cost-effectiveness ratio (ICER).

We assumed a 3% annual discount rate for outcomes and costs and used a Zambia-specific cost-effectiveness threshold between $76-$878 USD per QALY gained based on previous literature.

Results: Our model projects that the SoC+CVCT would reduce adult HIV incidence by 79% (78.23% – 80.28%) over 10 years in Zambia, compared to the 72% (71.89%–72.7%) reduction by the SoC. A national testing approach that incorporates CVCT into current HIV testing practices could avert 23,018 HIV infections and 6,506 (5,501–7,100) HIV-related deaths, and could result in over 162,583 (128,420–263,690) QALYs gained compared to the referent SoC. Additionally, we find SoC+CVCT to be cost-effective with an ICER of $445 ($298–$522) per QALY gained (Table).

	10-yr HIV Incidence Reduction	HIV Infections Averted	HIV-related Deaths Averted	QALYs gained	ICER (Cost* per QALY gained)
Referent Scenario, SoC	71.65% (71.89% – 72.7%)	--	--	--	--
Counterfactual Scenario, SoC+CVCT	79.16% (78.23% – 80.28%)	23,017 (15,755 – 29,173)	6,506 (5,501 – 7,100)	162,582 (128,420 – 263,690)	$445 ($298 - $522)

Abbreviations: CVCT = couples voluntary counseling and testing; ICER = incremental cost-effectiveness ratio; QALYs = quality-adjusted life year; SoC = standard of care
* Costs are measured using 2020 USD

Table: Cost-effectiveness of two testing scenarios in Zambia over a 10-year time horizon.

Conclusions: As countries like Zambia continue to improve upon their HIV programs, they may consider bolstering test-and-treat strategies in a cost-effective approach with CVCT, a WHO recommended strategy not yet scaled up in most African countries.

EPC150

Population-level impact of expanding PrEP coverage among men who have sex with men with long-acting injectable cabotegravir: model comparison analysis for Atlanta, US and Montreal, Canada

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Background: Long-acting injectable cabotegravir (CAB-LA) demonstrated superiority to daily oral tenofovir disoproxil fumarate/emtricitabine (TDF/FTC) for HIV pre-exposure prophylaxis (PrEP) in the HPTN 083/084 trials and is currently approved for HIV prevention in the United

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States. We compared the potential impact of expanding PrEP coverage by offering CAB-LA to men who have sex with men (MSM) in Atlanta, US/Montreal, Canada, cities with different HIV epidemics.

Methods: Two age- and risk-stratified HIV transmission models were independently parameterised and calibrated to local data. Scenarios achieving 40% and 50% PrEP coverage after 5 and 10 years by switching 0%-50% of TDF/FTC users to CAB-LA in 2022 and recruiting additional CAB-LA users were simulated. Intervention impact was measured as the proportion of cumulative HIV infections averted over 20 years compared to base-case scenarios with TDF/FTC use only (median values presented).

Results: Model simulations predict that, in the base-case without CAB-LA, overall PrEP coverage in Atlanta/Montreal could reach 32%/10% by 2042 with HIV prevalence decreasing to 17%/2%. Achieving 40% PrEP coverage in 2027 by adding CAB-LA is expected to avert 37%-40% of new HIV infections over 20 years in Atlanta and 47% in Montreal (Figure).

Switching TDF/FTC users to CAB-LA (0% vs 50%) has a modest impact (~3 percentage points increase (pp)) in Atlanta with no clear effect in Montreal where base-case PrEP coverage is significantly lower.

Delaying achieving 40% coverage until 2032 reduces the impact by 4pp and 9pp in Atlanta and Montreal, respectively. Reaching 50% PrEP coverage in 2027 increases the impact in Atlanta by 16pp-18pp and by 8pp-10pp in Montreal compared to 40% coverage.

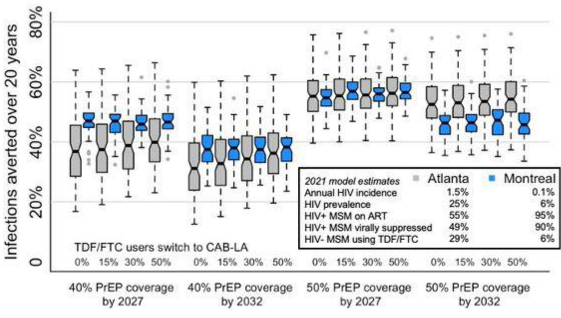

Figure. Proportion of infections averted with 40 or 50% PrEP coverage achieved in 2027 or 2032 in Atlanta (gray) or Montreal (blue). 0-50% of TDF/FTC users switch to CAB-LA. Both models used CAB-LA effectiveness and retention rates estimated from HPTN 083 data and setting-specific TDF/FTC effectiveness and retention.

Conclusions: Achieving high PrEP coverage by offering CAB-LA could impact the HIV epidemics substantially if rolled out without delays. Recruiting additional new CAB-LA users is expected to have a greater impact on preventing new HIV infections than switching current TDF/FTC users to CAB-LA.

EPC151
The role of HIV pre-exposure prophylaxis (PrEP) in reaching UNAIDS HIV incidence reduction goals among men who have sex with men (MSM) and transgender women (TGW) in Peru by 2030

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Background: UNAIDS called for a 90% reduction in HIV incidence by 2030 compared to 2010 levels and a 75% interim reduction by 2020. We set out to estimate observed and expected incidence reductions in 2020 and 2030, respectively, among MSM and TGW in Lima, Peru, using dynamic modeling.

We then used data from the ImPrEP demonstration project, which characterized PrEP uptake, retention and adherence among MSM and TGW in Peru, to model a PrEP intervention accordingly and estimate the PrEP coverage required to reach the UNAIDS goal by 2030.

Methods: Using a dynamic compartmental model of HIV transmission among MSM and TGW calibrated to HIV sentinel surveillance data among MSM/TGW in Lima from 1996 to 2019, we calculated the observed HIV incidence reduction between 2010 and 2020, as well as the expected reduction by 2030 in the absence of additional interventions.

We then used ImPrEP project data, which enrolled 781 MSM and 120 TGW in public sexual health clinics and an NGO in Lima from Jan/2018-Jan/2020, to parameterize a PrEP intervention in the model between 2022 and 2030 and estimated the coverage level required to achieve a 90% HIV incidence reduction by 2030.

Results: We found that compared to 2010, HIV incidence among MSM and TGW in Lima was 46.6% (95%CI: 36.3%-57.0%) lower in 2020. In the absence of additional interventions, it is expected to be 72.5% (95% CI: 60.7%-83.8%) lower in 2030, failing to achieve the UNAIDS goal.

A 50% PrEP coverage, mirroring ImPrEP patterns of use, maintained from 2022-2030, would lead to a 90.6% (95% CI: 84.3%-95.8%) HIV incidence reduction in 2030, or a 58% probability to achieve or exceed the 90% incidence reduction target.

Conclusions: Achieving the UNAIDS 90% HIV incidence reduction goal among MSM and TGW in Lima is feasible through providing PrEP to 50% of MSM and TGW between 2022-2030 in addition to current coverage of other HIV prevention and treatment interventions.

More strategic PrEP allocation by risk behaviors and implementation of HIV combination prevention packages, including further scale up of ART treatment as prevention, would reduce the required PrEP coverage.

EPC152

The population impact of herpes simplex virus type 2 (HSV-2) vaccination on HIV, HSV-2 and genital ulcer disease in South Africa: a mathematical modelling study

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Background: South Africa (SA) has some of the highest rates of HIV and herpes simplex virus type 2 (HSV-2) infection worldwide. Biological and epidemiological evidence suggests that HSV-2 and HIV interact to affect acquisition and transmission risks.
We analysed the potential impact of HSV-2 vaccines on HIV and HSV-2 transmission and days with genital ulcer disease (GUD).
Methods: We extended an existing dynamic HIV transmission model for SA to include HSV-2 transmission, assuming thatHSV-2 increases HIV acquisition and transmission risk and that HIV increases rates of HSV-2 shedding and so transmission.
The model was parameterized and calibrated using demographic, behavioural and epidemiological data from national household surveys and key population surveys.
We estimated the impact over 2020-2060 of:
i. Cohort vaccination of 9-year-olds with a partially-effective prophylactic vaccine that reduces susceptibility to HSV-2 acquisition;
ii. Vaccination of symptomatically HSV-2 infected individuals with a partially-effective therapeutic vaccine that reduces asymptomatic and symptomatic shedding.
In baseline analyses, both vaccines were assumed to provide lifelong protection with degree-type efficacy.
Results: Prophylactic HSV-2 vaccination was projected to have a moderate to substantial impact on HSV-2/HIV incidence and GUD days, depending on efficacy and uptake. An 80% efficacious prophylactic vaccine with 80% uptake could reduce incidence of HSV-2, HIV and GUD days by 84.1% (95% Credibility Interval: 81.2-86.0), 65.4% (56.5-71.6), and 58.8% (52.6-62.8) over 40 years.
In contrast, much less impact on HIV/HSV-2 incidence is projected for a therapeutic vaccine. An 80% efficacious therapeutic vaccine which achieves a coverage of 60% among symptomatic individuals by 2040 could reduce incidence of HSV-2, HIV and GUD by 42.7% (32.0-55.8), 38.1% (28.0-51.7), 67.7% (63.2-73.7), respectively, after 40 years.
However, there are substantial differences in the number vaccinated for each scenario, with the impact per vaccination on HSV-2, HIV and GUD being approximately 3-times, 4.5-times, and 14-times greater for a therapeutic vaccine, respectively.
Conclusions: Prophylactic and therapeutic vaccines offer two contrasting but promising approaches for reducing the burden of HSV-2 infection and disease. Both vaccines could also have additional important impact on HIV.

Modelling the role of syndemics on the HIV epidemic

EPC153

The contribution of binge drinking and inequitable gender norms to HIV transmission in South Africa

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Background: Binge drinking, inequitable gender norms and sexual risk behaviour are closely interlinked: binge drinking is strongly associated with casual and condomless sex, while inequitable gender norms are associated with male partner concurrency, binge drinking and male perpetration of intimate partner violence.
This study aims to model the potential effect of alcohol counselling interventions (in men and women) and gender-transformative interventions (in men) as strategies to reduce HIV transmission.
Methods: We developed an agent-based model of HIV and other sexually transmitted infections (STIs) in South Africa, allowing for effects of binge drinking on sexual risk behaviour, and effects of inequitable gender norms (in men) on sexual risk behaviour and binge drinking.
The model was calibrated using data from randomized controlled trials of alcohol counselling interventions (n=10) and gender-transformative interventions (n=4) in sub-Saharan Africa, using a Bayesian approach to identify the model parameters that give the best model fit to the trial outcome data.
The model was also calibrated to South African data on alcohol consumption and acceptance of intimate partner violence (to identify risk factors for inequitable gender norms). Binge drinking was defined as five or more drinks on a single day, in the last month.
Results: Binge drinking is estimated to be highly prevalent in South Africa (52% in men and 34% in women, in 2020). Over the period 1990 to 2021, binge drinking accounted for 2.9% of new HIV infections and 6.0% of incident curable STIs (gonorrhoea, chlamydia and trichomoniasis).
This was mediated mainly by an effect of binge drinking in women on engagement in casual sex (RR 1.63, 95% CI: 1.00-5.21). Inequitable gender norms did not significantly influence the incidence of either HIV or other STIs, despite

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a substantial effect of inequitable gender norm endorsement on alcohol consumption (RR 1.44, 95% CI: 1.00-2.33). A multi-session alcohol counselling intervention that reaches 50% of binge drinkers would reduce HIV incidence by 3.3%, over a 5-year period.

Conclusions: Although alcohol counselling and gender-transformative interventions are important in improving health outcomes, they are likely to have only modest effects on HIV incidence in South Africa.

Modelling future healthcare needs

EPC154

What is the best policy option for Indonesia to eliminate AIDS in 2030?: The Investment Case Analysis consideration

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Background: HIV control in Indonesia is facing considerable challenges toward the global target of 95-95-95 in 2030. Acceleration programs must be done, and its resource need must be calculated. This activity aimed to calculate the Investment Case Analysis (ICA) of the potential scenario for the acceleration program.

Methods: ICA was calculated by the AEM and it was conducted through several activities.

First, gathering national data of the current behavioral, program, and funding data.

Second, conducting focused group discussion of the potential acceleration scenario and its target.

The informants consisted of the national HIV program, UNAIDS Indonesia, public health experts, academicians, and NGOs.

Results: There were five scenarios of acceleration program offered, namely National Baseline 2020, Scenario 90-90-90 in 2024, Scenario 95-95-95 in 2030, Fast Tract Scenario(95-95-95) in 2025, National Action Plan (NAP) Target and Funding Analysis Result Scenario. The fastest reduction in HIV incidence occurred in the fasttractscenario (95-95-95) in 2025, the 90-90-90 scenario in 2024, and the NAP scenario.

In terms of estimated deaths, the NAP scenario can reduce the HIV-AIDS-related mortality rate the fastest among other scenarios, from around 22,272 deaths in 2020 to 7,392 deaths in 2024. The total investment of this scenario was USD 3,218,391,000 or an increase of 154% from the baseline condition.

With this total cost, it is estimated that in 2030 there will be 187,929 deaths related to HIV/AIDS, 107,994 new preventable cases, and 9,009,324 DALYs that can be reduced. This scenario provides the highest return of investment (USD 19.61) compared to other scenarios.

Conclusions: It is recommended that the government of Indonesia consider the NAP scenario. An additional investment (USD 1,954,199,000 of 54% higher than the baseline) is required and two-thirds of this fund will be used for treatments. This recommendation is also officially written at the updated HIV Strategic National Action Plan.

Modelling the impact of service models on the HIV epidemic

EPC155

Closing the gaps in the continuum of depression care among persons with HIV: modeling the impact on viral load suppression in the United States

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Background: Depression is prevalent among persons with HIV (PWH) and associated with decreased odds of medication adherence and retention in care, as well as increased risk for detectable viral load. Due to missed diagnoses, under-utilization of treatment, and inadequate treatment, only a small proportion of PWH have their depression effectively treated to remission. PATH (3.0), a dynamic, stochastic simulation model, was used to model the impact on viral load suppression (VLS) of (1) diagnosing all depression among PWH, and (2) treating depression among all PWH with depression.

Methods: We incorporated into PATH a multi-step depression care continuum whereby every PWH moves from getting diagnosed for depression if depressed, to getting treated for depression if diagnosed. We assumed a depression prevalence of 34.7% (DiPrete, et al., 2019) and modeled change over eight years. In the status quo scenario, 45% of PWH with depression were diagnosed with depression (Pence et al, 2012).

Of PWH diagnosed with depression, 55.3% were treated, and of those treated for depression, 33% achieved remission (DiPrete, et al, 2019). PWH with depression are less likely to attain and sustain viral suppression.

Compared to PWH without depression, we assumed the probability of being non-VLS changed by 1.57 times for PWH with depression, and by 0.95 times for PWH with remitted depression (Lesko, et al, 2021). The 'enhanced' scenario presumed that all depression among PWH was identified and treated, and the proportion of PWH with treated depression who achieved and maintained remission was 50% (Gaynes, et al., 2008).

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Results: Among the subgroup of PWH with depression, 75.9% had VLS in the enhanced scenario compared to 65.3% in the status quo scenario. Among all PWH, 74.1% had VLS in the enhanced scenario compared to 70.5% in the status quo scenario.

Conclusions: Fully diagnosing and adequately treating depression would result in a 5.1% increase in the proportion of all PWH who would have achieved VLS in 8 years without enhanced intervention (equating to approximately 42,892 additional PWH with viral suppression). These findings call attention to the importance of addressing mental health among PWH to improve health and prevention outcomes as well as quality of life.

EPC156

Testing strategies to achieve the goal of 95% knowledge of status by 2025

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Background: The UNAIDS Global AIDS Strategy 2021-2026 aims to reach treatment cascade targets of 95-95-95 by 2025. We examined whether the target is achievable with current testing approaches and the impact of new strategies.

Methods: We developed a testing strategy model that divides PLHIV into 13 groups and examines effects of combining nine testing modalities, on numbers of tests, new diagnoses and cost. The model was applied to the global population, split into high- and low-prevalence countries in sub-Saharan Africa, and countries with concentrated epidemics.

Current testing patterns were compared against alternatives designed to increase yield by focusing on populations with the most undiagnosed PLHIV, use of high-yield testing approaches and risk assessment.

Results: Currently 140 million tests are conducted annually in LMIC excluding China, producing about 1.7 million new diagnoses, for a yield of about 1.2%. Reaching 95% knowledge of status (KOS) by 2025 requires nearly 3 million new diagnoses per year. In all three regions, current testing approaches will not reach 95% KOS. The target could be achieved by maximizing testing among people in contact with the health system, but this would require 15-fold increased test volumes. A focus on key populations improves yields but would not produce all the required additional diagnoses.

Two targeted approaches can increase yields enough to reach 95% KOS and lower testing volumes. Index testing (for partners of PLHIV) and social network approaches can achieve yields up to 20%, a typical 4-fold increase. Risk screening tools, to focus testing on those most likely infected, will miss some people but can increase yields 4-fold, to 10-25%, even in low-prevalence populations. Combining both approaches and complementing with universal access to HIV self-tests would reduce costs yet ensure access to testing for anyone who wants it.

Conclusions: Current testing approaches fall short of the target of 95% KOS by 2025. The target can be achieved with widespread implementation of index partner testing, social networking and risk assessment tools. Widespread availability of self-tests can help control costs for general population testing. Testing strategies need to be tailored to each context, but these concepts are key to cost-effective strategies.

Reaching and recruiting key populations for HIV prevention services (online, offline, online-to-offline)

EPC157

Comparing the characteristics of Brazilian gay, bisexual and other cisgender men who have sex with men (MSM) according to recruitment strategy: online approach as an useful tool during COVID-19 pandemic

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Background: Complementary recruitment strategies are necessary to reach heterogeneous populations. Online strategies may reach MSM engaging in HIV high-risk behavior, but may not reach hard to reach populations, such as MSM of younger age, lower income and living outside main urban areas. Social distancing measures during COVID-19 pandemic may preclude on-site strategies.

We aim to describe the applicability of different strategies to recruit Brazilian MSM for a pre-exposure prophylaxis (PrEP) survey during COVID-19 pandemic.

Methods: Cross-sectional study using on-site and online strategies to recruit self-reported HIV negative MSM aged ≥18years. On-site recruitment occurred in five PrEP/HIV services in all country regions: Manaus, Salvador, Brasília, Rio de Janeiro and Porto Alegre. Online recruitment accurred through advertisements on GSN dating apps (Hornet

and Grindr) to recruit MSM living in any Brazilian city. HIRI-MSM scale assessed HIV high-risk behavior. We compared the different recruitment strategies using chi-square test. Multivariate logistic regression models identified predictors of online recruitment among non-PrEP users.

Results: Through October/December-2020, 3553 participants were recruited, 2874 (80.9%) online and 679 (19.1%) on-site. Most of participants were from Southeast Brazil (67.2%). Compared to on-site sample, MSM self-identified as gay, older, white, with high education and high income were more frequently recruited online (Table).

	Total N=3553	On-site N=679	Online N=2874	p-value
Age				
Median (IQR)	31 (26-38)	29 (25-35)	32 (27-39)	<.001
18-24	550 (15.5)	158 (23.3)	392 (13.6)	<.001
>24	3003 (84.5)	521 (76.7)	2482 (86.4)	
Race				<.001
White	2004 (57.2)	229 (34.5)	1775 (62.6)	
Black/Pardo(Mixed-Black)	1499 (42.8)	440 (65.8)	1059 (37.4)	
Sexual Orientation				0.032
Gay	3053 (85.9)	566 (83.4)	2487 (86.5)	
Bisexual/heterosexual/other	500 (14.1)	113 (16.6)	387 (13.5)	
Education				<.001
Low (≥ secondary)	1056 (29.8)	346 (51.0)	710 (24.8)	
High (>secondary)	2484 (70.2)	332 (49.0)	2152 (75.2)	
Family monthly income				<.001
Low (≤US$400)	1006 (29.8)	281 (43.3)	725 (26.1)	
High (>US$400)	2484 (70.2)	368 (56.7)	2048 (73.9)	
Region in Brazil				<.001
North	134 (3.8)	98 (14.4)	36 (1.3)	
Northeast	341 (9.6)	88 (13.0)	253 (8.8)	
Central-west	277 (7.8)	91 (13.4)	186 (6.5)	
Southeast	2388 (67.2)	333 (49.0)	2055 (71.5)	
South	413 (11.6)	69 (10.2)	344 (12.0)	
HIRI-MSM				<.001
Low	1151 (32.4)	181 (26.7)	970 (33.8)	
High	2402 (49.5)	498 (73.3)	1904 (66.2)	
PrEP use				<.001
Never	2303 (64.8)	252 (37.1)	2051 (71.4)	
Current	1032 (29.0)	391 (57.6)	641 (22.3)	
Past	218 (6.1)	36 (5.3)	182 (6.3)	

HIRI-MSM: The HIV Incidence Risk for MSM Scale was calculated based on sexual behavior in the previous 6 months (number of partners, condomless receptive anal intercourse, sex with HIV-positive partner), age and use of stimulants; High risk ≥10 points; Low risk < 10 points).

Table.

Overall, 1032(29.0%) MSM were currently using PrEP (daily oral: 93.0%, injectable: 4.0%, on-demand: 3.0%). Among non-PrEP users, 62.0% engaged in HIV high-risk behavior. Non-PrEP users recruited online had higher odds of being gay (aOR:1.42 [95%CI:1.01-1.98]), white (aOR:2.11 [95%CI:1.59-2.82]), having higher education (aOR:3.46 [95%CI:2.53-4.75]), higher income (aOR:1.52 [95%CI:1.12-2.04]), living in Southeast Brazil (aOR:3.15[95%CI:2.34-4.22]) and willingness to use PrEP (aOR:2.56 [95%CI:1.91-3.44]). HIV high-risk did not differ per recruitment approach (aOR:0.92 [0.69-1.22]).

Conclusions: Online approach may replace in-person strategies during COVID-19 pandemic to recruit MSM engaging in HIV high-risk behavior in Brazil. Nevertheless, recruitment of socially vulnerable MSM would be lower if restricted to online strategies.

EPC158

Reaching the unreached: leveraging social media networks to recruit transgender men into HIV prevention research in Uganda

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Background: Transgender (trans) men in sub-Saharan Africa have mostly been ignored in HIV prevention research, resulting in a lack of data to inform HIV strategies, programming, and policy. Effective recruitment and retention strategies are needed to enhance their participation in biomedical research, which will help tailor public health programs to address the unmet health needs of this population.

Description: From January-October 2020, we conducted a cross-sectional evaluation of HIV and STI risk behaviors, prevention needs, and sexual decision-making among trans men using quantitative and qualitative methods. We recruited 50 trans men into this study through snowball sampling. Initial peer recruiters were identified by transgender-led community organisations and asked to recruit from their social networks.

Enrolled study participants were also requested to recruit from their networks. Peer recruiters introduced the study team to trans men social media groups on WhatsApp and Facebook, which were used to disseminate study information. Trans people were included in multiple aspects of study implementation.

Lessons learned: Hidden and under-researched populations, such as African trans men, can be meaningfully engaged in biomedical research despite significant social, cultural, and legal challenges. Key facilitators for fostering participation of trans men in research include incorporating social media and trans-inclusive approaches in community engagement, provider sensitization training, and inclusion of trans people as members of the community advisory group.

Feedback from quarterly community consultation meetings helped improve cultural sensitivity of study staff and create a friendly, welcoming clinic environment. Trans men welcomed the opportunity to engage in HIV prevention research and were passionate about study participation.

Initial fears by potential study participants about discrimination by healthcare providers and entrenched social stigma were addressed through real-time WhatsApp discussions moderated by the research team. Social media interactions provided a platform for discussing health needs of trans men and the study objectives.

Conclusions/Next steps: Trans men were successfully recruited in the first study to evaluate HIV/STI risk among this trans men in sub-Saharan Africa. Innovative peer-led

social media approaches can accelerate recruitment of populations perceived as 'hard to reach" into biomedical research that could positively impact their lives.

EPC159

Using online platforms to reach men who have sex with men (MSM) during the COVID-19 pandemic in Ghana

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Background: Men who have sex with men (MSM) in Ghana often face challenges accessing routine HIV prevention and testing services for reasons including stigma, discrimination, and societal exclusion.

During the COVID-19 pandemic, MSM faced greater challenges accessing HIV services because of factors such as social distancing policies which restricts large group outreaches; reduced uptake of services because of fear of transmission of COVID-19 in facilities; and the shift of health resources away from HIV to COVID-19 prevention and treatment services. In the era of COVID-19, the use of online platforms can help reach MSM with essential HIV services.

Description: Peer Educators and Nurses were trained to engage MSM for HIV outreach and referral through social networking platforms such as Facebook, WhatsApp, Grindr, etc. HIV prevention messages and short videos were developed and posted on selected social media platforms to raise awareness and promote HIV services.

MSM who accessed these platforms were engaged through a one-on-one interaction and online counselling with confidentiality assurance by the Peer Educators and Nurses.

MSM recruited were given different timed appointments to access in-person services at community Drop-In-Centers (DIC) and homes of peers at their own convenience.

Lessons learned: During the pandemic, online platforms helped to maintain contact with beneficiaries and reached new MSM using social media and online networking platforms. MSM were free to discuss sexual issues without fear of stigma.

Through the online interactions, a total of 603 new MSM were reached with HIV prevention information from March to July 2020. 198 (32%) MSM recruited online reported had not been tested for HIV within the last six months. 59% of MSM recruited reported they had engaged in inconsistent use of condoms for casual anal sex.

Additionally, among the MSM recruited online, 213 were linked for HTS and 32 were diagnosed HIV positive.

Conclusions/Next steps: Delivery of service using online networking platforms encourages broader inclusion, differentiated and tailored services among MSM. Hence, implementing partners can adopt it as an effective tool of linking testing and prevention services to MSM even after the pandemic. HIV organizations can invest in online interventions to reach MSM across a wide geographic range.

EPC160

Prevalence of HIV serodiscordant couples within TB-affected households in a setting with a high burden of HIV-associated TB

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Background: Strong epidemiological links between HIV and TB may make household TB contact investigation an efficient strategy for HIV screening and finding individuals in serodiscordant partnerships at risk of HIV and linking them to HIV prevention services. We aimed to compare the prevalence of HIV serodiscordant couples in TB-affected households and in the general population of Kampala, Uganda.

Methods: We included data from a cross-sectional trial of HIV counselling and testing (HCT) in the context of home-based TB evaluation in Kampala, Uganda in 2016-2017. After obtaining consent, community health workers visited the homes of participants with TB to screen contacts for TB and offer HCT to household members ≥15 years.

We defined index patients and their spouses and parents of the same index patient as couples, and classified couples as serodiscordant if confirmed by self-reported HIV status or by HIV testing results.

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We used a two-sample test of proportions to compare the prevalence of HIV serodiscordancy among couples in the study to prevalence among couples in Kampala in the 2011 Uganda AIDS Indicator Survey (AIS).

Results: We included 323 index TB patients and 919 household contacts. Most index patients (55%) were male, while most (61%) contacts were female. HIV prevalence was 13.6%. There was ≥1 couple in 115/323 (35.6%) households, with most couples (98/116, 84.5%) including the index participant and spouse. Among these households, the prevalence of HIV-serodiscordant couples was 18/323 (5.6%), giving a number-needed-to-screen of 18 households.

The prevalence of HIV serodiscordancy was 18/116 (15.5%) among couples in the trial, which was significantly higher than among couples in the AIS (15.5% vs 8%, p=0.043).The 18 serodiscordant couples included 14 (77.8%) where the index patient was HIV-positive and the spouse was HIV-negative, and 4 (22.2%) where the index partner was HIV-negative, while spouse was HIV-positive.

Conclusions: The prevalence of HIV serodiscordancy among couples in TB-affected households was higher than in the general population. TB household contact investigation may be an efficient strategy for encountering people at substantial risk of HIV and linking them to HIV prevention services.

EPC161

Challenges in recruiting HIV-1 high risk adolescent girls and young women for HIV prevention research studies in rural settings in Uganda

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Background: The rise in the number of new HIV infections remains unacceptably high among Adolescent Girls and Young Women (AGYW) with 6,000 AGYW being infected every week worldwide. Therefore, prevention trials aimed at developing different methods of preventing these infections should be a top priority. However**,** there are several challenges ineffectively recruiting AGYW in HIV prevention research.

In this abstract, we describe the challenges involved in recruiting AGWY in the SIENA study and the strategies we employed in addressing them.

Description: We set out to describe the challenges faced while recruiting AGYW in a crossectional survey that was aimed at assessing incidence rates among AGYW in Mityana/Mubende districts and near areas in Uganda.

We recruited from health centres and high risk places including lodges, bars, restaurants, energy drinks producing companies, gold mines and fishing areas. The level of risk was assessed by using a set of prescreening questions about alcohol use, nature of work, pre exposure prophylaxis use and recent sexual behavior capturing number of sexual partners and condom use.

Lessons learned: Of the 1029 AGYW pre-screened, 371 were screened and enrolled. The pre-screening: enrollment ratio was 3:1. A high proportion of potential participants pre-screened were not enrolled for various reasons; more than half, 54%, (N=555) could not be reached due to lack of access to mobile phones, the majority, 60%, (N=648) had busy work schedules, 10% (N=112) were intoxicated with alcohol, and 15%, (N=162) gave inconsistent information. Challenges included failure to disclose their true identity and high mobility rates as many who were prescreened shifted before their screening visit.

The mitigation strategies included; working with managers of the places they operate from, capturing common/most preferred names, flexibility of working hours, constant community sensitization, working with their peers and village health team members.

Conclusions/Next steps: Several challenges were encountered in recruiting AGYWs in an HIV incidence survey. A large number of AGYW needed to be prescreened in order to enroll the target sample size.

Our findings underscore the need for adopting client specific and flexible methods while recruiting AGYW in HIV prevention research studies. Community involvement is crucial to achieving these rates.

EPC162

Implementation of HPV vaccination among HIV-positive adolescent girls and young women aged 15 to 26 years old, in Gutu District, Zimbabwe

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Background: Cervical cancer is the second most common cancer among women in the developing world, and the largest cancer killer among women in most developing countries.In Zimbabwe, HPV vaccination of girls aged 9 to 13 years was approved in 2009 but was only implemented in 2014 when a demonstration project was initiated in two districts, targeting 10-year-old girls. The MOHCC had a target of 85% HPV vaccine coverage among girls aged 9-to-13 years, and the "Bridging" project conducted in three districts which broadened the target age group demonstrated this achievement to be possible.

This study was carried out to access the acceptability and feasibility of HPV vaccination among girls/young women aged 15-26 years old and living with HIV integrated into the HIV clinic model of care.

Methods: The study employed a prospective study design.The Cervarix HPV vaccine was given on a three-dose schedule at 0, 1, and 6 months to 816 eligible participants. Vaccine uptake and completion rates were monitored as well as site effects following immunization. Reasons for refusal/withdrawal by beneficiaries at each stage between recruitment and dose administration were captured. Opinions about challenges of implementation by nurses were also captured.

Results: HPV vaccine uptake rate was high;with a primary uptake rate of 90.6%(95%CI: 88.3%-92.5%), secondary uptake rate of 93.2%(95%CI: 91.2%-94.9%) and tertiary uptake rate of 85.5%(95%CI: 82.6%-88.0%). The 3-dose HPV vaccine completion rate was 79.7% (95%CI: 76.6%-82.5%) with a first to third dose dropout rate of 20.3% (95% CI:17.4%-23.4%). Site effects due the vaccine was very low. Only 1 in 100 participants reported aside effect.No severe adverse event was reported.

Acceptability of HPV vaccination integrated into HIV care was very high among both the health staff and participants. Integration of HPV vaccination into health staff workload was found to be feasible. There was a high-level knowledge about HPV vaccination among girls and young women aged 15-26 years living with HIV.

Conclusions: Implementation of HPV vaccination in rural settings and integration into HIV care seems to be feasible and well accepted by recipients and health staff. It is therefore highly recommended that HPV vaccination be integrated into the HIV clinic model of care and decentralised nationwide.

EPC163

"PrEP means that I have control over my health": preparate.pe as a virtual tool in the promotion of PrEP among MSM and TGW for the ImPrEP study in Peru

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Background: The ImPrEP Study has been offering PrEP to MSM and TGW since 2018. In order to effectively promote PrEP use, we developed PrEParate.pe, a social media campaign to generate demand and provide accurate information. Using social media platforms (Facebook & Instagram), we established an interactive communication channel to support potential users. We analyzed the attitudes and perceptions about PrEP through interactions maintained in PrEParate.pe.

Methods: We carried out a systematic review of 770 interactions (MSM and TGW) through messages on Facebook and Instagram. The data was analyzed using an inductive thematic approach and focused on four aspects: Attitudes towards PrEP, reasons to use PrEP, frequently asked questions, and community communication channels. The data was collected between July 2018 and December 2021.

Results: Potential users showed positive attitudes towards PrEP, referring to it as an effective preventive method offering them greater control of their sexual health and as a great alternative for sero-discordant couples, reducing their fear of HIV. Some potential users expressed mistrust about PrEP effectiveness, and mentioned difficulties in coping with severe side effects and PrEP-related stigma.

Among their reasons for using PrEP, potential users reported self-perceiving a high risk of HIV that they wanted to reduce by controlling their sexual behaviors (i.e. multiple sex partners, condomless sex).

Also, they mentioned a preference for PrEP over condoms. Potential users were interested in information about PrEP, its use, cost, how to access it, effectiveness and side effects.

An important aspect for potential users was PrEP effectiveness (i.e. whether it replaces a condom or protects against HIV and STIs). Finally, their introduction to PrEP had been through friends' recommendations and through health centers.

Conclusions: There were mostly positive attitudes towards starting PrEP. Potential users described it as a self-care matter, while certain concerns related to effectiveness and side effects represented barriers to uptake.

Reasons to use PrEP were linked to sexual health awareness, high self-perceived HIV risk and the search for alternative protection methods.

The most frequently asked questions were related to PrEP cost and coverage. Finally, they stated that their awareness of PrEP was a product of their social environment.

EPC164

Increasing uptake of PrEP through community distribution: the case of a CSO in Western Region of Ghana

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Background: PrEP is a very efficacious tool for HIV prevention among key populations. However, this is dependent on its availability, accessibility, uptake and usage. While initial PrEP Policy in Ghana required that it should be delivered only at the health facility, this was not in sync with international best practice of multiple delivery channels, and led to low uptake.

As a pioneering CSO in HIV service provision for key populations (KPs) in Ghana, Maritime Life Precious Foundation (MLPF) piloted a community based service delivery model for PrEP.

Description: MLPF, a sub- grantee CSO of the JSI-led USAID Strengthening the Care Continuum project, provides HIV services including PrEP to key populations in the Western region of Ghana. Within the period of April to June 2021, MLPF introduced community distribution of PrEP in its outreach activities by adding a team of trained nurses responsible for PrEP to the already existing HTS outreach team. KPs who test positive are put on ART and those testing negative are referred to the PrEP team for PrEP initiation at the same venue. This approach was carried out in two of the project sites.

Lessons learned: Within the first six months (October 2020 to March 2021) of facility distribution of PrEP, before the introduction of community distribution, only 179 clients were initiated on PrEP across all our implementing sites. In contrast, the new community-based delivery channel which was carried out within the period of three months (April to June 2021) saw 330 clients initiated on PrEP.

From the figures above, MLPF has achieved 184% increment in PrEP initiation within a shorter period which suggests that community distribution is gaining acceptance among the target population and it should be replicated across other project sites.

Conclusions/Next steps: Community based distribution of PrEP is very effective and should be employed to compliment the facility based initiatives. Implementing partners should not limit PrEP to health facilities only but consider more delivery channels such as community distribution. Results of this case study have intrinsic benefits for the review of national PrEP policy.

Demonstration and pilot projects for prevention (including PrEP, PEP, male circumcision)

EPC166

Association of post-traumatic stress disorder symptoms with sexual behaviour and PREP preferences among young people in South Africa, Uganda and Zimbabwe

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Background: It is not known whether post-traumatic stress disorder (PTSD) increases HIV-risk behaviours among young people in sub-Saharan Africa. We assessed associations of self-reported PTSD symptoms with sexual behaviour, HIV risk perception, and attitudes towards PrEP among young people taking part in the CHAPS community survey.

We hypothesised that PTSD symptoms would increase sexual behaviours associated with HIV risk, hinder PrEP uptake and lead to a preference for daily over on demand PrEP.

Methods: Young people without HIV, aged 13-24 years, were purposively recruited in Johannesburg and Cape Town in South Africa, Wakiso in Uganda, and Chitungwiza in Zimbabwe, and surveyed on socio-demographic characteristics, PrEP knowledge and attitudes, sexual behaviour, HIV perception and salience, and mental health. PTSD symptoms were measured using the Primary Care PTSD Screen for the Diagnostic and Statistical Manual of Mental Disorders 5 (PC-PTSD-5); participants with PC-PTSD-5 ≥3 were classified as having symptoms consistent with PTSD. Logistic and ordinal logistic regression was used to assess associations between PTSD symptoms and socio-demographic characteristics, sexual behaviour, HIV risk perception, PrEP attitudes, and substance use, adjusting for age, sex, setting, depression and anxiety.

Results: Of 1,330 young people (51% male, median age 19 years), 254 (19%) had symptoms consistent with PTSD. PTSD symptoms were more common in females (adjusted OR 1.68, 95%CI 1.27-2.22) and in older participants.

There was strong evidence that PTSD symptoms were associated with reported forced sex (OR 3.62, 95%CI: 2.22-5.90), self-perception as a person who takes risks (OR 1.53, 95%CI: 1.16-2.01), and increased frequency of thinking about risk of HIV acquisition (OR 1.70, 95%CI: 1.29-2.24).

PTSD symptoms were not associated with willingness to take PrEP, preference for on-demand versus daily PrEP, or actual HIV risk behaviour such as condomless sex.
Conclusions: PTSD symptoms were common among young people in South Africa, Uganda and Zimbabwe but did not impact risk behaviour, PrEP attitudes or PrEP preferences. However, evaluation for PTSD might form part of a general assessment in sexual and reproductive health services in these countries. More work is needed to understand the impact of PTSD on HIV-risk behaviour, forced sex and response to preventive strategies including PrEP.

EPC167

Feasibility and safety of estrogen ring and/or probiotics for improving vaginal health in African/Caribbean/Black women: results from a prospective, randomized, open-label, phase I trial (CTN 308)

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Background: Vaginal inflammation, diminished *Lactobacillus*colonization and increased microbiota diversity (dysbiosis) are associated with increased risk of HIV infection. Studies indicate that ~40% of African/Caribbean/Black (ACB) women have dysbiotic vaginal microbiota.
To determine if probiotics and intravaginal estrogen are acceptable and safe interventions to improve vaginal health in pre-menopausal ACB women, a prospective, randomized, open-label, intervention phase I trial (CTN 308; clinicaltrials.gov NCT03837015) was conducted.
Methods: Pre-menopausal ACB women aged 18-49 from the Toronto area were enrolled and baseline samples collected. Participants were randomized to: low dose intravaginal estradiol (Estringâ; 7.5mg/day), a twice daily vaginal probiotic (RepHreshä Pro-Bä; 1x10^{7} cfu total of *L. rhamnosus*GR-1 and *L. reuteri* RC-14 per capsule), or a combination of oral or vaginal probiotic with Estring for 30 days. Participants returned a week after intervention for final assessment. Enrolment, retention, and intervention protocol (IP) adherence rates were calculated to assess trial feasibility. Adverse events (AEs) and blood markers were monitored to evaluate safety.
Results: Between November 2019 and December 2021, 63 ACB women were screened, 51 (81%) enrolled, and 41 completed the study (80% retention of enrolled).
Enrolment and retention rates met or exceeded targets of 70% and 80%, respectively. During the study, 6 (12%) participants withdrew consent, 4 (8%) withdrew due to IP non-compliance, and 1 (2%) was lost to follow up.
Of those that completed the study, IP adherence was high among all treatment groups, with an overall Estring adherence rate of 94% (12% SD, IQR 93%-100%) and an overall probiotic adherence rate of 91% (13% SD, IQR 87%-100%).
A total of 92 AEs were reported by 29 (57%) participants, 66 (72%) of which were mild in intensity and 86 (93%) resolved by the end of the study. No severe AEs were reported, and no clinically significant blood marker changes were observed.
Conclusions: Enrolment, retention and adherence rates demonstrate low dose intravaginal estrogen and/or twice daily probiotics are well tolerated interventions. Most AEs were mild and short-term, and no severe AEs occurred.
Overall, administration of intravaginal estrogen and/or twice daily probiotics are safe, acceptable interventions. Analysis of biological samples will determine whether interventions augmented vaginal Lactobacillus colonization.

EPC168

Between- and within-individual sociodemographic and behavioural determinants of daily PrEP use and adherence among men who have sex with men in Wales

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Background: The transient nature of HIV risk means measuring adherence to PrEP requires concurrent measures of medication use and potential risk exposure. Investigating determinants of non-adherence to PrEP using a definition which incorporates both enables identification of individuals who may be at risk of non-adherence and drivers that may be amenable to intervention. The aim of this work is to investigate the determinants of PrEP use and adherence among daily PrEP users in Wales.
Methods: This was a secondary analysis of an ecological momentary assessment study of individuals accessing oral PrEP through sexual health clinics in Wales, UK. Daily

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PrEP use was ascertained via electronic monitors and daily condomless sex via brief web surveys. Participants were defined as adhering to their daily PrEP regimen when condomless anal sex (CAS) was preceded by at least three days of daily PrEP and followed by at least two days of daily PrEP. We fitted multilevel logistic and multinomial logistic regression models for PrEP use and adherence respectively.

Results: Data for PrEP use were available for 50 participants covering 5,463 person-days and for PrEP adherence 49 participants covering 4,728 person-days. All participants were cisgender male, majority identified as White British, and the median age was 35 years.

Participants were predominantly single (77%), gay (93%), and having sex exclusively with other men (98%). Participants took PrEP on 68% of observed days (3,695/5,463 days). Over 384 reported CAS episodes, daily PrEP regimens were adhered to 54% of the time (207/384 CAS episodes). Key determinants of daily PrEP use were age, chronic health condition, prior experience with PrEP, STI diagnoses, PrEP-related stigma, and components of the extended theory of planned behaviour (ETPB, capacity, intentions, self-regulatory processes, action planning, anticipated regret). Key determinants of PrEP adherence were STI diagnosis, HIV risk perceptions, and components of ETPB (behavioural norms, autonomy, action planning, and anticipated regret).

Conclusions: Our finding highlight key determinants of daily PrEP use and adherence. Different determinants may imply a need to focus on considering PrEP use within the context of risk episodes when identifying individuals at risk of non-adherence and designing intervention to optimise PrEP adherence.

EPC169
Characteristics associated with PrEP pilot program participation among MSM in the Netherlands

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Background: Dutch Sexual Health Centers (SHC) have been offering pre-exposure prophylaxis (PrEP) and associated care to individuals at high risk for HIV infection since August 2019, as part of a five-year pilot program with a maximum capacity of 8,500 participants. In this interim evaluation we investigated whether the PrEP-pilot program enrolled men who have sex with men (MSM) at highest risk for acquiring HIV.

Methods: Between July 2019 and August 2021, 97,866 consultations were completed among 42,508 MSM at 24 SHCs. We selected the first PrEP consultation for MSM participating in the PrEP-pilot program as cases. Controls were selected as the first consultation among MSM who were eligible for (HIV-negative, recent anal STI/syphilis diagnosis or condomless anal sex), but not participating in, the program.

We used logistic regression models adjusting for the eight SHC regions (strata) to calculate odds ratios (OR) and 95% confidence intervals (CI) for associations between demographic and behavioral factors and program participation.

Results: This study includes 7.952 cases and 23.369 controls. Cases were significantly older than controls, less likely to be Dutch, and more likely to have more sexual partners in the past six months, to have had chemsex (GHB/GBL, mephedrone, or crystal meth use before or during sex) in the past six months, and to be sex workers (p chi^2 for all: <0.0001).

In mutually adjusted models, we observed associations with program participation for age (≥45 vs 18-24 OR 1.90 [CI 1.73-2.09]), migration background (non-Dutch western OR 1.14 [CI 1.06-1.23] and non-western OR 1.49 [CI 1.39-1.60] vs Dutch), number of partners (≥10 vs 0-2 OR 2.17 [CI 2.01-2.34]), chemsex (yes vs no OR 2.66 [CI 2.48-2.84]), and sex work (yes vs no OR 1.94 [CI 1.68-2.25]). Education was the only factor not associated with program participation (low/medium vs high, OR 0.98 [CI 0.92, 1.03]).

Conclusions: Our results show that the PrEP-pilot program reaches MSM with higher risk behaviors, as well as key demographic groups. However, younger MSM are less likely to participate.

Future efforts should be made to ensure that PrEP care in the Netherlands reaches young MSM, which may help to maximize population health benefits.

EPC170
Barriers and facilitators to uptake and retention on PrEP among key and priority populations in Southern Province, Zambia

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Background: While PrEP holds promise for HIV prevention, studies have found high rates of early discontinuation among many sub-populations in sub-Saharan Africa; including within a demonstration trial in Zambia (2017-2019)

with key populations (KPs) and priority populations (e.g., men who have sex with men (MSM); female sex workers (FSW); members of sero-discordant couples (SDC)). In Zambia, PrEP is now widely available in government clinics, but few studies have assessed the determinants of PrEP use in this setting.

This qualitative study aims to address the facilitators and barriers to uptake and retention among targeted populations, and serves as the first such assessment with these groups in Zambia.

Methods: In 2021, we conducted semi-structured interviews (n=43) and focus groups (n=4) with providers (facility-based healthcare workers and community health workers) and potential PrEP clients (SDCs, MSM, FSW) from a clinic in Southern, Zambia.

Purposively sampled participants were stratified by sub-population and level of experience with PrEP including those who were invited, but never initiated on PrEP; initiated, but discontinued within 3 months; and continued on PrEP for 3+ months.

A research team coded resulting narrative data. Codes captured the individual, interpersonal, healthcare, and community barriers and facilitators to PrEP uptake and retention.

Results: Many barriers to uptake and retention were shared across group. The single greatest barrier was the anticipated stigma of being perceived as HIV-positive and on ART. This perception was reinforced at the community-, interpersonal- (family, partner implications), and individual level (barrier to accessing PrEP at the clinic).

Other barriers included PrEP side-effects (perceived/experienced); misinformation from peers or family members about PrEP (e.g., it causes cancer, infertility); anticipated or experienced stigmatization at the clinic due to one's identity as a KP, particularly acute for MSM; and logistical barriers including distance and wait times.

Facilitators for use include peer and partner support, strongest for MSM, high motivation to remain HIV free, and community-based delivery of care.

Conclusions: There are ongoing barriers to PrEP uptake and retention among KP in Zambia, many of which are centered around stigma. Future programmatic interventions would benefit from mitigating these barriers as they scale up PrEP.

EPC171

Delays to PrEP initiation among female sex workers in Côte d'Ivoire (ANRS 12381 PRINCESSE project)

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Background: To describe the delays to initiation of oral pre-exposure prophylaxis (PrEP) among female sex workers (FSW) in Côte d'Ivoire.

Methods: The ANRS 12381 PRINCESSE project is a single-arm interventional cohort aiming to evaluate the implementation of a comprehensive and community-based care offer among FSW aged ≥18 years in the San Pedro region since end-2019, through a mobile clinic operating on 10 prostitution sites (visited every two weeks). PrEP is offered to all HIV-positive FSW after verifying the creatinine level (results valid for one month).

We described the time between FSW's interest for PrEP and PrEP initiation (or end of follow-up) among HIV- and hepatitis B virus-negative (HBsAg-) FSW included until end-October 2021. The probability of PrEP initiation since PrEP interest is described through a Kaplan-Meier curve censored on end-November 2021 (an analysis censored at the date of the last visit was also conducted).

Results: Of the 362 FSW included in the PRINCESSE cohort, 302 were HIV-/AgHBs-, and for 296 of them, PrEP was presented by medical staff (95.2% at inclusion). In total, 292 FSW expressed PrEP interest, and 192 (65.8%) initiated PrEP: 18 on the same day (the biological test having been performed during a previous visit), 148 during the next visit (median time since interest: 3 weeks [Inter-Quartile Range: 2-6]) and 26 during a subsequent visit (median time: 20 weeks [9-36]). The probability of PrEP initiation after PrEP interest was 39.0% at 1 month and 56.6% at 3 months (censoring on the date of the last visit, these proportions were 50.7% and 74.6%, respectively). Among the 100 FSW who did not initiate PrEP despite expressing interest, 68 were never seen again in the project; 4 declared that they were no longer interested in PrEP (median time since interest: 12 weeks [10-19]), 1 was tested HIV+ (delay of 2 weeks), and 27 were seen >1 month later (their biological tests were no longer valid).

Conclusions: Despite strong PrEP interest among FSW, PrEP initiation remained suboptimal. Barriers to PrEP initiation should be more explored and considered to find appropriate solutions to make PrEP effective among this specific key population.

EPC172

The PrEP care continuum among men who have sex with men and transwomen: ImPrEP Mexico

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Background: To succeed, pre-exposure prophylaxis (PrEP) programs need to promote adequate levels of PrEP awareness, acceptability, uptake, adherence, and retention (i.e., engagement in the PrEP care continuum) among people with high HIV risk. Mexico implemented a PrEP demonstration project (ImPrEP) targeting two key populations: men who have sex with men (MSM) and transwomen (TW).

This study's goal was to describe the perceptions and experiences related to the PrEP care continuum of MSM and TW, and to identify barriers and facilitators for scaling up PrEP services.

Methods: From June to July 2020, online semi-structured interviews were conducted with MSM and TW: PrEP users, ex-users, and potential users (screened, but not enrolled). Through purposive sampling, these profiles were balanced by sexual identity (MSM/TW), age, and education level. The interviews underwent a directed content analysis to identify factors per step of the PrEP care continuum.

Results: Ten users, six ex-users and eight potential users (fourteen MSM and ten TW) were interviewed.

Awareness: MSM commonly learned about PrEP and ImPrEP during HIV testing. TW mainly did so through informative talks about PrEP and TW associations, but knowledge gaps persisted.

Acceptability: Participants principally wanted to start PrEP because of its HIV protection during risky sex behaviors. However, potential users expressed doubts about wanting PrEP due to its potential side effects (e.g., interacting with hormonal treatment, for TW).

Uptake: Potential users missed their enrollment visit for varied reasons (e.g., work/school, the distance, forgetting, and COVID-19) and did not know how to reschedule.

Adherence: Users and ex-users overall reported taking PrEP adequately, yet some mentioned barriers like fear of side-effects, routine changes, and PrEP-related stigma.

Retention: Ex-users quit ImPrEP services, mostly without reducing their HIV risk, due to fearing the medication's effects and difficulties keeping their trimestral appointments.

Conclusions: The PrEP care continuum's barriers must be addressed for PrEP's scale-up to be effective. Awareness activities are crucial to reach persons who do not attend health services and to dispel PrEP myths, especially among TW, as misconceptions can diminish PrEP acceptability, adherence, and retention. PrEP services should also offer a more flexible schedule to facilitate uptake and retention.

EPC173

Adherence, safety, and feasibility of HIV pre-exposure prophylaxis among adolescent men who have sex with men and transgender women in Brazil

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Background: Despite reports of worrisome trends in HIV incidence among men 15-19 years old (yo) in Brazil the country does not yet have PrEP guidelines for adolescents. Thus, we aimed to evaluate the adherence, safety, and feasibility of PrEP in real-world settings among adolescent men who have sex with men (aMSM) and transgender women (aTGW).

Methods: PrEP1519 is a single-arm, demonstration cohort study of daily TDF/FTC as PrEP among aMSM/aTGW aged 15-19 yo. It is ongoing in Brazil and eligible are those HIV uninfected, at high risk of HIV, and with no risk of kidney and liver damage. Follow-up data is from February 2019-February 2021 (96 weeks). Study visits occurred at baseline, weeks 4, 12, and then quarterly. Demographic/sociobehavioural data were collected by a questionnaire. A mixed logistic model for longitudinal data evaluated the factors associated with high adherence, measured by medication possession ratio (i.e., MPR ≥ 1).

Results: The intention-to-treat population included 684 adolescents enrolled in PrEP, who initiated PrEP on the same day. Most MSM (91.9%), 18-19 yo (80.8%), self-identified as black/brown (69.7%). There was no significant increase in creatinine clearance and two participants had grade III TGO-AST. Incident HIV infection occurred in nine participants (overall incidence rate (IR)= 1.85 per 100 person-years (PY); 95%CI: 0.64–3.05): 4 in 15-17 yo (IR= 4.46 per 100 PY; 95%CI: 0.07–8.85) and 5 in 18-19 yo (IR= 1.26 per 100 PY; 95%CI: 0.15–2.36).

Multivariate analysis showed that MPR ≥ 1 was higher among those in a lover like relation (OR=1.31; 95%CI: 1.08–1.57), who perceived themselves at high risk of an HIV infection (OR=1.35; 95%CI: 1.02–1.67), and among aMSM (vs. aTGW) (OR=1.22; 95%CI: 0.84–1.79).

Conclusions: IR was higher among young adolescents enrolled in PrEP. But, lower when compared to an IR of 7.78% among MSM and TGW aged 30 years or less tested in Rio de Janeiro. PrEP adherence seems lower among aTWG, indicating the need for greater monitoring and care for TGW. Effective PrEP use must consider that adolescents are dynamic and fluid and, therefore, continually adapt to their context to improve adherence to PrEP.

EPC174

Contingency management for integrated harm reduction among methamphetamine-using MSM in Los Angeles: a pilot assessment

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Background: Methamphetamine (MA) use is associated with HIV acquisition and transmission among men who have sex with men (MSM). Contingency Management (CM) is effective in reducing frequency of MA use and of accompanying sexual risk behaviors, but has not been used to support adherence to biomedical HIV prevention.

We conducted a pilot trial of the logistics and feasibility of a combined CM intervention to reduce MA use and improve PrEP/ART adherence among MSM in Los Angeles.

Methods: Enrollment was limited to MSM currently using MA (verified by urine drug screen), not seeking addiction treatment, and prescribed a Tenofovir (TFV)-based regimen for HIV prevention or treatment (verified by demonstration of medication or prescription). Participants were randomly assigned to receive incentives for MA abstinence or medication adherence, and to a monitoring schedule of 2 or 3 visits per week.

Monitoring visits included motivational interviewing and urine testing for presence of MA metabolites and TFV. An escalating scale of incentives (range: $3-27 USD) was provided for either absence of MA or presence of TFV in urine, according to randomization arm. Participants answered questions about drug use and sexual behavior at each visit and reported their satisfaction with the intervention at the final visit.

Results: We enrolled 22 MSM (median age: 37; IQR: 28-45), 14 living with HIV. Three HIV-uninfected participants were excluded after not attending any post-enrollment visits. Remaining participants attended 96.2% (77/80) of scheduled visits in the 2x/week arm and 78.7% (85/108) in the 3x/week arm. During Follow-up, MA was detected in 89.1% (57/64) of samples in the MA-incentive arm and 91.2% (73/80) of samples from participants receiving TFV adherence incentives. TFV was detected in 78.1% (50/64) and 95.0% (76/80) of samples in the MA and TFV arms, respectively. Among 16 participants completing the exit survey, 81.2% (13/16) described themselves as "Very Satisfied" or "Extremely Satisfied" with the CM program.

Conclusions: A combined CM model using twice-weekly visits for MA-using MSM is feasible and potentially effective as an integrated harm reduction strategy among MA-using MSM. While we observed limited reductions in MA use, targeted incentives were associated with a high frequency of PrEP/ART adherence, assessed via objective metrics.

EPC175

An evaluation of the HIV risk screening and enrollment process in Mexico's pre-exposure prophylaxis demonstration project— the ImPrEP study

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Background: Pre-exposure prophylaxis (PrEP) programs need to identify and enroll persons with high HIV risk (HHR) to achieve an impact. Consequently, Mexico's PrEP demonstration project (ImPrEP) seeked to offer PrEP to two key populations: men who have sex with men (MSM) and transwomen (TW). Our study aimed to assess whether the project succeeded in identifying and enrolling MSM and TW with HHR.

Methods: MSM and TW were screened at four ImPrEP sites by filling in a questionnaire about HIV risk factors. HHR was defined by reporting at least one of four criteria: condomless anal sex (CAS), transactional sex, a partner living with HIV, or a sexually transmitted infection (STI).

In order to verify whether the four criteria effectively identified HHR, a score was composed based on the four HHR criteria and compared with seven other reported risk behaviors through Poisson modelling.

In addition, among persons at HHR, we assessed the proportion of those enrolled, lost-to-follow-up (LTFU), and excluded (not considered at sufficient risk according to the staff, despite the HHR).

Finally, through logistic models we compared the sociodemographics and sexual behaviors of those enrolled with those LTFU and with those excluded.

Results: A total of 2,518 candidates were screened (2,417 [96%] MSM and 101 [4%] TW). Only 137 (5%) did not report any of the four HHR criteria. The Poisson modelling confirmed that a higher score based on the four HHR criteria was associated with other risk factors, such as more male partners (coef=0.24) and more insertive CAS (coef=0.16). As for those at HHR, 1,701 (72%) were enrolled, 351 (15%) were LTFU, 247 (10%) were excluded, and 82 (3%) had medical contraindications.

The odds of being excluded were higher for those reporting a sex partner living with HIV (adjusted odds ratio [aOR]=2.53). The odds of being LTFU were lower for those older than 25 years of age (aOR=0.73), yet higher for TW (aOR= 5.56).

Conclusions: The four HHR criteria were useful to identify and enroll individuals at HHR, yet evaluating risk takes more than asking four questions. Strategies are needed to keep those with higher vulnerability (TW and young persons) from being LTFU.

EPC176

Socio-demographics, risk and eligibility of MSM clients accessing PrEP services through a pilot model using telemedicine in India

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Background: Pre-Exposure Prophylaxis (PrEP) has become an integral part of comprehensive HIV prevention package. There is a limited access of PrEP services to MSM population in India. This abstract presents the socio-demographics, risk & eligibility assessment of MSM clients who received PrEP services though a pilot telemedicine model in India.

Methods: The e-case sheets and e-prescriptions of the clients who received PrEP services between June 2020 – December 2021 were retrieved, and identifiers were removed. The data on socio-demographics and risk and eligibility assessment was extracted from these documents and analyzed in MS Excel 365.

Results: A total number of 243 MSM from 37 districts received PrEP services through this virtual service delivery model. Out of 243, three accessed these services for their female partners as a means of safer conception (discordant couples) and 240 for HIV prevention.

Of 240 clients, 20% were youth and 80% aged between 25 – 62 years; 86.25% were never married to a female and 3/5thself-identified as 'Gay'. Only 6.67% were monogamous but reached out for PrEP due to involvement with a risky partner. 64.2 % of the clients reported to be involved in receptive anal sex with a consistent condom usage in 60% clients only.

Of total clients, 12%, 30% and 9% reported to indulge in ‚*chem'* sex and have a treatment history of STDs & availed PEP following a high-risk exposure respectively. One-tenth of the clients was not eligible to use PrEP due to various reasons namely risky exposure in last 72 hours (n=19, eligible for PEP), not at risk (n = 4) and HIV reactive (n = 1). 7% of the eligible clients were further eligible to use PrEP on-demand.

Conclusions: Delivering PrEP services through telemedicine could be an effective strategy to reach out to hidden MSM population. There is a need to explore the scalability, and cost effectiveness of delivery of these services to MSM population through telemedicine in India.

EPC177

PrEP and telemedicine in times of COVID-19: experiences of health professionals in Mexico

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Background: ImPrEP Mexico was a pre-exposure prophylaxis (PrEP) demonstration project offering PrEP for populations at high HIV risk. To provide continuity of PrEP services during the first year of the COVID-19 pandemic, telemedicine strategies were adopted to reduce face-to-face on-site attendance and risk of contagion.

This study's goal was to document experiences and lessons learned among ImPrEP health professionals using tele-counselling, as to determine the acceptability of such strategies and the willingness to continue to use them post-COVID19.

Methods: In May 2021, we conducted 16 online interviews with health professionals from the 4 ImPrEP implementation sites located in Mexico City, Guadalajara, and Puerto Vallarta. We used a semi-structured interview guide to explore the seven dimensions posed by the Theory of Acceptability (affective attitude, burden, perceived effectiveness, ethicality, intervention coherence, opportunity costs, and self-efficacy). Interviews were audio recorded, with prior informed consent, and were subsequently transcribed and coded using the software Atlas.ti.

Results: All the interviewed professionals had carried out telemedicine strategies. Their experience was mediated by the pandemic context, available technological infrastructure and logistics, as well as by their personal disposition, attitudes, knowledge and previous experience. They perceived this strategy as appropriate strategy for specific user groups. They perceived benefits from telemedicine such as the reduction of the risk of COVID19-infection and the diminished time in terms of transfers, duration of sessions and waiting times.

Amongst its barriers, they mentioned the impossibility of physical examinations and the difficulty for users to acquire medicines using prescriptions received electronically. They also perceived that the implementation could lead to economic, work, and emotional burdens, may violate personal privacy, and can hinder the therapeutic relationship.

Conclusions: Telemedicine strategies are a tool that can facilitate PrEP access for specific groups of users (e.g., with telephone access). It is necessary to consider it as a complement or as part of a hybrid model alternating both face-to-face and virtual care.

To enhance benefits and guarantee success, requirements include clear implementation guidelines, providing up-to-date electronics devices, guaranteeing adequate Internet connectivity and infrastructure, and strengthening the skills of professionals and users for using this form of care.

EPC178

PrEP on the street: broadening prevention strategies for the most vulnerable populations in the city of São Paulo

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Background: In Brazil, the HIV/AIDS epidemic is concentrated in a few population segments that account for the majority of new infection cases, such as gays and other men who have sex with men (HSH), trans people and sex workers and young people. These populations not only present a bigger risk of contracting HIV, they are also often subjected to situations of discrimination, targets of stigma and prejudice, increasing their vulnerability to HIV/Aids.

Therefore, for the strategy of pre-exposure prophylaxis (PrEP) to be effective, it is necessary that the public health system lowers the barriers for access to these populations, and welcome them fully and ensure their rights to quality health care.

Description: In order to reach a larger share of a population that a lot of times don't arrive to the health services, the Coordination of STI/Aids of the Municipal Health Secretariat, started offering PrEP in mobile units, named "PrEP on the Street" broadening the possibilities of prevention strategies performed during its outreach work.

Following the criteria defined in the Clinical Protocol and Therapeutic Guidelines for Pre-Exposure Prophylaxis of Infection Risk (PCDT PrEP) point of care creatinine tests and rapid HIV tests are performed before the dispensation of PrEP.

Lessons learned: In 2021, 14 events of the project *PrEP na Rua* took place, with 468 people beginning prophylaxis, 14 Post Exposure Prophylaxis (PEP), 896 rapid HIV tests were performed and 6 thousand self-testing kits were distributed. It was observed that the offering of PrEP in mobile units expands the access to the prevention strategies to the populations that often don't arrive at the health services. In the same year for the 4th consecutive year the city of São Paulo managed to reduce the number of new HIV cases.

Conclusions/Next steps: With the "PrEP on the Street" events, it was observed a high demand and user acceptance, mostly gays and HSH, which demonstrates the importance of executing these activities outside of healthcare units, in alternative hours and on weekends. Of the people who began PrEP in this project, 63% followed up with the prophylaxis.

EPC179

Characterising heterosexual men's demand for and uptake of pre-exposure prophylaxis (PrEP) for HIV prevention in South Africa

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Background: While most PrEP programs focus on reaching men having sex with men, high-risk heterosexual men may also benefit from PrEP. We piloted a project to increase awareness of PrEP among heterosexual men and then provide it to them through private clinics, with the aim of assessing their demographic and behavioural characteristics, interest in PrEP, and experience of PrEP use.

Methods: Data were collected as part of an ongoing demonstration project in Johannesburg, South Africa. Community health workers engaged men on the street to discuss PrEP and link them to services. Private doctors then provided HIV testing and PrEP at no cost to clients. Routine intake and monitoring data were collected by community health workers as well as 10 participating practices from September 2021 (ongoing).

We analysed data in StataIC to summarize relevant clinical, demographic, and behavioural characteristics. Research activities were approved by the Foundation for Professional Development Research Ethics Committee (FPDREC).

Results: Demand creation reached 20,201 people. Among those reached, 19.8% had ever heard of PrEP, 91.9% were interested in learning more, and 56.3% were interested in trying PrEP. Within three months, 552 men had been initiated on PrEP. Of those, 59% were between ages of 25-39 years, and 47% were employed. Only 12% reported consistent condom use, with 24% never using condoms, and 61% using them inconsistently. 72% reported having more than one sexual partner in the past three months, with 45% reporting three partners or more. Alcohol use was reported by 64% and drug use by 11%. 48% percent of eligible clients had returned for a PrEP refill by end of the reporting period and 63% of those initiated were current users.

Conclusions: Early results of this study show low awareness of PrEP among heterosexual men but high interest once aware. Roughly three-quarters reported multiple sexual partners and inconsistent or no condom use, against a high background prevalence of HIV, making them good candidates for PrEP.

Uptake and continuation rates were high, even with minimal follow-up support provided. Targeting high-risk heterosexual men with PrEP could have both individual and population-level benefits.

EPC180

Effectiveness of a culturally tailored HIV Prevention intervention in promoting PrEP among Black women in community supervision programs in New York City: a randomized clinical trial

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Background: In the U.S. there is a significant racial and gender disparity in the uptake of pre-exposure prophylaxis (PrEP).Despite Black cisgender women experiencing a disproportionate burden of HIV acquisition, they are four times less likely to have initiated PrEP than their non-Hispanic white women. Few PrEP uptake interventions focus on cisgender women, and none have targeted women in community supervision programs (CSPs), which predominately serves Black women.
Advancing an effective PrEP intervention for Black women in CSPs holds great promise for reducing inequities in PrEP uptake and increasing HIV prevention among this vulnerable group.
Methods: We conducted a randomized clinical trial among 352 eligible Black women recruited from CSPs in NYC (probation, parole, alternative-to-incarceration programs) with a recent history of drug use. Participants were randomized to either E-WORTH (N=172) or an HIV testing control (N=180).
E-WORTH participants received a 5-session, culturally-tailored, group-based HIV prevention intervention plus HIV testing; Control participants received HIV testing alone. Both conditions were delivered by Black female staff at a large CSP. We evaluated the effectiveness of the E-WORTH intervention on increasing awareness, intention and use of PrEP.
Primary outcomes included: awareness of PrEP as a biomedical HIV prevention strategy, willingness to use PrEP and PrEP use over the prior 12-month period.
Results: A total of 336 participants women tested HIV negative at baseline and therefore were considered PrEP-eligible and included in this sample.
Compared to control participants, E-WORTH participants had significantly greater odds of being aware of PrEP as a biomedical HIV prevention strategy (AOR=3.25, 95% CI=2.01- 5.25, p<.001) and indicating a willingness to use PrEP (b= 0.19, 95% CI=0.001-0.38, p=.049). No significant difference between conditions was found with respect to PrEP use, which was low in both conditions.
Conclusions: These findings suggest the effectiveness of a culturally-tailored intervention for Black women in CSP settings in increasing awareness, willingness, and intention to initiate PrEP. The low uptake of PrEP in both arms may be due to lack of access, but also may highlight the need for providing more robust PrEP-on-demand strategies (e.g., PrEP telemedicine) during the intervention rather than linkage to a PrEP provider.

Demand creation for PrEP use

EPC181

PrEP demand creation can attract higher risk individuals and be a gateway to other HIV services in Ghana

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Background: The PEPFAR- and USAID-funded Meeting Targets and Maintaining Epidemic Control (EpiC) project implemented pre-exposure prophylaxis (PrEP) for the first time in Ghana.
The purpose of the program was to initiate higher risk men who have sex with men (MSM), female sex workers (FSWs), and transgender individuals on PrEP to reduce HIV acquisition.
Description: PrEP was implemented in six health facilities in the Greater Accra and Ashanti regions from October 2020 to September 2021. Key-population-led community-based organizations (CBOs) utilized social media and online networks to conduct demand creation activities and were not physically present in hot spots or gathering places.
Once clients were reached through social media, peer educators referred them for eligibility screening at the facility or mobile clinic. HIV testing was provided for the first time during the screening process.
Screening included a behavioral risk assessment, HIV test, and a review of possible acute infection or recent exposure to HIV. If an individual had a recent HIV exposure, post-exposure prophylaxis (PEP) was recommended.
We reviewed the PrEP screening through initiation cascade, and used a chi-square test to determine if there were differences in PrEP eligibility between FSW and MSM/TG.
Lessons learned: There was a high demand for PrEP among all KP (Table 1); however, it was found that a higher portion of MSM and TG were not able to start PrEP because of being HIV+ or other ineligibility criteria compared to FSW (Table 1).
A chi-square test of independence showed that KP type was associated with PrEP eligibility (p<.001).

	FSW	MSM & TG
Screened for PrEP	975	567
HIV+	9	65
Case Finding	0.91%	11.5%
Referred/Initiated on PEP	3	13
Total Ineligible for PrEP • including PEP • including HIV+	25	79
% Ineligible	2.6%	13.9%
Eligible for PrEP	950	488
Initiated on PrEP	867	462
Chi-square	p<.001	

Table 1: PrEP Cascade—screening to PrEP initiation

Conclusions/Next steps: There was high demand for PrEP services among higher risk MSM but were ineligible due to being HIV positive, or having another ineligibility criteria, which demonstrates the need for expanded HIV prevention services. PrEP offers an opportunity to reach individuals who may not otherwise seek services.

EPC182

Changes in awareness and willingness to use pre-exposure prophylaxis (PrEP) among men who have sex with men (MSM) in Latin America between 2018 and 2021: results from the ImPrEP project

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Background: Although daily oral PrEP was recommended by WHO for HIV prevention since 2015, PrEP availability is still limited in Latin America. The ImPrEP project aimed to generate evidence on the feasibility, acceptability, and cost-effectiveness of PrEP among MSM and transgender women in the context of the Public Health Systems of Brazil, Mexico, and Peru. Educational campaigns on social media have been promoted during ImPrEP to increase PrEP awareness and create demand.

This study aims to compare awareness and willingness to use PrEP among MSM collected during two ImPrEP formative surveys.

Methods: We conducted two online surveys among MSM aged ≥18 years living in Brazil, Mexico and Peru during the first (2018) and last (2021) year of ImPrEP. Participants were recruited on Grindr, Hornet and Facebook/Instagram. Awareness of PrEP was accessed with the question: "Have you ever heard of PrEP?" (yes/no). We used a 5-point Likert scale to assess willingness to use PrEP with the statement: "I would use a daily pill for PrEP". Responses options were dichotomized: yes="highly likely" and no=other responses. We used chi-square tests to verify changes in frequency of awareness and willingness to use PrEP between 2018 and 2021 by country.

Results: A total of 19,487 MSM were included in 2018 and 13,476 in 2021. Characteristics of participants per country and year are described in Table. PrEP awareness increased in all countries: Brazil (68.6% to 94.1%; *p*<.001), Mexico (64% to 82.7%; *p*<.001) and Peru (46.5% to 77.1%; *p*<.001). Willingness to use PrEP increased in Brazil (62.5% to 67.4%; *p*<.001), slightly decreased in Mexico (70.1% to 68%;*p*=.02), and did not change in Peru (57.6% to 58%;*p*=.84).

	Brazil		Mexico		Peru	
	2018 N=11,367	2021 N=8302	2018 N=5934	2021 N=4398	2018 N=2156	2021 N=1046
Age (year)						
18-24	3222 (28.3)	922 (11.5)	1766 (29.8)	911 (20.7)	889 (41.2)	423 (40.4)
25-35	5364 (47.2)	3808 (47.4)	2991 (50.4)	2202 (50.1)	970 (44.5)	475 (45.4)
>35	2780 (24.6)	3302 (41.1)	1177 (19.8)	1285 (29.2)	297 (13.8)	148 (14.2)
Race						
White	5999 (52.8)	4561 (56.8)	Not available	717 (18.8)	408 (19.6)	121 (11.6)
Black/Mixed-race	5363 (47.2)	3471 (43.2)		3090 (81.2)	1672 (80.4)	925 (88.4)
Education						
≤ secondary	4378 (38.9)	2594 (32.3)	1395 (23.6)	1259 (28.6)	461 (21.7)	326 (31.2)
> secondary	6876 (61.1)	5438 (67.7)	4516 (75.4)	3139 (71.4)	1663 (78.3)	720 (68.8)

Table.

Conclusions: PrEP awareness among MSM increased in Brazil, Mexico, and Peru, and ImPrEP educational campaigns may have contributed to this finding.

However, willingness to use PrEP increased only in Brazil. The availability of PrEP at no cost as a public health policy in Brazil and limited access to PrEP in Mexico and Peru may explain these disparities.

EPC183

Profiles of Pre-Exposure Prophylaxis (PrEP) modality preferences among Brazilian, Mexican and Peruvian Sexual and Gender Minorities (SGM)

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Background: Daily oral PrEP is highly effective for HIV prevention, yet its use remains limited in Latin America. Additionally, adherence difficulties compromise its effectiveness. The efficacy/effectiveness of other PrEP modalities have been demonstrated.

We analyze the characteristics associated with willingness to use four PrEP modalities: daily oral, event-driven, monthly oral, and injectable.

Methods: A cross-sectional online survey was conducted from April-August 2021 among sexual/gender minorities (SGM) aged 18+ years. Participants were asked to report their willingness to use PrEP modalities and to assume equal effectiveness and availability. Willingness was assessed using a 4-point Likert scale combining *Likely* and *Very likely* as 'willing'. We conducted multivariate Poisson regression estimating prevalence ratios to determine differences in willingness to use each PrEP modality. Models were developed for each PrEP modality, including age, country, race, education, income, HIRI-risk score (combining sexual risk and substance use), HIV testing, and HIV risk perception variables.

Results: Among 35,541 individuals who initiated the survey, 24,573 were eligible. Mean age was 33.4 years (Brazil: 64.9%; Mexico: 27.8%; Peru: 7.4%. Most were cisgender men (95.8%) and had >secondary education (66.2%). Most were willing to use: monthly oral (74.6%), daily oral (66.1%), and injectable (60.4%), while only 38.1% were willing to use event-driven PrEP. Across modalities, willingness to use PrEP was higher with increased HIV risk perception. Willingness was higher in individuals deemed high-risk (HIRI-score>=10) and lower among Peruvian respondents for all modalities except event-driven PrEP. Mexicans and Peruvians reported higher willingness for event-driven PrEP compared to Brazilians. Higher-income and education were associated with higher willingness for monthly and injectable PrEP only.

	Daily oral aPR (95% CI)	Event-driven aPR (95% CI)	Monthly oral aPR (95% CI)	Injectable aPR (95% CI)
Income (effect of an additional minimum wage per month)	0.99 [0.98,1.00]	1.00 [0.94,1.06]	**1.01 [1.00,1.02]**	**1.01 [1.00,1.02]**
Education >secondary (Ref. ≤secondary)	1.00 [0.95,1.05]	1.03 [0.96,1.10]	**1.06 [1.01,1.11]**	**1.06 [1.01,1.12]**
HIV risk perception (Ref=none)				
Low risk	**1.14 [1.06,1.24]**	1.02 [0.92,1.12]	**1.10 [1.03,1.18]**	**1.07 [1.00,1.16]**
Some risk	**1.42 [1.31,1.54]**	**1.20 [1.08,1.33]**	**1.21 [1.12,1.30]**	**1.21 [1.12,1.31]**
High risk	**1.53 [1.39,1.68]**	**1.29 [1.14,1.47]**	**1.25 [1.14,1.36]**	**1.29 [1.17,1.42]**
Very high risk	**1.39 [1.05,1.84]**	**1.46 [1.04,2.05]**	1.22 [0.94,1.58]	**1.32 [1.01,1.74]**
Country (Ref=Brazil)				
Mexico	1.03 [0.98,1.08]	**1.16 [1.09,1.24]**	1.04 [0.99,1.09]	**0.94 [0.90,0.99]**
Peru	**0.83 [0.76,0.91]**	**1.18 [1.06,1.32]**	**0.87 [0.80,0.95]**	**0.80 [0.72,0.88]**
HIV risk score ≥10 points high risk (Ref. <10 point low risk) HIRI score	**1.15 [1.09,1.20]**	1.04 [0.98,1.10]	**1.07 [1.02,1.11]**	**1.17 [1.11,1.22]**
HIV test >6 months (Ref. ≤6 months)	**1.05 [1.00,1.09]**	1.05 [0.99,1.11]	1.01 [0.97,1.05]	**1.12 [1.07,1.17]**
Bolding indicates statistical significance at p-value<0.05; all models were adjusted for age, race, sex work, and self-reported STI diagnosis.				

Table: Characteristics Associated with Preferred PrEP Modalities among an online sample of MSM and TGW from Brazil, Mexico and Peru

Conclusions: Higher willingness to use monthly oral and injectable PrEP indicates preference for long-acting formulations among SGM in Latin America. Research is needed to address the gaps in knowledge of prevention modalities and help potential users choose the available PrEP modality that fits their needs.

EPC184

Community interventions to reach Adolescent Girls and Young Women (AGYW) supporting Pre-Exposure Prophylaxis (PrEP) initiation and continuation in Rwanda

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Background: While Rwanda has nearly reached the 95-95-95 goals, adolescent girls and young women (AGYW) remain disproportionately affected by HIV: prevalence among AGYW and their male counterparts is 0.5% vs 0.3% [10-14 years], 0.8% vs 0.4% [15-19] and 1.8 vs 0.6% [20-24] (2018 Rwanda PHIA). Since 2018, Rwanda has used PrEP as an HIV prevention choice for AGYW, female sex workers, men who have sex with men and discordant couples at substantial risk of HIV infection.

Though PrEP is initiated at facility level, community interventions are critical for success through demand creation, education, identification and referral of at-risk AGYW, and follow up.

Description: ACHIEVE Rwanda, a USAID- and PEPFAR-funded project, had implemented DREAMS activities in two Kigali City districts since October 2020. Through two local partners: YWCA and DUHAMIC-ADRI, ACHIEVE serves 24,974 AGYW (10-24 years) with HIV prevention education and services; and PrEP interventions (education, demand creation, community screening, referrals to health facilities, and adherence counseling) targeting AGYW age 18+ who are sexually active and at risk of HIV infection.

From October 2020-September 2021, 5,145 HIV-negative AGYW were screened and 668 (13%) were found at risk of HIV and referred to health facilities for PrEP eligibility screening and initiation.

Sixty percent (402; 23% [18-19], 72% [20-24], 5% [24-29]) were eligible and initiated PrEP. The project, through training, coaching, and mentoring, prepared 159 DREAMS mentors to deliver community PrEP services.

Lessons learned: Mentors facilitate PrEP community interventions through the safe space model for demand creation and community screening; effective linkage and coordination with health facilities; community adherence support; and routine engagement with AGYW.

This strategy contributed to PrEP initiation among AGYW with a continuation rate of 94% and 91% respectively at one- and three-months' post-initiation.

Mentors further support those who discontinued PrEP, empowering them to use other prevention measures and reinitiate PrEP when needed.

Conclusions/Next steps: Community HIV prevention interventions capacitating and engaging mentors have shown contribution to PrEP strategy implementation through demand creation, identification, referral, adherence counseling, and community follow-up.

EPC185

Successful experience using PrEP champions to boost PrEP enrollment for Key Populations at a newly opened men's clinic in Port-au-Prince, Haïti

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Background: PrEP is a highly effective HIV prevention tool which, when used properly, reduces rates of HIV transmission and acquisition by more than 90% notably in high risk populations. Oral daily PrEP was introduced in Haiti in March 2019 and progressively integrated as a component of a combined HIV prevention package.

Through USAID funding, ISPD implemented a men's clinic where PrEP was included as part of a comprehensive and complete package of HIV prevention, care and treatment in March 2020.

Description: To increase client enrollment on PrEP especially in the MSM population, we adopted a peer led approach using MSM clients as PrEP champions. In May 2021, from a pool of clients already on PrEP at the men's clinic, three MSMs were selected for their communication skills and their adherence to both site visits and PrEP. They received an 8-hour training course using adapted versions of national curricula covering topics such PrEP, HIV and other STIs.

The PrEP champions were to report to the site twice weekly for onsite patient education and client referrals. Their goal was to increase awareness and enrollment on PrEP among their peers through onsite and community level sensitization.

Lessons learned: Since the implementation of PrEP Champions, when compared to the previous 6 months (October-April 2021), the men's clinic experimented 84% increase for MSM counselling for PrEP (from 88 to 162), 109% increase for MSM interest for PrEP (from 74 to 155), 129% increase for MSM enrollment on PrEP (from 42 to 96), and 34% increase for overall enrollment on PrEP (from 131 to 176). The high risk 20-29 age group saw 80% increase (from 59 to 106) during the studied period (May-September 2021).

The men's clinic created the demand for PrEP in a high-risk group which also led to an overall increase in PrEP enrollment; the site is now ranking fifth in terms of PrEP enrollment nationwide.

Conclusions/Next steps: We will scale up this peer led demand creation and community engagement strategy throughout our network using a population specific PrEP Champion approach to boost PrEP enrollment per category of population at risk.

EPC186

A conjoint analysis of injectable PrEP preferences among young sexual minority men

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Background: With the recent approval of injectable cabotegravir for Pre-Exposure Prophylaxis (PrEP) and in preparation for large-scale rollout, it is essential to obtain end-user perspectives.

In a conjoint experiment, ATN 141a (Next Choices) evaluated young men who have sex with men's (YMSM; ages 15-24) acceptability of a PrEP injectable.

Methods: We enrolled 150 HIV-negative YMSM in the United States in an online conjoint experiment. As part of the conjoint experiment, YMSM selected between random sets of product profiles using 6 features (delivery: provider vs self-injected; duration of protection: 1, 2, 4, 6 and 12 months; prevention efficacy: 50%, 65%, 80%, 95%, and 99% efficacious; potential side effects: none, soreness at injection site, fever, fatigue, nausea, and weight gain; cost per month in US dollars: $0, $25, $50, $100, $150). A subset of participants completed a follow-up in-depth-interview (IDI; n=10) to discuss their product preferences.

Results: Efficacy was the most important feature in a PrEP injectable (39%), followed by cost (20%), side effects (20%), duration of protection (18%), and mode of delivery (3%). We then estimated YMSM's willingness to pay for a PrEP injectable, considering the trade-offs between features (see Table 1).

Feature		Willingness to Pay (in $USD)
Delivery	Provider Self-injected	$0 -$12.20
Duration of protection	1 month 2 months 4 months 6 months 12 months	$0 $37.30 $57.20 $95.80 $122.70
Efficacy	50% 65% 80% 95% 99%	$0 $69.10 $170.70 $250.80 $290.70
Side Effects	None Soreness at injection site Fever Fatigue Nausea Weight gain	$0 $-27.50 -$46.40 -$41.30 -$54.10 -$132.50

Notes. Willingness to pay are computed within feature; negative values in $USD indicate YMSM's desire for a lower cost in the presence of a given element of the feature

Table 1. YMSM's willingness-to-pay for a PrEP injectable by feature.

Overall, participants' willingness to pay more than $100 per month was driven by three considerations: achieving at least 80% efficacy ($170.70), having 12 months of protection ($122.70), and avoiding weight gain (-$132.50). In IDIs, participants' acceptability of a PrEP injectable was informed by the aforementioned features, personal considerations (e.g., relationship status, income), and context (e.g., access to care, stigma).

Conclusions: YMSM weighed the features of a PrEP injectable differentially and made cost-related trade-offs regarding its acceptability. Variations in acceptability based on the injectable's features highlight the need to develop and test campaigns, with the greatest focus accentuating the efficacy of injectable PrEP while addressing perceived cost and side-effects among YMSM.

EPC187

#SummerFunCollab: engagement of online anonymized influencers in creating awareness and demand of HIV pre-exposure prophylaxis among high-risk men who have sex with men in the Philippines

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Background: WHO recommended the use of PrEP in addition to other prevention methods to halt and reverse the HIV epidemic in the Philippines. While it is being brought to scale, PrEP enrollment remains low among Filipino MSMs. The project aims to bring PrEP awareness to MSMs and lead them to PrEP enrollment by engaging anonymous online community influencers.

Description: Coming from the previous experience of LoveYourself in its #MenOfPrEP campaign, a new campaign plan was developed, keeping in mind the market: High-risk MSMs in Twitter, promoting their sexual activities anonymously (alters). The messages focused on PrEP information, access, and its impact on their lifestyle. The visual theme and key messages developed are sex-positive and sexually explicit, with a motivational tone of espousing self-empowerment. The developed plan was then cascaded to people who are the following: a known member of the MSM alter community and has an established online presence.

The following were then shared with the influencer as part of the campaign development: A PrEP 101 briefer, training, and an "influencer package" containing FAQs should they receive inquiries regarding PrEP on their personal accounts. These influencers were also given PrEP, to share their experiences while taking it, and using it in their sexual lifestyle. The influencers were then given the creative freedom on how to promote and share their PrEP experience and post it on their personal Twitter accounts.

Lessons learned: A total of 13 Twitter alter influencers agreed to participate in the campaign. Each post has received unique engagements ranging from 3,000 to 70,000, with a total of 239,382 for the entire campaign. Total impressions made amounted to 4,478,986. These numbers are organic, and no advertising/boosting funds were spent. The sign-up link for PrEP registration was accessed 25,000 times. Inquiries regarding PrEP in LoveYourself's social media channels increased by 3,500%. The campaign has helped increase the number of PrEP enrollees under LoveYourself's care by 194% (2,673 by December 2021).

Conclusions/Next steps: It was seen that a sex-positive campaign powered by the community is effective in bringing awareness of PrEP. Community consultations are essential in creating PrEP demand generation programs for other key communities.

EPC188

Increasing demand for Pre-Exposure prophylaxis (PrEP) among pregnant and breastfeeding women (PBFW) to prevent mother to child HIV transmission in 3 SAFE supported Provinces in Zambia

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Background: The USAID SAFE program (SAFE) supports the HIV program of the Ministry of Health (MOH) in Zambia by providing clients who have been exposed to HIV with antiretroviral pre-exposure prophylaxis (PrEP) to prevent HIV infection. SAFE targets HIV negative pregnant and breast-feeding women (PBFW), victims of rape and gender based violence (GBV), sexually active adolescents and sex workers. Implementation of PrEP among PBFW has slowly been adopted in SAFE facilities and surrounding communities.

Description: SAFE recruited, trained and mentored health care workers to support MOH efforts to provide PrEP to PBFW and their infants. Campaigns and demand creation was done through radio programs, community outreach services, in churches, weekend clinics and engagement with traditional leaders on the promotion of PrEP among PBFW in the communities. PBFW were screened for HIV and those who tested negative and found eligible for PrEP were counselled and started on PrEP.

Lessons learned: Between October 2019 to December 2021, a total of 36,668 clients were initiated on PrEP and among them 6,111 (17%) were PBFW. The PrEP Initiation differed by Quarter (See figure 1).

The Number of PBFW on PrEP was low from October 2019 to December 2020 as there were no demand creation and advocacy. The increase in PrEP initiation between January to December 2021 could be attributed to an increased campaign to initiate PrEP to PBFW with a peak in April to June 2021 with 2457 PBFW which is 34% contribution among all clients on PrEP.

The drop in initiation in the month of October-December 2021 could be attributed to COVID 19 wave 4 which resulted in restrictions of community outreach services.

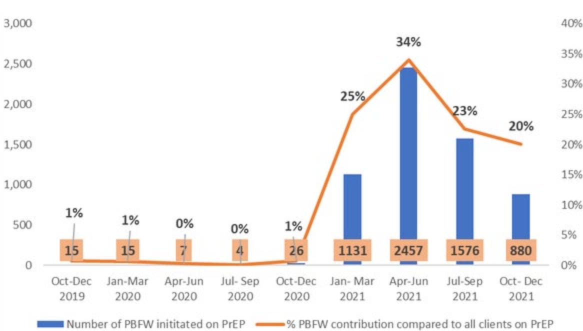

Figure 1. PBFW PrEP initiation and their contribution among clients on PrEP.

Conclusions/Next steps: Creating awareness through radio health talks and general population advocacy increases awareness on the importance of PrEP and therefore, increases the number of PBFW accessing PrEP to prevent transmission of infection to their children.

EPC189

Creating demand for HIV pre-exposure prophylaxis services among men who have sex with men and transgender people in the Eastern Cape Province of South Africa

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Background: A mid-term evaluation of the intervention programme implemented to reduce HIV incidence among men who have sex with men (MSM) and transgender (TG) people was conducted during February and March 2021. The intervention model introduced and piloted HIV pre-exposure prophylaxis (PrEP) as an additional HIV prevention method to the existing prevention methods.
This paper reports factors influencing uptake and barriers to uptake amongst these populations in the rural setting of South Africa.

Methods: Qualitative data collection methods including in-depth interviews and Focus Group Discussions (FGDs) in line with the evaluation objectives, explored various categories of the intervention programme stakeholders including programme beneficiaries, peer educators/ navigators and programme managers as well as other key informants involved in policy formulation including LGBTI, AIDS Council and Civil Society.

Results: PrEP uptake amongst the MSM did not meet the mid-term targets and performed overall at 25% among MSM. A significant increase in uptake, from 11% at end of March 2020 to 35% at end of September 2020 was recorded. Amongst the TG people, PrEP use performed overall at 80% of the mid-term target ranging from 14% to 145 % in implementing districts. Policy focus on the use of PrEP directed only towards high-risk population groups results in stigmatization of PrEP. Uptake and discontinuation of use were influenced by the health service delivery factors:

- The need for ensuring an uninterrupted supply of PrEP in facilities and avoiding PrEP outages.
- Labelling of PrEP to articulate prevention as it is easily mistaken as ART, further stigmatizing one as HIV positive
- Taking PrEP daily was cited as a challenge; long-acting injectable PrEP was recommended.
- Some saw PrEP as medicine, therefore preferring condom use as their choice of the protection method.
- Side effects of PrEP use were cited.

Conclusions: For successful roll-out of PrEP, the SA government needs to ensure proper implementation readiness, budget availability over and above external funding as well as the proper introduction of PrEP at all levels of government.

Scale up of PrEP

EPC190

Awareness of and willingness to use on-demand pre-exposure prophylaxis (PrEP) and associated factors men who have sex with men (MSM) in China

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Background: To maximize PrEP's benefit and provide prevention options tailored to individual risk, the U.S. CDC and WHO recommend "on-demand" PrEP dosing for individuals with infrequent sexual exposure. PrEP was officially approved for HIV prevention in China, yet little is known about awareness and willingness to use on-demand PrEP among Chinese MSM. This study describes awareness and willingness to use on-demand PrEP and their correlates among a sample of sexually active Chinese MSM.

Methods: Data were collected from *Blued*, a gay social networking (GSN) app, in July 2020. Active *Blued* users aged 18 and above were invited to complete a survey including questions on demographics characteristics, sexual behaviors, perceptions on on-demand PrEP use, perceived PrEP efficacy, and perceived MSM community's acceptance of PrEP, and health-related outcomes. Par-

ticipants who reported no anal sex in the past 6 months were excluded from analysis. All participants provided informed consent. Multivariable logistic regression was used to evaluate factors associated with awareness of and willingness to use on-demand PrEP.

Results: Of all eligible participants (*n*=956), only 56% had heard of on-demand PrEP, and 41% were willing to use on-demand PrEP. Nearly half (42%) reported not always using a condom, and 10.3% reported engaging in group sex.

In the multivariable model, MSM who engaged in group sex or had anal sex after using substances had a higher willingness to use on-demand PrEP (AOR=1.82, 95% CI:1.15-2.92; AOR=1.98, 95% CI:1.09-3.68). Higher perceived PrEP efficacy (AOR+1.97, 95% CI: 1.34-2.94) and higher perceived MSM community's acceptance of PrEP (AOR=2.06, 95% CI: 1.55-2.75) were statistically significantly associated with greater willingness to use on-demand PrEP.

Conclusions: Among a sample of high-HIV-risk MSM in China, both awareness and willingness to use on-demand PrEP for HIV prevention were low. Both awareness and willingness to use on-demand PrEP were correlated with individual risk behaviors, suggesting this might be a useful prevention tool for those at risk.

Future research and programs to promote on-demand PrEP use among MSM in China should focus on targeted messaging among individuals and communities. Disseminating information regarding PrEP and its efficacy in preventing HIV using GSN apps, is warranted.

EPC191

Willingness and preferences for long-acting injectable PrEP among US men who have sex with men

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Background: Cabotegravir long-acting injectable HIV pre-exposure prophylaxis (LA-PrEP) is shown to be efficacious with a good safety profile in clinical trials. Understanding potential user preferences for LA-PrEP is important to increase uptake and persistence.

Methods: Willingness to use and preferences for LA-PrEP and oral PrEP were measured in HIV-negative, sexually active men who have sex with men (MSM) in the 2020 American Men's Internet Survey.

Randomly selected MSM were randomized to a discrete choice experiment (DCE) module that presented paired profiles of hypothetical LA-PrEP alternatives with four attributes: out-of-pocket cost ($10, $30, $50), chance of side effects (25% pain, 15% headache, 5% rash), level of protection (90.0%, 95.0%, 99.9%), and total clinic time (1, 2, 3 hours), with an opt-out option (i.e., choose no LA-PrEP profile). Using Stata 17, conditional logit models estimated coefficients representing preferences, from which relative importance was calculated.

Results: Overall, 21% (1256/5,982) heard of LA-PrEP; 62% were likely to use it. Given a hypothetical choice, 74% (n=3,642) chose LA-PrEP, 16% (n=771) daily oral PrEP, and 10% (n=504) neither. Among n=2,647 DCE respondents, the greatest relative importance was placed on level of protection (Table). Respondents preferred lower costs, with $50 having 3 times higher disutility than $30. Respondents also preferred lower probability of side effects and shorter total time spent in clinic.

In relative importance, higher level of protection was important (55% of relative importance), followed by lower cost, shorter time spent, and side effects. The opt-out option (no injection) had the largest negative coefficient, indicating that holding all else constant, respondents strongly prefer the injection to no injection overall.

Attribute	Referent Level	Level	Coefficient (Mean)	SE	p-value	Relative Importance
Level of Protection	999/1000 Level of Protection 999/1000	950/1000	-1.3978	0.0265	<0.0001	55.29% 55.29%
		900/1000	-3.3130	0.0534	<0.0001	
Out-of-Pocket Cost	$10 Out-of-Pocket Cost $10	$30	-0.4973	0.0240	<0.0001	25.12% 25.12%
		$50	-1.5051	0.0420	<0.0001	
Total Clinic Time	3 hours Total Clinic Time 3 hours	2 hours	0.7411	0.0270	<0.0001	12.37% 12.37%
		1 hour	0.5607	0.0275	<0.0001	
Side effects	25% chance of pain Side effects 25% chance of pain	15% chance headache	0.4325	0.0287	<0.0001	7.22% 7.22%
		5% chance rash	0.3075	0.2782	<0.0001	
Neither option (Alternative-specific constant)			-8.324	0.2782	<0.0001	-

Table.

Conclusions: A large proportion of MSM expressed preference for LA-PrEP over daily oral pills. Respondents preferred that an injectable product be highly effective, with some concern for out-of-pocket cost, and relatively little concern for side effects and time spent obtaining.

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EPC192

PrEP availability among health facilities participating in the global IeDEA Consortium

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Background: While recognized as a key HIV prevention strategy, pre-exposure prophylaxis (PrEP) availability and accessibility are not well documented globally. We aimed to describe PrEP drug registration status and PrEP service availability across HIV care sites in the International epidemiology Databases to Evaluate AIDS (IeDEA) research consortium.

Methods: We used country-level PrEP drug registration status from the AIDS Vaccine Advocacy Coalition and data from HIV clinics caring for adult patients that participated in IeDEA-wide surveys conducted in 2014, 2017 and 2020 across seven regions: Asia-Pacific; North America; Caribbean, Central and South America; Central, East, Southern and West Africa.

We used descriptive statistics to assess PrEP availability, either onsite or offsite via referral, across participating sites and examined trends in availability among sites responding to all three surveys.

Results: PrEP was registered in 60% of countries (n=42), overall, and was lowest in Central (0%) and West African countries (43%). Of 199 eligible sites completing the 2020 survey, PrEP was available in 161 (80%). PrEP availability was highest at sites in North America (96%) and East Africa (94%) and lowest at sites in Central (50%) and West Africa (16%). Availability was higher at health centers (90%) and district hospitals (87%), versus referral/teaching hospitals (60%), and higher at sites serving predominantly rural (93%) versus urban (78%) or mixed (76%) populations. Among sites where PrEP was available, it was more frequently distributed at the HIV clinic (81%) versus elsewhere at the same facility (12%) or offsite via referral (6%). Among 94 sites responding to all three surveys (Figure), PrEP availability increased from 47% in 2014, to 60% in 2017, to 75% in 2020.

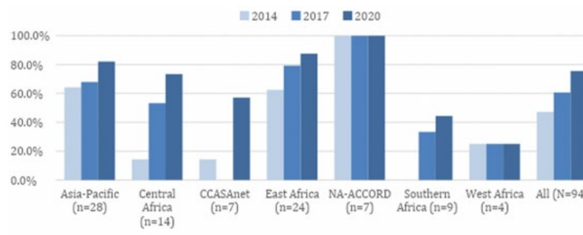

Figure 1. Availability of PrEP, either onsite or via offsite referral, by survey year and IeDEA region among 94 sites participating in 2014, 2017 and 2020 site surveys.
CCASAnet: Caribbean, Central and South America Network; NA-ACCORD: North American AIDS Cohort Collaboration on Research and Design

Conclusions: PrEP availability substantially increased across IeDEA sites since 2014.However, PrEP service provision varies markedly by region, underscoring the need to identify and address barriers to service provision.

EPC193

Correlates of adherence to daily oral HIV Pre-Exposure Prophylaxis among men that have sex with men in Nigeria

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Background: When taken correctly, HIV pre-exposure prophylaxis (PrEP) significantly reduces the risk of HIV acquisition. However, studies have demonstrated discordance between subjective self-reported measures and objective biomedical benchmarks of PrEP adherence. We estimated the correlation between self-reported PrEP adherence and PrEP biomarkers and explored factors associated with adherence among men that have sex with men (MSM) in Nigeria who are vulnerable to HIV.

Methods: TRUST-PrEP was an open-label, single-site, prospective, one-year study conducted in Abuja between April 2018 and May 2019, using clinic provider-initiated and community-based peer-to-peer PrEP introduction methods. MSM who were at least 18 years with substantial HIV risk were enrolled.

Participants were asked to report PrEP adherence over the last month using a 4-point scale from "poor" to "perfect" monthly and serum samples for PrEP biomarkers were collected at months 3 and 9. Self-reported adherence was correlated with serum tenofovir concentration, with serum tenofovir ≥ 4.2ng/mL (measured via liquid chromatography-tandem mass spectrometry) considered indicative of adherence.

Spearman's rank correlation was used to estimate correlations between self-reported adherence and measured tenofovir levels. Logistic regression with generalized estimating equations was used to estimate adjusted odds ratios (aORs) and 95% confidence intervals (CIs) for associations between self-reported adherence and laboratory-measured adherence.

Results: Of 219 MSM (median age 23 [IQR 20-27] years) that initiated PrEP, 314 samples were analyzed. Only 66/219 (30%, 95% CI: [24-36%]) had at least one record of PrEP adherence assessment.

Furthermore, 56/219 (26%, 95% CI: [20-31%]) showed concordance between tenofovir and self-reported adherence and 17/219 (8%, 95% CI: [4-11%]) and 49/219 (22%, 95% CI: [17-28%] had serum tenofovir of 4.2-35.4 ng/mL and ≥ 35.5 ng/mL, corresponding to at least 4 and 7 days' PrEP use, respectively, in a week.

In a longitudinal multivariable regression, PrEP adherence was more common among participants who received clinic-based PrEP introduction compared with community-based (aOR: 8.35, 95%CI: [3.24, 21.5]) and disclosed same-sex sexual practices to their family (aOR: 3.60 95% CI: [1.73, 7.51]).

Conclusions: Facilitating clinic-based PrEP introduction and disclosure of same-sex practices to family among MSM may improve PrEP adherence. Objective, cost-effective methods of assessing PrEP adherence would be useful in this setting.

EPC194
People who inject drugs: missed opportunities to discuss HIV pre-exposure prophylaxis

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Background: People who inject drugs (PWID) are at increased risk of HIV infection. HIV pre-exposure prophylaxis (PrEP; the use of antiretroviral treatment medications to prevent HIV infection) is an effective yet underutilized HIV prevention strategy for PWID. However, studies rarely examine correlates of whether healthcare providers discuss PrEP with PWID.

Thus, this exploratory study aimed to identify missed opportunities for healthcare providers to discuss PrEP with PWID.

Methods: Participants were 395 HIV-uninfected PWID recruited in the 2018 National HIV Behavioral Surveillance wave in San Francisco, California via respondent-driven sampling. We used simple and multiple logistic regression to test whether the following factors were associated with discussing PrEP with a healthcare provider in the past 12 months: demographic characteristics; incarceration; HIV testing; seeing a healthcare provider; receiving various forms of HIV/STI/hepatitis prevention, such as exchange services for syringes and injection equipment and receiving free condoms from a program; receiving or seeking substance use treatment, such as treatment programs and medication-assisted treatment; and overdosing.

We report odds ratios (ORs) with 95% confidence intervals (CI_{95}) for simple logistic regression analyses and adjusted odds ratios (aORs) with CI_{95} for the multiple logistic regression model.

Results: Most participants, 86.3%, reported seeing a healthcare provider, but only 15.0% of these reported discussing PrEP with a healthcare provider. Primary correlates of discussing PrEP included: sexual minority (non-heterosexual) status (*OR*=2.68, CI_{95}: 1.44-5.00; *aOR*=2.28, CI_{95}: 1.09-4.77), being tested for HIV (*OR*=7.28, CI_{95}: 2.22-23.93; *aOR*=4.33, CI_{95}: 1.21-15.47), having a healthcare provider recommend HIV testing (*OR*=3.05, CI_{95}: 1.42-6.54; *aOR*=3.28, CI_{95}: 1.34-7.99), and receiving free condoms (*OR*=7.00, CI_{95}: 2.47-19.86; *aOR*=5.90, CI_{95}: 1.92-18.15).

Conclusions: In the face of many missed opportunities to discuss PrEP, public health efforts must be more strategic to target services and circumstances encountered by PWID (e.g., receiving or seeking substance use treatment, seeing any healthcare provider who is aware of their injection drug use). Increased efforts are also needed to reach PWID who do not identify as sexual minority people.

Given that the present study occurred in San Francisco, which is among the leaders of PrEP coverage in the United States, missed opportunities are likely even more problematic outside of San Francisco.

EPC196

The best thing about PrEP is ____: benefits of HIV PrEP according to PrEP-using gay, bisexual and other men who have sex with men in Ontario and British Columbia, Canada

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Background: To describe positive aspects of HIV pre-exposure prophylaxis (PrEP) as identified by PrEP-using gay, bisexual and other men who have sex with men (GBM), and to explore their association with demographic characteristics.

Methods: We conducted a cross-sectional survey from JUL2019-AUG2020 among GBM in five cities in British Columbia and Ontario, Canada as part of 'PRIMP', a multi-component implementation project. We recruited participants at least 19 years old from sexual health clinics and various social media platforms.

Participants with current or prior experience taking PrEP were asked to describe with a few words "*the best thing about taking PrEP*". Each participant's responses were coded independently by two authors. Themes were created using content analysis. We created contingency tables between themes, and ethnicity and income; and tested for differences using χ^2 tests.

Results: Of 702 GBM with experience taking PrEP, 523 codes were generated from 459 responses. The median age was 35 (IQR: 29-42) years and most were currently on PrEP (79%, n=359). Seven themes emerged (see Figure and Table).

Black and Latin respondents tended to focus on the effectiveness of PrEP (p=0.014). GBM with higher income tended to focus on aspects such as reduced anxiety, less fear, less worry and less stigma (p=0.002). There were no differences based on age or former/current PrEP use (p>0.05).

	Health and personal gains 26 (5%)	Sex affirming 37 (7%)	A good head-space 183 (35%)	A calming effect 98 (19%)	A con-venient product 20 (4%)	PrEP works 152 (29%)	Everything about PrEP is good 7 (1%)
Ethnicity (p=0.014)							
White	20 (6%)	24 (7%)	121 (36%)	63 (19%)	16 (5%)	89 (26%)	5 (1%)
Black or Latin	1 (2%)	1 (2%)	15 (29%)	7 (14%)	0 (0%)	27 (53%)	0 (0%)
East Asian	2 (5%)	6 (16%)	9 (24%)	12 (32%)	2 (5%)	6 (16%)	0 (0%)
Other	3 (3%)	6 (7%)	37 (40%)	16 (17%)	2 (2%)	26 (28%)	0 (0%)
Income (p=0.002)							
<$40K CAD	6 (4%)	9 (7%)	54 (39%)	14 (10%)	9 (7%)	46 (33%)	0 (0%)
$40K-60K CAD	8 (7%)	7 (6%)	38 (32%)	19 (16%)	2 (2%)	40 (34%)	4 (3%)
>$60K CAD	11 (5%)	20 (9%)	77 (33%)	60 (26%)	7 (3%)	54 (23%)	2 (1%)

Table.

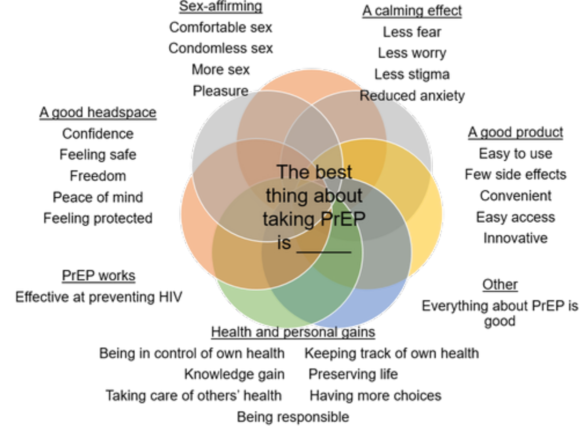

Figure.

Conclusions: The benefits of PrEP go beyond the obvious effectiveness against HIV infection. Ethnicity and income influence what positive aspects of PrEP might feel more relevant to GBM and could be incorporated into tailored health promotion messages.

EPC197

Missed opportunities for HIV testing and PrEP education in a high-risk population

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Background: The U.S. Department of Health and Human Services launched the Ending the HIV Epidemic initiative in 2019 with a goal of reducing new HIV infections in the U.S. by 90% by 2030. Core components include early diagnosis of HIV and scale-up of PrEP.

Methods: We conducted a retrospective review from 1/1/2019-12/31/2019 of all positive gonorrhea and chlamydia tests in patients 18yrs and older at Cambridge Health Alliance.

Patients with greater than 1 positive result on the same day were counted as one "encounter" whereas patients with greater than one positive result on separate days were counted as separate "encounters."

For those without HIV, we gathered data on whether HIV testing occurred within 90 days after the encounter for the positive gonorrhea or chlamydia test. For the subset of patients without HIV and not on HIV PrEP who had a positive test for gonorrhea, we determined if PrEP was discussed within 180 days after the positive gonorrhea test.

For encounters in which only chlamydia was identified, we elected not to assess if a PrEP discussion occurred because isolated chlamydia infection is not considered a specific indication for PrEP among women or heterosexual men in the PrEP guidelines.

Results: During the calendar year 2019 there were 1,015 positive gonorrhea and chlamydia tests in HIV-negative individuals, representing 980 separate encounters. 57.7% of these encounters were followed by an HIV test within 90 days, 2 of which were positive. Rates of follow-up HIV testing varied by department in which the gonorrhea or chlamydia test was obtained and by patient gender.

Of these 980 encounters, 93 were in HIV-negative individuals not receiving PrEP who tested positive for gonorrhea. Education about PrEP was documented in 19.4% within 180 days. PrEP education after a positive gonorrhea test varied by ordering department and gender.

Conclusions: Missed opportunities to offer HIV testing and PrEP education to individuals at high risk of HIV acquisition exist. In particular, patients who were tested for an STI in an emergency department and female patients were more often overlooked. Working with our emergency department colleagues and addressing gender imbalance is critical to reducing new HIV infections.

EPC198

Audience segmentation of preferences for long-acting injectable among US MSM: a latent class analysis

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Background: Cabotegravir long-acting injectable HIV pre-exposure prophylaxis (LA-PrEP) is superior to daily oral PrEP and has a good safety profile. Understanding variations in preferences for LA-PrEP is important for audience segmentation to tailor implementation strategies.

Methods: Preferences for LA-PrEP were measured in HIV-negative, sexually active men who have sex with men (MSM) in the 2020 American Men's Internet Survey.

Randomly chosen respondents were offered a discrete choice experiment (DCE) with paired profiles of hypothetical LA-PrEP alternatives: out-of-pocket cost ($10, $30, $50, $75), side effects (25% chance of pain, 15% chance of headache, 5% chance of rash), level of protection (90.0%, 95.0%, 99.9%), and total clinic time (1, 2, 3 hours), with an opt-out option.

Latent class analysis was conducted to estimate preference heterogeneity, and within-class coefficients calculated into relative importance.

Results: Three latent classes of preferences for LA-PrEP emerged among n=2,657 respondents (Table).

Class 1 (41% of respondents) cared largely about level of protection (72% of total utility). This class strongly preferred LA-PrEP to opting out if it is highly effective.

Class 2 (44%) placed relatively more importance on cost (38% of utility), cared about protection level (27%) and time spent (23%), and preferred the injection to no injection.

Class 3 (15%) was like Class 2, caring about protection, cost, and time, but preferred opting *out* of the injection.

Attribute	Referent Level	Levels	Class 1 (44% of respondents) Coefficient (mean)	Class 1 Relative importance of attribute	Class 2 (41% or respondents) Coefficient (mean)	Class 2 Relative importance of attribute	Class 3 (15% of respondents) Coefficient (mean)	Class 3 Relative importance of attribute
Side effects	25% chance of pain	15% chance of headache	0.361	12.04%	0.483	5.73%	0.147	8.74%
	Side effects 25% chance of pain	5% chance of rash	0.0470	12.04%	0.130	5.73%	0.336	8.74%
Out-of-pocket costs	$10	$30	-0.591	38.38%	-0.642	13.20%	-0.758	29.90%
	Out-of-pocket costs $10	$50 or $75	-1.498	38.38%	-1.112	13.20%	-1.149	29.90%
Level of protection	999/1000	950/1000	-0.484	26.98%	-3.520	72.28%	-1.005	33.52%
	Level of protection 999/1000	900/1000	-1.053	26.98%	-6.088	72.28%	-1.288	33.52%
Total Clinic time	3 hours	2 hours	0.720	22.60%	0.74	8.79%	0.570	27.84%
	Total Clinic time 3 hours	1 hour	0.882	22.60%	0.054	8.79%	1.070	27.84%
Preference for no LA-PrEP, given the options (alternative-specific constant)			-2.786	-	-6.536	-	2.423	-

EPC198 Table.

Conclusions: The vast majority of respondents consistently chose LA-PrEP regardless of cost, clinic time, side effects, or protection level; however, preferences among these attributes varied. About 40% of MSM placed highest importance on effectiveness over other attributes.
Others valued a balance of cost, time, and effectiveness, with most of them wanting the injection despite those factors, and a small proportion preferring to opt out of the injection altogether. These varied groups likely require tailored communication strategies to achieve maximum LA-PrEP uptake and persistence.

EPC199
Awareness and willingness to pay for dapivirine vaginal ring by female undergraduate students of the University of Nigeria

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Background: Dapivirine vaginal ring (DPV-VR) is a pre-exposure prophylaxis strategy that reduces the risk of HIV transmission in women at high risk of the infection. The uptake of DPV-VR will reduce the prevalence of HIV infection in Nigeria which contributes a significant proportion to the global burden.
This study assessed the acceptability and willingness to pay (WTP) for DPV-VR by undergraduate female students of the University of Nigeria (UNN).
Methods: This study adopted a cross-sectional design to obtain responses from female students of UNN in January 2022 using a 23-item questionnaire. A sample size of 500 was estimated from five faculties. Their acceptability was accessed before and after educating them on DPV-VR. WTP choice and amount were obtained in Naira using contingent valuation.
Descriptive statistics were used to summarize the variables, while chi-square test was used to evaluate the impact of the educational intervention. $P<0.05$ was considered statistically significant. Ethical approval was obtained from the university's Institutional Review Board.
Results: A total of 385 students responded to the questionnaire (77.0% response rate). The modal age was 18–24 years: 321(83.4%). Majority of the students were not married, expressed by 363(94.3%). When asked if they had ever tested for HIV, 198(51.4%) responded in the affirmative.
Whereas 172 students responded that they had receptive vaginal sex with their male partners within the past four weeks (before the study), 77(44.77%) reported that they did not use condom during the sex acts.
There was about a two-fold increase in the acceptability of the DPV-VR among the students (128 to 223) after the device and its importance were described to the students: $\chi^2(2)$, $p\leq0.001$. Majority of the students (174, 45.2%) indicated that they would be willing to pay N410.00 – N8,200.00 for a single DVP-VR, with a mean of N4217.29 and minimum/maximum amounts of N0.00/N50,000.00 (N415/$1).

Conclusions: Many of the female students of the University of Nigeria were willing to use dapavirine vaginal ring. More were willing to use the ring after they were informed of its importance. They were also willing to pay (out-of-pocket) to be provided the ring if it was not freely provided for them.

EPC200
The effect of pregnancy on daily oral PrEP use among adolescent girls and young women in Uganda

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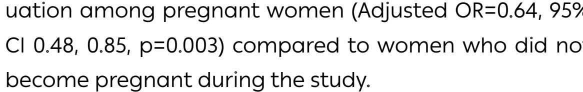
Background: Pregnancy is a period with elevated risk for acquiring HIV and oral pre-exposure prophylaxis (PrEP) is recommended during pregnancy for at-risk women. However, little is known about how pregnancy impacts oral PrEP continuation among young women.
Methods: We used data from an ongoing open-label prospective study aimed to address safety questions with concurrent tenofovir (TDF)-based PrEP and contraceptive use.
The study enrolled sexually active, HIV-negative women, ages 16-25 years, initiating contraception in family planning clinics and health centers in Kampala, Uganda.Over 24 months, women were followed quarterly with rapid testing for HIV and pregnancy, PrEP adherence counseling, and PrEP refill. Women who become pregnant were counseled about the benefit and risk of PrEP use during pregnancy per national guidelines.
We used a multivariable generalized estimation equation to compare PrEP continuation between women who became pregnant and those who did not become pregnant during the study with adjustment for age, income, education, relationship status, and partner's HIV status.
Results: Among 499 women enrolled in the study, 440 initiated PrEP at any point during the study. Among those who initiated PrEP, the median age was 20 years (IQR 18-21), median education level was 11 years (IQR 7-12), 56% earned an income of their own, and 86% had a steady sexual partner at enrollment.
The majority (62%) had multiple sexual partners and 66% were unsure of their partner(s)' HIV status during the study period, 79 (18%) women became pregnant, 60 (76%) continued PrEP use during pregnancy. There was a statistically significant 36% reduction in the odds of PrEP contin-



uation among pregnant women (Adjusted OR=0.64, 95% CI 0.48, 0.85, p=0.003) compared to women who did not become pregnant during the study.
Among women who became pregnant, there was a statistically significant 30% reduction in the odds of PrEP continuation during pregnancy (adjOR=0.70, 95% CI 0.52-0.96, p=0.025) compared to their PrEP use during non-pregnant periods.
Conclusions: Women who experienced pregnancy while using PrEP were less likely to continue using PrEP than those who did not experience pregnancy. Innovative strategies are needed to support PrEP use during pregnancy.

EPC201
Incidence of HIV infection after initiation of Australian government-subsidisedpre-exposure prophylaxis (PrEP): a national whole-of-population cohort study using dispensing data

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Background: PrEP has been publicly funded since April 2018. We used national dispensing data to examine HIV incidence in a national real word cohort of all people prescribed government-subsidised PrEP.
Methods: We used linked de-identified dispensing records of all government-subsidised PrEP and antiretroviral therapy (ART) up to September 2021 for people who initiated PrEP between April 2018 and September 2020. Incident infection was defined as ART dispensed more than 60 days after PrEP initiation. Medication possession ratio over the last 90 days (90day-MPR) and incidence rate from the time of PrEP initiation were calculated and Poisson regression analysis performed using: patient sex, age-group, location, subsidy level (based on employment, health, disability), Hepatitis C treatment history, year of PrEP initiation, 90day-MPR and prescriber location and caseload (number of PrEP patients per prescriber).

	n	1000PY	IR	(95% CI)	aIRR	(95% CI)	p
90 day MPR>= 60%	12	39.2	0.31	(0.17-0.54)	ref		
90 day MPR > 0% and < 60%	10	7.80	1.28	(0.69-2.37)	4.35	(1.88-10.09)	.001
90 day MPR = 0 & received PrEP once	26	11.9	2.19	(1.49-3.21)	10.33	(5.13-20.83)	<.001
90 day MPR = 0 & rec'd PrEP more than once	47	41.1	1.14	(0.86-1.52)	4.39	(2.32-8.30)	<.001
Higher subsidy level	41	19.7	1.67	(1.19 -2.36)	2.20	(1.42-3.42)	<.001
History of Hepatitis C Treatment	5	0.60	7.73	(3.22 - 18.56)	6.16	(2.44-15.6)	<.001
PrEP caseload <=100	11	30.0	0.37	(0.20 -0.66)	0.24	(0.13-0.46)	<.001
PY= person years, IR=incidence rate per 1000 person years, CI=confidence interval, aIRR= adjusted incidence rate ratio.							

Table.

Results: Amongst 39,817 PrEP users (99.8% male, median age 34 years), 95 HIV incident infections were identified over 100,064 person-years (PY), representing an incidence rate of 0.95/1000PY (95%CI 0.78-1.16) and with a median 220 days (0-740 days, IQR 97-421 days) without PrEP prior to HIV diagnosis. Incident rates were lowest with 90-dayMPR >60% and amongst patients of low caseload prescribers and highest with people dispensed PrEP only once, higher subsidy level and history of Hepatitis C treatment (see table); other variables were not associated.
Conclusions: Overall HIV incidence in PrEP users is low and is more than five times lower than national levels in MSM in Australia before PrEP. Active support and follow-up of those with delayed PrEP collection (particularly after one prescription), hepatitis C treatment history (a possible marker of injection drug use and/or high sexual risk) and higher subsidy level (a possible marker of disparities in the social determinants of health) may drive incidence even lower.

EPC202
PrEP eligibility and willingness among sex-workers (SW) in Ukraine

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Background: SWs are still a stigmatized and hard-to-reach group in Ukraine, and HIV has shifted towards the sexual transmission, mainly through heterosexual contact. HIV prevention services (consultations, HIV testing, condoms) are provided with annual coverage of >50k SWs of the 86K estimated population. In 2021, about 5k people received PrEP, but only 5% of them were SWs.
In this analysis, we have estimated the share of SWs who are eligible and willing to take PrEP in 7 Ukrainian cities.
Methods: We analyzed data of the 2021 integrated bio-behavioral survey (IBBS) among SW (n=4,961). The study was conducted in 7 cities of Ukraine using the time-location method.
Within the survey, we asked participants about their perception of PrEP and their willingness to take it under the required conditions.
We measured the willingness of SWs to use PrEP and estimated the number of SWs who meet the eligibility criteria and are willing to take it.
Results: 96.9% of SWs received HIV-negative test result, only 1/3 of them have heard about PrEP and 3% have used it. 94.9% of SWs were eligible for PrEP according to HIV-negative test result and risk behavioral criteria (having HIV-positive client or sex partner, unsafe sex more than one partner in the last 30 days). 18.8% of SWs have demonstrated willingness to use PrEP and agreed to take it following the conditions of its prescription and monitoring of use (daily intake, using condoms, regular HIV and other medical testing, receiving at the AIDS Center).
Opportunity to receive PrEP at NGOs, not only AIDS Centers, increases willingness by +3%. Thus 17% of SWs were eligible and willing for PrEP (or 7k SWs in 7 IBBS cities). PrEP

willingness significantly depends on the city, age groups, monthly income groups, current occupation, and using NGO services as a client.

Conclusions: In 2021, the Ministry of Health of Ukraine adopted the Standard on PrEP, which means scaling up of PreP among key populations, including SWs. The presented results of the analysis are important strategic information for improving SWs' awareness of PrEP and implementation of it among the target group.

EPC203

Qualitative study on PrEP implementation among men who have sex with men and transgender women in Brazil: the user's perspectives

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Background: HIV/AIDS epidemic persists in Brazil among key populations such as men who have sex with men (MSM) and transgender women (TGW). Changes in recent prevention strategies, with the incorporation of Pre-Exposure Prophylaxis (PrEP), create challenges and opportunities for its implementation, such as user knowledge, perception, and access to daily oral PrEP. Moreover, PrEP uptake and continuation are of global concern as access barriers for MSM and TGW.

This abstract presents results of a qualitative study assessing perceptions and attitudes of PrEP users during the implementation of PrEP policy in Brazil (ImPrEP Stakeholders study).

Methods: Qualitative study, based on in-depth interviews with PrEP users in 6 cities of all 5 administrative regions of Brazil. Interviews were recorded, transcribed, organized, and categorized using NVivo12 Plus software. The central axes analyzed were:

i. PrEP knowledge,

ii. accessibility,

iii. users' experiences and interaction with public health services.

This analysis looked at PrEP implementation based on these narrative categories.

Results: Twenty PrEP users were interviewed; age 26-47 years; 80% MSM, and 20% transgender women. Most participants obtained knowledge of PrEP through peers, communication technologies/internet, implementation studies, and health professionals. Participants expressed concerns related to the dissemination of PrEP information. More accessible language is needed to increase PrEP literacy among key populations. In terms of accessibility, lack of service availability and difficulties to initiate same-day oral PrEP at public health services were reported as concerns.

Regarding PrEP use, all interviewees emphasized the importance of PrEP for HIV prevention and sexual pleasure. PrEP use was reported as easy to take, and PrEP services were said to reinforce the importance of care and prevention of other sexually transmitted infections.

Conclusions: Understanding the experiences of PrEP users and their interaction with health services, socioeconomic context, subjectivities, and cultural specificities are crucial for an effective PrEP implementation policy. Perceived practices of health professionals (subjectivities, values, and beliefs) should attend to the concerns of key populations.

Stigma-free health service environment, targeted communication, community mobilization, and peer support are strategies perceived as effective facilitators to access, linkage, and retention to PrEP services, and enablers to PrEP roll-out in Latin America and globally.

EPC204

The best predictor of future behavior may be the past: exploring behavior change in men who have sex with men using pre-exposure prophylaxis in the Netherlands

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Background: Pre-exposure prophylaxis (PrEP) use reduces HIV transmission, but may lead to changes in sexual behavior and increased sexually transmitted infection (STI) incidence. We aimed to explore predictors of behavior change in men who have sex with men (MSM) using PrEP at sexual health centers (SHC) in the Netherlands.

Methods: We used longitudinal data from the national STI surveillance database (2018-June 2021) of HIV-negative MSM who first initiated PrEP in the national PrEP pilot (start July 2019). We modelled behavior change over time, and identified predictors of behavior change using multi-state Markov models.

Results: Of all MSM included in the analysis (n=4,981, n SHC visits=27,937), 60% was ≤35 years old, 63% was highly educated (i.e., university degree), and 59% was of Dutch origin. Recent PrEP use was reported at 56% of all visits, any STI (i.e., chlamydia, gonorrhea or syphilis) positivity was 22%, and 12 MSM (0.2%) were diagnosed with HIV.

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Furthermore, ≥10 partners (34% of all visits), groupsex (22%), chemsex (21%), use of poppers/erection stimulants (24%), and inconsistent condom use (90%) were commonly reported behaviors. Anal STI or syphilis diagnosis was a predictor of starting chemsex and poppers/erection stimulants, and of continuing to engage in groupsex.

Furthermore, visiting the SHC more often/regularly (vs. less often) was a predictor of changing from inconsistent to consistent condom use, but also of starting with groupsex, chemsex, and poppers/erection stimulants, and increasing partner numbers (≥10).

Furthermore, young age (16-35 years), and visiting the SHC in Amsterdam (vs. other regions) were predictors of behavior change (i.e., both stopping or starting groupsex, chemsex, poppers/erection stimulants, and condomless anal sex, and of changes in partner numbers).

Recent PrEP use was not a predictor of behavior change, nor was the COVID-19 pandemic (i.e., visits from March 2020 onwards vs. visits pre-COVID-19).

Conclusions: We identified several predictors of behavior change among MSM in the national PrEP pilot, but PrEP use was not one of them. Although regular SHC visits may improve condom use, STI prevention efforts during SHC consultations could be more focused on other behaviors associated with STI risk, especially for MSM who tested positive for anal STI or syphilis.

EPC205

Oral PrEP use acceptability and feasibility among Uganda fisherfolk communities in central Uganda: a qualitative study

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Background: HIV is hyperendemic among fisherfolk in Sub-Saharan Africa. Research is needed to determine acceptability of pre-exposure prophylaxis (PrEP) and identify feasible and sustainable intervention strategies to improve PrEP implementation and social marketing messages to encourage PrEP use in fisherfolk communities. Mildmay Uganda, the research setting, is implementing PrEP at the Nakiwogo and Kigungu fishing communities on Lake Victoria, Uganda.

Methods: To inform PrEP implementation, semi-structured interviews were conducted with 35 HIV-negative testing clients at Nakiwogo and Kigungu (15 women, 20 men: fishermen, other fishing industry workers, commercial sex workers, and unemployed individuals) and 10 key stakeholders (4 women, 6 men: 2 Ministry of Health policymakers, 1 district focal person, 4 healthcare workers, 2 fishing community leaders, and 1 Village Health Team provider). Interviews aimed to understand what is currently being done regarding current PrEP implementation and how it can be improved; marketing messages to introduce PrEP to fisherfolk; and ways to support adherence and medication refill.

Transcripts were analyzed using a directive content analysis approach based on implementation science and social marketing frameworks.

Results: Participants showed misconceptions and a lack of knowledge about the purpose of PrEP, how it works, and how it should be taken. Other barriers included stigma (due to similar medications/packaging as HIV treatment); mobility, competing needs, poverty, and fear of partner conflict. Providers discussed insufficient staffing to provide PrEP in fishing communities.

Misconceptions included fear of side effects, doubts about effectiveness, beliefs that PrEP cannot be taken with alcohol or on an empty stomach, and concerns that it is experimental or poisonous.

Recommendations included: change PrEP packaging; integrate PrEP with other services; decrease PrEP refill frequency; give transportation resources to providers; train more healthcare workers to provide PrEP in fisherfolk communities; and use positively framed messages to promote PrEP.

Conclusions: Inadequate knowledge and misconceptions may be due to inadequate explanation by healthcare providers, as well as low education levels in fisherfolk communities. Results can inform policymakers and healthcare organizations on how to overcome barriers to PrEP scale-up in most at-risk populations.

EPC206

Scaling-up PrEP delivery in South Africa: lessons from 2nd year of implementation

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Background: HIV oral Pre-Exposure Prophylaxis (PrEP) was first launched in South Africa in 2016 in selected sites as part of a combined HIV prevention strategy. Evidence to inform scale-up of PrEP is needed to meet the National Department of Health's target of 676,970 individuals on PrEP by March 2022.

Description: PrEP was launched at the clinic level in 18 sub-districts in South Africa in October 2019 targeting adolescent girls and young women (AGYW) 15–24-year-olds who are HIV negative and at significant risk of acquiring HIV infection. In South Africa, AGYW account for a quar-

ter of all new HIV infections. To accelerate the program in 2021, the following efforts produced lessons learned for scaling-up PrEP delivery.

Lessons learned: *PrEP Integration:* To increase the identification of high-risk HIV negative individuals and serodiscordant index contacts, it is necessary to integrate PrEP with HTS and across all clinic service delivery points.

Formal partnerships: Signed partnership agreements are essential for encouraging joint planning and agreement to implement a bi-directional referral system.

Capacity-building of healthcare workers & PrEP clients: PrEP implementation requires capacity-building of healthcare workers and PrEP literacy for beneficiaries and caregivers to accept and continue on PrEP Treatment.

Granular Site Management approach: Setting targets at the clinic level and identifying high-volume testing clinics with low PrEP initiations was prioritised for site-level interventions.

These scale-up activities resulted in 86% of those screened, being eligible and 64% of those eligible to be initiated on PrEP which was a 15-fold increase (from 2,850 to 43,822) from the previous year's PrEP initiations. Males and females outside of the AGYW age band accounted for 55% (23,951/43,822) of PrEP initiations. Females contributed 74% (32,238/43,822) to the overall performance.

Conclusions/Next steps: PrEP as a prevention method should be extended to all high-risk individuals irrespective of age. Clinics need to prioritise adolescent and youth-friendly services to attract AGYW to health care facilities. PrEP integration into ANC and PNC services is necessary for scale-up in pregnant and breastfeeding women to prevent mother-child transmission of HIV. Differentiated care models have recently been approved for dispensing of multi-month PrEP treatment.

EPC207

Acceptance of HIV home self-testing to follow-up PrEP users from a community center in Barcelona. A response to the pandemic-related barriers to maintain prevention programs and scale up PrEP usage

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Background: In 2021 BCN PrEP-Point modified the follow-up protocol, requiring a complete appointment every 6 months, rather than 3, and using "quick follow-up" appointments using a HIV home self-test and STIs screening in between. Those who had taken PrEP for longer than 1 year with good adherence and adequate kidney function were eligible. These changes aimed to respond to the pandemic situation and allow more people to be included in the program, while also involving PrEP users in their own care. We wanted to evaluate the implementation of such changes.

Description: This paper is an evaluation of the usage of HIV home self-testing to follow-up with men who have sex with men and transgender people taking PrEP in a community-based center in Barcelona. An online-based survey invitation was sent, informed consent was requested and local data protection laws were assured.

The survey asked about: accuracy and clarity of the information/instructions given; experience of performing the HIV home self-test and STIs samples collection; the convenience of this "quick follow-up" visit; and difficulties faced during the process. Responses were collected, analysed and discussed.

Lessons learned: 434 participants answered the survey. 94.1% of participants agreed that the information and instructions for HIV home self-testing were clear and adequate. 75.5% found it easy to perform the HIV home self-test, and 92.9% found it easy to read the result. 95.8% of respondents found the "quick follow-up" visit convenient and agile.

However, 31.8% of the users felt anxiety about performing the HIV home self-test and 15.2% suggested they didn't feel like using this service. Since implementation, the number of PrEP users has increased 18.9%.

Conclusions/Next steps: These changes have allowed the PrEP program to expand and were well received, encouraging users to be more responsible for their own care. Additional support was offered to users who experienced anxiety or didn't feel like using the service.

We expect the number of people that feel uncomfortable and/or anxious to reduce as users become accustomed to performing home self-testing in the future. Home self-testing has become increasingly popular and offers a cheap, simple and useful tool in HIV prevention.

EPC208

Assessing PrEP uptake for HIV negative contacts of index client: RISE experience

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Background: The Reaching Impact, Saturation, and Epidemic control (RISE) project is funded by PEPFAR via USAID in support of the national HIV response in Nigeria. PrEP has been integrated into routine health services in 103 RISE-supported facilities. The HIV-negative partners of newly diagnosed index cases are the primary population offered PrEP. While there has been a steady uptake in PrEP, there is a need to accelerate this intervention as a proven method of prevention; uptake of PrEP ranges widely, from

60 to 95% of those at risk who test negative. This analysis aims to evaluate the testing, eligibility and PrEP enrollment cascade of HIV negative partners/contacts of index clients who receive care at sites supported by the RISE project.

Methods: A risk screening tool was used to determine the HIV negative at-risk population eligible for PrEP. Eligible individuals were counseled and, if interested and clinically eligible, enrolled into the program and initiated on PrEP. Data from electronical medical records for services provided between October 2020 and September 2021 were analyzed to describe the proportion of individuals who were screened, eligible and subsequently received PrEP by cascade. Pearson's Chi-square test with Yates correction was utilized using a p-value of 0.05 as benchmark for statistical significance.

Results: A total of 10,027 HIV-negative individuals were screened between October 2020 and September 2021; 8,610 (86%) were eligible; of whom 8,385 (97%) accepted PrEP. Of the individuals who accepted PrEP 3,089 (37%) were female. Among HIV-negative partners of index cases, 2,493 HIV negative individuals were screened, 1,892 (76%) were eligible and 1,847 (98%) accepted PrEP. There was no significant difference between PrEP uptake in index modalities and other modalities for either men or women (p = .3234). PrEP uptake amongst women was highest 146 (22%) among ages 25-29, while PrEP uptake was highest 231 (21%) amongst Men aged 30-34.

Conclusions: Over 95% of eligible individuals-initiated PrEP from both index and non-index modalities. However, focus on strategies on raising risk awareness among female counterparts is essential in the program.

EPC209

Uptake of Pre-exposure Prophylaxis among key populations in Nigeria: evidence from the 2020 integrated biological & behavioural surveillance survey

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Background: Key populations (KPs) are at increased risk of HIV due to specific higher-risk behaviours and structural factors that increase their vulnerability. Although KPs represent less than 2% of the total population in Nigeria, they are estimated to account for about 11% of new HIV infections. While interventions to prevent new infections among KPs in Nigeria have included oral pre-exposure prophylaxis (PrEP), there is limited evidence on its coverage. This study explored the uptake of PrEP and the disparities among KPs in Nigeria.

Methods: This study was a secondary data analysis of the 2020 Integrated Biological & Behavioural Surveillance Survey (IBBSS). Using a two-stage cluster sampling approach, the survey was conducted in 12 states across the six geopolitical zones in Nigeria, to obtain serological and behavioural information on KPs, including female sex workers (FSW), men who have sex with men (MSM), people who inject drugs (PWID) and transgender people (TG).

In the survey, KPs who had heard of PrEP were asked: "Have you ever taken PrEP?" We restricted our analysis to 6,069 KPs who responded "yes" or "no" to ever taking PrEP. We performed weighted descriptive statistics and univariate and multivariate regression analyses.

Results: Overall, 22.3% reported that they had ever taken PrEP (Table 1). The uptake of PrEP varied by KP group: MSM (27.5%), TG (24.1%), FSW (20.4%), and PWID (11.4%). After adjusting for sociodemographic factors, the odds of ever taking PrEP among MSM were about twice that of FSW (aOR=1.6, 95%CI=1.30-2.02) (Table 1). However, compared with FSW, PWID had lower odds of reporting ever taking PrEP (aOR=0.5, 95%CI=0.36-0.62).

	No N (%)	Yes N (%)	Univariate OR (95%CI)	Multivariate aOR(95%CI)
Group:				
FSW	890 (79.6)	228 (20.4)	Reference	Reference
MSM	1568 (72.5)	596 (27.5)	**1.5 (1.25-1.76)**	**1.6 (1.30-2.02)**
PWID	977 (88.6)	126 (11.4)	**0.5 (0.40-0.64)**	**0.5 (0.36-0.62)**
TG	1278 (75.9)	406 (24.1)	**1.2 (1.03-1.49)**	1.2 (0.97-1.56)
Age:				
15-24	1863 (75.5)	603 (24.5)	Reference	Reference
25-34	2130 (77.7)	610 (22.3)	0.9 (0.78-1.01)	1.0 (0.86-1.15)
35-44	624 (83.0)	128 (17.0)	**0.6 (0.51-0.78)**	0.9 (0.73-1.22)
≥45	96 (86.5)	15 (13.5)	**0.5 (0.27-0.82)**	0.8 (0.40-1.45)
Educational attainment:				
None	128 (74.4)	44 (25.6)	Reference	Reference
Primary	261 (82.6)	55 (17.4)	**0.6 (0.39-0.96)**	**0.6 (0.37-0.94)**
Secondary	2891 (79.0)	768 (21.0)	0.8 (0.54-1.09)	**0.6 (0.38-0.84)**
Tertiary	1433 (74.6)	488 (25.4)	1.0 (0.69-1.41)	0.7 (0.50-1.12)
Religion:				
Christianity	3662 (78.8)	983 (21.2)	Reference	Reference
Islam	825 (71.5)	329 (28.5)	**1.5 (1.28-1.72)**	**1.3 (1.09-1.57)**
Traditional and others	51 (94.4)	3 (5.6)	**0.2 (0.08-0.74)**	**0.3 (0.10-0.98)**
No religion	110 (84.6)	20 (15.4)	0.7 (0.41-1.09)	0.6 (0.39-1.04)
Marital status				
Single	3889 (76.8)	1173 (23.2)	Reference	Reference
Currently married	417 (88.3)	55 (11.7)	**0.4 (0.33-0.58)**	**0.5 (0.35-0.65)**
Formerly married	408 (76.1)	128 (23.9)	1.0 (0.84-1.28)	**1.4 (1.08-1.86)**
Employment status:				
Employed	2240 (75.7)	720 (24.3)	Reference	Reference
Unemployed	1732 (82.2)	375 (17.8)	**0.7 (0.59-0.77)**	**0.8 (0.67-0.94)**
Student	707 (74.6)	241 (25.4)	1.1 (0.90-1.25)	1.0 (0.80-1.16)
Retired	14 (50.0)	14 (50.0)	**3.1 (1.47-6.40)**	**3.7 (1.63-8.42)**
Geopolitical zone:				
South East	164 (77.7)	47 (22.3)	Reference	Reference
South South	1210 (80.6)	291 (19.4)	0.8 (0.59-1.18)	0.9 (0.64-1.31)
South West	1895 (77.5)	551 (22.5)	1.0 (0.72-1.41)	0.9 (0.62-1.24)
North Central	873 (80.2)	215 (19.8)	0.9 (0.60-1.22)	1.3 (0.86-1.83)
North East	60 (65.2)	32 (34.8)	**1.8 (1.07-3.13)**	**1.9 (1.07-3.31)**
North West	512 (69.9)	220 (30.1)	**1.5 (1.04-2.13)**	1.1 (0.76-1.66)
All	4713 (77.7)	1356 (22.3)		

Table 1: Uptake of PrEP by KP groups and logistic regression analyses, IBBSS, 2020

Conclusions: The uptake of PrEP among KPs in Nigeria is suboptimal and varies significantly by KP group. There is a need to identify and address barriers that limit the uptake of PrEP among these vulnerable populations.

EPC210

Long-acting injectable HIV pre-exposure prophylaxis interest among people who inject drugs in the San Diego-Tijuana border region

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Background: Long-acting injectable HIV pre-exposure prophylaxis (LAI-PrEP) holds promise in overcoming challenges with daily oral PrEP adherence among people who inject drugs (PWID). However, PWID have been excluded from most LAI-PrEP research to date, and data on their LAI-PrEP interest remains limited. To advance equity in PrEP implementation for PWID, we examined LAI-PrEP interest among PWID in the San Diego-Tijuana border region (SDTBR) of the United States (US) and Mexico.

Methods: From 2020-2021, 612 PWID in the SDTBR were enrolled into a prospective study. Participants completed interviewer-administered surveys and HIV testing at baseline and 6 months. Multivariable multinomial logistic regression models examined associations between past-6-month sexual and injection behaviors, perceived HIV risk, and PrEP interest outcomes (interested in both oral and LAI-PrEP, only oral PrEP, only LAI-PrEP, or neither).

Results: Among 563 HIV-negative participants at baseline, median age was 43.0 years (IQR=35.0-52.0), 74% identified as male, 71% identified as Latino, and 70% were US residents. Six-month HIV incidence was 5.7 per 100 person-years (95% confidence interval [CI]: 2.0-9.5). Overall, 84% (472/563) expressed interest in PrEP, with 15% (86/563) interested in both oral and LAI-PrEP, 44% (248/563) interested in oral PrEP only, and 25% (138/563) interested in LAI-PrEP only. Compared to the odds of being interested in LAI-PrEP only, the odds of being interested in neither oral nor LAI-PrEP were lower for those who reported injecting multiple times daily (adjusted odds ratio [aOR]=0.4, 95% CI: 0.2-0.9), using syringes known or suspected to have been used before (aOR=0.5, 95% CI: 0.3-0.9), sharing other injection equipment (aOR=0.4, 95% CI: 0.2-0.7), buying drugs in already-prepared syringes (aOR=0.4, 95% CI: 0.2-0.7), having sexual partners living with HIV (aOR=0.4, 95% CI: 0.2-0.8), using drugs before or during sex (aOR=0.4, 95% CI: 0.2-0.8), and perceiving oneself to be at higher HIV risk than other PWID (aOR=0.2, 95% CI: 0.1-0.4).

Conclusions: PrEP interest was high among PWID in the SDTBR where HIV incidence is very high. Interest in LAI-PrEP only was associated sexual and injection risk behaviors and high perceived HIV risk, suggesting that LAI-PrEP could be a pivotal HIV prevention intervention for this population.

EPC211

The Pre-exposure Prophylaxis (PrEP) cascade among gay, bisexual and other men who have sex with men (MSM) in Shanghai, China

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Background: This study aims to understand the impact of PrEP in gay, bisexual and other men who have sex with men (gbMSM) and to quantify an anticipated PrEP cascade in a community-based sample of MSM in Shanghai, China

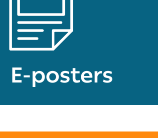
Methods: From July 2019 to December 2020, we conducted a cross-sectional online survey among a convenience sample of HIV-negative or HIV-unknown MSM recruited through a voluntary HIV testing clinic and smartphone app in Shanghai. We constructed a three-step PrEP cascade by sequentially quantifying respondents' PrEP awareness, acceptability, and drug coverage.

We also included correlates of PrEP usage, such as health-care access, sexually transmitted infection (STIs), self-assessed sexual risk, concerns about taking PrEP, perceived PrEP acceptability in the MSM community, PrEP-related stigma, and locations for PrEP access. Three multivariable logistic regression models were conducted to examine the association between potential correlates and the three-step PrEP cascade.

Results: Of 615 participants, the median age was 29 years; 35.9% were born in Shanghai and 64.1% in other cities in China. Most had an undergraduate degree or more (83.7%), full-time employment (77.9%), and health insurance (93.7%). Participants self-reported: a history of STIs (26.1%), high risk of HIV (12.4%), current recreational drug use (26.1%), and an HIRI-MSM score >10 (85.7%). Most participants felt comfortable telling their sexual partners that they were taking PrEP (65.5%), but not their friends (48.8%) and family (19.2%).

Of all participants, 66.2% were aware of PrEP; of those who were aware of PrEP, 69.8% were willing to use PrEP; and of those willing to use PrEP, 83.1% had any drug coverage, which may increase likelihood of PrEP usage. PrEP cascade engagement was associated with undergraduate education (OR=5.39, 95% CI=3.25-9.14), concerns about STIs (OR=1.93, 95% CI=1.18-3.17), self-assessed HIV risk (OR=2.61, 95% CI=1.09-7.07), past PEP use (OR=2.48, 95% CI=1.16-5.82), and anticipated PrEP disclosure to sexual partners (OR=2.46, 95% CI=1.54-3.96).

Conclusions: Our findings identified patient, community and health system factors that impact PrEP cascade engagement. Further interventions to raise PrEP awareness,



address PrEP-related stigma and ensure drug access are needed to promote effective PrEP scale up amongst MSM in Shanghai.

EPC212

Knowledge of and willingness to take PrEP in Zimbabwe – an analysis of the Zimbabwe Population-based HIV Impact Assessment (ZIMPHIA) 2020

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Background: In 2018, Zimbabwe launched pre-exposure prophylaxis (PrEP) as an HIV prevention strategy for those at high-risk of HIV infection. This analysis uses Zimbabwe Population-based HIV Impact Assessment (ZIMPHIA) 2020 data to investigate characteristics associated with knowledge of and willingness to take PrEP.

Methods: ZIMPHIA 2020 is a nationally-representative, cross-sectional, HIV-focused survey among adults age 15+ in randomly selected households. We examined associations between sociodemographic characteristics and risk-taking and health-seeking behaviors with knowledge of and willingness to take PrEP.

Factors significantly associated with the outcomes ($p<0.05$) in bivariate logistic regression models were included in multivariable models, stratified by sex, using jackknife methods to estimate variance.

Results: Among the sample population, (males=4,527; females=7,392), 9.99% of males and 10.95% of females heard of PrEP. Among those testing HIV-negative (males=3,743; females=5,701), 68.03% of males and 64.33% of females indicated willingness to take PrEP. Males (aOR 4.14 [95%CI: 2.51-6.83]) and females (aOR 2.46 [95%CI: 1.69-3.59]) with above a secondary education were more likely to have heard of PrEP than those with primary/no education. Males who tested for HIV in the last year (aOR 2.00 [95%CI: 1.31-3.07]) were also more likely to have heard of PrEP, and females ages 15-24 were more likely to have heard of PrEP (aOR 0.73 [95%CI: 0.55-0.96]) than those 35-44. Males ages 15-24 were more willing to take PrEP (aOR 1.38 [95%CI: 1.04-1.87]) than those 35-44, and divorced, separated, or widowed males were more willing to take PrEP (aOR 2.35 [95%CI: 1.52-3.63]) than those never married. Females were more willing to take PrEP if they worked for cash/goods as payment (aOR 1.21 [95%CI: 1.05-1.38]) or saw a healthcare worker in the last year (aOR 1.16 [95%CI: 1.00-1.33]).

Conclusions: Participants who did not access healthcare or had lower education were less likely to have knowledge of or be willing to take PrEP. Adolescent girls and young women (AGYW), who have disproportionately high-risk of infection, are also less likely to have heard of PrEP.

These results highlight the importance of community-based demand creation and education and scale-up of differentiated service delivery models, including AGYW-specific prevention programs, to better reach those at risk of HIV.

EPC213

Primary healthcare provider-related factors associated with oral pre-exposure prophylaxis (PrEP) provision for HIV prevention in the eThekwini municipality

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Background: Oral HIV pre-exposure prophylaxis (PrEP) is safe, effective and approved but the uptake has been low. Low uptake may be due to user or provider-related factors. There is a paucity of information regarding factors that may influence whether oral PrEP is prescribed.

This study examined the primary health care (PHC) provider-related factors associated with oral PrEP provision in the eThekwini Municipality, KwaZulu-Natal, South Africa. The study assessed the socio-demographic provider profile and challenges experienced by providers when providing oral PrEP.

Methods: This was a quantitative, cross-sectional study with 160 participants (medical doctors, professional and enrolled nurses and counsellors) from both private and public PHC facilities, who completed a self-administered questionnaire between January 2020 and June 2021.

Although 92.5 % (n=147/160) of the respondents had patients who may benefit from oral PrEP, only 71.3 % (n=114/160) had prescribed or referred patients for oral PrEP.

Results: Socio-demographic factors were similar between oral PrEP adopters (prescribed PrEP) and non-adopters (did not prescribe PrEP). Oral PrEP was most likely to be prescribed when healthcare providers had 11 or more oral PrEP discussions with patients (OR= 9.12, CI= 3.05-27.25, $p<0.001$). Providers who requested≥6 HIV tests in the last month were 2.20 times more likely to provide or refer patients for oral PrEP than providers who requested ≤5 HIV tests (OR= 2.20, CI= 1.04-4.63, p=0.039).

Healthcare providers who had limited knowledge about oral PrEP were also 73% less likely to prescribe or refer a patient for PrEP than those who had attended training on oral PrEP (OR= 0.27, CI= 0.11-0.66, p= 0.004).

Majority of the healthcare providers reported concerns or challenges regarding adherence, increased risky sexual behaviour, increased STIs, increased counselling time, eliciting an accurate sexual history and eliciting accurate

risk perception. The majority of healthcare providers were also concerned about financing of oral PrEP, misperception that the patient was HIV-infected, patients not using adequate protection at the commencement of oral PrEP and the regular 3-monthly follow-up visits.

Conclusions: The results suggest large gap between PrEP awareness and provision and highlights the need for further education among providers to improve scale up of oral PrEP at PHC level.

EPC214

Scale-up and optimization of HIV self-testing for the last mile in Botswana

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Background: Botswana is a high HIV-burden country, with 19.9% HIV prevalence among adults aged 15 to 49 years old in 2020. The UNAIDS estimates that 92% of people living with HIV know their status. Botswana deployed several HIV testing modalities, including HIV self-test kits (HIVST), to increase HIV case identification and reach the 95% UNAIDS target. HIV self-testing, a more discreet approach, was introduced in 2019 by the CDC-funded Accelerating Botswana through Last Mile to Epidemic Control (ABLE) project to reach clients beyond health facilities. We describe the experiences and lessons learned in implementing HIVST across 53 facilities in Botswana.

Description: The Bummhi/Jhpiego partnership consulted with health authorities and providers, identified distribution points at facilities, and trained health workers on HIVST and HIVST monitoring tools. HIVST standard of procedures were developed and included distribution points, screening for intimate partner violence, return of results, confirmatory HIV testing for clients with reactive results, and linkage to antiretroviral therapy (ART).

A continuous quality improvement data-driven approach was used to optimize HIVST through monthly performance reviews and swift remediation to improve new client identification, return of results, linkage to HIV testing for confirmatory testing, and ART as key performance measures.

Lessons learned: Between Oct 2020 and September 2021, 7434 HIVST were distributed across 53 facilities. A total of 4242 (57.1%) clients returned their HIVST results. Among them, 157 (3.7%) had a reactive test, 111 (70.7%) performed HIV testing according to the national algorithm, and 102 (91.9%) were diagnosed with HIV. Among them, 92 (90.2%) were linked to ART. A total of 125 trained Lay Health Care Workers were integrated into all health service delivery points to assist with HIVST distribution. HIVST kits included health facility contact information to enable clients to reach providers for additional information or schedule follow-up appointment for HIV testing.

After three days, clients who received HIVST were contacted to obtain results and schedule HIV confirmatory if HIVST was reactive.

Conclusions/Next steps: Trained personnel, wide availability of HIVST, and longitudinal HIVST monitoring tools have contributed to the scale-up of HIVST. HIVST monitoring has enabled individualized longitudinal follow-up to optimize linkage to HIV services.

EPC215

Uptake of pre- exposure prophylaxis as a prevention tool among adolescent and young key population across seven states in Nigeria

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Background: Pre-exposure prophylaxis (PrEP) is an effective HIV-prevention tool for protecting adolescents and young people (AYP) at risk for HIV acquisition. PrEP is strategic in reducing new infections. AYPs are at a stage of experimentation, self-discovery and low-perceived risk of contracting HIV. They are more vulnerable and have poorer negotiating skills to advocate for safer-sex practices due to discrimination, violence and imbalances especially with older partners. In 2021, the estimated cumulative number of people initiating PrEP was 124,000 – 125,000.

This study reviewed PrEP uptake among AYP key population (female-sex workers, men who have sex with men, persons who inject drugs and transgender) across 89 facilities in seven states in Nigeria.

Methods: A retrospective study of PrEP uptake among AYP key population(KP) aged 15 -24 years who accessed PrEP services from 89 (three one-stop-shops and 86treatment) facilities between April 2020 and December 2021 across seven states in Nigeria. Strategies to improve uptake included, stakeholder engagement for acceptability/buy-in by the KP communities, expansion into more communities to increase access, and assigned facility targets. PrEP was offered and prescribed to the AYP- KPs who accessed services. PrEP uptake was defined as new enrolment who got a PrEP prescription and medications dispensed. Data was extracted using an excel-based reporting tool, which collated patient-level data from the electronic-medical-records.

Results: During the period under review, 3109 AYP-KP enrolled on PrEP. The highest uptake was among females 20-24 years 1391 (45%) and lowest among males 15 -19 years

249(8%). PrEP uptake showed an upward trajectory-Fig 1. The proportion of PrEP uptake among AYPs also showed an upward trend from 7% in FY 20_Q2 to 24% in FY22_Q1.

Figure 1. Uptake of pre-exposure prophylaxis among adolescent and young key population.

Conclusions: Improvement in PrEP uptake among AYP-KPs shows acceptability among this age-band. With increased demand creation, correct risk perception and AYP-KP led/ friendly facilities there is room for improved uptake and reduction in HIV transmission among AYP-KPs.

EPC216

Outcomes of a pharmacist-led, same-day pre-exposure prophylaxis (PrEP) program in Mississippi: a mixed-methods study

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Background: Mississippi has one of the highest rates of HIV in the United States but has low PrEP uptake. Understanding patterns of PrEP use can help improve PrEP uptake and persistence.

Methods: Between November 2018-December 2019, patients at high risk for HIV attending a non-clinical testing site in Jackson, Mississippi were referred to a pharmacist for same-day PrEP initiation. The pharmacist provided a 90-day PrEP prescription and scheduled an appointment within 3 months for patients to see a clinician. We linked records of patients to electronic health records from the two largest PrEP clinics in Jackson to determine linkage into ongoing clinical care. We identified four distinct PrEP use patterns:

1. Filled a prescription and linked into care within 3 months;
2. Filled a prescription and linked into care after 3 months;
3. Filled a prescription and never linked into care; and,
4. Never filled a prescription.

In 2021, we conducted 24 follow-up interviews with patients in the four groups to ascertain barriers and facilitators to PrEP uptake and persistence.

Results: There were 121 clients evaluated for PrEP; all were given a prescription. One-third were less than 25 years old, 77% were Black, and 59% were cisgender men who have sex with men. Around one-quarter (26%) never filled their PrEP prescription. Of those who filled their prescription, 59% never linked into clinical care and ultimately stopped PrEP, 17% linked into care at some point after 3 months (resulting in a gap in PrEP coverage), and 24% linked into care within 3 months, though only 41% of those individuals continued PrEP for another 3 months.

Qualitative data revealed that stigma related to sexuality (e.g., being gay) and HIV, misinformation about PrEP, lack of PrEP locations, and fear of side effects were barriers to uptake and persistence. Individuals' desire to stay healthy and the support of PrEP clinic staff were facilitators.

Conclusions: Only a quarter of individuals given a same-day PrEP prescription persisted on PrEP for 3 months without a gap in PrEP coverage. Addressing noted barriers of stigma and misinformation and increasing locations that provide PrEP may increase PrEP persistence.

EPC217

Discontinuation rate, associated factors and reasons for discontinuationof pre-exposure prophylaxis among sex workers attending the most at risk population clinic, Mulago Hospital in Uganda

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Background: A substantial number of sex workers are initiated on (Pre-Exposure Prophylaxis) PrEP for HIV prevention. Retaining those initiated on PrEP is very important to achieve the goal of reducing new infections in Uganda. However, data on discontinuation and retention among key populations especially sex workers is generally limited in the country.

Methods: This was a cross-sectional study employing both quantitative and qualitative approaches of data collection. A total of 30 In-depth interviews were conducted for the qualitative data collection. A sample size of 484 client records were abstracted for the quantitative data. Systematic sampling technique was employed for the quantitative data. Qualitative data was analyzed using Atlas ti version 6 and results are presented under different themes. Quantitative data was analyzed using STATA version 14; Univariate, bivariate and multivariate analysis were conducted, and results are presented in tables using measures of central tendency, dispersion and associations. PrEP discontinuation was defined as missing refill of PrEP for two or more consecutive rounds of refill.

Results: The Prevalence of PrEP discontinuation was 76.0% (368/484). Factors associated with PrEP discontinuation included; age 30-34 years compared to age <20years adjusted PR=1.21, 95%CI [1.23-1.56]; Secondary school level of education compared to primary level, adjusted PR=0.92, 95% CI [0.86-0.99]; Duration on PrEp in months 3-6 months and >6months compared to 2< months adjusted PR=0.79, 95% CI [0.71-88] and PR=1.86, 95% CI [1.52-2.28]. The overall clients experience on PrEP were generally good. Facilita-

tors included perceived medical benefits, perceived sexual benefits, and most clients use it alongside condoms during a sexual encounter. Reasons for PrEP discontinuation included;change of sexual behaviors, fear of stigmatization, discomfort of having to consume PrEP every day / pill burden, fear of side effects like nausea, fatigue, vomiting, dizziness and loss of appetite, and limited access to medication.

Conclusions: Prevalence of PrEP Discontinuation among commercial sex workers was high. This could be because of limited access to the medication, medication side effects pill burden and stigmatization from the general population. Targeted strategies to prevent inappropriate discontinuations are needed to the commercial sex workers and general population as well.

EPC218

Facilitators and barriers of daily oral HIV pre-exposure prophylaxis use among men who have sex with men, Harare 2020

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Background: HIVPre-exposure prophylaxis (PrEP) when taken consistently reduces the risk of HIV infection by 92 to 99%. Key populations PrEP Program data demonstrated that against a targetofenrollingall eligible MSM on PrEP in Harare only 28% have accessed it since2019.

We investigated the barriers and facilitators to PrEP use among MSM to strengthen biomedical interventions for the control of the epidemic amongst this group.

Methods: We conducted a 1:1 unmatched case-control study, a case being an HIV negative MSM above18years-old receiving health services at PSI or Wilkins clinics in Harare between 1 October 2018 and 31 September 2019 and not on PrEP or has a self-reported PrEP adherence composite-score of less than 75%.

We randomly recruited 149 case-control pairs from three high volume sites offering services for MSM in Harare. Interviewer administered questionnaires were used to collect dataon thebarriersand facilitators to PrEP use among MSM.We generatedmeans, frequencies, proportions, odds ratios and their corresponding 95% confidence intervals. Stratified analysis was done to identify possible confounding or effect modification. Logistic regression analysis was done to determine the independent factors associatedPrEP use among MSM.

Results: Cases and Controls had comparable demographic data. Inconsistent condom use (aOR= 2,051, 95%CI: 1,231-3,419), receptive anal sex (aOR=2,865, 95%CI: 1,374-5,972), and HIV test done in the last 3 months (aOR= 2,61495% CI: 1,452-4,716) were independent risk factors associated with not using Pre-Exposure Prophylaxis. Being employed (aOR=0,526 95% CI:0,313-0,882) and being of transgender sexual orientation (aOR= 0,21295% CI: 0,042-0,997) were independent protective factors that facilitated PrEP use among MSM.

Conclusions: Sexual orientation affected the use of HIV PrEP, experiencing receptive anal sex, having taken an HIV test in the last 3 months and inconsistent condom use was associated with not using HIVPrEP.

We recommend strengthening PrEP differentiated service delivery including PrEP awareness targeting gay and bisexual men.PrEP education was given to 330 Men who have sex with men in Harare.

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Barriers to PrEP uptake in gay, bisexual, trans and queer men, two-spirit and non-binary people in Canada: an analysis considering ethnoracial and gender-diverse identities within a community-based health survey

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Background: Indigenous and ethnoracial minority Gay, Bisexual, Trans, Queer men, Two-Spirit, and non-binary (GBTQ2S+) people in Canada are often underrepresented in PrEP uptake within GBTQ2S+ population samples due to health and social inequities.

We sought to determine barriers to PrEP use for sub-populations of HIV-negative GBT2Q based on ethnoracial identity and gender diversity.

Methods: Participants self-completed the national, online, anonymous, community-based Sex Now 2019 behavioural surveillance survey. Recruitment occurred via GBTQ2S+-oriented sex-seeking apps, websites, and social media from November 2019 to February 2020 (pre-COVID). Participants completed questions on demographics and PrEP-related barriers (e.g., low self-perceived HIV risk, cost, judgement from healthcare providers).

Multivariable confounder bootstrapped (1000 iterations) logistic regression models assessed differences in various barriers to PrEP by ethnoracial identity, and stratified by cisgender/gender-diverse identity; possible confounders included age, income, and sexual orientation, if significantly correlated with the outcome. Beta coefficients (β) with 95% confidence intervals (CI) are presented.

Results: Of 1137 HIV-negative Indigenous and ethnoracial minority GBTQ2S+ participants (85.5% cisgender men, 14.5% gender-diverse), 17.2% were Black/African/Caribbean, 29.2% were Indigenous, 20.0% were Latinx, 28.9% were East/Southeast Asian, and 21.9% were Arab/South Asian.

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Four ethnoracial differences in PrEP-related barriers were identified:
First, low self-perceived HIV risk was less likely to be reported by Latinx (15.6% versus 23.2%, β=-0.75, CI [-1.41,-0.15]) and Arab/South Asian (17.8% versus 22.8%, β=-0.53, CI [-1.10,-0.056]) participants.
Second, disliking taking pills was less likely to be reported by Arab/South Asian participants (8.7% versus 16.4%, β=-0.61, CI [-1.29,-0.11]).
Third, cost as a barrier was less likely to be reported by Indigenous participants (19.9% versus 28.9%, β=-0.61, CI [-1.16,-0.11]).
Fourth, judgement from healthcare providers was less likely reported by gender-diverse South Asian participants (8.0%, β=-1.54, CI [-22.33,-0.024]) versus all other gender-diverse participants (23.6%).
Conclusions: Commonly reported PrEP barriers for Indigenous and ethnoracial minority GBTQ2S+ were self-perceived risk, cost, and judgement from healthcare providers. However, specific ethnoracial groups, intersecting with gender diversity, experienced these less.
Although this data cannot encapsulate all PrEP barriers faced by these communities, it highlights the need for culturally-appropriate and gender-affirming health promotion strategies, new PrEP prevention efforts, and healthcare provider capacity-building to improve equitable PrEP implementation.

EPC220
The PrEP care continuum in men who have sex with men in China: a systematic review

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Background: Pre-exposure prophylaxis (PrEP) could be a promising HIV prevention intervention among men who have sex with men (MSM) in China. Yet, aggregated evidence regarding the presentations and determinants of the PrEP Care Continuum remains absent. This review aimed to summarize the current status of the PrEP care continuum and synthesize the barriers and facilitators to inform future intervention efforts in China.
Methods: We conducted a systematic review searching both English and Chinese electronic databases for studies published since 2012. Four reviewers screened all studies independently, and relevant data were extracted and synthesized following the PRISMA guidelines.
Results: A total of 568 records were identified and 22 studies met the criteria and were included in the final synthesis, with 12,484 MSM in total. The proportion of MSM who were aware of PrEP was 32.6% (95% CI: 23.4-43.4), lower than the proportion of MSM willing to use PrEP 54.1% (95% CI: 38.8-68.5). The pooled prevalence of PrEP uptake from (n=5) studies was 1.67% (95% CI: 0.67-4.10). Only one study reported PrEP adherence (62.9%).
Factors associated with higher PrEP awareness include higher HIV knowledge, previous HIV testing, and higher education, while the barriers were short local residence time and internet-based partner seeking. Multilevel facilitators to PrEP willingness include previous sexually transmitted infection, partners at high risk of HIV infection, community engagement in sexual health, and difficulty of condom use. Barriers were mainly at the individual level, such as concerns about effectiveness and mental health issues.
Having multiple male partners, concerns about HIV infection, and ease and comfort of PrEP use were facilitators for PrEP uptake and adherence, while medical mistrust, low perceived risk of HIV infection, discriminatory treatment when seeking PrEP service, and high cost are barriers to uptake. Potential side effects of PrEP and substance use are barriers to PrEP adherence.
Conclusions: This review found relatively low levels of awareness of PrEP, while higher levels of willingness among MSM in China. More studies are needed to examine PrEP uptake and adherence. Policies and interventions can leverage the facilitators and address the barriers to promoting the PrEP care continuum among MSM in China.

EPC221
Primary care clinic health care workers' perspectives on PrEP implementation among men in rural South Africa

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Background: South Africa, home to the world's largest HIV epidemic, began implementing PrEP in primary care clinics in early 2020. We evaluated health care workers' (HCWs') experiences with the PrEP rollout among men and assessed perceived barriers and potential solutions.
Methods: Semi-structured qualitative interviews were conducted with senior-level nurses (n=24) across 16 primary care clinics and 1 mobile clinic in rural Msinga, Kwazulu-Natal province, South Africa. Nurses were eligible if they worked within Msinga, prescribed PrEP, and spoke English, and were recruited through purposive sampling until thematic saturation was achieved. Thematic analysis was performed.

Results: HCWs report slow PrEP rollout, particularly among men. PrEP barriers were characterized in a socioecological model at the individual-level, community-level, and society-level. Individual-level barriers included: low SES and health literacy, low PrEP knowledge and inaccurate information, low perception of HIV risk, daily pill burden, and preference for treatment over prevention.

Community-level barriers leading to PrEP not being offered to all eligible patients included: nurse workload, lack of time, variable PrEP education for patients, variable staff training and PrEP knowledge, poor clinic access, and lack of social support for PrEP.

On a society-level, HCWs report persistent HIV and gender-based stigmas. HCWs perceive men as higher HIV risk but worse PrEP candidates compared to women, and reported gender skew in PrEP uptake. HCWs view men to have more health negligence, HIV testing avoidance, skepticism towards new medications, low PrEP retention, poor engagement with female nurses, and high reliance on traditional healers, related to cultural norms for male health-seeking behavior.

Rollout was also negatively impacted by the COVID-19 pandemic due to low patient volumes and shift in public health focus. Despite challenges, HCWs generally view PrEP positively, though some view it as extra work. HCWs suggested potential solutions to facilitate implementation, including: more educational materials in Zulu and staff trainings, long-acting injectables, PrEP ambassadors, engaging male community leaders, and a men's clinic staffed by male nurses that accommodates work schedules.

Conclusions: HCWs play an important role in PrEP rollout and provide valuable suggestions for implementation, including improved PrEP education, injectable PrEP, and differentiated service delivery models for men.

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Missed opportunities for HIV prevention and pre-exposure prophylaxis (PrEP) prescription at a safety-net health system in the Southern U.S

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Background: PrEP is a prophylactic drug up to 99% effective in reducing risk of HIV transmission. Despite this, prescription rates remain low and HIV incidence remains stable. Persons with HIV acquisition risk should be counseled on PrEP, however efforts to increase PrEP uptake in the South, where HIV rates are highest, have proven unsuccessful.

Methods: Retrospective chart review of patients newly diagnosed with HIV at a large public health system from January 1, 2015 to June 30, 2021. We analyzed interactions with the health system in the five years preceding HIV diagnosis and identified missed opportunities for discussing PrEP; defined as a recent bacterial sexually transmitted infection (STI), reported intravenous drug use (IVDU), or unprotected sex.

Outcomes included rates of documented PrEP counseling, PrEP educational handout, and condom discussion in the electronic medical record.

Results: We identified 454 patients with a new HIV diagnosis who had previous health system interactions (average number of visits 9.8). In total, 29.5% had at least one identifiable HIV risk factor (9.9% bacterial STI, 14.1% inconsistent condom use, and 5.5% IVDU) prior to HIV diagnosis. Only 1.5% of patients were directly counseled on PrEP, and 3.7% received a PrEP educational handout at their visit.

The majority of patients (67.8%) had no documented condom discussion. No PrEP education occurred for those who exclusively interacted with the emergency department, urgent care, or inpatient settings, and 85% had no documented discussion about condoms in those practice settings.

In contrast, 20% of those who exclusively interacted with an outpatient primary care or subspecialty clinic had no documented condom discussion.

Conclusions: Data from this large health system suggest multiple missed opportunities to discuss PrEP and HIV risk with patients prior to HIV diagnosis. From these findings, it does not appear that these discussions are routinely taking place, or at a minimum, being documented in the patient's electronic health record. Documented PrEP education and condom discussion varied depending on the clinical setting and was underutilized overall.

Educational interventions may be needed to ensure that those treating patients at risk have the knowledge, skills, and resources to discuss the benefits of PrEP with patients.

EPC223

Population-level trends in HIV pre exposure prophylaxis (PrEP) knowledge, interest and use among indigenous two-spirit and gay, bisexual, queer, and trans men and non-binary people in Canada, 2015-2020

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Background: Health Canada approved HIV pre-exposure prophylaxis (PrEP) in 02/2016, and a priority group is Indigenous Two-Spirit, and gay, bisexual, trans, and queer

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men and non-binary people of all ethnicities (2S/GBTQ). We sought to examine population-level trends and demographic correlates of PrEP knowledge, interest and use among 2S/GBTQ in Canada.

Methods: We pooled data (N=18,805) from a community-based cross-sectional bilingual survey repeated in 2015 (online), 2018 (pride festivals), 2019 (online), and 2020 (online). Online recruitment used advertisements on socio-sexual websites/apps, and community-based organizations' social media and email lists. Our analytic sample included 2S/GBTQ participants who were HIV-negative, >15 years old, and lived in Canada.

We evaluated demographic correlates and temporal trends (survey year as a continuous explanatory variable) of four PrEP outcomes (knowledge, interest, current use, lifetime use) using four multivariable logistic regression models, each adjusting for sexual orientation, gender, ethnoracial identity and age. We report adjusted odds ratios (AOR) with 95% confidence intervals (95%CI).

Results: Knowledge of PrEP increased from 57.3% to 88.5% (2015-2019, AOR=1.56, 95%CI:1.53-1.59). Interest in PrEP decreased from 48.0% to 38.4% (2015-2020, AOR=0.93, 95%CI:0.91-0.94).

Current PrEP use increased from 12.6% to 20.4% (2018-2020, AOR=1.37, 95%CI:1.26-1.48). Lifetime PrEP use increased from 15.5% to 30.7% (2018-2020, AOR=1.62, 95%CI:1.50-1.74).

Younger 2S/GBTQ were more likely to know about PrEP (AOR=0.99, 95%CI:0.98-0.99), be interested in PrEP (AOR=0.99, 95%CI:0.99-0.99), but less likely to currently use it (AOR=1.01, 95%CI:1.00-1.01).

Non-binary 2S/GBTQ were more likely to know about PrEP (AOR=1.36, 95%CI:1.08-1.71), but less likely to use PrEP currently (AOR=0.58, 95%CI:0.40-0.81) or ever (AOR=0.75, 95%CI:0.57-0.98).

Bisexual-identified men were less likely to know about (AOR=0.32, 95%CI:0.29-0.35), be interested in (AOR=0.91, 95%CI:0.84-0.98), and to use PrEP currently (AOR=0.43, 95%CI:0.36-0.50) or ever (AOR=0.40, 95%CI:0.35-0.46).

Compared with white participants, each of African/Black/Caribbean, Asian, and Latin GBTQ2 were more likely to know about, be interested in, and use PrEP currently or ever (all p<0.05). Indigenous 2S/GBTQ were less likely to know about PrEP (AOR=0.77, 95%CI:0.66-0.90), and use PrEP currently (AOR=0.67, 95%CI:0.50-0.87) or ever (AOR=0.77, 95%CI:0.60-0.97).

Conclusions: PrEP knowledge and use has generally increased for 2S/GBTQ, hence decreased interest levels, but population-specific approaches are needed to support under-served 2S/GBTQ groups (e.g. Indigenous, non-binary, youth, bisexual).

EPC224

Acceptability of long-acting injectable prep administration by health workers in Kampala, Uganda; a cross-sectional study

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Background: The FDA recently approved long-acting injectable PrEP (LAI-PrEP) formulation of Cabotegravir® for HIV prevention It is important to understand what clinicians' perspectives about use of LAI-PrEP are even before it is widely rolled out. This is because there are implementation differences in the use of LAI-PrEP and oral PrEP, which might affect clinicians' attitudes.

We aimed to determine the acceptability of injectable PrEP use among health workers in HIV prevention clinics in Uganda.

Methods: We conducted a cross-sectional study with convenient sampling of health workers between November-December 2021 at several HIV prevention clinics in Kampala, Uganda. Self-administered structured questionnaires were used to assess the acceptability of health workers to administer LAI-PrEP and implementation preferences.

We used descriptive statistics to characterise the population and logistic regression methods to determine factors associated with health workers willingness to administer LAI-PrEP.

Results: Among 101 health workers of median age 32 [IQR=26−41] years, 93.07% were willing to administer LAI-PrEP when it becomes available. Those who were comfortable with giving injections were more likely to accept the administration of LAI-PrEP (P <0.001) as well as those who did not have concerns that it increased high-risk sexual behaviour (P <0.001). Majority (87%) believed their facilities were well equipped to provide LAI-PrEP.

Preferences for places of administration were hospital (46%), home (12%), community drug distribution points (11%), and pharmacies (4%)

Conclusions: There is high willingness among health workers to administer LAI-PrEP when it becomes available. Factors that could hinder use warrant further investigation.

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Socio-behavioral correlates of PrEP uptake and correct PrEP adherence in men who have sex with men in West Africa (CohMSM-PrEP – ANRS12369 – Expertise France)

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Background: For men who have sex with men (MSM), multiple barriers compromise pre-exposure prophylaxis (PrEP) engagement. However, in low and middle-income countries little is known about PrEP engagement for MSM. In West Africa, the CohMSM-PrEP demonstration project was one of the rare interventions providing PrEP to MSM.

We investigated the rate and factors associated with PrEP uptake and correct adherence in CohMSM-PrEP.

Methods: CohMSM-PrEP recruited MSM in four community-based clinics in Mali, Côte d'Ivoire, Burkina Faso, and Togo. Quarterly follow-up included a prevention package, PrEP (daily or event-driven), peer-led counselling (prevention and adherence) and psychosocial support, as well as socio-behavioral data collection.

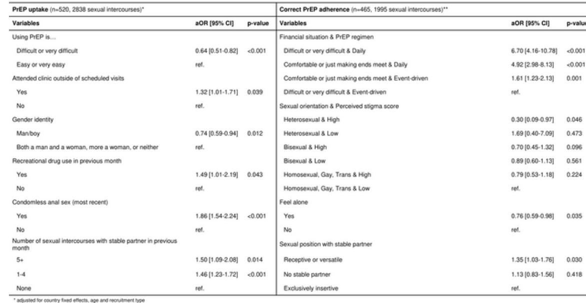
Multivariate generalized estimating equations (GEE) models were used to identify the factors associated with:

1. PrEP uptake during most recent anal intercourse and
2. Correct self-reported PrEP adherence.

Results: 520 participants were retained for analysis and had a median follow-up time of 12 months (IQR 6-21). They declared 2838 sexual intercourses, of which 1995 (70%) were protected by PrEP. Among PrEP-protected intercourses, correct adherence accounted for 1461 (73%) of sexual intercourses. The multivariate analyses for both outcomes are in Table 1.

Those who found PrEP use to be difficult had less uptake, while those with increased clinic attendance had more uptake.

After uptake, incorrect adherence was more likely for socioeconomically vulnerable event-driven users, highly stigmatized heterosexual-identifying participants, and those who felt alone. Both outcomes were associated with behavioral characteristics.



PrEP uptake (n=520, 2838 sexual intercourses)*

Variables	aOR [95% CI]	p-value
Using PrEP is...		
Difficult or very difficult	0.64 [0.51-0.82]	<0.001
Easy or very easy	ref.	
Attended clinic outside of scheduled visits		
Yes	1.32 [1.01-1.71]	0.039
No	ref.	
Gender identity		
Man/boy	0.74 [0.59-0.94]	0.012
Both a man and a woman, more a woman, or neither	ref.	
Recreational drug use in previous month		
Yes	1.49 [1.01-2.19]	0.043
No	ref.	
Condomless anal sex (most recent)		
Yes	1.86 [1.54-2.24]	<0.001
No	ref.	
Number of sexual intercourses with stable partner in previous month		
5+	1.50 [1.09-2.08]	0.014
1-4	1.46 [1.23-1.72]	<0.001
None	ref.	

Correct PrEP adherence (n=465, 1995 sexual intercourses)**

Variables	aOR [95% CI]	p-value
Financial situation & PrEP regimen		
Difficult or very difficult & Daily	6.70 [4.16-10.78]	<0.001
Comfortable or just making ends meet & Daily	4.92 [2.98-8.13]	<0.001
Comfortable or just making ends meet & Event-driven	1.61 [1.23-2.13]	0.001
Difficult or very difficult & Event-driven	ref.	
Sexual orientation & Perceived stigma score		
Heterosexual & High	0.30 [0.09-0.97]	0.046
Heterosexual & Low	1.69 [0.40-7.09]	0.473
Bisexual & High	0.70 [0.45-1.32]	0.096
Bisexual & Low	0.89 [0.60-1.13]	0.561
Homosexual, Gay, Trans & High	0.79 [0.53-1.18]	0.224
Homosexual, Gay, Trans & Low	ref.	
Feel alone		
Yes	0.76 [0.59-0.98]	0.035
No	ref.	
Sexual position with stable partner		
Receptive or versatile	1.35 [1.03-1.76]	0.030
No stable partner	1.13 [0.83-1.56]	0.418
Exclusively insertive	ref.	

* adjusted for country fixed effects, age and recruitment type
** adjusted for country fixed effects
PrEP: pre-exposure prophylaxis; GEE: Generalized estimating equation; aOR: adjusted odds ratio; CI: confidence interval; ref: reference.

Table 1. Multivariate analyses of factors associated with PrEP uptake and correct PrEP adherence (GEE, binary logistic distribution).

Conclusions: In the region's hostile sociocultural context, socially and economically marginalized participants struggled to use PrEP sufficiently. Support for PrEP use is an essential part of PrEP delivery. As scale-up continues in West Africa, we recommend using MSM-friendly clinics and providing extra support for vulnerable PrEP users to ensure adequate PrEP engagement.

Scale up of PEP

EPC225

Trends in HIV post-exposure prophylaxis following sexual exposure (PEPSE) in Brazil (2011-2019)

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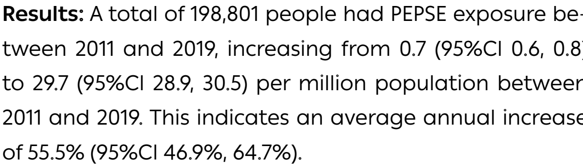
Background: HIV post-exposure prophylaxis following sexual exposure (PEPSE) is a fully subsidized HIV prevention strategy offered in Brazil. However, there is a paucity of data on patterns of PEPSE use, particularly repeated PEPSE use, which may indicate repeated risky behaviour. Here, we evaluated trends in the prevalence of PEPSE and repeated PEPSE among people aged 14 years or older in Brazil.

Methods: We used nationwide routine dispensing data and joinpoint regression to estimate trends in PEPSE prevalence over time. We considered the period between 2011-2019 to analyse PEPSE trends, and 2011-2018 for repeated PEPSE trends.

We defined repeated PEPSE as multiple PEPSE exposures within 365 days of the first observed dispensing in the data, thus excluding people who had an index date in 2019 due to incomplete follow-up data.

We also performed a descriptive analysis comparing the characteristics of people with repeated PEPSE to those who did not repeat PEPSE in the most recent year (2018).



Results: A total of 198,801 people had PEPSE exposure between 2011 and 2019, increasing from 0.7 (95%CI 0.6, 0.8) to 29.7 (95%CI 28.9, 30.5) per million population between 2011 and 2019. This indicates an average annual increase of 55.5% (95%CI 46.9%, 64.7%).

Also, the prevalence of repeated PEPSE increased 11.8% (95%CI 6.0%, 18.0%) in the study period, from 3.8% (95%CI 2.9%, 4.7%) of people who had their index dispensing in 2011 to 8.4% (n=3,867 95%CI 8.1%, 8.7%) in 2018. PEPSE was associated with cisgender men (20,784 - 45.0%), homosexuals (15,742 – 18.7%), people aged 25-29 years (10,781 – 23.7%), filling prescriptions in HIV services located in populous cities >500,000 inhabitants (31,817 - 67.1%) and with elevated caseload, equal to or above the 90th percentile compared with other facilities (30,681 - 66.4%).

Conclusions: Our findings showed that PEPSE and repeated PEPSE have considerably increased in Brazil over the years. There is the need to reinforce other HIV prevention strategies, thus reducing repeated risky exposures, especially among young people or gay men.

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Long-term follow-up of individuals using HIV post-exposure prophylaxis-in-pocket ("PIP") for high risk, low frequency exposures

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Background: Pre-exposure prophylaxis (PrEP) and post-exposure prophylaxis (PEP) are two established methods to prevent HIV acquisition. However, there remain gaps in HIV prevention care, and the value of these tools for individuals with very infrequent, higher-risk HIV exposures might be limited due to cost, high pill burden, or barriers to care. HIV post-exposure prophylaxis-in-pocket (PIP) involves prospectively identifying individuals with a very low frequency of high-risk exposures and providing them with 28 days of PEP medication before an exposure occurs, along with instructions of when to initiate medications and how to follow up with care. We present long-term follow-up of a cohort of patients provided with PIP for HIV prevention.

Methods: We conducted a retrospective evaluation of the clinical characteristics and outcomes of patients initiated on PIP as a primary HIV prevention modality. The cohort includes all patients who initiated PIP between February 2016 and December 2021 at two large HIV-prevention and care centres in Toronto, Canada.

Patients were initially referred for biomedical HIV prevention (PrEP or PEP) and transitioned to PIP if they had an ongoing risk of low frequency (0-4 exposures per year), high-risk HIV exposures (any type). Participants were followed at regular 4-6 months intervals. Demographic and clinical data was collected with a standardized form.

Results: PIP was prescribed as part of a bundle of HIV prevention care for 101 patients, giving a combined total of 104.6 patient-years. The average age was 36 years-old (range 20-70), with 97 (96%) patients assigned male at birth. Twenty-five (24.8%) patients self-initiated their prescribed PIP, with 47 courses of PIP taken during the observed time. Patients fluidly transitioned between HIV prevention modalities as circumstances warranted: 23 individuals (22.8%) shifted from PrEP to PIP, and 27 (26.7%) changed from PIP to PrEP. In the 80 patients for which there are data, there were 11 episodes of bacterial sexually transmitted infections in 6 individuals (7.5%). No HIV seroconversions were detected.

Conclusions: Increasing evidence shows PIP as an innovative and useful HIV prevention modality for individuals with a low frequency of higher-risk HIV exposures.

EPC227

Awareness and openness to using PrEP among a nationally representative sample of South African Adults

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Background: South Africa adopted PrEP in 2016, becoming the first African country to do so. Yet to date, uptake has been underwhelming, only about 165,000 South Africans reported being on PrEP in mid-2021. Lack of awareness has been cited as a contributory factor for the low uptake, but this has never been examined using a nationally representative sample.

Methods: We investigated this among a national sample of HIV seronegative adults. Data were from the 2017/2018 South African National HIV Prevalence, Incidence, Behaviour and Communication Survey. Awareness and openness to using PrEP were self-reported. Weighted percentages were calculated overall and by demographic characteristics.

Results: Overall, only 3.2% of seronegative adults spontaneously reported PrEP as a way of preventing HIV. Overall, 69.6% were open to using PrEP, from 58.2% in Western Cape, to 78.5% in Western Cape. Prevalence of openness to using PrEP was highest among the youngest age group (18-29 y, 78.3%) and lowest among the oldest (60+ years, 45.6%).

Striking racial differences were observed with openness among Black Africans (75.4%) being 2.5 times higher than Whites (29.0%). Among women, the prevalence of openness to using PrEP was 64.7% among those currently preg-

nant, 80.4% among those pregnant in the past two years but not now, and 67.8% among those who were not pregnant in the past two years). Among males, the prevalence of openness to using PrEP was higher among those circumcised (75.6%) than uncircumcised (64.5%).

Conclusions: Awareness of PrEP was low; however, close to 7 in 10 seronegative adults were open to taking PrEP if it were available. Planning for broad-scale implementation of PrEP within the South African context could build on knowledge gained from recent implementation and scale-up of relevant biomedical interventions (e.g., ART, voluntary medical male circumcision, and family planning).

EPC228

Evaluation of the use of post-exposure prophylaxis for HIV in transgender women a few months before the implementation of pre-exposure prophylaxis in Goiânia, Brazil

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Background: Transgender women are a key population for HIV control. Globally, 2 in 10 transgender women are infected by HIV. Although Post-Exposure Prophylaxis (PEP), an emergency form of HIV prevention, has been available for more than 20 years, transgender women are still reluctant to use it.

The aim of this study is to analyze factors that facilitate and hinder the use of Post-Exposure Prophylaxis for HIV among transgender women two months before the implementation of pre-exposure prophylaxis in the metropolitan region of Goiânia, Goiás, Brazil.

Methods: A descriptive-exploratory qualitative study was conducted between April 2018 to July 2019, wherein 90 transgender women participated. Data collection began two months before implementing Pre-Exposure Prophylaxis (PrEP). Data was collected through a structured interview, and interpretative thematic analysis was performed.

Results: The median age was 24 years (IQR: 20.0-27.0), and formal education time of 11 years (IQR: 9.0-12.0). The qualitative analysis showed that more than half of the participants (61.1%) knew about PEP, and more than half reported knowing that PEP is used after accidentally having sex with someone living with HIV. Also, they showed no interest in seeking knowledge about pre-exposure prophylaxis. Those who used PEP found some facilitating factors, including reception, testing and counseling, the public health network, and information within the social network itself. The significant obstacles reported were related to motivation, i.e., they reported anticipated stigma, fear of the possibility of a positive diagnosis, deficit in self-care, and adverse effects.

Conclusions: In general, not acquiring HIV is the reason that encourages people to use PEP, but for transgender women, this is not reason enough to transpose the social stigma and fear of a positive diagnosis for HIV.

A few months before the end of this study, pre-exposure prophylaxis (PrEP) was made available in Brazil. Therefore, new studies are necessary to evaluate the adherence of this crucial population to this pharmacologically preventive strategy.

Scale up of medical male circumcision

EPC229

Seasonality and male circumcision: an analysis of quarterly PEPFAR-supported voluntary medical male circumcisions for HIV prevention, 2016 – 2019

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Background: Since 2007, the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) has supported voluntary medical male circumcision (VMMC) programs in 15 sub-Saha-

ran African countries. This analysis evaluates the seasonality of VMMCs performed during 2016-2019, and how this seasonality might vary by region in sub-Saharan Africa.

Methods: PEPFAR monitoring, evaluation, and reporting data were analyzed from 14 countries that had a PEPFAR-supported VMMC program during 2016-2019. We report the calendar-year quarter during which the most VMMCs were performed each year, by country and region. Multi-level generalized linear regression models were used to estimate the effect of quarter on VMMCs performed by country.

Results: The most VMMCs were performed during the same quarter each year in 6 (42.8%) of the 14 countries (Figure 1).

Among these 6 countries, all in Southern Africa, there was a statistically significant association (*P* value of < 0.05) between the increase in VMMCs performed and the corresponding highest performing quarter. Five of the 6 countries performed the most VMMCs during Quarter 3 (July – September), and one country had the highest performance in Quarter 2 (April – June).

Four countries performed the most VMMCs during the same two quarters each year. Among these 4 countries, 3 are in Southern Africa. Another 4 countries, all in Eastern Africa, had their highest performing quarter vary year to year, and no statistical associations between quarter and VMMCs performed were identified.

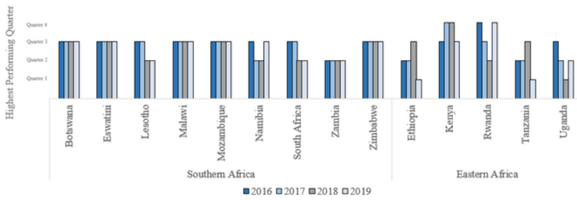

Figure 1. Calendar year and quarter with the most performed voluntary medical male circumcisions, among 14 sub-Saharan African countries, 2016 - 2019

Conclusions: Most PEPFAR-supported VMMCs are performed during April – June and July – September, particularly among countries in Southern Africa. Previously reported factors influencing seasonality include perception of improved healing during colder months, seasonal work, school schedules, and traditional circumcision season. It is important to consider seasonality during VMMC program planning to ensure that there is a balance of labor and resources to meet demand.

EPC230

Timing for maximum anesthetic effect of topical cream during early infant male circumcision (EIMC) in Rakai, Uganda

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Background: Male circumcision reduces male HIV acquisition by up to 60%. Early Infant Male Circumcision (EIMC) presents advantages, including faster wound healing, lower cost, and no risk of early sex resumption. Data from recent studies shows that device-based circumcision (ShangRing and Mogen Clamp) is safe in infants aged 0-60 days. However, success of future infant circumcision scale-up programs in sub-Saharan Africa depends on adequate pain control during the procedure. We assessed the optimal timing for application of topical anesthesia for device-based circumcision procedure.

Methods: 200 infants aged 0-60 days were enrolled in an EIMC trial comparing the Mogen clamp and ShangRing devices at 4 facilities in south-central Uganda. Topical anesthetic

(EMLA cream.) was applied on the entire penile shaft. The anesthetic effect was assessed every 5 minutes, starting at 10 minutes post-application until 60 minutes, the recommended time to start circumcision. Pain was tested at the tip of the foreskin using the Neonatal Infant Pain Scale (NIPS) to assess responses. Mean (SD) and median (IQR) NIPS scores at each time interval were used to determine the time range of maximum anesthesia.

Results: The median NIPS score dropped to zero between 25 to 55 minutes, with the narrowest IQR occurring between 35 and 45 minutes after applying topical cream. The effect started diminishing after 45 minutes. A similar trend was observed for the mean scores (Table 1).

Time in minutes	10	15	20	25	30	35	40	45	50	55	60
Median (IQR)	3.0 (4.0)	2.0 (5.0)	1.0 (4.0)	0.0 (2.0)	0.0 (2.0)	0.0 (1.0)	0.0 (1.0)	0.0 (1.0)	0.0 (2.0)	0.0 (2.0)	1.0 (2.0)
Mean (SD)	3.3 (2.3)	2.7 (2.4)	1.8 (2.2)	1.2 (1.7)	1 (1.6)	0.7 (1.3)	0.8 (1.3)	0.8 (1.4)	1 (1.5)	1.3 (1.7)	1.6 (1.9)

Table 1. Table showing the NIPS scores at the different time intervals. (N=200).

Conclusions: The optimal timing for maximum topical analgesia occurred 35 to 45 minutes after application which is less than the recommended 60 minute waiting time. A shorter waiting time may be efficient for mass device-based circumcision.

EPC231

Strengthening safety through surveillance: notifiable adverse events in the U.S. President's Emergency Plan for AIDS Relief's voluntary medical male circumcision program through 2020

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Background: Circumcision reduces males' risk of heterosexual HIV acquisition by ~60%. Since inception, the President's Emergency Plan for AIDS Relief (PEPFAR) has supported over 28 million voluntary medical male circumcisions (VMMCs) in 15 countries. PEPFAR monitors defined adverse events (AEs) occurring within 30 days of VMMC through its Notifiable Adverse Event Reporting System (NAERS). Systematic reporting of deaths started in 2014, expanding to other event types in 2015.

Methods: Standardized forms are used to report notifiable adverse events (NAEs) which include: death, hospitalization ≥3 days, penile injury, permanent or probable deformity or disability, tetanus, and circumcision device displacement. Detailed case investigations by reviewing physicians further classify diagnoses and determine NAE relatedness to the VMMC procedure. We analyzed NAE reports submitted to PEPFAR since the first ad-hoc report in 2011 through December 2020.

Results: Fourteen countries reported 446 clients with NAEs; 394/446 (88%) were determined VMMC-related, 37/446 (8%) were unrelated, and 15/446 (3%) were unknown. There were 56 deaths reported, 24/56 (43%) were determined VMMC-related with 13/24 (54%) of these from tetanus. The remaining 390 NAEs were non-fatal with 370/390 (95%) VMMC-related. Of clients with a reported NAE, 16/446 (4%) were among infants aged ≤2 months, 5/446 (1%) were among clients aged 2 months-9 years, 236/446 (53%) were among clients aged 10-14 years, 182/446 (41%) were among clients aged ≥15 years, and 7/446 (2%) were of unknown age.

Infection was the most common cause of hospitalization ≥3 days. There were 175 severe non-tetanus infections and 26 cases of tetanus reported. Disability or anatomic deformity was reported for 115 clients, including 40 glans injuries and 51 fistulas. Severe bleeding was reported in 70 clients, with 18 having a secondary infection. There were 4 circumcision device displacements.

Conclusions: Although it is not possible to completely eliminate all AEs from surgical interventions, surveillance of rare but serious AEs can identify pre-existing or new safety concerns and guide continuous programmatic improvement. Several policy changes including updated guidance on surgical technique, restricting VMMC eligibility to clients ≥15 years old, and improving tetanus prevention practices, were made following analyses of NAERS data to improve program safety.

EPC232

Real-world impact of male circumcision on HIV seroprevalence in sub-Saharan Africa: a household fixed-effects analysis among 279,351 men from 29 countries

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Background: Medical male circumcision reduced the individual-level risk of female-to-male HIV transmission by approximately 60% in randomised-controlled trials, but little is known about the impact of male circumcision on HIV prevention in a 'real-world' setting. Understanding the impact of male circumcision outside of randomised clinical trials is important for understanding how to support the implementation of voluntary medical male circumcision (VMMC) campaigns in high HIV prevalence settings.

Methods: We pooled individual-level nationally-representative survey data (Demographic and Health Surveys and AIDS Indicator Surveys) from all sub-Saharan African countries that included information on male circumcision status (self-reported) and HIV status (determined using blood-based testing). We estimated the effect of men's circumcision status on HIV-seropositivity using modified Poisson regression models (adjusted for age, educational level, and marital status) with household fixed-effects, which control for heterogeneity in observed and unobserved factors that might confound the association shared by men living in the same household.

Results: We included data from 279,351 male respondents to 48 surveys conducted in 29 countries between 2003 and 2018. Mean survey-level male circumcision prevalence was 65.9% (median 84.5%, IQR 28.8%–68.1%) and mean survey-level HIV prevalence was 5.6% (median 2.5%, IQR 1.2%–

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10.2%). In our analysis, we found that circumcised men had 0.80 times (95% CI 0.73-0.88) the risk of living with HIV compared to uncircumcised men, implying that circumcision reduces the risk of HIV transmission by roughly 20% (12%-27%).

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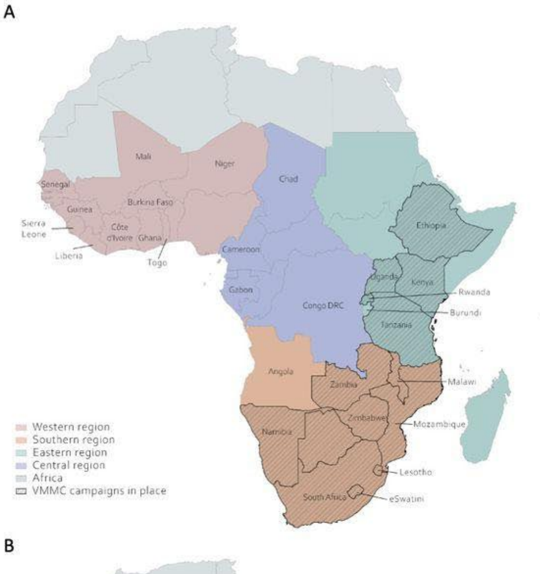

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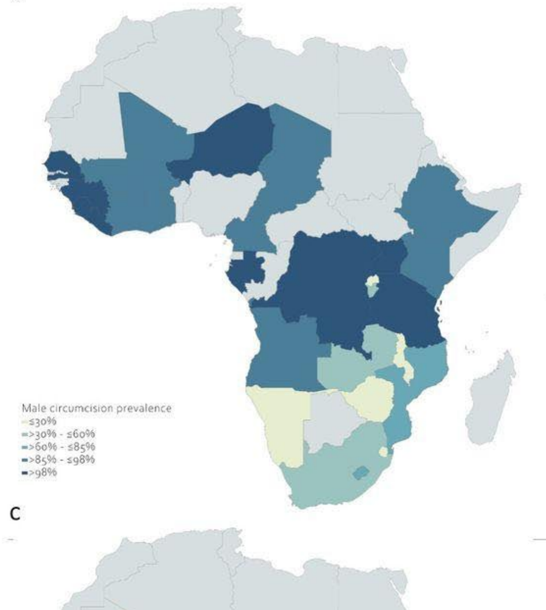

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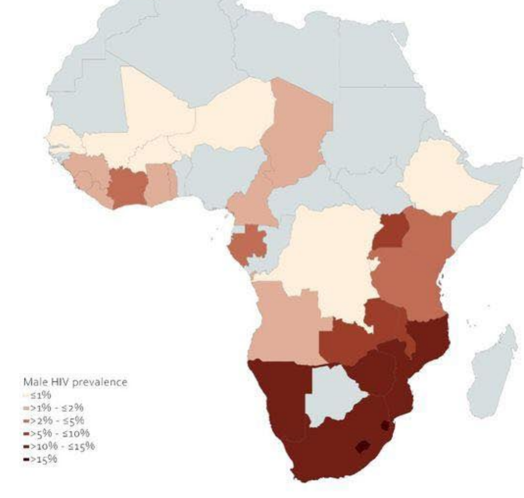

Conclusions: The population-level 'real-world' impact of male circumcision on HIV prevention was significant, but 2-to-3-fold less strong than demonstrated in previous randomised-controlled trials. Reasons for this could be suboptimal circumcision procedures (especially in cases of traditional circumcision), lack of abstinence compliance following the procedure, and sexual risk compensation behaviours. Implementation strategies to improve VMMC delivery in high prevalence settings are needed to maximise the full protective effects of the intervention.

EPC233

Knowledge, attitude and perception of uninitiated adolescents towards customary male initiation practices in selected schools in Buffalo City Municipality, Eastern Cape

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Background: Based on evidence that Voluntary Medical Male Circumcision (VMMC) significantly reduces the risk of HIV transmission by 60%, the World Health Organization (WHO) recommends implementing VMMC programs in countries with a high HIV prevalence, considering the unique sociocultural and economic dynamics of each setting. In South Africa (SA), multiple tribes including the AmaXhosa in Eastern Cape (EC) province practice Customary Male Initiation (CMI) also known as *Ulwaluko* as a rite of passage of males from boyhood to manhood, and this involves circumcision.

However, in recent years, this practice has been riddled with deaths of initiates, admissions to hospital, amputation of penis, assaults, drug& alcohol, and crime.

Hence this study aimed at understanding the knowledge, attitude, and perceptions of uninitiated adolescents towards the CMI practice in Buffalo City Municipality (BCM), EC to aid in developing strategies to solve current challenges.

Methods: Between June and December 2021, this cross-sectional descriptive study was conducted in BCM, EC, using a quantitative research approach. The study population included male adolescents aged 15 to 19 who had not attended CMI. Applying a multistage random sampling technique, two (2) BCM towns (King William Town-KWT and East London) and the township of Mdantsane were selected and further the schools from which consenting pupils were enrolled into the study. Data was collected using a validated self-administered questionnaire which was captured on excel and analysed using STATA.

Results: Of 520 questionnaires distributed in 10 schools, 251 were both uninitiated and 15-29 years. Majority (35%) were 16 years and from Mdantsane township (48%). 95% spoke IsiXhosa language and majority (40%) lived with only a mother.

Majority (79%) preferred CMI to VMMC and surprisingly 54% did not have knowledge of laws governing CMI. Level of knowledge on benefits of VMMC was generally low; reduces risk of HIV-28%, reduces risk of STI-22%, reduces risk of penile cancer-14%. 41% did not know risks associated with Ulwaluko, with 14% indicating dehydration, 27% injury to penis.

Conclusions: To improve the outcome of CMI in BCM, implementation of strategies to educate uninitiated adolescents of benefits of VMMC, risks associated with CMI and laws governing Ulwaluko is critical.

EPC234

District-level coverage and unmet need for medical and traditional circumcision among men aged 10-29 years in sub-Saharan Africa

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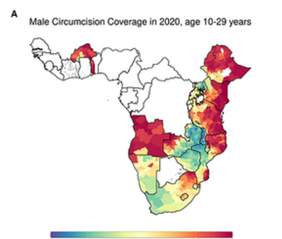
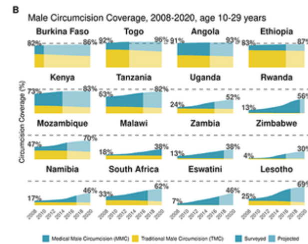
Background: In 2016, UNAIDS developed a Fast-Track strategy that targeted 90% coverage of male circumcision (MC) among men aged 10-29 years by 2021 in priority countries in sub-Saharan Africa (SSA) to reduce HIV incidence. There is substantial variation across subnational regions within countries in both traditional male circumcision (TMC) practices and progress towards implementation of voluntary medical male circumcision (VMMC).
Tracking progress and remaining gaps towards VMMC HIV prevention targets requires detailed district-level circumcision coverage data.

Methods: We analysed self-reported data on male circumcision from 40 nationally representative household surveys conducted in 16 SSA countries between 2006-2020. A spatio-temporal Bayesian competing-risks time-to-event model was used to estimate rates of traditional and medical circumcision by age, location, and time. Circumcision coverage in 2020 was projected assuming continuation of estimated age-specific rates, with probabilistic uncertainty.

Results: Across 16 countries, from 2010 to 2020 an estimated 26.4 million men (95% CI 22.0-31.9 million) were newly circumcised, of whom 22.3 million (17.3-28.5 million) were medically circumcised, and 4.1 million (3.9-4.6 million) traditionally circumcised. In 2020, MC coverage among men 10-29 years ranged from 30.3% (20.8%-48.7%) in Zimbabwe to 95.5% (91.9%-98.7%) in Togo.
MMC coverage ranged from 24.6% (22.7%-27.9%) in Malawi to 62.1% (55.9%-67.9%) in Tanzania, and TMC coverage from 0.6% (0.4%-0.8%) in Eswatini to 62.1% (59.6%-64.2%) in Ethiopia. The largest increase in MMC coverage was in Lesotho from 10.2% to 57.9%.
Within countries, the median difference in MC coverage between the districts with lowest and highest coverage was 58.0%, with the smallest variation in Eswatini (42.4% to 48.3%) and largest in Zambia (8.9% to 98.7%). 17 million men aged 10-29 need to be circumcised to reach 90% coverage in all countries.





Conclusions: VMMC programmes have made substantial, but uneven, progress towards male circumcision targets. Granular district and age-stratified data provide information for focusing further programme implementation.

Integrating STI, sexual and reproductive health and HBV and HCV services in HIV prevention programmes

EPC235

Prevalence and factors of HCV infection among HIV-negative MSM, PrEP users versus non-PrEP users, in a community health center

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Background: Since 2000, multiple HCV outbreaks have been reported in the community of people living with HIV, but to a much lesser extent in HIV-negative Men who have Sex with Men and Transgender Women (MSM). During the last decade new developments like the accepted U=U campaign, PrEP implementation, and extension of ChemSex use may have contributed to fueling the transmission chain. A community center with experience of early HIV detection, linkage to care, and treatment initiation might be able to create a model with Point-of-Care (PoC) HCV detection in an understudied population.
The study aims to determine the prevalence of acute and chronic HCV infection in HIV-negative MSM community and to assess risk factors associated with HCV infection.

Methods: All clients, PrEP users and non-PrEP users, coming for routine HIV testing to the community center were offered to be screened for HCV. Sexual behavior and drug use were assessed with questionnaires. A PoC serology test (Abbott® Bioline™ HCV) was performed. Positive results were immediately confirmed by a PoC PCR test (Xpert® HCV VL Fingerstick).
Additionally, clients with a negative serology and pre-defined criteria (e.g. ChemSex, fisting, recent HIV diagnosis) were offered a PCR test to detect a potential acute infection. All confirmed cases were referred to start treatment rapidly.
Results: Interim analysis: between August 23 and December 31, 2021 a total of 3,284 MSM were included (32.5% PrEP users). 19 cases with positive serology were found: 3 active infections (1 coinfection with HIV), 13 serological scars and 3 false positive results. All 3 active infections were detected in non-PrEP users and ChemSex use was 100% present, including 1 case of slamming. One case was considered acute, and another was a reinfection. Two cases have been genotyped as subtype 1a.
Conclusions: Preliminary results show a low prevalence of HCV in HIV-negative MSM (0.49%), and further screening will allow more insight. However, these results suggest that targeted screening may be effective, once criteria are established, for future HCV testing and treat strategies. Community centers play an important role in detecting cases not linked to the health system or subpopulations with difficulties in accessing the public system.

EPC236
Syphilis among pre-exposure prophylaxis initiators in selected districts of Nepal

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Background: HIV prevention services are crucial to achieve the goal of ending AIDS by 2030. In Nepal, the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) and United States Agency for International Development (USAID)-supported Meeting Targets and Maintaining Epidemic Control (EpiC) project support provision of pre-exposure prophylaxis (PrEP) to key populations (KPs) such as female sex workers (FSWs), men who have sex with men (MSM), and transgender people. The project offers integrated PrEP and syphilis screening, as well education on risk reduction. We report syphilis prevalence among these KPs at PrEP initiation and follow-up in the 19 EpiC-supported sites.
Methods: Syphilis prevalence was measured at baseline among all clients initiated on PrEP from October 2020 through March 2021, and incidence was measured during follow-up visits in EpiC Nepal's STI clinic during April through September 2021. Syphilis was diagnosed through rapid plasma reagin and treponema pallidum particle agglutination performed by trained laboratory personnel. Those who tested positive received treatment. These data were collected through the individual reporting system used by EpiC Nepal.
Results: From October 2020 to March 2021, 1,780 KPs (43% FSWs, 34% MSM, 23% transgender people) were initiated on PrEP. Almost half (43%) were ages 15–24 years. Seventy percent of those who initiated PrEP continued to take it, whereas 30% discontinued PrEP. At the time of PrEP initiation, 13% (n=232) tested positive for syphilis (23% FSW, 42% MSM, 34% TG).
At follow-up (April–September 2021), 0.56% (n=7) of those who continued PrEP services and 0.75% (n=4) of those who discontinued the services tested positive for syphilis. Among the KP individuals who continued PrEP, 0.24% (n=3) tested positive for syphilis at baseline and follow-up.
Conclusions: KPs are not only at risk of HIV infection, but also other STIs, including syphilis. Our findings showed a significant decrease in the number of syphilis cases over the time among the PrEP initiators.
Since both PrEP and STI services are provided at the same sites, there is an opportunity to conduct comprehensive STI prevention, screening, and care among PrEP initiators.

EPC237
PrEP as an opportunity to prevent viral hepatitis among a high risk population in Buenos Aires, Argentina

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Background: HIV pre-exposure prophylaxis (PrEP) programs are expanding in middle income countries, including Argentina. Its implementation is an opportunity for the timely diagnosis and treatment of other sexually transmitted infections (STIs), including viral hepatitis (VH). In Argentina, universal HBV immunization is provided at no cost for everyone as well as vaccines for HAV for children and high risk populations. Nevertheless cases and outbreaks of HBV and HAV still occur.
The aim of this study was to evaluate the proportion of HBV and HAV susceptible individuals among men who have sex with men (MSM) and transgender women (TGW) enrolled in a PrEP program.
Methods: From 2018 to 2020,VH serology results were collected from PrEP users. including HVA, HBsAb, HBcAb, HBsAg, HCV antibodies. Sexual risk assesment was evaluated through Sexual Health Promotion (SexPro). SexPro scores ≤16 identified users with higher risk.

Results: Two hundred and two participants were evaluated, 190 MSM and 12 TGW. The median age was 29 years (IRQ 25-33.25). 81% had a SexPro score <16 (mean 8; IQR 1-15), 23% (n=46) had a negative result of HBsAb: 25 were vaccinated during follow-up. 158 (78%) were tested for HAV, 5% (8/158) were negative for IgG HAV, and were vaccinated. all were HCV negative. During follow-up there was one case of acute HBV and one acute HCV.
Conclusions: PrEP programs are an opportunity to identify people at high risk of acquiring VH, prevent HAV and HBV and cure HCV. Close monitoring of serology and vaccination status can reduce the burden of VH in key populations.

EPC238

Gaps and opportunities for integrated HIV and STI testing for women sex workers: findings of a community-based cohort in Metro Vancouver, Canada

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Background: Given the stark HIV and sexual health inequities experienced by sex workers, empirical evidence is needed to inform accessible and sex worker-friendly models of voluntary, confidential and non-coercive HIV and STI testing. In light of reports of barriers to health access reported by sex workers generally, and the individual and public health importance of regular HIV/STI testing, we evaluated patterns and correlates of HIV/STI testing in the last 6 months among women sex workers.
Methods: Data were drawn from An Evaluation of Sex Worker's Health Access (AESHA), a community-based open cohort of sex workers (January 2010-present) working across diverse street, indoor, and online environments in Vancouver, Canada.
Using semi-annual questionnaire data collected by experiential (sex workers) and community-based staff, we used logistic regression with generalised estimating equations (GEE) to model correlates of recent HIV/STI testing over a 9.5-year period (Jan 2010–Aug 2019).
Results: Of 898 participants, 334 (37.2%) identified as Indigenous, 286 (31.8%) as Black/Persons of Colour, and 278 (31.0%) as White. 8.4% and 36.3% identified as a gender or sexual minority, respectively. At baseline, 504 (56.1%) received an HIV and/or STI test in the last 6 months; over the study period, 71.4% (n=641) accessed HIV/STI testing offered by community- or clinic-based providers (e.g., community clinic, family doctor, outreach). In multivariable GEE analysis (Figure 1), odds of recent HIV/STI testing was higher among youth (<30 years), those facing enhanced sexual/drug risks (e.g., inconsistent condom use, non-injection drug use), and those accessing sex worker-led/specific services. Im/migrant sex workers and Black/Women of Colour had lower odds of HIV/STI testing.

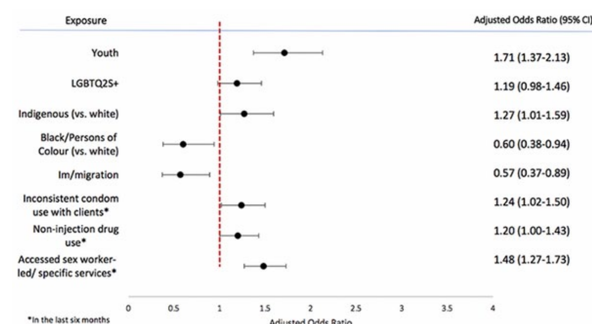

Figure 1. Adjusted odds ratios (AORs) and 95% Confidence Intervals (CIs) for the association between demographic and structural exposures and HIV/STI testing in the last 6 months among women sex workers in Metro Vancouver, Canada (N=898, 4083 observations), 2010-2019
Note: Analyses excluded observations where participants accessed testing safely through AESHA.

Conclusions: Scaling-up community-based, sex worker-tailored services is recommended to enhance voluntary, confidential, and safe access to integrated STI/HIV testing for sex workers. Culturally-safe, multi-lingual services are urgently needed to reduce inequities and improve testing access for im/migrant and racialized sex workers.

EPC239

Blazing a trail for MPT counseling: efforts to develop recommendations for the Dual Prevention Pill and reconcile inconsistent guidance for delivering PrEP and oral contraception

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Background: A range of multipurpose prevention technologies (MPTs) to simultaneously prevent HIV and unintended pregnancy are in development. The Dual Prevention Pill (DPP), a daily pill combining oral pre-exposure prophylaxis (PrEP) and combined oral contraception (COC), is the MPT likely to enter markets next. Consolidating guidance for PrEP and COC is needed to ensure effective provision of the DPP. The process described below offers one model for future efforts to develop appropriate counseling guidance for other MPTs.

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Description: Beginning in February 2021, a working group of eight clinical and implementation experts in HIV and family planning was convened to develop counseling recommendations for the DPP.

First, the group reviewed existing PrEP and COC counseling guidance and supporting tools across six topics: uptake, missed pills, side effects, discontinuation/switching, drug interactions and monitoring.

The group identified points of overlap and divergence, prioritizing outstanding questions to answer through additional desk research and expert consultation.

The group developed recommendations for the DPP across selected topics, which will inform counseling messages used in clinical acceptability studies for the DPP.

Lessons learned: Reconciling PrEP and COC guidance for missed pills to develop clear messages for DPP counseling posed unique challenges, with implications for efficacy, side effects, cost, user comprehension and burden. For example, providers counsel clients to "double up" on missed COC pills, yet limited evidence on the toxicity or side effects of doubling up on oral PrEP in women complicates recommendations for the DPP.

Furthermore, COC guidance allows women to skip placebo pills after missing multiple doses or to avoid monthly bleeding. Yet in the current formulation, the last week of DPP pills will contain TDF/FTC, adding costs to discarding a pack early. Crafting recommendations for the DPP as a novel MPT requires balancing the clinical and implementation implications of both products.

Conclusions/Next steps: Providers will need clear guidance to expand prevention options on offer without compromising effectiveness or increasing client health risks.

Reconciling PrEP and COC guidance for the DPP ensures providers will be equipped to deliver it and support users. The process to consolidate guidance may be applied to accelerate the development of counseling for other MPTs.

EPC240

The role ofadolescent-friendlyhealthservices in HIV preventionandgender-based violenceresponse amongadolescentgirlsandyoungwomen in Namibia

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Background: ACHIEVE Namibia, a USAID/PEPFAR-funded project, aims to achieve and sustain HIV epidemic control among adolescent girls and young women (AGYW) in northern Namibia. ACHIEVE builds on best practices in HIV prevention, sexual and reproductive health (SRH), and post-gender-based violence (GBV) care to strengthen adolescent-friendly health services (AFHS).

Description: ACHIEVE implemented DREAMS in four districts of two regions in Namibia from October 2020-September 2021 targeting AGYW aged 15-24 years old in 21 public health facilities. The DREAMS interventions include HIV prevention, GBV prevention and response, and SRH services, and are provided in adolescent-friendly clinics, DREAMS safe spaces in communities, and schools around the clinic.

To address barriers to care, the clinics have clear signage, are staffed by AFHS-trained providers, actively engage AGYW, and offer a comprehensive service package under one roof. Clinics offer HIV testing services (HTS), pre-exposure prophylaxis (PrEP), linkage to antiretroviral therapy, sexually transmitted infection screening/treatment, counselling/provision of contraception, and post-GBV clinical care, amongst other services.

Lessons learned: The service provision has closed the gap of SRH/HIV and GBV prevention missed opportunities among AGYW. From October 2020-September 2021, 21,801 AGYW visited the clinics, of whom 98% (21,334) were assessed for HIV risk using a standard tool. The majority of them, 76% (16,278) were found at risk. Of those at risk, 71% (11,487) were tested, and 99% (11,374) tested negative.

Among those who tested negative, 43% (4,929) were initiated on PrEP for the first time. Also, 4,090 received a modern contraceptive method, and 82% (1,187) of 1,441 reported GBV cases received post-GBV clinical care. The distribution of service provision by age group is in Figure 1.

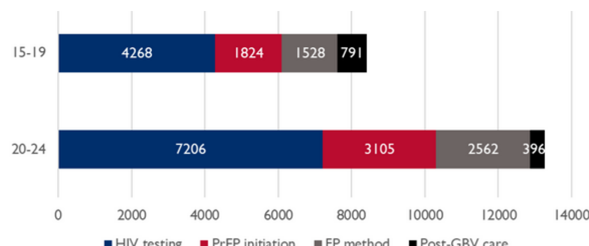

Figure 1. Number of AGYW receiving adolescent-friendly health services by service type and age.

Conclusions/Next steps: Offering integrated AFHS approaches and addressing the barriers faced by AGYW in accessing high-quality HIV/SRH services contributes to increased service uptake, better care, and improved health outcomes (ex. preventing unintended pregnancies and HIV acquisition) among AGYW.

EPC241

Sexually transmitted infections prevalence and incidence among HIV negative high risk men who have sex with men and transgender women, participating in HIV combined prevention study in Buenos Aires, Argentina

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Background: Men who have sex with men (MSM) and transgender women (TGW) are at increased risk for HIV and other sexually transmitted infections (STIs).
The objective of this study was to evaluate the prevalence and incidence of STI´s among high risk MSM and TGW in Buenos Aires, Argentina.
Methods: We conducted a retrospective analysis that included all positive STI tests (HIV, chlamydia, gonorrhea, and syphilis) performed between March 2020-January 2022 among asymptomatic, HIV negative MSM and TGW at substantial risk of HIV infection (defined as any of the following situations in the last 6 months: >5 sexual partners, anal unprotected sex, use of drugs, STIs or transactional sex) participating in HIV combined prevention study. Active syphilis diagnosis was made by VDRL and confirmed by a treponemal test (FTA-ABS). Chlamydia trachomatis (Ct) and Neisseria gonorrhoeae (Ng) infection were diagnosed by in-house PCR on first void of urine, rectal and pharyngeal swabs.
Results: we included 117 participants (111 MSM and 6 TGW), median age was 31 years (IQR 20-51). At entry, gonorrhea prevalences at urethral and rectal sites were 0.9% and 2.6%; one participant had both rectal and urethral infections; no pharyngeal infections were diagnosed. Chlamydia prevalences at urethral, pharyngeal and rectal sites were 2.6%, 1.7% and 1.7% respectively. Active syphilis was diagnosed in 8/117 (prevalence 6.8%).
Global STI prevalence at baseline was 14.5%. During follow-up (median 21,25 months), there were 8 new syphilis infections (incidence 7.3%), 4 cases of gonorrhea (incidence 3.7%) and 2 chlamydia infections (incidence 1.8%), 1 HIV diagnosis, 1 episode of rectitis, 1 episode of urethritis and 1 diagnosis of rectal T. vaginalis infection . The global incidence of STI among this population was 16,5%. 8 participants were lost to follow up.
Conclusions: Global STIs prevalence and incidence among this population is high, underlining the importance of periodically testing in this high risk population with focus on syphilis, extragenital gonorrhea and chlamydia that are usually asymptomatic. Testing and treatment so far is the most effective method to interrupt transmission and reduce the burden of illness.

EPC242

Factors influencing modern contraceptive choices among HIV positive women attending family planning clinic at the University College Hospital Ibadan

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Background: Choices about childbearing and contraceptive use are important health decisions among HIV/AIDS infected female population. This study assessed the factors influencing modern contraceptive choices among HIV positive women attending the Antiretroviral family planning clinic of University College Hospital, Ibadan.
Methods: A cross-sectional study using systematic random sampling technique to select 341 consenting women was conducted. A pre-tested interviewer-administered questionnaire which contained respondents' demographic characteristics, factors influencing the choice of modern contraceptives, factors responsible for continuation of chosen method of contraception etc, Contraceptive continuation scores were categorised into unlikely (≤ 4), likely (5-6) and very likely (≥7).
Satisfaction scores of ≤6 and >6 were categorized as low and high respectively. Data were analysed using descriptive statistics, Chi-square and multinomial logistic regression at 5% level of significance.
Results: Age of the respondents was 35.5 ± 6.4 years; 99.4% were married and 89.0% were in monogamous marriage. Forty-seven percent had tertiary education and 41.3% had senior secondary school certificate. Current method of contraception was influenced by perceived effectiveness (72.8%) and few side effects (56.1%). Implant was the commonest choice for women with secondary (48.2%) and tertiary education (42.9%).
Majority (78.5%) reported irregular menstruation, weight gain/loss (27.2%), breast tenderness (5.0%), stomach pain (4.1%) and frequent headache (1.7%). Factors influencing continuation of chosen method included availability (95.9%), easy discontinuation of method (90.3%) and husband support (88.3%).
A Major reason for being satisfied with chosen method was adequate information before choice (98.2%). A significant association was found between the chosen modern contraceptive and higher level of education. Women whose choice of a particular method was not because it had worked for their mothers were twice (OR=0.54, 95%: 0.39-0.94) less likely to have chosen IUCD over implant than women who said yes. Women who had secondary education were (0R=0.44, 95% CI: 0.24-0.82) less likely to have chosen IUCD over implant than women who had tertiary education.
Conclusions: Higher level of education and previous use of contraceptives by respondents' mothers are factors influencing modern contraceptive choices. More emphasis on male involvement in family planning programme and reproductive health is hereby recommended.

EPC243

STI incidence and care discontinuation among PrEP using Black men who have sex with men in New Orleans, Louisiana

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Background: Studies of PrEP among men who have sex with men (MSM) have demonstrated reduced rates of HIV but high rates of STIs. Additionally, rates of gonorrhea, chlamydia, and syphilis in the United States are five times higher in Black men compared to White men, and a significant proportion of new HIV cases are attributable to these STIs. Few studies specifically address STI risk in Black MSM PrEP users.

Methods: We prospectively enrolled Black MSM PrEP users aged 18-35 in a longitudinal study to assess STI incidence including gonorrhea, chlamydia, and syphilis. Participants enrolled from July 2019 until May 2021 and were followed until December 2021.

We examined demographic characteristics and factors shown to be associated with STI risk, such as social isolation and medical mistrust. We also examined care discontinuation events, defined as six months or more between visits, or no visits during the last six months of the study period.

Results: We enrolled 63 Black MSM PrEP users; total follow up time was 81.8 person years (PY). Mean age was 29.9 (SD 4.3); 45 participants (71%) had insurance, and 30 (48.4%) had been diagnosed with an STI in the 12 months prior to enrollment. Social Isolation, Discrimination, and Medical Mistrust Scores are shown in the table.

There were 56 STI infections over follow-up (6 syphilis, 18 chlamydia, 32 gonorrhea), yielding an STI incidence of 68.5/100PY. There were 2 incident cases of HIV (2.4/100PY). Additionally, 32 (51%) participants had PrEP discontinuation events.

Conclusions: Overall, Black MSM PrEP users in New Orleans did not feel socially isolated and had low perceived levels of discrimination, although their sense of medical mistrust was moderate.

Additionally, they had poor engagement in PrEP care and high rates of STIs and HIV. Further efforts are needed to enhance PrEP use and prevent STIs in this population.

Demographic (n=63 unless otherwise noted)	N/mean (% or SD)
Age - mean	29.9 (4.25)
Self-identified ethnicity - Hispanic	3 (4.8%)
Self-identified race - multiracial including black	8 (12.7%)
Income per year	
$0 - $34,999	41 (69.4%)
Greater than or equal to $35,000	18 (30.5%)
Insurance	
Private	22 (34.9%)
Medicaid	23 (36.5%)
None / Unknown	18 (28.6%)
STI within 12 months (n=62)	
Yes	30 (48.4%)
# of partners in prior 3 months	
0 - 4	45 (74.6%)
5 - 9	11 (17.4%)
>/= 10	5 (7.9%)
Anal condom use (n=55)	
Always	8 (14.5%)
Sometimes	32 (58.1%)
Never	15 (27.3%)
Social provisions scale (SPS-10)* (n=54)	33.5 (7.8)
Patient Reported Outcomes Medical Information System (PROMIS) social isolation score* (N=60)	6.3 (3.7)
Multiple discrimination scale - Gay† (n=48)	2 (2.5)
Multiple discrimination scale - Race‡ (n=48)	2.6 (2.4)
Group base medical mistrust scale§ (n=51)	2.5 (0.6)

SD: standard deviation
*Scores range 10-40, higher scores represent less social isolation
#Scores range 0-20, higher scores represent more social isolation
†Scores range 0-10, higher scores represent more discrimination based on sexual identity
‡Scores range 0-10, higher scores represent more discrimination based on race
§Scores range 1-5, higher scores represent more medical mistrust

Table 1. Baseline characteristics.

EPC244

A pilot evaluation of integrating STI testing & expedited partner therapy into PrEP delivery within antenatal care for pregnant women in Kenya

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Background: PrEP delivery integrated within antenatal care (ANC) is scaling up in Kenya, yet pregnant women may not accurately perceive their HIV acquisition risk. Incorporating testing for sexually transmitted infections (STIs) into ANC could increase their HIV risk perception and motivation for PrEP initiation.

Methods: From December 2020 to August 2021, we piloted integrating chlamydia and gonorrhea (CT/NG) testing and expedited partner therapy (EPT) at one ANC clinic

in Siaya, Kenya. HIV-negative ANC clients ≥15 years were counseled on and offered Xpert CT/NG® testing with instructions on vaginal swab self-collection.

If participants were uncomfortable with self-collection, nurses collected swabs. CT/NG results were returned to nurses who counseled participants on their results prior to offering PrEP. Women diagnosed with CT or NG were offered immediate supervised treatment per national guidelines and EPT with appropriate medication for their partner(s).

Results: In total, 300 HIV-negative ANC clients were enrolled at a median gestational age of 24 weeks (IQR 16-24); 23% reported having any STI symptoms. The most frequent STI symptoms were vulvar burning/itching (22%) and abnormal vaginal discharge (14%).

Overall, 82% of participants accepted CT/NG testing and 93% self-collected swabs. We did not detect differences between participants who accepted vs. declined testing, except in frequency of STI symptoms (28% vs. 2%%, p<0.001).

Among participants who declined testing, the most frequent reasons for declining were not having time to wait 90-minutes for results (80%) and feeling like they did not have STIs (20%). Among those who accepted testing, 9% had CT detected; no cases of NG were detected. All participants received their CT/NG results at the same visit. PrEP acceptance was higher among women who accepted CT/NG testing compared to those who declined (25% vs. 11%, p=0.03).

Among participants with CT detected (n=23), all were treated immediately and 61% accepted EPT; 35% accepted PrEP. Reasons for declining EPT included partners residing far away and fear of partner reactions. No adverse events occurred following EPT acceptance.

Conclusions: In this pilot, offering both CT/NG testing and PrEP integrated within ANC was feasible. HIV-negative pregnant women frequently accepted CT/NG testing and if CT was detected, frequently accepted EPT and PrEP.

EPC245

Impact of point-of-care testing and treatment of sexually transmitted infections and bacterial vaginosis on the genital epithelial barrier integrity

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Background: Genital inflammation and epithelial barrier damage can increase HIV susceptibility in women. Because sexually transmitted infections (STIs) and bacterial vaginosis (BV) directly contribute to these, effective treatments are necessary to improve genital health and limit HIV risk in women. A program of point-of-care (POC) STI/BV, immediate treatment, and expedited partner therapy is shown to clear STIs and reduce inflammation in a cohort of young women in South Africa.

Here we investigate the impact of this approach on the integrity of the genital epithelial barrier against HIV/STIs.

Methods: HIV-negative women with BV and/or POC diagnosis of Chlamydia trachomatis, Neisseria gonorrhoeae, or Trichomonas Vaginalis received immediate treatment and EPT for STIs. Participants were retested 6- and 12-weeks post enrolment. Concentrations of 48 cytokines and 5 matrix metalloproteinase (MMP) biomarkers of epithelial barrier integrity were measured in cervicovaginal fluid using multiplex ELISA technology.

Wilcoxon-Mann-Whitney tests were used to assess the relationship between MMP concentrations and STI/BV at baseline, with ANOVA and multivariable linear mixed models used to assess the impact of treatment on MMP concentrations.

Results: The study included 238 women with a median age of 23 (IQR 21-27) years. Women with STIs/BV at baseline (n=169/238) had significantly higher concentrations of MMP-1, MMP-2, MMP-7, MMP-9, and MMP-10 (p<0.01) compared to women without (n=69). Increased baseline MMP concentrations correlated significantly with that of several pro-inflammatory and chemotactic cytokines. While most women cleared their STIs by 12 weeks (34/37, 91.9%), only 16/63 (25.4%) cleared the BV/IM status to a Nugent

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score of less than four after treatment with oral metronidazole. Reduced MMP concentrations were associated with STI treatment (MMP-1, MMP-7, MMP-9; p=0.05), but not with post-treatment Nugent scores.
The most marked reduction was observed in MMP-1 levels, where concentrations were reduced, respectively, by 20.76% (adj p=0.003) and 13.21% (adj p=0.034) by 6- and 12-weeks after STI treatment.
Conclusions: Our findings indicate that POC STI/BV testing, immediate treatment, and EPT can clear STIs, reduce inflammation, and promote epithelial barrier integrity, thereby improving vaginal health and potentially reducing HIV risk. However, more effective BV treatments are required and may better restore the epithelial defense against HIV/STIs.

EPC246

Integration of female genital schistosomiasis into HIV/sexual and reproductive health and rights and neglected tropical diseases programs and services: a scoping review with a systematic search

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Background: Female genital schistosomiasis (FGS) affects 56 million women and girls across sub-Saharan Africa, and is associated with a threefold increased risk for HIV. Integrating FGS with HIV programmes as part of comprehensive sexual and reproductive health (SRH) services may be one of the most significant innovations for HIV prevention among girls and women in the region.
This scoping review with a systematic search assessed how FGS can be integrated into HIV/SRH and neglected tropical diseases (NTDs) programs.
Methods: A search of studies published until October 2021 via Scopus and ProQuest was conducted using PRISMA guidelines. Data extraction included studies that presented FGS integration interventions and described the associated opportunities and challenges.
A qualitative review was undertaken adapting a conceptual framework for integrated implementation of FGS, HIV and HPV/cervical cancer interventions to thematically organize the results.
Results: Of 334 studies identified, 22 were eligible for analysis. Majority of citations, 72% (n=16), were published in NTD journals. Studies were classified into six integration measures: awareness, diagnosis, treatment, burden assessment, community engagement and economic evaluation.
Most activities pertained to awareness (n=9), diagnosis (n=9) and community engagement (n=9) and primarily connected to HIV (n=8) and school-based (n=8) programmes.
The studies mainly proposed opportunities/challenges for integration, rather than presenting results of integrated interventions. They advocated for integration due to the importance of FGS as a significant co-factor for HIV acquisition and other SRH issues.
Advice included increasing: FGS awareness and education; effectiveness of FGS diagnostic tools; and praziquantel provision to women of all ages and out-of-school children for FGS prevention and treatment and as a novel HIV and cervical cancer prevention tool.
Conclusions: There is an evidence gap on FGS integration into HIV/SRHR/NTD programmes. Therefore, evidence supporting an integrated approach to preventing and treating FGS needs to be published in peer reviewed journals focused on women's health and embedded into medical training at all levels.
Existing evidence on the increased risk of HIV acquisition due to FGS must be translated into programming and operational research for delivering integrated services. Investments and political will are needed to realise the potential of FGS integration as an HIV prevention innovation.

HIV prevention services for key populations

EPC247

Frequent episodes of sexual risk among men who have sex with men who are non-adherent to pre-exposure prophylaxis: a longitudinal cohort study

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Background: Pre-exposure prophylaxis (PrEP) is a highly effective biomedical HIV prevention intervention. Among men who have sex with men (MSM) who take at least four daily doses per week, PrEP has been found to provide near compete protection against sexual transmission of HIV via anal sex. PrEP does not necessarily require constant adherence; rather, adherence to PrEP is most important during periods of sexual risk. Thus, measuring functional adherence to PrEP requires measuring PrEP use and concurrent sexual behavior. To optimally characterize how PrEP adherence aligns with sexual risk, frequent assessments with short recall periods are needed.
We assessed the feasibility of biweekly assessments of PrEP use and sexual behavior among MSM in the southern United States.
Methods: PrEP-using MSM were recruited online. Eligible and consenting men were enrolled and completed a baseline survey followed by brief check-in surveys every two weeks for 16 weeks. Each mobile-optimized survey assessed PrEP use and sexual behavior over the previous 2-week period.

Feasibility was assessed based on the proportion of surveys that were completed. Adherence was defined as reporting at least 4 doses per week on average over a 2-week period.

Results: Of 78 total participants, 35 (47%) were non-Hispanic white, 20 (27%) were non-Hispanic Black, 12 (16%) were Hispanic; the remainder reported other or multiple races. 25 (32%) participants lived in rural areas. Feasibility was high with 86% of all surveys completed; 65% of participants completed all nine study surveys. Self-reported adherence was >90% at all study time points.

We observed a total of 39 intervals in which a participant reported non-adherence or discontinuing PrEP across 14 participants; 14 (36%) of these intervals contained at least one episode of condomless anal sex.

Conclusions: Although adherence on PrEP was high, non-adherence frequently overlapped with periods of sexual risk. Frequent, short surveys are a feasible method for assessing PrEP adherence and alignment with sexual risk among MSM in the US South.

These methods will be key in understanding patterns of PrEP use, identifying barriers to and facilitators of sustained adherence during periods of sexual risk, and evaluating effectiveness of different PrEP adherence strategies in preventing HIV infections.

EPC248

Unmet service needs among PrEP-eligible MSM and TGW in THRIVE — United States, 2015–2020

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Background: Oral pre-exposure prophylaxis (PrEP) is highly effective for HIV prevention, but PrEP uptake has been low among U.S. Black/African American (Black) and Hispanic/Latino men who have sex with men (MSM) and transgender women (TGW), related to social and structural barriers.

Data from the THRIVE demonstration project were analyzed to describe unmet service needs among PrEP-eligible Black and Hispanic/Latino MSM and TGW.

Methods: THRIVE funded 7 U.S. health departments during 2015–2020 to provide HIV prevention and care services through community collaboratives, prioritizing Black and Hispanic/Latino MSM and TGW. All sites routinely screened clients for PrEP eligibility and 4 sites routinely screened for unmet mental health, substance use, housing, employment, transportation, and health insurance needs. Unmet service needs were described among Black and Hispanic/Latino MSM and TGW who were PrEP-eligible and enrolled at one of 4 sites with routine screening. Comparisons between groups were performed using chi-square tests.

Results: Among PrEP-eligible clients included in this analysis, 1,742 were Black MSM, 498 were Hispanic/Latino MSM, 201 were Black TGW, and 48 were Hispanic/Latino TGW. Hispanic/Latino TGW had the highest proportion with any unmet needs (88.4%). A higher proportion of Hispanic/Latino MSM had any unmet needs compared with Black MSM (71.5% vs. 47.1%, p<.001), and a higher proportion of Hispanic/Latino TGW had unmet needs compared with Black TGW (88.4% vs. 65.5%, p<.01).

Among Black MSM and Hispanic/Latino MSM, the most common single unmet need was health insurance (17.9% and 34.3%, respectively). Among Black and Hispanic/Latino TGW, the most common unmet need was employment (35.4% and 59.1%).

The highest proportion with unmet mental health needs was among Hispanic/Latino TGW (22.5%), followed by Hispanic/Latino MSM (22.0%). The highest proportion with unmet substance use needs was among Hispanic/Latino MSM (9.6%).

Conclusions: Black and Hispanic/Latino MSM and TGW who were eligible for PrEP in THRIVE had high unmet service needs. Hispanic/Latino clients had higher unmet service needs compared with Black clients, and Hispanic/Latino TGW had the most unmet needs.

Addressing the social determinants of health among persons at risk for HIV acquisition might help improve PrEP uptake among disproportionately affected populations.

EPC249

PrEP vs PEP: Awareness, use and preferences among Latina immigrant transgender women in the Washington DC metropolitan area

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Background: Latina immigrant transgender women (LITW) in the US are disproportionately impacted by HIV. However, their use of the pre- and post-exposure prophylaxis (PrEP and PEP) is low. This longitudinal mixed-methods research study explored awareness, use and preferences regarding PrEP and PEP among LITW.

Methods: Participants were 37 HIV-negative LITW living in the DC metropolitan area (M age=34.5; SD=8.4). Most participants were from Central America (n=28; 75.7%) and had been in the U.S. for over five years (M=10.5; SD=8.7). We conducted up to three in-depth, semi-structured mixed-methods interviews per participant.

All interviews were conducted, transcribed and analyzed in Spanish. For qualitative data we used a Rapid and Rigorous analysis (RADaR) technique to identify key themes. Quantitative analyses used descriptive and non-parametric statistics.

Results: Awareness, lifetime use and preference were higher for PrEP than for PEP. Participants who preferred PrEP (62.9%) felt it was safer because they were taking it

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beforehand (e.g., "I have it in my system and now I am no longer worried of having sex"), and because there is more information about it (e.g., "It is talked about a lot, I feel safer"). Participants who preferred PEP (31.4%) liked it's limited time frame (e.g., "I prefer to take 28 days than my whole life") and the possibility of using it on a case-by-case basis (e.g., "If I have someone of dubious [status], I will take PEP to make sure I will be OK").

Regarding intentions to use, less than half of PrEP-naive participants (n=10; 45.4%) thought PrEP would be a good alternative for them. Conversely, the majority of participants, regardless of previous PrEP/PEP use, would use PEP if they were concerned about a recent sexual encounter (n=33; 89.2%), despite some concerns about access.

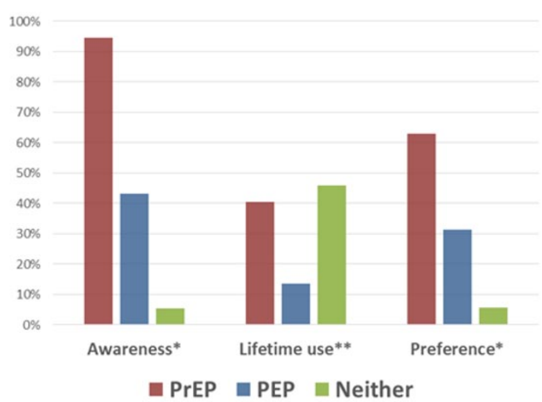

Figure 1. PrEP and PEP awareness, lifetime use and preference.

Conclusions: Despite higher awareness, use, and preference for PrEP, PEP is an important additional HIV-prevention strategy among LITW.

EPC250

Prevalence and factors associated with timeliness of partner services for persons newly diagnosed with HIV in the United States, 2019-2020

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Background: Timely delivery of partner services (PS) is an important strategy to reduce HIV transmission by improving linkage to care and prevention services for persons with HIV and their partners. However, data on the timeliness of PS in HIV prevention programs are limited.

Methods: We used 2019-2020 HIV testing data submitted by 60 CDC-funded state and local health departments. Variables analyzed include date of interview for PS, demographic and behavioral risk characteristics, and testing site type for persons newly diagnosed with HIV (n=9,611). Timeliness of PS was operationalized by provision of an PS interview within 14 and 30 days of HIV diagnosis. We conducted multivariate Poisson regression to examine factors associated with timely delivery of PS.

Results: Overall, only 43.7% and 58.4% of persons newly diagnosed with HIV in 2019-2020 were interviewed for PS within 14 and 30 days of diagnosis respectively. Similar factors were associated with both measures of timely delivery of PS. Results for PS interview within 14 days of diagnosis indicate lower prevalence among 40-49 (38.8%; adjusted prevalence ratio [aPR]=0.86; 95% confidence interval [CI]=0.80-0.93) and ≥50 year olds (35.9%; aPR=0.80; 95% CI=0.74-0.88) compared to 20-29 year olds (46.8%). Hispanic/Latino persons (41.2%; aPR=0.89; 95% CI=0.83-0.95) were less likely to receive timely interview than White persons (47.1%). Timely interview was higher among persons from the South (38.3%; aPR=1.23; 95% CI=1.13-1.33), the Midwest (62.1%; aPR=1.77;95% CI=1.61-1.95) and the West (64.1%; aPR=1.99; 95% CI=1.83-2.18) compared to persons from the Northeast (33.9%). Timely interview was higher among persons tested in STD clinics (58.4%; aPR=1.56; 95% CI=1.46-1.67) and lower among those tested in emergency departments (18.7%; aPR=0.67; 95% CI=0.55-0.80) compared to those tested in HIV testing sites (37.4%).

Conclusions: More than 40% of persons newly diagnosed with HIV were not interviewed for PS within 14 or 30 days of diagnosis indicating missed opportunities at preventing further transmission of HIV to partners. Demographic, regional, and testing site type differences suggest inequitable delivery of PS.

Further research is needed to identify and remove the barriers to timely and equitable provision of PS and contribute to ending the HIV epidemic in the United States.

EPC251

Which men who have sex with men are most in need of pre-exposure prophylaxis in Amsterdam, the Netherlands? A reappraisal of eligibility criteria

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Background: Pre-exposure prophylaxis (PrEP) distribution is restricted within the Dutch national PrEP program and should target those at highest HIV-risk. To reappraise eligibility criteria, we assessed the men who have sex with men (MSM) most in need of PrEP.

Methods: We used Amsterdam Cohort Studies (ACS) data from 2011-2017 for non-PrEP using HIV-negative MSM. PrEP need, defined as HIV-risk, was assessed using outcomes:
1. Incident HIV-infection and;
2. Newly-diagnosed anal STI (proxy for HIV-risk).
Determinants included:
1. Dutch PrEP eligibility criteria: anal STI and condomless sex with a steady or casual partner (PEP use and syphilis were excluded due to insufficient data), and;
2. Additional determinants: age (16-35/35+), education (yes/no college or university), group sex, alcohol during sex, and chemsex.
We estimated relative risks (RR) and 95% confidence intervals (CI) of determinants on outcomes at visit level using targeted maximum likelihood estimation (TMLE).
We assessed population-level effects by calculating population attributable fractions (PAF) with 95%CI using RRs from TMLE.
Results: Among 810 included MSM, the median age was 36.1 (IQR=29.6-43.0) and most (76.9%) were highly educated. During follow-up, 22 HIV-infections and 436 anal STIs (n= 218; median=2[IQR=1-2]) were diagnosed.
Chemsex (RR=5.8 [95%CI=2.0-16.9]; PAF=55.3 [95%CI=43.3-83.4]), condomless sex with a casual partner (RR=3.3 [95%CI=1.3-8.7]; PAF=38.0 [95%CI=18.3-93.6]) and anal STI (RR=5.3 [95%CI=1.7-16.7]; PAF=22.0 [95%CI=-16.8-100.0]) were significantly (p<0.05) associated with HIV, and were among the most attributable risk behaviors for HIV.
Chemsex (RR=2.0 [95%CI=1.6-2.4]; PAF=19.5 [95%CI=10.6-30.6]) and condomless sex with a casual partner (RR=2.5 [95%CI=2.0-3.0]; PAF=28.0 [95%CI=21.0-36.4]) were also significantly associated with anal STI, as well as younger age (16-34 versus 35+; RR=1.7 [95%CI=1.4-2.1]; PAF=15.5 [95%CI=6.4-27.6]) and group sex (RR=1.3 [95%CI=1.1-1.6]; PAF=9.0 [95%CI=-2.3-23.7]).
Despite non-significant RR estimates for HIV, PAF estimates indicated that group sex was the third (PAF=26.7 [95%CI=1.6-100.0]) and younger age was the sixth (PAF=10.7 [95%CI=-24.10-100.0]) most attributable factor for HIV-risk.
Conclusions: Encouraging PrEP use among MSM having chemsex as a new criterium alongside the current criteria of condomless sex with casual partners and anal STI could improve HIV prevention. The additions of group sex and younger age may also help prioritize PrEP.
Future research must assess these criteria among less homogenous MSM populations (i.e., younger, ethnically diverse and mixed socioeconomic backgrounds) and evaluate the costs and benefits of application in practice.

EPC252
Differentiated escalating adherence support visualization for cisgender women on PrEP

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Background: Pre-exposure prophylaxis (PrEP) use and support for HIV prevention for cisgender women remains understudied in the US. Oral PrEP adherence support strategies for cisgender women are needed.
Methods: The AEGIS study provided open-label PrEP to women at risk for HIV in California between May 2016 and April 2018. Standard adherence support for all participants included Individualized Texting for Adherence Building (iTAB), an automated daily text message and inquiry about dosing, and engaging women at each study visit in a brief discussion exploring current context and needs specific to sexual health promotion and PrEP use (integrated Next Step Counseling [iNSC]).
Dried blood spot drug concentrations were collected at weeks 4, 12, 24, 36 and 48. Concentrations suggesting less than 6-7 days dosing (<1050 fmol/punch) triggered escalated intervention(s).
The first escalation was targeted-iNSC, a version of iNSC which uses problem solving around the reported causes of the below threshold result.
A second below threshold result triggered LifeSteps for PrEP, a multi-session, theory-based adherence counseling intervention. Demographics between participants who had some improvement after escalated intervention and those who did not were evaluated with univariable Fisher's Tests and Kruskal-Wallis Tests.
Results: The Figure maps the flow the 108 women who received PrEP and had at least one follow-up visit over 48 weeks of study participation. 16 (14.8%) sustained high levels of daily PrEP use with the standard adherence support package. Only employment was associated with improvement after escalated intervention (p=0.02).

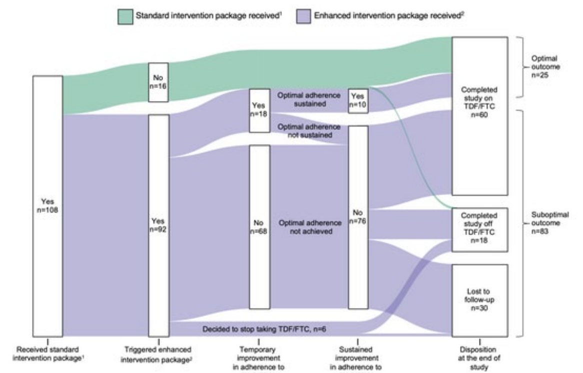

Figure. Escalating adherence support strategies and dried blood spot results.

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Conclusions: While the escalated intervention approach appeared to be helpful for some participants, a large segment had drug concentrations that remained below threshold after escalation, particularly for women who were unemployed, and loss to follow-up was not uncommon. PrEP optimization for US cisgender women will likely require a robust menu of HIV prevention strategies and tailored social and structural support.

EPC253

Evaluating Black women's preferences towards sexual and reproductive health content for the mobile health app prototype Savvy HER

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Background: Black women in the United States experience disproportionate rates of HIV, and have the second highest rate of new HIV infections after men who have sex with men. Mobile health (mHealth) interventions can function as a valuable tool in mitigating HIV risk among Black women through providing content that is tailored towards their needs and lived experiences.

Our descriptive qualitative study explored the features that Black women desired to see within a mobile app that is currently under development, *Savvy HER*, which will focus on HIV prevention and pre-exposure prophlyaxis (PrEP) uptake for Black women.

Methods: Semi-structured in-depth interviews were conducted with n=24 Black women. Interview guide questions inquired about HIV and PrEP knowledge and awareness, sources of health information, and willingness to use a mobile app for HIV prevention. Interviews were recorded and transcribed using Otter.ai software. Data analysis employed Grounded Theory in which transcripts were coded inductively with patterns among codes being identified to categorize codes into overarching themes.

Results: Results from our qualitative study demonstrate that Black women had high acceptability of using a mobile app for sexual and reproductive health content. Participants desired content focused on various sexual and reproductive health topics that expanded beyond HIV prevention. Women stated voiced wanting to have access to accurate information on relevant health topics including family planning, contraception, and mental health. Themes pertaining to women's empowerment were also identified. Women also voiced including features that provides linkage to community resources for health and social support.

Conclusions: Black women desired content on various health topics within our proposed mHealth app that expanded beyond HIV prevention. This finding underscores the importance of using human centered design and collaborative engagement with target communities to identify end-user needs and preferences regarding the content and design of mHealth programs.

While our app prototype, *Savvy HER*, was initially developed for HIV prevention, we have now included features that were desired by Black women that promote holistic wellness (e.g.linkage to health and social resources) while ensuring Black women are adequately reflected throughout the design of *Savvy HER*.

EPC254

Association between knowledge and attitudes toward methadone and the decision to initiate pre-release methadone among men living with HIV and opioid use disorder in Malaysia's Kajang prison

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Background: Strong beliefs, including misperceptions about methadone are documented among people who experience incarceration in Malaysia. We examined associations between knowledge and attitudes and the decision to initiate pre-release methadone maintenance treatment (MMT).

Methods: We used data from*Project Harapan*, a randomized (n=64) and participant choice (n=246) trial of pre-release MMT between 2010 and 2013 in Malaysia's largest prison among men living with HIV and opioid use disorder. Our analysis was restricted to participant choice, after excluding 14 men, 232 remained. Primary interest lay in relationships between responses to 14 methadone knowledge and attitude questions collected during baseline interviews and the choice to initiate or not to initiate pre-

release MMT. We conducted a latent class analysis based on responses to identify clusters of men with similar responses (chi-square tests [X^2]); examined associations between classes and socio-demographic characteristics (X^2& Kruskal Wallis tests); between classes and MMT choice (X^2); and, between responses and MMT choice (X^2).

Results: Of the participant choice sample (n=232), men were 39 years old on average, most were Malay (74%), Muslim (77.1%), reported injection drug use (94%) and few reported past MMT use (9.5%).

We uncovered four latent classes. We found differences among the groups in the proportion of men assigned to them that chose to initiate pre-release MMT.

Higher proportions of men in the two groups with lower proportions of "don't know" responses chose to initiate pre-release MMT than in the two groups with higher proportions of "don't know" responses.

We found high proportions of "don't know" responses by men assigned to each class; class 1: 17.0 %, class 2: 96.9 %, class 3: 60.3 % and class 4: 16.4 %. Pre-release MMT uptake was still quite high among men that gave many don't know responses. Overall, of the 232 men, 184 (79.3%) chose to initiate pre-release MMT, 48 (20.7%) chose not to.

Conclusions: Potential exists to increase MMT uptake by addressing uncertainty towards methadone. Prisons seeking to increase MMT uptake may consider evidence-based shared-decision aids to understand perceptions, knowledge and attitudes and address how these may challenge 'methadone as HIV prevention' efforts.

EPC255

Return to opioid use following release from incarceration: Findings from a prison-based methadone maintenance treatment program for men living with HIV and opioid use disorder in Malaysia

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Background: Return to opioid use is high following release from incarceration and is associated with poor HIV treatment outcomes and opioid-related harms. Efforts to scale-up methadone treatment as HIV prevention and reduce harms are required.

We evaluate the efficacy of pre-release methadone maintenance treatment (MMT) initiation in reducing return to opioid use post-release in Malaysia.

Methods: Individuals were enrolled in*Project Harpan*,a randomized (n=64) and participant choice (n=246) trial of pre-release MMT initiation between 2010 and 2013 in Malaysia's largest prison among men living with HIV and opioid use disorder.

After excluding 14, 296 men remained. The primary outcome was incidence of opioid use over the 12 months post-release, indicated by monthly urinalysis. We hypothesized opioid use post-release would be lower in the group initiating pre-release MMT than those not initiating.

Outcomes of urine toxicology tests for opioids were fitted to multivariable logistic regression models using generalized estimating equations after multiple imputation to test the hypothesis.

Results: Of the 296 men, most were Malay (72.3%), Muslim (76.6%), were on average 38 years old, never married (64.1%), living with hepatitis C (95.7%) and reported a history of injection drug use (91.6%). Less than 14 percent were on antiretroviral treatment, few were virally sup-

pressed (15.9%). The mean CD4+T-lymphocyte count was 451.1 (cells/mL), 17% had a CD4+T-lymphocyte count under 200 (cells/mL). Initiation of pre-release MMT was strongly associated with a decreased probability of returning an opioid-positive urine toxicology result in the first 12 months post-release, compared to individuals not initiating pre-release MMT (adjusted odds ratio 0.45, 95% CI, 0.30, 0.67).

Urine samples from individuals with equal to or greater than 4 incarceration episodes had 36 percent higher odds of testing positive for opioids than those with≤1 prior incarcerations (aOR 1.36, 95% CI, 1.04, 1.77).

Conclusions: Use of opioids in the 12 months post-release was less frequent among individuals initiating pre-release MMT. We recommend the expansion of MMT in Malaysian prisons.

Our findings suggest pre-release MMT may be an effective intervention for decreasing and interrupting the cycle ofopioid use and improving HIV prevention and treatment outcomes.

EPC256

Healthcare providers' perspectives on PrEP adherence among MSM and TGW in Peru: a qualitative study of the ImPrEP demonstration study

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Background: Daily Oral HIV Pre-Exposure Prophylaxis (PrEP) was implemented in Peru through the ImPrEP Study, focused on men who have sex with men (MSM) and transgender women (TGW). Healthcare providers play a significant role in the successful implementation of PrEP and their perspectives and experiences are critical to understanding PrEP adherence in these populations.

Methods: Individual in-depth interviews (IDI) were conducted with 11 healthcare providers (physicians, psychologists, midwives and peer educators) from 4 ImPrEP Study sites in Peru. Analysis explored four dimensions: PrEP acceptability among MSM/TGW, benefits of PrEP use, barriers to PrEP adherence, and current situation of health services.

Results: Healthcare providers reported that PrEP was highly acceptable among MSM/TGW, especially among participants with very active sex lives (multiple partners, condomless sex), sero-discordant couples, commercial sex workers, and those seeking an alternative HIV prevention method to condoms. Among the benefits offered by PrEP, providers stated that PrEP helps MSM/TGW reduce risk of contracting HIV while giving them greater security, confidence, and control over their sexual health. Additionally, PrEP had a liberating effect, strengthening bonds between sex partners and providing greater sexual satisfaction. Likewise, control visits helped to detect STIs in time and maintain participants' sexual health. Major barriers to PrEP adherence among MSM/TGW reported by providers included low HIV-risk perception, struggles to adhere to the daily regimen, side effects and PrEP-related stigma, followed by doubts about PrEP effectiveness, concerns about the interaction of hormone therapy and PrEP and periods of low sexual activity. Providers described several structural barriers of current services such as limited health systems capacity to provide PrEP, inadequate infrastructure, insufficient personnel, and the urgency of establishing a PrEP provision program supported by the Ministry of Health.

Conclusions: According to healthcare providers, participants with a high self-perceived HIV risk often request PrEP, which helps them reduce their risk and gives them control over their health. Daily oral regimen, low HIV-risk perception, side effects and PrEP-related stigma were described as major barriers to adherence. The health services would require changes and improvements to successfully implement PrEP within the government's public health program.

EPC257

Seroconversions monitoring in Brazil's PrEP program

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Background: As Brazil's free-of-charge PrEP program scales-up, more individuals at increased risk of contracting HIV can benefit from this public health policy. Although PrEP has been proven effective in several studies, we aimed to analyze seroconversion in Brazil´s daily dosing PrEP program using real life data.

Methods: We analyzed the National PrEP Program Database from january 2018 to december 2021 and linked it, using unique identifiers, with the national system of Antiretroviral Therapy (ART), which registers all ART dispensation in country. We used descriptive statistics to quantify PrEP and ART dispensations and identify seroconversions during PrEP use.

Results: From 57,302 individuals seeking PrEP, we found out that 1,014 (2%) later initiated ART (median age:29, IQR 26-35). Among them, 492 (48%) were registered for PrEP, but did not initiate it and started ART instead; 481 (47%) started ART after not returning to refill PrEP pills; 34 (3%) received their first PrEP dispensation, but tested positive at the 30-day-follow-up visit, which indicates infection in the window period before PrEP; 3 (0,3%) seroconverted while in PrEP, but reported having missed 15 or more pills on the prior 30 days; 4 (0,4%) seroconverted while in PrEP and reported taking all pills. Out of these 4 cases, just one has done genotyping and no drug resistance was found.

When we analyze all 52,577 individuals who received at least one PrEP dispensation, 7 (0.01%) seroconverted (median age:36, IQR 25-46). Among those, 6 (86%) were gays/MSM and 1 (14%) was a cisgender woman; and 3 (43%) were sex workers.

Conclusions: After four years of PrEP program in Brazil, the low percentage of HIV seroconversions reinforces the effectiveness and importance of this prophylaxis and encourages the country to further expand this prevention option.

Considering that almost half of the seroconversions could be attributed to poor adherence, it is important to continue to bring attention to education, motivation and social/psychological strategies to improve adherence, but also consider the offer of new PrEP delivery models, especially for key population.

EPC258

Preferences for HIV prevention strategies among newly arrived Asian-born men who have sex with men living in Australia: a discrete choice experiment

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Background: Overall, HIV incidence has declined in Australian-born gay, bisexual, and other men who have sex with men (MSM) but not in newly-arrived Asian-born MSM. We aimed to evaluate preferences for HIV prevention strategies among newly-arrived Asian-born MSM.

Methods: We conducted an online discrete choice experiment among MSM, not living with HIV, aged ≥18 years, born in Asia (South, East, South-East), and who arrived in Australia within the last five years. We evaluated their personal preferences for HIV prevention strategies using random parameter logit (RPL) models and estimated the relative importance for each strategy. We explored heterogeneity of preferences using latent class analysis (LCA) with interaction effects for employment status, where people sourced information about HIV and strategy used at last sex.

Results: In total, 286 participants completed the survey (1/2/2019-30/6/2021). Their mean age was 29.2 (SD6.8) years and had lived in Australia for a median of 3 years (IQR 2-4). The mean number of regular male sex partners in the last 6 months was 2.0 (SD4.0) and median was 1 (IQR 1-2).

Regarding the relative importance of strategies, men preferred PrEP as an HIV prevention strategy, followed by consistent condom use, post-exposure prophylaxis, asking their sexual partners for their latest HIV test result and insertive anal-sex.

The LCA uncovered 3 classes: 'PrEP' (52%), 'Consistent condoms' (31%), and 'No strategy' (17%). Compared to the 'No strategy' class, men in the 'PrEP' class were less likely to be a student or asked their partner for their HIV test result.

Men in the 'Consistent condoms' class were more likely to get information about HIV from online, used condoms in their last sexual encounter, and less likely to ask their partner for their HIV test result.

Conclusions: Overall, PrEP was the preferred HIV prevention strategy for this subpopulation of MSM at higher risk for HIV. Therefore, removing barriers for accessing PrEP is paramount such as more PrEP campaigns and information in language, and partnerships with education providers to disseminate PrEP information.

Focus on those in the 'No strategy' subgroup to have a strategy is also important as they would be at highest-risk of acquiring HIV.

EPC259

The positive impact of drug consumption rooms on HIV/HCV risk practices among people who inject drugs: results from the COSINUS cohort study

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Background: The effectiveness of drug consumption rooms (DCR) for people who inject drugs (PWID) has been demonstrated in several contexts, mainly on HIV-HCV risk practices. However, none of these studies has taken into account the potential bias related to specific characteristics of the group of PWID attending DCR by comparing the exposed group to a control one.

The Cosinus cohort study conducted in France was designed to evaluate the impact of being exposed to DCR on the reduction of HIV-HCV risk practices by using a controlled cohort study.

Methods: The COSINUS cohort is a 12-month longitudinal study among 665 PWID enrolled in Bordeaux, Marseilles, Paris and Strasbourg. We used data from face-to-face interviews at enrolment, 6- and 12-month visits conducted among participants recruited in addiction care and harm

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reduction programs in Bordeaux and Marseille and also in DCR in Strasbourg and Paris. We measured the impact of DCR exposure on HIV-HCV risk practices i.e. injecting equipment sharing (e.g., syringe, filter, spoon, water, etc.) during the previous month.

We used a two-step Heckman mixed-effects probit model, which allowed us to take into account the correlation of repeated measures and to control for the potential bias due to non-randomization between the two groups (DCR-exposed *vs.* DCR-unexposed participants).

Results: PWID exposed to DCR have 11% less HIV/HCV risk practices compared to those not exposed. After correction for the selection bias, being exposed to DCR was significantly associated with a lower risk of injection equipment sharing (adjusted coefficient (aCoeff) = -1.14; 95% confidence interval (95% CI) = [-1.91;-0.36]), after adjusting on being younger, having received food aid, using crack cocaine or free base daily, injecting daily, having harmful alcohol consumption, reporting being HCV seropositive and younger.

Conclusions: DCR that have been implemented in France have a positive impact on risk practices for infectious diseases such as HIV and HCV. This result confirms the previous studies published on the topic and provides additional strong argument to advocate for DCR implementation.

EPC260

Preventing HIV infection in pregnant women through a comprehensive antenatal care-based intervention: an implementation study in Western Uganda

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Background: Worldwide, HIV incidence has stabilized, but isolated groups are still at high risk of infection. Pregnant women are specifically vulnerable due to biological and socio-behavioral factors. However, most endemic countries like Uganda do not specifically target HIV-negative pregnant women within prevention strategies.

The aim of our implementation study was to assess feasibility and outcomes of a comprehensive HIV prevention intervention for pregnant women in Fort Portal, Uganda.

Methods: We recruited a prospective cohort of HIV-negative antenatal care (ANC) clients in three facilities in Fort Portal. At first ANC visit, a prevention intervention was applied, including individual HIV risk counselling, referral to pre-exposure prophylaxis (PrEP) if eligible, partner counselling and testing including written invitation letters for absent partners, and reinforced repeat HIV testing after three months using reminder text messages. At the repeat test date, women were tested for HIV seroconversion. In descriptive analysis, we assessed uptake and feasibility of the measure. We analyzed predictors of post-intervention engagement in HIV risk behavior using multivariable logistic regression.

Results: Overall, 1081 women (median: 25 years, 18.6 gestational weeks) received the intervention. 81.4% were sexually active, 74.4% reported no condom use. 9.4% engaged in HIV risk behavior at baseline. 34/1081 women were eligible for PrEP services, but only two women presented there.

Among women receiving partner invitation letters, 88% delivered those; 39.6% of respective partners returned for HIV testing in ANC. The follow-up visit was attended by 848 women (78.5%); 24% of these came after text message reminder.

At follow-up, 4.9% reported HIV risk behavior, and 2/844 tested HIV-positive (pregnancy incidence rate 0.7%). HIV risk behavior despite the intervention was significantly associated with lower socioeconomic status, being a client in the rural compared to urban setting, and women and partners being less educated and lacking formal employment.

Conclusions: After receiving a comprehensive prevention intervention, this cohort showed a 0.7% incidence rate compared to pre-intervention 2.9% in the same region. The intervention was highly feasible; risk behavior three months after the intervention was halved compared to baseline. Pregnant women in rural areas and with less favorable socioeconomic conditions should be more closely targeted to prevent seroconversion during pregnancy.

EPC261

Low awareness of pre-exposure prophylaxis among female sex workers in Togo

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Background: The HIV pandemic remains a public challenge in sub-Saharan African, particularly among Female Sex Workers (FSW). Pre-exposure prophylaxis (PrEP) is an effective HIV prevention method among this high-risk group, however scarcely used in Togo. The aim of this study was to explore PrEP awareness among FSW in Togo.

Methods: A cross-sectional study was completed in June 2021 among FSW in two cities of Togo: Lomé, the capital city in the South and Kara in the North. A snowball sam-

pling method was used and initial seeds were identified in collaboration with local FSW non-governmental organizations. After consent, a standardized questionnaire was administered by trained research staff.

Results: A total of 447 (300 in Lomé) FSW participated in this study. Median age was 30 (interquartile range [24 - 38]), and 48.8% (n=218) had a secondary school education or higher. Only 8 (1.8%) were aware of PrEP. After explanation on what PrEP is, 88.5% (n=309) expressed their interest and intention in using PrEP if available.

If on PrEP, 12.1% and 47.7% reported they would be willing to engage in condom less sex with clients and partners, respectively. Nearly half (47.4%) were unsure whether PrEP could fully fulfill their HIV prevention needs, and 24.7%, (n=43) of those who believed PrEP could fully fulfill their HIV prevention needs indicated that they would absolutely not use condoms with their clients if on PrEP (p<0.001).

A third of FSW (33.8%) indicated that they would find it difficult and very difficult to take PrEP every day without missing a dose, and among them 43.7% (n=66) indicated not feeling capable to take PrEP every day without missing a dose.

About one in two (n=223; 49.9%) FSW indicated they would prefer obtaining PrEP at the pharmacy, and only 10.3% (n=46) would prefer access through FSW community-based organizations and peer-educators. More than half (52.8% (n=236) indicated that they would be willing to pay for PrEP if given the option.

Conclusions: .Despite low awareness, FSW were interested in PrEP for HIV prevention. However, for a successful implementation, long-acting PrEP, non-stigmatizing access to PrEP and steady behavioral prevention should imperatively be considered.

EPC262

Human Immunodeficiency Virus prophylaxis use by female sex workers during COVID-19 lockdown in Uyo, Nigeria

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Background: Human Immunodeficiency Virus (HIV) is a sexually transmitted infection of public health priority. Sex work is an important driver of HIV transmission making female sex workers (FSWs) a vulnerable group at high risk of HIV infection. The outbreak of Coronavirus disease 2019 (COVID-19) in Nigeria led to lockdown on 30th March 2020. As a result, there was treatment interruption and limited access to HIV prevention services such as Pre- and Post-Exposure Prophylaxis (PrEP and PEP) among FSWs. This study assessed the sexual practices and PrEP and PEP use among FSWs in Uyo, Nigeria during COVID-19 lockdown.

Methods: A cross-sectional survey was carried out by interviewing a total 344 HIV-negative female sex workers from June to August 2020 to collect data on PrEP and PEP use with a questionnaire. Participants were selected using systematic random sampling.

Results: The mean age of the respondents was 29.06 ± 5.20. Majority of the respondents were within the age range of 25-34 years (68.6%), unmarried (88.7%), and had duration of sex work of ≤5years (74.4%) with about half (41.9%) having at least post-secondary education.

Current PrEP and PEP use as at the time of the survey was 16.8% and 20% respectively, despite 23% condom non-use among the respondents and 47.4% of them engaging in unprotected sex with incentives from clients. Among those who were using PEP, reasons for use were client did not want to use condom (47.3%), respondents chose not to use a condom (21.1%), condom burst (21.1%) and coerced sex (10.5%). Similarly, the major reason for PrEP use was unprotected sex with clients who gave incentives. 34% of the respondents reported using solutions to cleanse self after sex as the reason for not taking PEP despite exposure while 25.0% didn't know where to get the drug. Furthermore, 30.9% reported starting PEP and not completing the 4 weeks of medications.

Conclusions: PrEP and PEP use among FSWs was poor despite unprotected sex and condom burst associated with their activities. There is a need for more education on the usefulness of PrEP and PEP in HIV prevention among FSWs to promote the use of them.

EPC263

Exploring retention in PrEP care in high-risk HIV negative patients in a Miami community health center

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Background: Black people account for roughly 40% of persons in need of PrEP for HIV prevention, but are six times less likely than Whites to be prescribed PrEP. Community Health Centers (CHCs) play a key role in reducing HIV disparities by helping underserved populations gain access to quality free or subsidized healthcare. Despite removing barriers to PrEP access like prescription cost and availability, retention in care remains low in Black populations. Using data from a Miami CHC, we examined gender differences in retention in PrEP care and explored factors that may predict retention.

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Methods: This retrospective study reviewed de-identified clinical and demographic data from the health records of patients enrolled in the CHC's PrEP program between September 2018 and January 2019. Retention in care was defined as the number of on time follow-up (F/U) visits attended in the 1st year of enrollment.

Four visits (one every 3 months) from the date of enrollment were considered 100% retention. Using SPSS, descriptive statistics were calculated for all patients, differences in means and proportions calculated using t-tests and chi-square tests respectively, and regression analysis used to identify predictors of retention.

Results: Of the 230 men (n=98) and women (n=132) in the sample, 19.6 % achieved 100% retention in care. 64% attended their 1st F/U visit at 3 months, 47.8% at 6 months, and 34.8% at 9 months. Average F/U time was 3.66 months between enrollment and visit one.

The more visits attended, the more likely patients were to be on time for their next visit. No gender differences in risk behaviors were observed. 48% reported transactional sex as a risk behavior. Strongest predictors for retention were being female, being 40 or older, and self-reporting transactional or condomless sex.

Conclusions: We found low retention in PrEP care amongst Black at-risk patients. Future interventions for PrEP retention should take gender differences into account, since barriers and motivators may be different, and incorporate multilevel approaches addressing complex social and structural drivers of HIV to promote continuation in populations with risky behaviors and a myriad of unaddressed needs that interfere with their capacity/willingness to continue with PrEP and required maintenance appointments.

EPC264

Chemsex, PrEP use and adherence to PrEP among gay, bisexual and other men who have sex with men (GBMSM) in Taiwan

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Background: Limited studies have examined the prevalence, types and role of chemsex in relation to biomedical prevention methods (i.e. pre-exposure prophylaxis, PrEP). This study aims to improve our understanding of the evolving chemsex practices among GBMSM seeking for sexual health services and further examine PrEP uptake and adherence to PrEP in relation to chemsex practice.

Methods: We used data from a multi-center, prospective cohort study conducted at hospital-based clinics in Taiwan between 2018 and 2019. Chemsex was defined as sex under the influence of MDMA, ketamine, GHB/GBL, methamphetamine or mephedrone at least once in the past 12 months. Adherence to PrEP was defined as a correct intake of PrEP for the most recent anal intercourse in the past month. Correct intake of PrEP was considered as:

1. Taking two pills on day X (i.e. the day having sex) or the day X-1, and at least one pill on the day X, X+1 and X+2 for event-driven regimen,
2. At least one pill every day for five days for daily regimen.

Logistic regression model was used to evaluate PrEP uptake and adherence in relation to chemsex.

Results: Among 935 MSM enrolled in the analysis, 111 (11.9%) reported engaged with chemsex. Compared to non-chemsex group, higher proportion of chemsex group were HIV positive (9.0% vs 2.8%, p=0.003), were versatile in condomless anal sex (60.4% vs. 26.5%, p <0.001), had sexually transmitted infections (63.1% vs. 34.8%, p <0.001), had higher number of sexual partners (>5, 48.6% vs. 22.0%, p<0.001).

Chemsex was significantly associated with PrEP uptake experience after controlling for cofounding factors (57.7% of PrEP use in chemsex group vs. 41.5% in non-chemsex group; aOR=1.81, *p*<.05). Among 344 MSM on PrEP, 45 (13.1%) were engaged in chemsex. Level of PrEP adherence was similar comparing chemsex to non-chemsex (83.5% vs. 83.4%).

Conclusions: GBMSM who engaged in chemsex are more likely to use PrEP. Further, chemsex is not a barrier to PrEP adherence. We urged to continue the effort to promote biomedical prevention methods in GBMSM who engaged in chemsex and to incorporate situated and interdisciplinary care for GBMSM who engaged in chemsex.

EPC265

Health insurance and provider access among young MSM in the US: baseline results from the COMPARE Study

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Background: Young men who have sex with men (YMSM) have among the highest HIV incidence and lowest uptake of HIV testing and pre-exposure prophylaxis (PrEP) in the US. Health insurance can greatly impact PrEP access, and youth on parental insurance face unique challenges when accessing prevention services. We characterized health insurance type and provider access in a multisite Adolescent Trials Network (ATN) study.

Methods: The COMPARE Study (ATN 143) enrolled HIV-uninfected YMSM aged 15-29 across 9 US sites into a randomized trial evaluating mobile apps to increase HIV/STI testing and PrEP uptake. At enrollment, participants completed an online survey assessing demographics, sexual behaviors, insurance status, and experience with HIV/STI testing and PrEP.

Results: From October 2019-November 2021, 384 YMSM enrolled in the study. Median age was 22, 17% were Black, 18% Latinx, and 51% White. Overall, 61% were currently in school, 69% were employed, 43% reported low income, and 46% were completely out to their immediate family regarding their sexual identity; 81% reported recent anal sex, 71% had ever tested for HIV, and 63% tested for an STI. While 95% had heard of PrEP, 15% had ever taken PrEP. The majority of youth were on their parent/guardian's health insurance (52%), 36% had their own insurance, and 12% were uninsured.

Among the insured, 83% had private insurance and 16% were publicly insured. Most participants primarily received healthcare from a private physician/HMO (56%) or public health/community clinic (19%), and 19% reported having difficulty getting healthcare in the past year. Being uninsured was associated with Black or Latinx race/ethnicity, lower income, residing in a non-Medicaid expansion state, and reporting difficulty getting healthcare (all $p<0.05$).

Compared with those on their own insurance, parentally-insured YMSM were more likely to be under 25, white, and less likely to have tested for HIV/STIs, talked with a provider about PrEP, or taken PrEP (all $p<0.05$).

Conclusions: The majority of YMSM in this cohort were on their parent's insurance, which was associated with lower engagement in HIV/STI testing and PrEP. Strategies to assist parentally-insured YMSM and those who are uninsured navigate prevention services are critical to address HIV disparities among youth.

EPC266

Gender based violence among Female Persons who Inject Drugs (FPWIDs) and Female Sex Workers (FSWs) – Implication on HIV epidemic control in Nigeria

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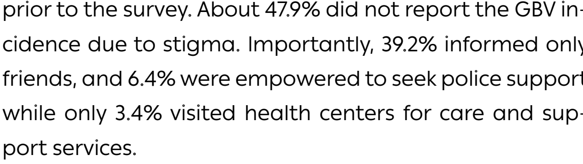
Background: The Female Persons Who Injects Drugs (FPWIDs) and Female Sex Workers (FSWs) are highly affected by HIV in Nigeria due to their behavior and drug-use. HIV prevalence among Brothel Based FSWs was 19.4%, Non-Brothel Based was 8.6%, and PWID was 7.0% compared to the national prevalence of 1.3%. Key Populations (KPs) constitute about 1% of adult population in Nigeria but contribute about 23% of new HIV infections in Nigeria.

FSW and FPWID belong to the Key population community and are frequently exposed to Gender Based Violence (GBV) which makes them more vulnerable to HIV. Interventions targeting GBV prevention for these populations are limited. This study assessed the vulnerability of these populations to HIV.

Methods: A baseline study on KP subgroup was conducted using a mixed method approach (qualitative and quantitative), questionnaires, interviews and focus group discussions to determine GBV prevalence and associated information. A total of 424 respondents were reached (200 FPWIDs and 224 FSWs) across 20 LGAs in Benue and Lagos, Nigeria.

Results: The mean age was 27.1±7.1years with age range of 15-58years. About 225 (53.1%) respondents completed secondary education while 52(12.3%) completed tertiary education. Majority 324(76.4%) of the respondents daily income were less than a dollar. GBV prevalence among the respondents was 234(55.2%) six months preceding the survey, while 183 (43.2%) reported no GBV experienced. However, findings showed 127 of 234 (63.5%) FPWIDs and 107 of 234 (47.8%) FSWs experienced GBV in last 6 months



prior to the survey. About 47.9% did not report the GBV incidence due to stigma. Importantly, 39.2% informed only friends, and 6.4% were empowered to seek police support while only 3.4% visited health centers for care and support services.
Conclusions: The study shows high burden of GBV among FPWIDs and FSWs, which could increase their vulnerability to HIV. Unfortunately, actions taken by some of the survivors are not adequate to manage the GBV issues. There is therefore an urgent need to integrate gender responsive post GBV interventions in all HIV prevention and treatment programs specifically for KPs to reduce their vulnerability to HIV.

EPC267

Perspectives on ethical issues around the use of smartphone apps for HIV prevention among men who have sex with men in Malaysia

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Background: The use of smartphone apps can improve the HIV prevention cascade for key populations such as men who have sex with men (MSM). In Malaysia, where stigma and discrimination toward MSM are high, app-based strategies have the potential to open new frontiers for HIV prevention efforts. However, little guidance is available to inform researchers about ethical concerns unique to the development and implementation of app-based HIV prevention programs.
Methods: We conducted online focus group discussions (FGDs) with 23 MSM between August and September 2021. Using in-depth semi-structured interviews, participants were asked about their perceived risks, benefits, and ethical issues associated with using mobile apps for HIV prevention. Each session was digitally recorded and transcribed. Transcripts were inductively coded using Dedoose software and analyzed to identify and interpret emerging themes.
Results: Overall, participants indicated a preference for using app-based strategies for HIV prevention efforts. Emerging themes on benefits related to app use for HIV prevention included convenience, anonymity (ability to remain anonymous while seeking care), less-stigmatizing (able to avoid the burden and stigma of visiting an HIV clinic in person), readily accessible multimedia resources (e.g., text, graphics, videos), and self-management portals (e.g., medication adherence, appointment reminders).
Prominent concerns raised by participants included privacy and confidentiality concerns, issues around personal health data storage and management, and fear of the Malaysian government accessing data.
Conclusions: The findings from this study indicate that app-based strategies for HIV prevention efforts are acceptable among Malaysian MSM. The results further highlighted the role of ethical concerns and the associated risks and benefits related to the use of app-based HIV prevention programs.
Given the ever-evolving nature of such technological platforms and the complex ethical-legal landscape, such platforms must be safe and secure to ensure widespread public trust and uptake.

EPC268

HIV treatment optimism moderates the relationship between sexual risk behaviours and HIV risk perceptions among urban Canadian HIV-negative gay, bisexual and other men who have sex with men

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Background: Studies suggest that HIV treatment and prevention advances have led to greater treatment optimism and consequently increased high-risk sexual behaviour. Some gay, bisexual, and other men who have sex with men (GBM) engaging in high-risk sexual behaviour do not perceive themselves at risk of acquiring HIV.
We evaluate whether treatment optimism moderates this relationship.
Methods: Engage is a prospective three-city Canadian study; sexually-active GBM aged 16+ were recruited using respondent-driven-sampling (RDS). Baseline(02/2017-06/2018) questionnaire data from HIV-negative/unknown GBM in Montréal were analysed. 'High-risk' sexual behaviour was defined as a high-risk event (episode of condomless anal sex with a casual partner where PrEP was not used or a partner with detectable/unknown viral load) or anal sex with >5 men, in past six months; "low-risk" was defined as no high-risk event and anal sex with ≤5 men.

Self-perceived HIV-risk was assessed using the question: "How would you assess your current risk of getting HIV?" Responses dichotomized to "no-risk"(very unlikely/unlikely) and "at-risk" (somewhat likely/likely/very likely).
The moderator was HIV treatment optimism-skepticism (TOSS), a 12-item scale (e.g., "A person with undetectable viral load cannot pass on the virus"); higher scores=greater optimism. Logistic regression (adjusted for age, ethnicity, sexual orientation, education, income, transactional sex, main partner, chemsex, and HIV testing) was used, including an interaction term to explore TOSS scores (z-standardized) as a potential moderator. All analyses used RDS-II weights.
Results: Engage-Montréal enrolled 938 self-reported HIV-negative/unknown participants. Mean age was 35.4 years, 40% (n=448) were categorized "high-risk"; among them, 28% (112) perceived themselves "at-risk". "High-risk" sexual behaviour was significantly associated with perceived HIV risk (adjusted Odds Ratio=2.08, 95%CI=1.51-2.88). TOSS moderated the relationship (p<0.001): for GBM reporting "high-risk", higher TOSS scores were associated with greater perceived HIV risk while for "low-risk" GBM, higher TOSS scores were associated with lower perceived HIV risk.
Conclusions: Only a quarter of GBM engaging in high-risk behaviour perceived themselves at risk of HIV. Our findings suggest that participants with higher TOSS scores better aligned their risk perception to their sexual behaviour.
Promoting awareness around advances related to HIV prevention and treatment is important for appropriate risk assessment and for increased engagement in prevention interventions.

EPC269

Only 34% sex work hotspots are covered by HIV prevention services: programmatic mapping approach in 8 region of Ukraine

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Background: Sex workers (SW) continue to be the hard-reach group for HIV-service projects. According to the 2021 integrated bio-behavioral survey among SWs in Ukraine, only 40.7% of them are clients of non-governmental organizations that provide HIV-related services, and 62.8% have been tested for HIV and received results in the last year. The programmatic mapping approach allows optimizing the work of HIV prevention and testing projects for SWs.
Methods: We used the programmatic mapping approach in two steps known as Level 1 (L1) and Level 2 (L2). During L1, information about location of the hotspots, characteristics of these hotspots, and SWs at them was collected from key informants (KI), and an exhaustive list of hotspots was created. During Level 2 (L2), all identified hotspots were visited and validated their active status, and interviews were conducted with KI from the SW's community to confirm and clarify information from L1.
This study was conducted in March-July 2021 in 8 regions of Ukraine, and its results were analyzed and visualized using QGIS.
Results: 1212 KI of 10 different types were interviewed at L1, and 1966 KI were interviewed at L2. 2581 hotspots of 13 different types were identified, and 82% of them (2118) were active. 43.2% of hotspots were apartments, 11.7% were virtual (websites) and 11.1% were street-based (eg parks, squares).
97 of 2118 hotspots were operated by male SWs (560 people), 20 were trans* people (81 people), and 175 were SW-PWID (352 people). Only 1/3 of hotspots (720) confirmed that HIV-prevention services were provided there, and using mobile vans at 400 hotspots. HIV services were not always working at the hotspots where HIV-positive SWs were.
The total number of SWs estimated at the 8 regions stood at 7866 (3883-13537). Their minimum age was 14 years, maximum was 60 y.o. Typologies of hotspots, coverage with the prevention, characteristics of SWs, and the estimated number vary depending on the region.
Conclusions: The programmatic mapping approach helps to determine the size of SWs and their locations in regions. The results of the study will be used to optimize and plan outreach routes for HIV projects among SWs in Ukraine.

EPC270

Willingness to use Pre-exposure Prophylaxis (PrEP) for HIV Prevention among Women Who Inject Drugs in Lagos, Nigeria

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Background: People who inject drugs (PWID) are at a higher risk for HIV infection because of the dual risk from injection and sexual behaviors, including transactional sexand forced sex. Pre-Exposure Prophylaxis (PrEP) has been proven to be effective in preventing HIV. We, therefore, sought to determine the knowledge of, uptake, and willingness to take PrEP among Women Who Inject Drugs (WWID) in Lagos State, Nigeria.
Methods: Methods: The study had a descriptive, cross-sectional design with 422 participants selected using a purposive sampling method. Questionnaires were used to elicit feedback on knowledge and use of PrEP by participants and their willingness to use PrEP if it was available.

The inclusion criteria included HIV seronegativity and self-report of substance abuse within 3 months prior to the study. Data were analyzed using Epi Info 7 software. Descriptive statistics, Chi-square, and multivariable logistic regression were used in the analysis and the level of significance was at p<0.05.

Results: Only thirty-three participants (7.8%) had good knowledge of PrEP with 8 of them (1.9%) reporting that they had ever used PrEP. A total of 358 participants (84.8%) reported a willingness to take PrEP if it was available.

Substances commonly ingested by participants included stimulants (33.6%), cocaine/crack (30.6%), heroin (19.9%), opiates (5.0%), methadone (4.7%), and sedatives (2.6%). Perceived barriers to using PrEP included probable side effects (43.4%), accessibility to the product (34.1%), frequency of use (10.2%), cost (6.6%), others (5.7%). Increased knowledge of PrEP was associated with secondary school or higher level of education compared to those with lower education (AOR:7.63 95%C, 2.59-22.45).

Willingness to use PrEP was associated with religion, tribe, and health provider. WWID who were Muslims had a higher willingness to use PrEP compared to Christians (AOR: 1.43 95% CI, 0.30-0.92).

Conclusions: Most of the participants indicated a willingness to use PrEP despite their poor knowledge of it. It is important to design programs that can improve the knowledge of PrEP so as to reduce the risk of HIV infection in this vulnerable population. There is a need to consider the correlates of willingness to use PrEP in designing interventions for this group.

EPC271

Medication-assisted treatment in Ukraine must be tailored to the needs of the large populationof people who inject drugs who are skeptical about the program

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Background: Medication-assisted treatment (MAT) effectively reduces health risks, and improves the wellbeing of people who inject drugs (PWID). Ukraine's HIV epidemic is concentrated among PWID, so previous prevention efforts have focused on expanding MAT coverage to PWID who use opioids. According to the national strategic plans, Ukraine intends to increase current MAT coverage to almost 31,000 PWID by the end of 2023. Such ambitious plans require significant efforts at both structural and individual levels.

To better understand how to increase MAT service coverage in Ukraine, we examined existing bio-behavioral surveillance data to assess factors associated with PWID willingness to start MAT.

Methods: We performed an analysis of the 2020 bio-behavioral surveillance (BBS) of PWID in Ukraine. Restricting our sample to those PWID who use opioid drugs (n=3,861), we assessed MAT willingness among three groups:

1. Those having experience with MAT (current or former clients),
2. Those naïve to MAT but willing to be enrolled, and;
3. Those having no intention to enroll in MAT (skeptics).

We ran additional regression analyses among MAT skeptics to identify correlates of MAT skepticism in comparison with the experienced group.

Results: An estimated 24% of PWID had experience with MAT, 25% were willing to be enrolled in it, and 51% of PWID were MAT skeptics. Prevalences of MAT skepticism varied by geographical areas, from 37% to 73%. The highest proportion of skeptics were observed in Kriviy Rih, Odesa, Dnipro and Mariupol.

Additionally, MAT skepticism was associated with younger age (below 34 years, AOR 1.43 [1.00-2.03]), higher income levels, AOR 2.37 [1.54-3.64], being married, AOR 1.29 [1.02-1.63], using home-made opioids, AOR 2.13 [1.49-3.03], no prior incarceration, AOR 0.53 [0.41-0.67], HIV negative status, AOR 1.75 [1.34-2.27], and lower chances of receiving social services/being NGO client, AOR 0.16 [0.13-0.21].

Conclusions: To expand MAT, Ukraine must reach a large population of PWID, many of whom are skeptical about MAT. The profiles of skeptics we have identified could be used to improve communication campaigns.

Additional in-depth research is needed to better understand current barriers to MAT for this group, and develop effective communication strategies and program adaptations.

EPC272

Impact of primary care and health care encounters for HIV testing among men who have sex with men in Puerto Rico

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Background: HIV prevention strategies have evolved, and primary healthcare plays a vital role in integrating HIV screening and prevention services. However, there is limited evidence on access to primary care in increasing HIV testing among men who have sex with men (MSM). We also lack an understanding of how healthcare encounters facilitate preventive services. In this study, we explored the role of having primary care providers (PCPs) in HIV prevention practices, including HIV testing and the disclosure of sexual orientation and sexual practices among MSM in Puerto Rico (PR).

Methods: We conducted a cross-sectional online survey with n=256 MSM in PR. Participants were recruited via social media with the support of community-based orga-

nizations serving these populations. Descriptive statistics and binary logistic regressions were used to answer the research questions.

Results: The mean age of participants was 31 years and lived in non-urban areas (59%). Most participants have tested for HIV at least once during their lifetime (93%), and, of those, 42% tested in primary healthcare settings. Those with a PCP (59.2%) tested for HIV more often than those without a PCP (56% vs. 36%; p=0.04). Most participants have never been asked by their PCP about their sexual orientation (70%) or sexual practices (54%), and most have not disclosed this information to their PCP. Having a PCP was not statistically associated with disclosing or being asked about sexual orientation and sexual practices.

After controlling for confounding variables, participants with a PCP were 2.7 times more likely (95%CI=1.02,7.08) to have tested for HIV in their lifetime when compared to those who did not have a PCP.

Conclusions: Increasing access to PCPs is essential in enhancing HIV testing among MSM in PR and an excellent opportunity to provide other HIV prevention services.

However, although access to a PCP yields an increase in HIV testing, providers are not explicitly asking their patients about their sexual orientation or sexual practices. Comprehensive primary care and HIV prevention interventions should facilitate affirmative and inclusive services to populations made socially vulnerable.

EPC273

Perspectives of federal prison inmates and institution staff on a unique HIV harm reduction service

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Background: Responding to ongoing HIV transmission among inmates evidenced by seroconversion data and unacceptable incidence of non-fatal overdose events, Correctional Service Canada (CSC) implemented Canada's first and, to date, only Overdose Prevention Service (OPS) at a medium-security Institution for male offenders. Operational June 2019, in supervised personal cells inmates access sterile injection and drug preparation equipment for use with their own drugs.

Process evaluation data are presented in this paper - acceptability of the service from the perspectives of inmates, feasibility from the perspectives of correctional officers and program staff.

Methods: At three months post-implementation, confidential anonymous interviews following informed consent conducted with inmates with varying OPS experience to assess acceptability and with Correctional Officers and other program staff to assess feasibility. All interviews took place in confidential locations, grounded theory applied to analyze responses.

Results: *Acceptability.* Availability of supervised location away from cells and ranges seen as the prime benefit, *"It's a safe place. It's supervised. It's not in the cells, not in the units."* At the individual level, OPS participants stressed importance of sterile injection equipment distribution to reduce needle sharing, "*I no longer have to trust that someone else's needle is clean." "I don't use a dirty rig no more – a jail rig."*

Feasibility. Initial negative perspectives of correctional and security staff: "*Our job is to keep drugs out. This is backward thinking."* changed over time*:* "*I've changed my attitude, I'm not so against it."*

Similarly, early safety concerns regarding needle-stick assaults dissipated due to non-occurrence. Health Services staff saw OPS as a unique opportunity for supportive prevention counselling, "*It's a safe way to talk about drug use. We're here. It's safe. We are here to help with this."*

Conclusions: These process data - one component of a comprehensive evaluation - document significant beneficial outcomes for inmates and eventual successful adoption by Institution staff.

Recommendations shared for service development included comprehensive preparation and ongoing training for institution staff, increased OPS hours, and availability of safer snorting equipment. CSC is currently responding to these and other recommendations prior to increased pan-Canadian implementation.

Sexuality, gender and prevention technologies (including condoms, treatment as prevention, medical male circumcision, pre-exposure prophylaxis)

EPC274

"You never know with one's husband, so this is important": Preliminary hypothetical acceptability responses to the Dapivirine Vaginal Ring for HIV prevention among Latina community clinic attendees

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Background: The Dapivirine Vaginal Ring (developer, International Partnership for Microbicides) is the first discreet, long-acting product shown to reduce risk of HIV infection in women. The ring has received a positive scientific opinion by the European Medicines Agency, and is WHO prequalified. Data on US women are limited. We report initial, interim results on the first 90 women enrolled in a hypothetical acceptability study.

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Methods: Women (>=18 years) were recruited from the waiting room of a community clinic serving a predominantly Latina population by a bilingual research assistant. Participants underwent a brief informational session, handled a placebo ring, then completed a survey via audio computer-assisted self-interview (Spanish or English). Participants received $25 gift cards.

Results: Mean age was 37 years. Most participants (67%) opted for the Spanish survey (SPS). One third (34%) had no high school diploma; 43% had some college education.91% reported a main partner; 18% had a casual partner; 74% had children; 78% reported some prior (male) condom use. 20% (main) and 33% (casual) felt at risk for HIV from a partner. 58% had prior tampon use.

Overall, 53% reported wanting to try the ring when available, including 62% of SPS participants and 37% English survey participants (p<0.001); 30% SPS participants responded "don't know/unsure".

Overall, more than half reported concerns about ring safety, comfort and ease of use, but these were not associated with a lack of desire to try the ring when available. SPS respondents reported more concerns about partner discovery of the ring, ring getting stuck, and ring "falling out of the vagina". Prior tampon use predicted less concern that the ring would "fall out" (p=0.03).

Overall, the majority of participants liked the following ring attributes: constant internal risk reduction and having to worry less (94%), not having to take pills every day for HIV prevention (98%), being able to control insertion and removal themselves (94%).

Conclusions: Considerable interest was shown for the new product, especially among women preferring Spanish survey language, with areas identified to be addressed in educational messaging and counseling for successful uptake. Prior tampon use did not generally predict greater overall hypothetical acceptability.

EPC275
Which are the most valued pre-exposure prophylaxis (PrEP) attributes? A discrete choice experiment among men who have sex with men (MSM) and transgender women (TW) in Peru

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Background: There is potential demand for PrEP in Peru; however, little is known about preferences towards various potential ways to take PrEP or the importance of various PrEP attributes. Our research focused on which attributes most influence the choice of PrEP modalities among MSM/TW. We also assessed how participants' preferences vary by recruitment strategy and population.

Methods: We applied a discrete choice experiment in three mutually exclusive groups:
1. PrEP recipients;
2. Sexually transmitted infections (STI) clinic attendees; and,
3. Social Media outreach. Inclusion criteria:
MSM or TW, age>=18 years-old, self-reporting a non-HIV positive status, and who provided informed consent. PrEP attributes assessed were: route of administration, frequency of taking PrEP, healthcare provider, HIV testing frequency, side effects, and efficacy. Each participant was presented 12 option pairs with mixed attribute levels and had to choose one option per pair.

Results: From June to October 2021 we recruited 2931 participants (91.5% MSM; 8.5% TW), with mean age=29.0y [SD=9.0]; 56.6% completed tertiary education; 46.8% earned US$232 or less. In general, efficacy [27.6%, 95%CI 27.0-28.2], and frequency of taking PrEP [21.2%, 95%CI 20.8-21.7] were the most important attributes (Panel A), with the social media group placing the highest importance on efficacy [32.0%, 95%CI 31.1-32.9] (Panel B). STI clinic attendees and the social media groups were more concerned about potential side effects, while the current PrEP recipients placed the greatest importance on frequency of taking PrEP [26.7%, 95%CI 25.6-27.7] (Panel B).

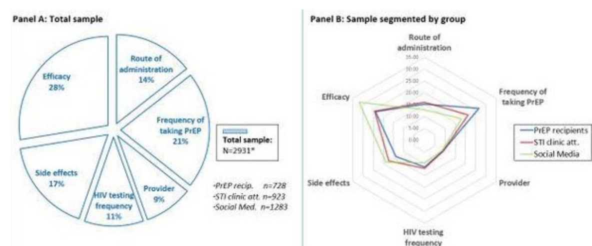

Figure 1. Ranking of most important PrEP attributes in the whole sample and segmented by field work source.

Conclusions: Overall, attributes such as efficacy and frequency of taking PrEP were the most important attributes across the recruitment strategies; however, current PrEP recipients placed more weight on frequency than the other groups. Prior knowledge and previous PrEP experience influenced how attributes were considered.

Our data may be helpful for future PrEP scale-up strategies, anticipating potential users' concerns, and learning from current users.

EPC276

Perspectives from sex venue management towards occupational HIV Pre-Exposure Prophylaxis (PrEP) in Bangkok and Pattaya, Thailand

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Background: Bangkok and Pattaya are Thai cities with globally known sex venues (brothels, beer bars, gogo bars, and massage parlors). We aimed to fill a gap in knowledge about venue management attitudes towards HIV pre-exposure prophylaxis (PrEP) through qualitative interviews among venue management.

Methods: We interviewed 24 venue managers using key-informant interviewing from July 2016-July 2018 in Bangkok and Pattaya, Thailand. Participants were Thai, aged >=20, and worked for a sex work venue for >=12 months. Interviews focused on HIV/STI screening and treatment, HIV prevention knowledge and practices, occupational PrEP acceptability and support, challenges and needs, and policy suggestions.

Results: Participants were a median age of 42 years (range 21-52), were employed full-time (91.7%), reported completed bachelor's degree or higher (37.5%), and self-identified as transgender (62.5%). Venue management were aware of PrEP but had difficulty distinguishing it from post-exposure prophylaxis (PEP). Most managers expressed high interest in occupational PrEP for sex venue workers. Reasons for support included the high-risk nature of sex work, low condom negotiation power during group sex and chemsex, and scrutinization of condoms as a means for policing sex work in Thailand.

Concerns encompassed PrEP adherence (capacity to take daily doses, interference with substance use), social harms (HIV treatment stigma), and sex work-related risk compensation (condomless sex, increased sexual partners, misuse of PrEP as a rate negotiation tool). Venue managers who had previously taken PrEP expressed concerns about long-term side effects due to their own past negative experiences with PrEP (e.g. acute reactions/side-effects to medications).

Overall, venue management believed PrEP could increase sex workers' confidence in occupational safety and personal motivations for safe sex practices. Managers recommended that PrEP rollout targeting venue-based sex workers prioritize access by optimizing locations and procedures for initiating and managing PrEP that are convenient, uncomplicated, and minimally time-consuming.

Conclusions: While sex venue management in Bangkok and Pattaya are generally aware of PrEP, targeted education (particularly addressing long-term safety concerns, misinformation, and stigma) could facilitate institutional support for PrEP use among venue management.

Efficient PrEP implementation with sex venues may depend on enhancing coordination between health departments and other municipal authorities, communities, and sex venue management.

EPC277

Awareness and use of Undetectable=Untransmittable (U=U) among gay, bisexual, and other men who have sex with men in five Asian countries: results of the Asia Pacific MSM internet survey

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Background: The global Undetectable=Untransmittable (U=U) campaign informs people that a person living with HIV who is on antiretroviral therapy (ART) with undetectable viral load (UVL) cannot sexually transmit HIV.

However, the extent of U=U awareness among gay, bisexual, and other men who have sex with men (GBM) in many Asian countries is unclear.

Methods: An online cross-sectional survey targeting GBM in Indonesia, Japan, Malaysia, Thailand, and Vietnam was conducted from May 2020–January 2021. Factors independently associated with U=U awareness were determined by multivariable logistic regression, stratified by HIV status.

Results: We recruited 15,872 participants (Indonesia = 1,342; Japan = 7,452; Malaysia = 849; Thailand = 1,566; Vietnam = 4,663). Overall, 6.8% were HIV-positive, 46.2% HIV-negative, and 47.0% of unknown-status. Overall, 35.9% were aware of U = U, 44.8% had never heard of it prior to the survey, and 19.3% were not sure.

U = U awareness varied by country (Indonesia = 27.6%; Japan = 41.1%; Malaysia = 39.3%; Thailand = 33.4%; Vietnam = 30.2%; $p<0.001$) and by HIV status (HIV-positive = 75.5%; HIV-negative = 43.8%; unknown-status = 22.4%; $p<0.001$).

Among HIV-positive men, factors independently associated with U=U awareness included: university education ($p = 0.014$); reporting any condomless anal intercourse (CLAI; $p = 0.004$); currently being on ART ($p<0.001$); having UVL at last test ($p<0.001$); and having fewer experiences of sexuality-related stigma ($p = 0.002$). Among non-HIV-positive men, U=U awareness was associated with: being older ($p=0.002$); being "out" to more people ($p<0.001$);

university education (p = 0.003); identifying as gay (p = 0.009); reporting sex with >10 male partners in the previous year (p = 0.001); having an HIV test in the previous year (p<0.001); and currently taking PrEP (p<0.001).

Of 4,707 men reporting CLAI with a regular partner in the previous 12 months, 30.4% had used UVL to prevent HIV transmission (HIV-positive men = 75.2%; non-HIV-positive men=25.1%; p<0.001). Among 1,797 men reporting CLAI with casual partners, 22.8% reported using UVL to prevent transmission (HIV-positive men = 70.2%; HIV-negative men = 17.2%; p<0.001).

Conclusions: Two-thirds of GBM were not aware that U=U and one-quarter of HIV-positive men lacked this awareness. While a large proportion of HIV-positive men used UVL to prevent transmission when having CLAI, this was uncommon among non-HIV-positive men.

Such a situation significantly challenges the ability of GBM to utilise proven safer-sex options and diminishes opportunities to disrupt pervasive stigma experienced by people living with HIV.

EPC278

"You tell him, 'Baby, I am protecting myself'": Women's agency and constraint in relationships, and the potential for PrEP use in the context of stigma in South Africa

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Background: Daily oral pre-exposure prophylaxis (PrEP) offers effective HIV prevention. In South Africa, PrEP is publicly available, but use among young women remains low.

This study explores women's willingness to consider using PrEP for HIV prevention in the context of HIV- and sexuality-related stigma and gendered relationship dynamics, in Durban, KwaZulu-Natal, South Africa.

Methods: As formative qualitative research prior to developing a gender-informed intervention, Masibambane, to introduce PrEP to young, urban, educated women, we conducted six focus group (FG) discussions with 46 women ages 18-25 years and individual interviews with eight FG participants. Women not using PrEP were recruited from clinic and community settings using a criterion-based snowball sampling technique. Qualitative data were coded and analyzed thematically, using a team-based consensus approach for final coding, analytical decisions, and data interpretation.

Results: Women clearly understood the benefits of PrEP, focusing on their right to protect themselves. Their thoughts about future PrEP use were challenged by social stigmas related to HIV and female sexuality, but motivated by a desire for health promotion and sexual empowerment.

Women feared that daily PrEP pills would be confused with anti-retroviral treatment, creating HIV stigma, and that PrEP pills and related clinic visits would "out" them to their communities as sexually active. Women were realistic about potential reactions of male partners if the women opted to use PrEP, including disapproval, loss of trust, loss of the relationship, and violence.

Some women advocated for covert use of PrEP whereas others argued for disclosure, proposing various approaches to presenting PrEP to their partners. Women repeatedly suggested that both partners use PrEP.

They sought to avoid discussions about trust and partners' possible infidelities, and instead focused on preserving or building the relationship through PrEP use.

Conclusions: Women offered diverse narratives on agency and constraint in relation to choosing PrEP for HIV prevention. Women's pronounced concerns about HIV stigma, negative community perceptions of young women's sexual activity, and relationship challenges speak to the need for tailored interventions to bolster women's confidence, sense of empowerment, communication, and decision-making skills for successful adoption of PrEP.

EPC279

In vivo pharmacokinetics and safety in mice for ultra-long-acting injectable, biodegradable, and removeable in-situ forming implant with cabotegravir for HIV prevention

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Background: Globally, 1.5 million new HIV infections occurred in 2020. Daily oral HIV PrEP, while effective, can have low patient adherence. Monthly injectables are not removeable and their pharmacokinetic (PK) tail can lead to drug resistance.

Thus, we propose to develop an ultra-long-acting, injectable, removable, and biodegradable in-situ forming implant (ISFI) with cabotegravir (CAB) for HIV prevention.

Methods: A 90-day PK and 30-day safety study was conducted in female BALB/c mice (n=6/time point) with the CAB ISFI formulation (50 µL subcutaneous injection). Plasma samples were collected longitudinally to quantify CAB, TNF-α and IL-6 concentrations.

At day 3, 7 and 30, the depot and surrounding tissue were excised for H&E staining to assess local inflammation. At day 90, depots were removed to quantify residual CAB, evaluate polymer degradation with gel permeation chromatography, and depot microstructure with scanning electron microscopy.

Results: In vivo plasma concentrations of CAB were above its 4X PA-IC90 for 90 days, demonstrated zero-order release kinetics *(Fig. 1A)*, and showed low concentrations of TNF-α and IL-6 in plasma with mild/moderate local inflammation *(Fig. 1B/C/E)*. Depots retrieved 90-days post-administration showed no fibrotic tissue *(Fig. 1D)* and reached ~47% polymer degradation and contained ~73% of residual CAB.

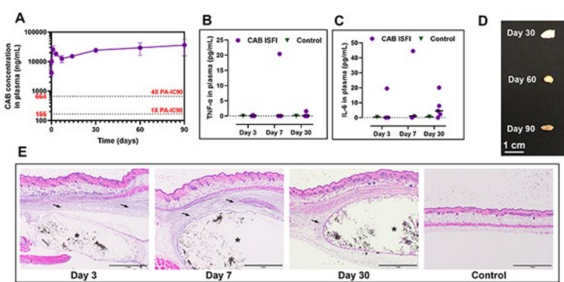

Figure 1. In vivo PK and safety of CAB ISFI in female BALB/c mice. (A) CAB concentration in plasma over 90 days. Dashed lines represent 1X and 4X PA-IC90. (B) Individual TNF-α levels and (C) IL-6 levels in plasma over 30 days. (D) Image of depots removed after 30, 60, 90 days post-injection. (E) Hematoxylin and eosin (H&E) stained images of depots and surrounding tissue day 3, 7 and 30 post-injection compared to no injection control. Asterisks represent ISFI and arrows represent infiltrated immune cells.

Conclusions: Our results demonstrated sustained CAB release kinetics in mice for 90 days with plasma levels well above the 4X PA-IC90 in a well-tolerated and safe formulation.

EPC280

Examining PrEP cascade engagement in a statewide sample of transgender, nonbinary, and gender diverse adults in the United States

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Background: Although transgender/gender diverse (TGD) individuals are at increased risk for HIV, few studies have examined engagement of TGD individuals with different gender identities (e.g., transmasculine, transfeminine, nonbinary) across the PrEP cascade.

There is particularly little knowledge regarding PrEP engagement among transmasculine and nonbinary individuals.

Accordingly, this study examined engagement in the PrEP cascade among a statewide sample of transfeminine, transmasculine, and nonbinary individuals and tested for significant differences in engagement by gender.

Methods: Data come from the Michigan Trans Health Survey (*N*=659), a community-based participatory research project. Data were collected using a computerized self-report survey.

We used frequencies to examine engagement in the PrEP cascade (i.e. education, referral, prescription, use) and Pearson chi-squares to determine significant differences in engagement by gender.

Results: The sample included all participants who qualified for PrEP due to reporting anal or vaginal sex (*n*=317). A majority of participants were White (78.39%).

Participants also identified as Black/African American (6.45%), Latinx/Chicanx/Hispanic (4.84%), Asian/Pacific Islander (2.90%), Multiracial (5.81%), or other (1.61%) and were an average age of 27.67 years (SD=8.47).

Of those who qualified for PrEP, 64 (20.19%) received information about PrEP from their healthcare provider, 17 (5.36%) received a referral to PrEP, seven (2.21%) visited a provider who could prescribe PrEP, and five (1.58%) received a PrEP prescription and began taking PrEP.

Of those five, three planned to continue PrEP use into the foreseeable future. Chi-square results indicated a significant difference by gender in who received information about PrEP from their health providers (χ^2 (1, N=317) = 11.34, *p*=.01).

A significantly greater proportion of transfeminine participants (40.91%) and those who reported multiple/other genders (48.39%) received PrEP information than their transmasculine (22.09%) and nonbinary (13.95%) peers.

We were unable to detect additional significant gender differences due to small numbers of participants who engaged further in the PrEP cascade.

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Conclusions: A substantial number of PrEP-eligible TGD individuals reported not receiving information about PrEP from healthcare providers, and even fewer engaged further in the PrEP cascade.

Provider education on sexual health for TGD individuals is needed to increase PrEP engagement in this population, especially for transmasculine and nonbinary individuals.

EPC281

Designing the next generation intravaginal ring for prevention of HIV and unplanned pregnancy: what do potential users' perceptions have to do with it?

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Background: Intravaginal rings (IVRs), woman-controlled devices for delivering medications for contraceptive and/or HIV prophylaxis, must be used consistently to be effective. Informing IVR design with women's input on potential IVR features can promote product uptake and use, particularly when elicited early in product development.

Methods: In 2020-2021, using virtual focus groups (VFGs) and in-person in-depth interviews (IDIs), we elicited potential users' sensory perceptions and experiences to iteratively inform the design of a novel 3D-printed IVR, which enables engineers to readily modify designs in response to input.

Women from a state-wide health system aged 18-45 years, who were Black, non-Hispanic white, or Latina from urban and rural areas of North Carolina participated. They were shown prototypes of varying designs and colors. In nine VFGs we assessed reactions to visual aspects of IVR prototypes and to modifications derived from VFG data and concurrent safety/efficacy animal data.

We then interviewed 25 women in person to assess their perceptions of both visual AND tactile features of the modified prototypes. VFGs and IDIs were audiotaped, transcribed, and independently coded by two researchers and summarized/organized into matrices by key areas.

Results: IVR characteristics generally perceived as important were: texture, hue, size, comfort, and hygiene. Overall, smoother surfaces and lighter hues (e.g., lavender, light grey) were preferred ("calming", "more approachable", enabling one to "see what was on it" for cleanliness), but color preferences were not paramount. Women felt smaller rings would enhance comfort.

Some women perceived designs with small holes as unhygienic, potentially increasing risk of infections. In in-person IDIs, on initial visualization, prototypes were perceived as "chunky", "thick", "big and wide," suggesting uncomfortableness, but upon handling, women found IVRs were "more soft and malleable" than they initially perceived.

For many women the perceived comfort advantages that the holes afforded outweighed the women's hygiene concerns.

Conclusions: Women's views of HIV prevention devices varied, providing useful information in product design. IVR pliability was perceived to govern comfort and was a critical consideration for women.

EPC282

Reimagining 'discontinuation' of pre-exposure prophylaxis (PrEP) as part of an ongoing PrEP journey for gay and bisexual men

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Background: The focus on the risks associated with discontinuation of pre-exposure prophylaxis (PrEP) among gay and bisexual men (GBM) masks nuances regarding changing PrEP use and neglects GBM's HIV risk behaviour during periods off PrEP. The concept of ‚prevention-effective adherence' describes the alignment of ongoing HIV risk and PrEP persistence.

Methods: We explored GBM's patterns of PrEP use and sexual behaviour. We conducted semi-structured interviews with 40 GBM in Australia recruited from a previous PrEP clinical trial. Eligibility required that participants had changed their PrEP use.

Results: Median age was 39 and 24 had university education. All 40 participants commenced PrEP with daily dosing, with considerable diversity in PrEP use over time (Figure 1).

At *any* point in their PrEP journey, 34 had discontinued, voluntarily suspended (during temporary periods of anticipated absent sex), or involuntarily suspended (due to depleted PrEP supply while travelling or mental health issues) at least once. During periods off PrEP, 22 of these 34 did not have condomless anal intercourse (CLAI).

However, 12 had CLAI after discontinuing or suspending, among whom condoms were unviable and assumptions were sometimes made about a partner's HIV, PrEP, or viral load status without prior discussion.

Among those who had CLAI after discontinuation, two had CLAI once, which prompted recommencement of PrEP, and six had CLAI on multiple but dispersed occasions, but reported they did not see themselves at sufficient risk to warrant recommencement.

Figure 1.

Conclusions: The complexity of GBM's PrEP use demonstrates that discontinuation may only form one part of a broader PrEP journey, and does not necessarily increase HIV risk when considering changes made to sexual behaviour.

Service delivery models and health promotion should address this complexity by encouraging non-condom based HIV prevention during periods off PrEP and supporting GBM in recognising changing risk and recommencing PrEP when appropriate.

EPC283

Who prefers what? Correlates of preferences for next-generation HIV prevention products among a national U.S. sample of young MSM

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Background: Young men who have sex with men (YMSM) in the United States remain at high HIV acquisition risk. Pre-exposure prophylaxis (PrEP) has been available for nearly a decade; yet only ~15% of young people with clinical indications have a PrEP prescription.

Next-generation PrEP modalities may address some challenges of daily oral PrEP. However, preferences for these products are unknown.

Methods: From October 2020-June 2021, we conducted a national online survey of 737 cisgender, HIV uninfected YMSM (age 15-24 years) (ATN141a: NextChoices). After reviewing PrEP product descriptions (daily oral pills, event-driven oral pills, event-driven rectal douches, bimonthly intramuscular injections, bimonthly intravenous bnAb infusions, yearly subcutaneous implants), participants were asked to rank them from 1 (most preferred) to 6 (least preferred). Exploded logit models were estimated to examine the association between ranked preferences of PrEP modalities and sample characteristics.

Results: Participants' mean age was 21 years (SD=2.3); 19% identified as Black, 24% as Latino. Twenty-eight percent had ever used daily oral PrEP; 19% were currently taking it. Across six PrEP modalities, daily oral PrEP had the highest preference ranking, followed by event-driven oral (OR=0.89, p=.058), injectable (OR=0.83, p=.005), implant (OR=0.48, p<.0001), bnAb (OR=0.38, p<.0001), and rectal douches (OR=0.24, p<.0001).

There were differences by age, insurance status, sexual behavior, PrEP use history, HIV and STI testing history, and STI diagnoses (p<0.05). Participants selected reason(s) for choosing their top-ranked product: ease of use for those who chose daily oral (99%) and daily event-driven (98.5%); feel more protected against HIV for those who chose injectable (95.4%) and implants (100%); not worry about remembering to take it for those who chose bnAbs (93.8%); and being able to stop taking it when they want for those who chose rectal douche (90.9%).

Conclusions: Next-generation modalities were less likely to be preferred over daily oral PrEP; however, a substantial minority did prefer the next-generation modalities, and there were differences in the magnitude by sociodemographic and behavioral characteristics.

Given the low uptake of daily oral PrEP, having a menu of products may increase PrEP uptake overall, but it is essential that end-users' preferences for and concerns about PrEP products are understood and addressed.

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EPC284
What is the added value of incorporating pleasure in sexual health interventions? A systematic review and meta-analysis

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Background: Despite billions of dollars invested into Sexual and Reproductive Health and Rights (SRHR) and the significant burden of disease of AIDS, the effect of incorporating sexual pleasure, a key driver of why people have sex, in sexual health interventions is currently unclear. We conducted a systematic review and meta-analysis to answer the question 'Do SRHR interventions which incorporate sexual pleasure improve relevant health outcomes (as compared with 'usual' SRHR interventions)?
To our knowledge, this is the first systematic review of interventions incorporating pleasure beyond condom eroticization. Our systematic review and meta-analysis provide evidence for the effectiveness of different interventions incorporating pleasure for a variety of outcomes in the context of sexual health.
Methods: We followed PRISMA guidelines in carrying out this systematic review and meta-analysis. We searched 7 databases for relevant articles published between 1 January 2005-1 June 2020 and conducted secondary search strategies. We adopted an expansive approach and included randomized controlled trials and quasi-experimental studies with both pre and post-intervention measures and a control group published in peer-reviewed journals. For our meta-analysis we accepted only standard SRHR control or matched groups with a similar SRHR intervention.
We considered various outcomes including behavioral measures (use of condoms, prevention services, risky behavior etc), attitudes and knowledge (about contraception use, STI/HIV incidence etc).
Results: We identified 33 unique interventions that incorporate pleasure. All included interventions targeted HIV/STI risk reduction. We find that the majority of interventions targeted populations that authors classified as high-risk. We were able to meta-analyze 8 studies reporting condom use as an outcome and found an overall moderate, positive, and significant effect of Cohen's d = 0·37. Full results here.

Conclusions: Incorporating sexual pleasure within SRHR interventions can improve sexual health outcomes. Our meta-analysis provides evidence about the positive impact of pleasure-incorporating interventions on condom use which has direct implications for reductions in HIV and STIs. Qualitatively, we find evidence that pleasure can have positive effects across different informational and knowledge-based attitudes.
Taking all the available evidence into account, we recommend that agencies responsible for sexual and reproductive health consider incorporating sexual pleasure considerations for effective interventions.

EPC285
Disclosure practices among PrEP adopters in the eThekwini district, South Africa

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Background: South Africa is described as an HIV epicentre where young girls and women are disproportionately affected. In 2021, the HIV prevalence was recorded at 13.7%. The intervention of pre-exposure prophylaxis (PrEP) as a daily HIV prevention pill may assist by combating potential seroconversions. PrEP is known as a self-controlled measure particularly among women which is synonymous with covert use.
The aim of this study was to determine disclosure practices among PrEP adopters in the province of KwaZulu-Natal, South Africa.
Methods: A qualitative study was conducted at two primary healthcare clinics in the eThekwini district during November and December 2021. Non-probability sampling was used to purposively select PrEP users (n=15) aged 18 and older with minimum PrEP use of 6 months and identifying either as a current or ex-user. Thematic analysis was used to identify themes and sub-themes.
Results: All participants were Black African aged 30.4 ±8.13. Majority were female (86.7%), employed full-time (46.7%) with PrEP duration ranging from 7-31 months. Over two-thirds (73.3%) disclosed their PrEP use to their sexual partner and family members. Over 50% told their friends about their medication use and few admitted this to their work colleagues.
Most revealed this directly, however, few recalled how their PrEP use was discovered accidentally by their sexual partner. Despite this unexpected turn of events, their sexual partner was initially shocked by this revelation but later came to an understanding.
None of the participants were subjected to anger and/or violence by their sexual partner when disclosing their PrEP use. Interestingly, minimal stigma levels were identified by ones' family and social networks upon disclosure. Few males within ones' family and social networks came

to know about their medication intake. Additionally, some recommended PrEP to their sexual, family, social and work contacts while others began using PrEP due to their disclosure and reasoning for initiation. When recommending PrEP, the suggestion was framed based on their network's personal circumstance at that point in time.

Conclusions: This study highlights how disclosure was received without prejudice and recommending PrEP use among their contacts. Furthermore, PrEP adopters increased both awareness and uptake levels.

Access to harm reduction interventions

EPC286

Characterizing history of opioid agonist therapy uptake among people who inject drugs in Iran: findings from a national bio-behavioral surveillance survey in 2020

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Background: Opioid agonist therapy (OAT) is an effective harm reduction intervention that helps reduce opioid withdrawal and cravings, injection drug use, and all-cause mortality among people who inject drugs (PWID). Iran has the largest OAT program in the Eastern Mediterranean region, but our understanding of barriers to OAT uptake is limited. We aimed to characterize Iranian PWID who had never received OAT and examine the associated barriers.

Methods: In the 2019-2020 national bio-behavioral surveillance survey in Iran, a respondent-driven sample of 2,684 PWID (i.e., history of last-year injection drug use) were recruited from 11 large and geographically dispersed cities. Outcome of interest was no lifetime uptake of OAT medications (i.e., prescribed methadone, buprenorphine, or opium tincture maintenance therapy).

We measured the association of sociodemographic and behavioral variables with no history of OAT uptake using multivariable logistic regression models. People who had never received OAT were asked for the underlying reasons/barriers which were categorized into primary themes.

Results: Lifetime prevalence of no history of OAT uptake among PWID was 31.3% (95% confidence interval (CI): 29.5, 33.1). In the multivariable analysis, younger age (adjusted odds ratio [aOR]: 0.99; 0.98, 0.99), ≥ high school education (aOR: 1.41; 1.17, 1.71), being married compared to divorced (aOR: 1.28; 1.01, 1.61), never been married compared to divorced (aOR: 1.46; 1.16, 1.83), no history of prior incarceration (aOR: 1.48; 1.22, 1.79), and length of injecting career of 2-5 years compared to more than five years (aOR: 1.42; 1.03, 1.95) were significantly and positively associated with never receipt of OAT.

Individual-level barriers (e.g., having a hard time, too many failures in the previous attempts to quit drugs, mental problems), financial barriers (e.g., unaffordable cost of OAT services), and system-related barriers (e.g., service availability interfering with working hours, long distances to OAT services, unrealistic treatment-related expectations from staff, stigma and rejection from healthcare providers) were the main barriers to obtaining the OAT.

Conclusions: About one-third of PWID in this national study in Iran had never received OAT in their lifetime. PWID continue to face preventable barriers to obtaining OAT, which calls for revisiting how OAT is provided across the country.

EPC287

Factors associated with preference of "take-away dose" among Opioid Substitution Therapy clients in Nepal

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Background: Opioid Substitution Therapy (OST) is a crucial harm reduction component of HIV program for people who inject drugs. Despite being the first South Asian country to start OST, low retention rate (21%) has always been a major challenge of OST program in Nepal. During COVID lockdown period, Nepal successfully implemented "Take-away OST dose" which accelerated the advocacy for take-away dose provision for stable clients during normal times also.

However, little is known about client's perception between "take-away dose" and "daily site visit". Thus, we examined the socio-economic factors associated with choice of "take-away dose" or "daily site visit" among OST clients in Nepal.

Methods: We conducted a cross-sectional study among 852 currently enrolled OST clients in all 12 OST sites in Nepal. We collected data during September 2021 through online self-administered questionnaire.

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We measured socio-demographic variables, OST duration, distance to OST site, commuting habit, clients' choice between "take-away dose" or "daily site visit". We used multivariable logistic regression model to analyze the data.

Results: Out of 852 participants, 4% were female. The mean age was 33.8 years (SD 8.0). Half of the participants had higher school education or above. Around 51% participants were employed. The mean OST duration was 27.7 months (SD 33.3). Around 21% and 18% of participants travel daily 6-10 kms and more than 10 kms respectively to visit OST site. Around 64% participants use motorbike to commute daily to OST site. Around 78% participants prefer "take-away dose" than "daily site visit".

Participants who travel daily for more than 10 kms and those who travel 6-10 kms daily were respectively 5.6 times (AOR= 5.65, 95% CI 2.80-11.39) and 1.8 times (AOR= 1.82, 95% CI 1.16-2.86) more likely to prefer "take away dose" than those who travel less than 5 kms daily.

Conclusions: Daily long commuting distance to the OST site is strongly associated with clients' preference of take-away OST dose. Such evidence is important to advocate for take-away OST dose in Nepal and thus improving the access and retention rate of the clients in the OST program.

EPC288

Partnering with the Ministry of Justice (MOJ) to launch and scale Ukraine's first-ever medication-assisted treatment (MAT) as part of comprehensive HIV prevention services for prisoners with opioid dependency

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Background: HIV prevalence in prisons in Ukraine is 8.9% (2019), and 90% of prisoners incarcerated for drug crimes continue using drugs while in prison. Access to harm reduction services in prison settings is critical to prevent HIV transmission while addressing substance use disorders. However, no drug-related harm reduction programs existed in Ukrainian prisons before 2019. The USAID/PATH Serving Life project partnered with the MOJ to launch and scale the first MAT pilot in prisons.

Description: Serving Life and the MOJ undertook the following steps to pilot MAT:

1. Advocated to integrate MAT into the comprehensive care package in penal settings;
2. Developed standard operating procedures to guide MAT program enrollment, provision of psychosocial support, and MAT adherence counseling by project-supported social workers, offering of HIV testing as part of MAT services, and linkage to civil-sector MAT programs for prisoners being released;
3. Created a medical advisory board and multidisciplinary care team to manage medical and social services for MAT clients;
4. Established a MAT room at pilot sites equipped with required commodities. MAT was first piloted in Bucha Prison Colony #85 (male prison) in 2019, and in four additional prisons (male and female) in 2021.

Lessons learned: Among the 144 prisoners enrolled in MAT from December 2019 through December 2021, 123 (85%) are continuing therapy. As of December 31, 2021, 100 prisoners received daily MAT in prisons. Procedures established to transition MAT clients to civil-sector MAT programs upon release were effective, with 23 former prisoners linked to community-based MAT services. No overdoses have been reported. Prisoners are reporting health benefits of MAT, and no longer buy illegal drugs or share injecting equipment, decreasing HIV and viral hepatitis risk.

Conclusions/Next steps: Providing MAT services in Ukrainian prison settings is feasible and acceptable. As part of a comprehensive HIV prevention package, MAT enabled prisoners to decrease HIV risk and improve health outcomes. Close partnership with the MOJ was critical to obtaining political will to launch MAT. Serving Life and the MOJ plan to open MAT sites in three additional prisons in 2022; and the MOJ plans to scale MAT at all penal settings in 2023.

EPC289

The first study of psychoactive substance use and drug checking practices among participants of electronic dance music Events in Ukraine

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Background: The study explored psychoactive substance (PAS) use associated with electronic dance music (EDM) culture in Ukraine; examined the uptake, relevance and utility of drug checking and its influence on harm reduction behaviour in order to inform the development of harm reduction interventions.

Methods: Between May and October 2021 we conducted a cross-sectional survey of attendees of 12 EDM festivals of varying sizes and genres in Kyiv, Ukraine. The survey conducted in conjunction with harm reduction intervention focused on PAS use, associated risks and the experience of drug checking. The final analytic sample included 1307 participants who reported consumption of PAS excluding tobacco, alcohol and cannabis.Trends in drug checking were analysed based on cross-sectional surveys of a major festival in 2018, 2019, and 2021.

Results: The mean age of participants was 24.4. Slightly over a half were male. 76% self-identified as heterosexual, 3% homosexual, and 16.6% bisexual. 37.7% experienced overdose symptoms in the past 12 months, most common related to mental health: anxiety/paranoia/panic attacks (19%) and confusion/changes in mental state (15%).

MDMA, amphetamine, LSD, cocaine, ketamine, psilocybin were most prevalent followed by methamphetamine, synthetic cathinones, 2C-B and GHB/GBL.

Between 2018 and 2021 the proportion of participants who report to have ever tested PAS increased from 2% to 26%. The odds of consuming the tested substance were about 2.5 times lower (p = 0.008) in case of unexpected drug checking results compared to situations when testing confirmed the intended substance.

Cluster analysis identified three distinct clusters of study participants with specific risk factors that may require tailored harm reduction responses. E.g., experience of overdose symptoms may be correlated with age, gender, and substance use history. The risk of overdose significantly increased among people who report using synthetic cathinones.

Conclusions: In addition to influencing harm reduction behaviour drug checking can be instrumental in engaging and creating rapport with recreational PAS users thus allowing to implement HIV prevention and harm reduction interventions in this underserved population.

Further interventions in this group should address mental health challenges. Emergence of synthetic cathinones on the Ukrainian drug scene calls for interventions to prevent transition to injecting and transmission of HIV.

EPC290

Digitally facilitated harm reduction intervention for experimenting and recreational users of psychoactive substances in Ukraine serves 1437 unique clients in 7 months

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Background: Young recreational users of psychoactive substances (PAS) in Ukraine are an underserved population facing significant risks associated with PAS use and related sexual behaviours. The intervention aims to prevent HIV transmission and reduce harms in this population.

The objectives included engagement of the target population, studying the risks and needs, and home delivery of HIV prevention and harm reduction commodities.

Description: The intervention employed online survey marketed through relevant social media as outreach instrument. People who reported using PAS (excluding cannabis, alcohol or tobacco) were directed to harm reduction information resources and offered home delivery of the PartyBox – a harm reduction kit containing condoms, lube, HIV self-test, safer sniffing kits, vitamins and drug checking tests. 1437 unique individuals from all geographic regions of Ukraine received PartyBoxes between June and December 2021, 49% women, 51% men, 61% aged 18-24, 28% - 25-34, 6% - 14-17, and 5% - 35-44. 26.4% reported non-heterosexual orientation. 90% never administered PAS by injecting.

Lessons learned: Targeted marketing, modern design, appropriate language, alignment with current trends in the target population and highly demanded information and services have allowed to engage a large group of young recreational PAS users. The intervention confirmed the demand for HIV prevention, testing and harm reduction (including drug checking) services in this population and the role of peers in further promotion of services.

Collected data on the profiles and risks indicated high prevalence of overdose symptoms; psycho-emotional problems (41% of participants), problems with relationships (20%), health (20%), work or school (12%) and law enforcement (9%); use of PAS to modify sexual experiences, and low condom use. Participants prioritised drug checking kits (82%), condoms (75%), lube (73%), sniffing straws and cards (61%), STI testing (51%) and HIV testing (50%).

Conclusions/Next steps: Online operational studies can be utilised as outreach tools tailored to specific underserved populations. HIV prevention and testing services are in high demand among recreational PAS users.

The established link with the target population and high demand for information and services allows for further efforts to prevent transitions to injecting, HIV transmission associated with sexualised drug use and to address the identified mental health challenges.

EPC291

South to south learning between Uganda and Kenya to scale up access to Medically Assisted Therapy services for people who inject drugs

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Background: The South-South Learning Network (SSLN) is an HIV prevention learning initiative that supports the Global HIV Prevention Coalition to strengthen national HIV programmes through shared learning and problemsolving across 10 African countries, including Uganda and Kenya. The SSLN facilitates meaningful engagements across countries through deliberately constructed webinars and workshops, mentoring and capacity-building, technical support, documentation and dissemination of best practices.

Description: Uganda's Medically Assisted Therapy (MAT) program started in September 2020 with initiation of a MAT center within Butabika National Referral Hospital to enroll 200 clients. Community consultation identified long distances to the center and suboptimal demand generation activities as key barriers to access and uptake of MAT.

Uganda Ministry of Health approached the SSLN to facilitate a process of peer to peer learning with Kenya which has a scaled MAT programme. The SSLN conceptualized and facilitated a virtual country-to-country mentoring programme. Kenya selected facilitators from facility and community programmes to lead the interactive sessions covering topics including:

a. Establishing multiple MAT sites;

b. Establishing mobile van MAT services;

c. Demand generation by strengethening community outreach with PWID;

d. Microplanning at site and population level; and,

e. Action planning.

Five 2-hour sessions were conducted biweekly from October to December 2021. Each session was attended by more than 25 participants from the two countries representing national, facility and community level service providers and implementers.

Lessons learned: Joint country to country problem solving, which is actively facilitated by a learning network can lead to structured learning and application. Involving facilitators and participants that have different technical capacities in the mentorship sessions encourage practical deliberations. Concluding mentoring sessions with action plans provide countries with an agenda to apply the learnigs in their own context.

Conclusions/Next steps: Uganda plans to adapt strategies including:

a. Targeted demand generation through peers using microplanning tools;

b. Providing more comprehensive services in MAT clinics;

c. Adopting mobile van for MAT dispensing reaching difficult to reach population; and,

d. Initiate livelihood programmes for MAT clients to make MAT more accessible.

EPC292

ChemSex risk management: a global sexual health approach through a single entry point of care in Hospital St Louis' Infectious Diseases Unit in Paris

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Background: ChemSex involves between 15% and 50% of men who have sex with men (MSM, on PrEP or HIV positive). This practice corresponds to the use of psychoactive substances to increase the intensity and duration of sexual intercourse and is associated with an increased risk of sexually transmitted infections, psychiatric diseases and sexual dysfunctions.

ChemSex harm reduction (HR) consultations have been implemented since September 2019 in the Infectious Diseases Department of Hospital Saint-Louis to integrate a sexual healthcare management that is cross-cutting and available in a single location to facilitate patient care.

Description: Physicians of this department are trained to identify and refer patients for HR. Specialized caregivers conduct harm reduction interviews with ChemSex users wishing to change their practices.

At each consultation, the professional and the patient set an objective for the HR, and a personalized action plan is established, specifically to help manage cravings. The means of action are re-assessed every consultation and new objectives are established. The patient is sent to the referring physician, psychiatrist or sexologist in case of co-morbidity.

Lessons learned: Between September 2019 and December 2021, 633 HR consultations were carried out in the unit for 172 MSM patients (average age 41 years). 77% of patients carried on to at least one consultation.

A survey was conducted in December 2021 assessing the behaviors and comorbidities of the consultants. 96 patients responded, 28% of whom practiced ChemSex several times a week.

96% of the respondents regularly used cathinones, 67% GHB. 60% of the patients had a sexual dysfunction before the practice of ChemSex, 41% of whom declared a sexual addiction and 32% an erectile dysfunction.

83% of the respondents felt that the harm reduction consultations had reduced the risks associated with their use of psychoactive products and 84% would "definitely" recommend the consultation to someone in the same situation as them.

Conclusions/Next steps: Patients encourage us to continue our integrative sexual health approach by expressing a major benefit and interest in these ChemSex consultations within a familiar and unique point of care, and underlined the need for more systematic sexual counseling to prevent ChemSex use.

EPC293

Outcomes of neonates born to mothers on opioid substitution therapy (OST) with Methadone in Kenya

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Background: Use of heroin during pregnancy has been associated with high incidence of prematurity, low birth weight, neonatal abstinence syndrome (NAS) and neonatal mortality. A study was conducted to determine the clinical outcomes of neonates born to mothers on Opioid Substitution Therapy (OST) in Kenya.

Methods: A retrospective cohort study was carried out on mothers on opioid substitution therapy (OST) with methadone and their neonates born in the period 1st January 2015 to 31st December 2019 from six of the largest Medication assisted treatment (MAT) clinics in Kenya. Mother/infant data was extracted from the patient files using a

standard data collection tool, entered into a Microsoft Excel spreadsheet, cleaned and transferred to STATA version 11.2 for analysis. Proportions were used as estimates of the prevalence of LBW, NAS and neonatal mortality. Logistic regression analysis was conducted in order to test the factors associated with these three outcomes.
Results: A total of 81 mother infant pairs were included in the study.The median age of the mothers was 31 years, 95.1% had some formal education and 80.3% were unemployed. All the women were heroin users on OST, and in addition 87.7% and 65 (80.3%) reported cannabis and tobacco use respectively. The mothers had been on OST for a median 20 months (range: 1-60) and were receiving a median of 90mg of methadone (range 0-245mg) just before delivery.
Overall 39.7 of the babies were low birth weight (LBW) and median birthweight was 2550g. Independent predictors of LBW were maternal history of heroin IVDU Adjusted odds ratio (AOR) =5.7 (95% CI 1.7,18.9) p=0.004) and AOR=37.05 (95% CI 3.8,361.8) p=0.002] for heroin used during pregnancy.
Overall 35% of neonates developed NAS. Maternal use of benzodiazepine was associated with a significantly reduced risk of NAS use, AOR=0.31 [95%CI 0.10-0.97) p=0.045].
Overall 8.7% of the babies died.Risk of neonatal death was significantly reduced by methadone use AOR=0.97[(95% 0.95, 1.0) p=0.031] and increased by cocaine use AOR =12.85 [(95% 2.0,82.4) p=0.007].
Conclusions: The neonatal outcomes of neonates born to mothers on OST was poor, There is need for better interventions, education and emphasis on management of mothers and neonates in this population.

EPC294

First harm reduction intervention among MSM who use Psychoactive Substances (PAS) to modify their sexual experiences (practice Chemsex) in Ukraine

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Background: Following initial explorations of chemsex phenomenon in Ukraine the Alliance for Public Health launched outreach and services to MSM who practice chemsex in Kyiv and Odesa. The intervention aimed to verify the feasibility of and demand for HIV and harm reduction services in this population, and to study the initial group of clients to inform further development of services.
Description: In June - December 2021 trained outreach workers through online and offline channels recruited the initial group of 572 people who reported using PAS before or during sex in order to change their sexual experience. 53% of clients were aged 25-34, 24% - 18-24, 20% - 35-44, and 2% - 45-54. Expected effects from chemsex included increased pleasure, new sensations/experience, arousal, reduced inhibitions, improved/prolonged sex, empathy with the partner, muscle relaxation, overcoming physical discomfort and fear. 565 people agreed to obtain unique identification codes that facilitate further access to services. 10% reported ever *injecting* PAS and 1.8% having done so within the last 30 days. Last anal sex condom use was 61%, and 32% reported having 10 or more casual sex partners in the last 12 months. 439 participants ordered HIV testing. 13 tested positive and initiated ART.
Participants received harm reduction, sexual health and PrEP counselling and referrals. 450 people received PartyBoxes - harm reduction kits containing condoms, lube, HIV self-test, cards and straws for safer intranasal use, vitamins and drug checking tests.
Lessons learned: Chemsex is prevalent among MSM in Ukraine with the main substances used being MDMA, amphetamine, GHB/GBL, cocaine, mephedrone and other synthetic cathinones, LSD, ketamine and methamphetamine. Friendly and creatively branded harm reduction services are in high demand among people who practice chemsex.
Participants highly prioritised drug checking (82%), lube (82%), condoms (77%), safer sniffing tools (57%), STI (56%) and HIV (52%) testing and harm reduction counselling (24%). 37% expressed their willingness to receive PrEP.
Conclusions/Next steps: The programme verified demand for HIV prevention, harm reduction and sexual health services among MSM who practice chemsex in Ukraine.
Further scaleup of such interventions is advisable and likely to contribute to HIV prevention and care in this population.

EPC295

Remotely support the chemsexers: the french experience of association AIDES

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Background: Men who have sex with men (MSM) who use psychoactive products in a sexual context (chemsexers) may live in rural areas, order psychoactive substances online and recruit partners on dating apps. Moreover it is difficult for chemsexers to find friendly and trained interlocutors, to tell their HIV status, to describe their practices. Therefore, they may be very far from care.
Furthermore, the restrictions resulting from the Covid epidemic in France, mental health and addiction professionals, especially community health workers, have warned about the worsening situation for many of them. They have observed an increase in psychoactive substance use and chemsex practices as well as an increase in the number of first-time consumers.
Description: To meet to the needs of these chemsexers who are isolated or far from care, AIDES developed a national remote assistance offer in 2017 based on sexual

prevention, harm reduction, self-assistance and referral to care. This assistance is provided through a Facebook page and WhatsApp. Thus, this offer managed by about fifteen activists covers the whole of France.

For dealing with the reduction of interventions with the public within the context of Covid, AIDES has reinforced this assistance by organizing self-support groups by videoconference and individual interview proposals on WhatsApp.

Lessons learned: Of 1201 active members in the Facebook support group, 90% are MSM and 58% are between 25 and 44 years old. The main requests include the need for support and medical guidance, information about harm reduction, expression of loneliness. On WhatsApp, 88% of 258 interviews in 2021 concerned chemsex. Callers were 44% from Paris region.

This system has become a forum for discussion and essential services for those who have stopped using healthcare centers. Satisfaction criteria include the quality of the information provided, the appropriateness of the support and especially the possibility of communicating with people who are not sexual partners.

Conclusions/Next steps: This remote offer, which has been reinforced according to the sanitary context, responds to unmet needs. This offer was useful during the Covid crisis thus AIDES decided to sustain the online support group and the possibility of online interviews although the Covid-19 epidemic is in decline.

Optimizing vertical transmission prevention programmes

EPC296

A prospective analysis of PrEP adherence and depressive symptoms among Kenyan women who initiated PrEP during pregnancy and postpartum

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Background: Prior studies report suboptimal adherence among depressed PrEP users, yet few data exist on psychosocial factors associated with PrEP adherence among pregnant and postpartum women.

Methods: We prospectively analyzed data from the PrIMA Study (NCT03070600) among participants who initiated PrEP during pregnancy or postpartum to identify psychosocial correlates of adherence. Depressive symptoms were assessed serially (pregnancy, 6 weeks, 9 months postpartum) using the Center for Epidemiologic Studies Depression scale (moderate-to-severe depressive symptoms [MSD]=scores≥10).

Optimal PrEP adherence (self-reporting no missed PrEP pills in the last 30 days) was evaluated monthly in pregnancy; 6 weeks, 14 weeks, 6 months, 9 months postpartum. Correlates of PrEP adherence were identified using generalized estimating equation models, clustered by participant, adjusted for age, parity, education, partner HIV status, pregnancy status.

Results: Among 715 women who initiated PrEP, median age was 25 years (IQR:21-30), median gestational age at PrEP initiation was 29 weeks (IQR:24-33), 88% were married, and 19% had a partner living with HIV. Over a third (36%) of women reported MSD during pregnancy; of those 36% reported MSD in postpartum. Perinatal MSD was associated with having a partner of unknown HIV status, ≥4 lifetime sexual partners, intimate partner violence (IPV), and low social support ($p<0.05$). Among 3856 PrEP follow-up visits, 47% had optimal PrEP adherence which was 60% higher during pregnancy compared to postpartum (adjusted relative risk [aRR]:1.5, 95%CI:1.4-1.6, $p<0.001$).

Women >24 years were more likely to adhere to PrEP compared to younger women (aRR:1.2, 95%CI:1.0-1.3, $p=0.008$). PrEP adherence was 60% higher among women with partners living with HIV compared to women with partners of unknown HIV status or presumed HIV-negative (aRR:1.6, 95%CI:1.4-1.7, $p<0.001$). MSD in the past 6 months was not associated with PrEP adherence (aRR:1.02, 95%CI:0.93-1.14, $p=0.643$). Marital status, IPV, and social support were not associated with PrEP adherence.

Conclusions: Among perinatal women who initiated PrEP, self-reported adherence was higher in pregnancy than postpartum, among older women, and those with partners living with HIV.

In contrast to studies of non-pregnant women, PrEP adherence was not associated with depression. Our findings suggest that the impact of psychosocial barriers to PrEP adherence may be attenuated among perinatal populations.

EPC297
I=I (U=U) is good news

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Background: In 2016 Prevention Access Campaign launched the global campaign U=U (undetectable = untransmissible). Once Trece Foundation designed the campaign i=i, the acronym for U=U in Spanish for the Venezuelan public. Although several years have passed since then and U=U is a verifiable fact, millions of people, do not know the advantages of these 3 characters.
In a voluntary and confidential survey of 200 patients living with HIV at the infectious disease department of the Vargas Hospital in Caracas, 47% said they did not know the meaning of i=i (U=U) and 36.6% believed that even under treatment people could continue to transmit HIV. When the campaign was explained, 97.62% said it was good news and 100% assured that making this public would end the stigma and discrimination of PLWHA.
Description: The campaign designing an easily recognizable logo. Some materials were distributed, 1000 flyers, 500 posters for ARV pharmacies, 800 T-shirts, 600 bags, 13 videos, 13 podcasts , 2 mobile clinics labeled with the message, 1 massive concert for World AIDS Day.
The material was distributed in communities carrying the i=i message. Several journalists, including international channels, used the T-Shirts to report on HIV-AIDS.
Doctors in other countries, including DR, Colombia and Argentina requested shipments of T-shirts and material to carry the campaigns outside Venezuela. On World AIDS Day, a massive concert with the National Orchestra System reached an audience of more than 4,500 people, including ambassadors from several countries and officials from UN offices and other AIDS NGOs from Venezuela and the world. Both musicians and singers wore i=i t-shirts during the concert.
Lessons learned: Talking about HIV-AIDS almost always generates rejection from the general population, which is not yet prepared to face realities without stigmatization. One way to reach people is through everyday life: clothes, music, shows. Societies prepared to stop discrimination could be better off in a future of equality.
Conclusions/Next steps: Campaigns like these will make it possible to bring the end of discrimination and stigma closer. Achieving the 95, 95, 95, 95, goal in Venezuela is a difficult task but, this kind of initiatives bring closer the possibilities to reach the goal.

EPC298
Accelerated declines in HIV incidence and flattening prevalence trends with scale-up of combination HIV prevention in a Ugandan adult population cohort, 1989-2021

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Background: The long-term evolution of the HIV response and its impact on HIV infection can offer insights for optimizing HIV interventions. In a population-based longitudinal study conducted over 30 years, we explain annual changes in HIV incidence, prevalence, and all-cause mortality in the context of a changing HIV response in rural Uganda.
Methods: Between 1989 and 2021, participants were repeatedly tested for HIV, and longitudinal data were collected on sexual behavior, circumcision, and residency status (in-migration, out-migration, death). People living with HIV (PLHIV) have reported on knowing their HIV status, starting antiretroviral therapy (ART), and their viral load data obtained.
While calculating HIV incidence, the seroconversion date was randomly imputed between each participant's last negative and first positive tests using a uniform distribution. These imputations were repeated 30 times to account for random error, and Rubin's rules were used to obtain age, sex, and calendar period-specific estimates.
To explain HIV incidence and prevalence trends, data were also examined for outcomes that might reflect the national HIV policy and practice in the study area. Analysis was restricted to participants aged ≥15 years.
Results: Participants (n=20,959) contributed 176,659 person-years and 669 seroconversions. In both men and women, HIV incidence initially declined slowly until the early 2000s, subsequently increasing after the introduction of ART in 2004, but there have been accelerated declines since 2011. Between 2015 and 2021, all age-specific incidences remained higher in women than men except in older adults (55 years and older) in whom incidence was similar.
Overall HIV prevalence initially declined from 8.0% in 1989/90 to 5.8% in 2002, then steadily increased until 2015 where it has since flattened at about 9.8%. More recently, male circumcision was scaled-up, virtually all participants were initiated on ART once diagnosed, more than 91% were virally suppressed, but a considerable proportion of PLHIV have unknown HIV status (18.4% in men, 13.6% in women).
Conclusions: HIV prevention and testing-and-treatment programmes must be concurrently scaled-up to accelerate population-level declines in HIV spread. The expansion of male circumcision in this study further accelerated declines in HIV incidence among men, but gaps exist in reaching PLHIV with unknown status.

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EPC299

Adherence to HIV treatment and prevention among a young Black and Latinx sexual minority men and transgender women cohort in the United States: PUSH study 2017-2021

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Background: Adherence to HIV and prevention care is a critical target for status-neutral HIV prevention efforts. Rates of PrEP adherence have been lower among younger Black and Latinx sexual minority men and transgender women in the United States. This analysis sought to identify which key factors may undermine adherence in care in a vulnerable population of youth.

Methods: Young (aged 18-24) Black and Latinx sexual minority men and transgender women participating in randomized trials to evaluate an intervention to increase HIV care and prevention were followed for up to 18 months in the PUSH study in Eastern US. Adherence was defined as no missed doses in the last week for those at risk for HIV who reported being on daily, oral PrEP (N=117) and no missed doses in the last 4 days for those living with HIV who reported being on ART (N=33).

Logistic GEE regression models with stepwise covariate selection were used to obtain adjusted odds ratios (AOR) for medication adherence, adjusting for baseline factors (e.g., age, race/ethnicity, gender and sexual identity, history of unstable housing and transactional sex) and time-dependent substance use (grouped by common patterns of reported substances).

Results: Overall adherence rate was 47.5%. Only 11.2% reported no substance use while 67.4% used both alcohol and cannabis with or without tobacco. Over 176 person-visits, there were no statistically significant difference in adherence related to HIV status, age, unstable housing, or COVID time period since March 2020.

Minority gender identity (transgender, queer, questioning, non-conforming, other) was associated with lower adherence (AOR=0.24, p=0.015).

Poly substance use in the prior 3 months was associated with lower adherence: Combined alcohol and cannabis use (AOR=0.21, p=0.008), combined alcohol, cannabis and tobacco use (AOR=0.14, p=0.001) and use of alcohol or cannabis combined with other drugs (amphetamines, opioids, cocaine, inhalant, sedatives, hallucinogens) (AOR=0.31, p=0.065).

Conclusions: Efforts to improve adherence to HIV treatment and prevention need to address concomitant drug use among young Black and Latinx sexual and gender minority youth. Additional barriers to adherence among gender diverse youth will also need to be better understood to overcome and achieve optimal HIV outcomes.

Prevention of vertical transmission

EPC300

Determining the viral load threshold for initiating neonatal combination antiretroviral therapy prophylaxis in HIV exposed newborns

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Background: Neonatal combination antiretroviral (cART) prophylaxis is recommended in situations at high-risk of vertical transmission, however, the maternal viral load threshold at time of delivery (dVL) for which neonatal cART is warranted is not clear. The objective of this study was to describe cART use and risk of vertical transmission at low levels of dVL.

Methods: Data were analyzed from mother-infant pairs (MIPs) in the Canadian Perinatal HIV Surveillance Program between 1997-2020, collected annually from 22 perinatal HIV centers in Canada. Infants were categorized as high-risk (dVL ≥1000c/ml, or maternal cART <4 weeks prior to delivery), medium-risk (dVL detectable and <1000c/ml, and maternal cART ≥4 weeks prior to delivery), and low-risk (dVL undetectable, and maternal cART ≥4 weeks prior to delivery). Neonatal ART regimens and HIV transmission risk was compared between groups.

Results: A total of 4743 MIPs were included; overall, 1.8% of newborns received no prophylaxis, 70.4% received monotherapy, 14.5% a dual-combination regimen, and 13.3% cART. The most commonly prescribed cART regimens were zidovudine (ZDV)/lamivudine (3TC)/nelfinavir (NFV) (6.5%), followed by AZT/3TC/nevirapine (NVP) (5.6%), and AZT/3TC/NVP/NFV (0.5%). Raltegravir based cART was used in only 0.3% of infants. A total of 2891 MIPS were categorized into risk categories (incomplete data for n=1854); 65.1 % were categorized low risk, 6.8% medium-risk, and 28.1% high-risk. An equal proportion of high and medium-risk infants received cART (25.7% *vs.* 26.6%). There were 55 HIV transmissions events; this included 49 (6.2%) of those in the high-risk, 1 (0.5%) in the medium-risk, and 5 (0.3%) in the low-risk category (p<0.001).

Among those prescribed cART, transmission occurred among 12.6% of infants in the high-risk group, 2.1% of those in the medium risk group, and 4.8% of those in the low-risk group. There were no transmissions among infants receiving single, dual or no ART in both low and medium-risk groups.

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Conclusions: While cART was equally prescribed in both high and medium-risk situations, the benefits in the medium-risk group with low level detectable viremia are not clear. These data suggest that efforts may be better directed towards ensuring access to cART in high-risk situations, and limiting cART exposure in others.

EPC301

Broadly neutralizing antibodies - A new hope for elimination of vertical transmission of HIV

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Background: Progress in preventing vertical transmission of HIV has stagnated. In 2020, there were 150,000 new HIV infections among children globally. The majority of new infections occurred through vertical transmission and fell dramatically short of the Joint United Nations Programme on HIV/AIDS (UNAIDS) 2020 targets.
Preliminary research indicates that broadly neutralizing antibodies (bNAbs) are potentially promising tools for prevention of vertical transmission of HIV.
Description: In partnership with other global health organizations and implementing partners, USAID supported activities related to research, development, and preparation for future implementation of bNAbs in low- and middle-income countries (LMICs) (Table 1).
Given the recent advances in the safety, tolerability, and pharmacokinetic characteristics of bNAbs, a strategic priority is to contribute evidence-based information on how bNAbs might be optimally positioned to contribute to the elimination of vertical transmission in LMICs.
Lessons learned: The analysis indicates that several complementary streams of work must be implemented to overcome bottlenecks in advancing bNAbs for prevention of vertical transmission. A robust business case, user-informed target product profile, and clear access strategy built upon learnings from these activities will be needed early in clinical development.
The inclusion of applications of bNAbs to reduce vertical transmission in the broader preferred product characteristic (PPC) of bNAbs for prevention has provided initial momentum for mobilizing the global health community to actively explore the potential of bNAb-based prevention products to reduce new vertical transmissions in LMICs.

Activity	Key Partners Involved	Brief Description/Main Purpose
Health Economic Research Strategy	• IAVI • London School of Hygiene and Tropical Medicine (LSHTM) • UNAIDS	Identify gaps in evidence and propose a priority agenda for health economic and modeling studies for biomedical HIV prevention over the next decade to inform critical decision-making junctures along the pathway from early development through implementation.
Cost-effectiveness of bNAbs for HIV Prophylaxis for All Infants Born in High-burden Settings	• Massachusetts General Hospital • IAVI	Evaluate the clinical impact and cost-effectiveness of bNAbs for infant HIV prophylaxis in Côte d'Ivoire, South Africa, and Zimbabwe.
Demand Forecasting	• Avenir Health • IAVI	Define the potential market for bNAbs for infant prophylaxis to inform clinical development strategy, commercial investment decisions, eventual implementation planning, and estimate manufacturing scale and costs.
Expert Consultations on the bNAb Use to Prevent Vertical Transmission	• IAVI • Individual stakeholders	Understand critical considerations, potential barriers, and enablers through expert consultations and two workshops to discuss strategies for the rapid development, access, adoption, and effective implementation of bNAbs for infant HIV prophylaxis.
World Health Organization (WHO) Preferred Product Characteristics (PPC) for bNAbs for HIV Prevention	• WHO • IAVI	Define preferred attributes for bNAbs including for the prevention of vertical transmission to inform product development; Lay the groundwork for policy recommendations & WHO pre-qualification; Increase the understanding of the potential role of bNAbs for HIV prevention in the global agenda.
Access Plan	• IAVI	Define a strategy to ensure the affordability, availability, differentiated value proposition, and integration into health delivery systems of future bNAb products, to pave the way for accelerated access, including for infant prophylaxis indications.
Acceptability Studies	• IAVI • Y.R. Gaitonde Centre for AIDS Research and Education • Centre for Sexuality and Health Research and Policy • Humsafar Trust • Final Mile	Understand the perspectives of potential end-users, service providers, and policy makers on the acceptability and feasibility of bNAbs as HIV prevention products among populations of interest in India, as a starting point, and then expand studies to other locations.

Table 1. Evidence informing decision-making around bNAbs for prevention of HIV vertical transmission in LMICs.

Conclusions/Next steps: Willing partners within the global health community should continue prioritizing strategic activities to inform consideration of bNAbs as a potentially integral tool to reduce vertical transmission and to understand the feasibility of bNAb implementation in LMICs.
The goal of the historic four-decade-long journey to end the global HIV epidemic and eliminate vertical transmission will be reached only when we have a range of safe and effective prevention methods and have achieved comprehensive implementation of these methods worldwide.

EPC302

Predictors of HIV transmission at two months among HIV exposed infants in twenty four States of India

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Background: In India, 20,958 HIV+ pregnant women are estimated to be giving birth annually. Though the country has made significant progress in scaling up PMTCT interventions, there is limited data on the efficacy of these interventions.

The objective of this analysis is to assess the factors associated with antenatal, intrapartum and postpartum transmission among 11,827 HIV Exposed Infants (HEI) served by the National EMTCT program between 2018-2020 in 24 states of India.

Description: Routine program data of 11,827 mother-infant pairs from the GFATM funded Svetana program is used for this analysis. Logistic regression analysis was conducted using SPSS21. Mean age of women was 25 years and CD4 was 438 Cells/mm^3, 50% were Primigravida, 11% presented during labor and postpartum periods and 38% of the partners were HIV negative. Around 58% of the HIV+ women received >24 weeks of ART during pregnancy, 20% received 12-23 weeks, 15% below 11 weeks and 7% received no antenatal ART.

In addition, 71% of them underwent Normal Delivery and 29% Caesarean Delivery, 77% of them opted for exclusive breastfeeding and 99% of HEI received ARV prophylaxis. Antenatal ART regimens included 95% TLE, and infant ARV prophylaxis included 97% NVP and 3% AZT.

Lessons learned: Around 1.5% of the babies (173/11,827) tested positive at two months. Risk factors associated with HIV transmission were; no ARV prophylaxis to baby [aOR = 8.1, 95% CI (1.3- 50.0)], maternal CD4 count <200 [aOR = 3.3, 95% CI (1.8-5.8)] and 200 to 500 [aOR=2.2, 95% CI (1.4-3.4)], no antenatal ART [aOR = 2.3, 95% CI (1.2-4.2)], enrolment during the postnatal period [aOR = 2.2, 95% CI (1.1-4.2)], normal delivery [aOR = 1.8, 95% CI (1.2-2.9)], and antenatal ART duration of <4 weeks [aOR=1.8, 95% CI(1.0-3.5)]. Age and education of the mother, spouse HIV status, and birth weight of the baby were not significantly associated with HIV transmission whereas second pregnancy order [aOR = 0.61, 95% CI (0.39-0.96)] was found to be a protective factor.

Conclusions/Next steps: Early identification and initiation of ART and improving maternal CD4 during pregnancy, infant ARV prophylaxis for all HEI and planned C-Section can further reduce vertical transmission at two months in India.

EPC303

Preventing mother-to-child transmissionin Botswana: a health system strengthening approach

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Background: The Government of Botswana made a strong commitment to achieve HIV epidemic control and eliminate mother-to-child transmission (MTCT). In April 2015, the Botswana University of Maryland School of Medicine Health Initiative (Bummhi) received PEPFAR funding for the Botswana Partnership for Advanced Clinical Education (BPACE) Project. BPACE provided technical assistance to the Ministry of Health and Wellness on HIV care and treatment and consolidated efforts for achieving epidemic control, including support for preventing mother-to-child transmission (PMTCT).

A bundle of strategies were implemented, including increased testing of pregnant women and use of triple prophylaxis. This paper describes PMTCT program successes over the 5-year BPACE project.

Methods: Bummhi conducted a retrospective analysis of the BPACE PMCTC programmatic data collected between October 2015 and July 2020. The analysis focused on 13 high-HIV burden districts in eastern Botswana, where BUMMHI implemented an HIV care and treatment program. The evaluation included all women and babies who received care in the 22 facilities that were continuously supported by Bummhi. Data was collected from paper-based ANC, baby testing, and HTS registers. Data Clerks then captured the data into Bummhi's Health Information Software (DHIS-2) system. The evaluation focused on PEPFAR-reported indicators

Results: By 2020, the number of women registered for antenatal care (ANC) more than doubled to 25,315 and the proportion of women with known HIV status increase to99% (p=0.015).The proportion of known HIV-positive clients remained steady through the years (15% to 16%, p=0.108), while the proportion of newly positive clients

decreased (9% to 3%, p<0.001). Among women who were HIV-positive, the proportion on ART increased from 74% to 99% (p<0.001). Additionally, as part of the early infant diagnosis activities, 4,637 newborns were tested for HIV (866 by 6 weeks, 3,050 by 2 months, and 3,955 by 1 year).

Conclusions: Despite Botswana being one of the countries with the highest HIV prevalence, the country has made exceptional progress in reducing MTCT. The implementation of the targeted PMTCT program along with EID services increased the number of pregnant women accessing ANC and HIV services. Engagement with these services increased the number of newborns being tested and linked to HIV services.

EPC304

Role of disclosure, stigma, discrimination on ART adherence among people living with HIV in sub-Saharan Africa: a qualitative systematic review

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Background: Adherence to antiretroviral therapy (ART) is key in achieving viral suppression and better health outcomes among people living with HIV (PLHIV). Non-adherence has been linked with several factors including disclosure, stigma, and discrimination in resource-limited settings. However, this relationship has not been properly investigated in Sub-Saharan Africa.

This study aims to systematically examine the evidence on stigma and disclosure and its effect on adherence to ART among PLHIV.

Methods: Thematic analysis of qualitative studies that reported findings on the role of disclosure, stigma, and discrimination on ART adherence among PLHIV in sub-Saharan Africa was explored. Six electronic databases - PubMed, CINAHL, Health Source: Nursing/Academic Edition and MEDLINE via EBSCO, Cochrane Central Register of controlled trials (Central), and PsychINFO were searched for related articles, including published, unpublished, and grey literature. Relevant abstracts were listed.

Any study conducted among PLHIV in sub-Saharan Africa that reported on the role of disclosure, stigma and discrimination on ART adherence was included for review. Data were extracted, quality assessment was conducted and the findings were synthesized using thematic synthesis.

Results: The database search yielded 341 initial results. After eliminating duplicates and screening the titles and abstracts, 30 journal articles were listed. However, only six qualitative studies met the inclusion criteria for this review. These studies were conducted in South Africa, Ethiopia, Kenya, and Tanzania. The thematic synthesis identified 3 major third order themes that centered around various levels of personal, interpersonal, and structural elements of stigma, discrimination, and disclosure and their role in ART adherence among PLHIVs. The review found that stereotypes around HIV necessitate concealment and undermine adherence. Non-disclosure and maintaining secrecy were highlighted as a means to protect one's reputation. Concerns around stigma, discrimination, and abandonment limited disclosure.

Those who disclosed reported feeling a sense of freedom from a guilty conscience. Many participants found that disclosure helped them adhere to their treatment and appointments.

Conclusions: Disclosure improves adherence and reduces the fear of stigma and discrimination among PLHIVs. Programs should implement interventions that increase clients' willingness to disclose their HIV status to their partners.

EPC305

Impact of Option B+ combination antiretroviral therapy on mother-to-child transmission of HIV-1, maternal and infant mortality rates; a 24-month prospective follow-up study at a primary healthcare clinic in Harare, Zimbabwe

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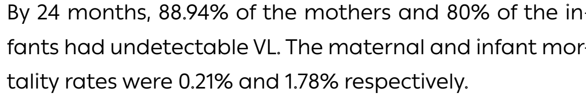
Background: In 2013, the World Health Organization recommended lifelong combination antiretroviral therapy (cART) for, treatment of maternal HIV disease and prevention of mother-to-child transmission of HIV (MTCT), dubbed Option B+.

We conducted a 24-month prospective follow-up study, at a primary healthcare clinic in Harare, Zimbabwe, to determine the MTCT rate, the contributions of intrauterine (IU), intrapartum (IP), and postpartum (PP) to MTCT , maternal and infant virologic responses to cART, as well as maternal and infant mortality rates in the era of Option B$^+$ cART.

Methods: Plasma for virus load (VL) quantitation was obtained from 475 mothers enrolled into the study. VL was quantified at enrolment and every 6 months thereafter up to 24 months using the Cepheid GeneXpert HIV-1 Quantitative test. Dried blood spots were collected from 453 infants at birth, 4-6 weeks, 3 months and every 3 months thereafter up to 24 months. HIV-1 infant diagnosis was conducted using the Cepheid GeneXpert HIV-1 Qualitative test. Absolute, cumulative MTCT rates and mortality rate were calculated.

Results: Seven mothers (1.55%) transmitted HIV-1 infection to their infants by 24 months. Four infants (0.88%; 95% CI, 0.26%-2.33%), 1 infant (0.22%; (95% CI, 0%-1.4%) and 2 infants 0.44%; 95% CI, 0.01%-1.7%) were infected IU, IP and PP respectively.



By 24 months, 88.94% of the mothers and 80% of the infants had undetectable VL. The maternal and infant mortality rates were 0.21% and 1.78% respectively.

Conclusions: In the first 24 months of life, IU transmission is the major route of MTCT. The cumulative MTCT rate of 1.55%, low maternal and infant mortality rates of 0.21% and 1.78% respectively contribute to growing evidence that Option B+cART not only drastically reduce MTCT but also maternal and infant mortality.

Innovative behavioural prevention interventions

EPC306
Engaging parents to create an enabling environment for young people's PrEP use: developing and field testing a new tool to supplement family strengthening programs

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Background: An incredible tool for HIV prevention — pre-exposure prophylaxis (PrEP) — continues to be underutilized among adolescent girls and young women (AGYW). AGYW's uptake and continuation of oral PrEP are affected by parental support, particularly if they still live with their parents. AGYW, implementers, parents, and researchers have all called for more parental involvement in PrEP programs, so that parents understand and can support their daughters' effective PrEP use.

Description: The USAID- and PEPFAR-supported CHOICE consortium developed a module to facilitate parental involvement: *Engaging Parents to Create an Enabling Environment for Young People's PrEP Use.* The module was informed by dialogues—with AGYW, parents participating in family strengthening programs, and program facilitators—and field tested in Kenya and Zimbabwe.

It can be paired with and leverages the *HIV Prevention Ambassador Training Package*, which is designed for young people. *Engaging Parents* contains seven activities — to be delivered together as one session in a larger curriculum-based family strengthening program — that introduce oral PrEP and the PrEP ring, counter common misconceptions, support parents to speak to their AGYW about PrEP, and encourage parents to reduce PrEP stigma from other adults.

Lessons learned: During dialogues, parents, facilitators, and AGYW shared priority topics (Figure 1) that were then integrated into the session. In field tests with 147 parents and 57 family strengthening program facilitators, pre- and post-tests showed that PrEP knowledge doubled: average knowledge scores rose from 33% to 68%. In addition, there was a dramatic increase in parents saying they would support their children's PrEP use, from 40% to 60%. Qualitative feedback suggested that participants would also share information with other adults in their social networks.

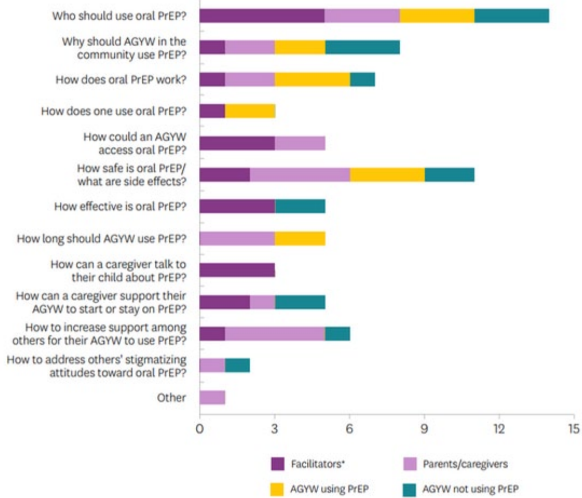

Figure 1. Topics identified as priorities for session inclusion in dialogues with facilitators, parents and AGYW.
** Unit of measurement is number of dialogues. Facilitator dialogue data reflects individual interviews in Zimbabwe and group discussions in Kenya. All other dialogues occurred with groups.*

Conclusions/Next steps: Parents can be an invaluable resource in making PrEP an accessible reality for AGYW. *Engaging Parents'* contributors are currently partnering with AGYW HIV programming across Africa to scale up the module.

EPC307
Refining POSSIBLE: a multicomponent intervention to increase HIV risk perceptions and PrEP initiation among Black Sexual Minority Men

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Background: Increased HIV pre-exposure prophylaxis (PrEP) initiation is urgently needed to substantially decrease the incidence among U.S. Black sexual minority men (BSMM). However, BSMM are less likely than other groups to accept a clinician's recommendation to initiate PrEP, and adherence remains suboptimal. Peers and smartphone apps are popular HIV prevention intervention mechanisms that are typically used independently. This study refined a multicomponent intervention using

a peer change agent (PCA) and a smartphone app called PrEPme to increase HIV risk perceptions (HRP) and PrEP willingness for referral among BSMM.

Methods: Data were obtained from 12 focus groups and one in-depth interview among BSMM from Baltimore, MD, between October 2019 and May 2020 (*N*=39).

Participants were eligible based upon the following criteria: self-identifying as a Black or African-American man, being ≥18 years of age, self-reporting being HIV-negative, having oral or anal intercourse with at least one male partner in the previous six months, and residing in Baltimore. Focus groups were stratified by age: 18-24, 25-34, and 35 and older. Facilitators probed on attitudes towards PrEPme, working with a PCA in the intervention, and preferences for PCA characteristics.

Data analysis consisted of reflexive debriefing among the facilitators and thematic analysis using an adapted pile sorting approach.

Results: Most participants self-identified as homosexual, gay, or same gender-loving (68%), were employed (69%), single (66%), and interested in using the app to self-monitor sexual risk behaviors (68.4%). Across all age groups, participants had low HRP despite disclosing high-risk behaviors. They also suggested that using the app to self-monitor sexual behaviors could trigger internalized stigma by increasing their consciousness of HIV risk behaviors. The PCA was highly accepted and endorsed as an interventionist. Participants also expressed that an acceptable PCA should be a "possible self" who was using PrEP to inspire BSMM and reduce concerns regarding efficacy and side effects.

Conclusions: The PrEPme app and its self-monitoring sexual health functionality was acceptable despite participants endorsing that monitoring their sexual health might increase internalized stigma. A PCA is an important part of the healthcare team for BSMM. Increasing HIV risk perception and PrEP implementation using multi-component strategies requires further research.

EPC308

Partner notification for persons diagnosed with HIV/STIs in community pharmacies in Uganda: lessons learned for future HIV/STI control interventions

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Background: After effective treatment, persons diagnosed with a sexually transmitted infections (STIs) are encouraged to modify behaviour and notify partners. Partner notification for testing and treatment is a challenge in resource-limited settings (RLS) due to factors including fear of blame, relationship breakup, lack of STI knowledge and poor communication skill. This ultimately leads to failure of treatment, reinfection and a vicious cycle of STI spread among sexual networks in communities.

Description: A project that aims to assess feasibility of community pharmacies/drug stores for HIV/STI testing in Uganda is collecting blood and urogenital samples from symptomatic and asymptomatic persons seeking across the counter treatments for different ailments including STI-like symptoms. Samples are tested using point of care (POC) diagnostics for *Neisseria gonorrhoeae* (NG), *Chlamydia trachomatis* (CT), *Trichomonas vaginalis* (TV), Syphilis and HIV.

HIV/STI positive participants receive treatment, and are randomised to either standard of care (SOC) arm where they receive an HIV/STI information leaflet and partner notification slip ;or the assisted partner notification (APN) arm using Call 4 life (C4L) arm where they receive automated phone calls and a partner notification slip both aimed at prompting and encouraging partner notification (PN). They are then followed up in person and using automated phone calls on days 30 and 90 post-enrollment to ascertain treatment completion,partner notification and symptom resolution.

Lessons learned: 200 participants have been recruited for this study.47(23.5%) had at least one STI with 23 randomised to the C4L arm and 24 to the SOC arm. PN was at 15(65%) and 11(45%) for C4L and SOC respectively. PN was especially poor (15%) among asymptomatic participants who has been diagnosed with an STI as compared to symptomatic ones (36.7%).

Follow-up visits on days 30 and 90 showed overall poor partner testing and treatment rates (16%). 46.8% of participants reported they had no intention of notifying their partners citing various reasons.

Conclusions/Next steps: PN was low in this population many of whom reported risky sexual behaviour although treatment completion rate and follow-up visits was high for index participants across both arms. Innovative ways to incentivize PN especially among asymptomatic persons like the Call 4 life system are necessary in future HIV/STI control interventions.

EPC309

Real-time monitoring andjust-in-time interventionfor adherence to pre-exposure prophylaxis among men who have sex with men in China: a multicentre RCT study

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Background: PrEP has been demonstrated to be effective to prevent transmission of HIV infection, although medication adherence remains a challenge.

Methods: A multicentre RCT study was conducted at four hospital-based clinics in four cities of China from September 2019 to December 2020. 422 MSM PrEP users were

randomized to electronic monitors intervention (n=247) or control (n=195). The intervention participants were provided with real-time monitoring equipment that triggers twice just-in-time SMS (Short Messaging Service) medication reminders to PrEP users every half an hour when a scheduled dosage is missed and followed with just-in-time SMS medication reminders to clinicians half an hour when there is no supplement after the second just-in-time SMS reminder.

Clinicians will initiate individualised telephone intervention as soon as possible upon receipt of the just-in-time SMS missed dose alert. The control participants only received generic weekly SMS reminders. Trial outcomes to be measured by adherence (tenofovir plasma levels) at 3 and 6 months.

Results: 516 MSM were screened to recruit 442 participants. Median age was 31 years old, 81.7% had completed college, 52.5% were single, and 70.6% had a monthly income less than 1,200 USD. Plasma tenofovir levels were significantly higher in the intervention group in both daily and ED MSM PrEP users using mixed linear model analysis.

By 3 months, the intervention daily group continued to have drug levels consistent with TDF/FTC use was 86.4% (81.4%-90.2%), while the comparison group was only 71.8% (64.0%-78.5%) had similar levels (p=0.0006); the intervention ED group continued to have drug levels consistent with TDF/FTC use was 80.8% (72.8%-86.8%), while the comparison group was only 64.4% (55.1%-72.6%) had similar levels (p=0.006).

By 6 months, the intervention daily group continued to have drug levels consistent with TDF/FTC use was 85.8% (81.9%-89.0%), while the comparison group was only 70.9% (64.9%-76.2%) had similar levels (p<0.0001); the intervention ED group continued to have drug levels consistent with TDF/FTC use was 80.5% (74.0%-85.7%), while the comparison group was only 68.0% (60.1%-74.9%) had similar levels (p=0.010).

Conclusions: A real-time monitoring and just-in-time intervention system could be utilized for improving adherence of daily and ED PrEP users, and thus effectiveness of PrEP application.

EPC310
Prevention of HIV among convicts

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Background: The COVID-19 pandemic has made adjustments to progress in tackling the HIV / AIDS epidemic. Convicted and imprisoned citizens felt this most acutely. This situation complicates the access of prisoners and convicts in penitentiaries, including HIV-positive, viral hepatitis and tuberculosis patients, to health care provided by NGOs. This, in turn, makes it difficult for health professionals to motivate HIV diagnosis, adhere to treatment for ART and hepatitis, and engage HIV-positive clients in index testing. Based on this, it was important to ensure continuity in the provision of health services for quality social support to clients in the prevention and treatment of HIV, TB, viral hepatitis.

Description: We were able to ensure unimpeded access to preventive services by introducing the position of a social worker in the medical staff of the State Institution "Poltava Penitentiary Institution (№23). As part of the preparatory process, an analysis of regulations and barriers to changes in the staffing of the Poltava City Medical Unit № 23 were made.

Then we advocated for changes in the staffing of the Poltava City Medical Unit № 23, prepared a draft regulation on the establishment of a multidisciplinary team, held a series of working meetings. After the introduction of a social worker, we continue to provide mentoring support to the institution.

Lessons learned: The covid pandemic has made it clear that it is time to look for alternative and innovative ways to prevent HIV in penitentiaries in particular. The introduction of a social worker has made it possible to ensure unhindered access to prevention services for the target group.

Conclusions/Next steps: this case can be an example for the whole of Ukraine. To date, we have a proven algorithm for the introduction of a social worker in the staff, proven efficiency, economic feasibility and seek to spread this successful experience to other regions.

EPC311
A systematic review of technology-based interventions promoting sexual health outcomes of adolescents and young people (10–24 years) in sub-Saharan Africa

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Background: Technology-based interventions could address the growing sexual health needs of adolescents/young people in sub-Saharan Africa – a region disproportionately affected by HIV. However, no known systematic review has examined the effectiveness and methodological rigor of these interventions. Therefore, this review addressed:

1. What is the most common delivery strategy?
2. What are the most common sexual health-related outcomes evaluated in these interventions?
3. What is the methodological rigor of technology-based intervention studies?
4. Are technology-based interventions effective, and for which outcomes?

Methods: A systematic search of 9 databases was conducted to identify peer-reviewed articles on intervention studies that were:
1. Conducted in SSA,
2. Quantitative evaluations of technology-based interventions to promote sexual health, and;
3. Focused on or included AYPs between ages 10-24, and
4. Reported sexual outcomes.

The methodological rigor of the studies was evaluated using the Methodological Quality Rating Scale (MQRS). A median split of MQRS scores established high versus medium-to-low-rigor studies. Data extracted from studies included study design, sample description, delivery strategy, interventions components, sexual health outcomes, and results.

Results: Of the nine intervention studies included, intervention delivery strategy included: SMS (n=4), internet/computer-based (n=3) and game-based learning (n=2). Despite different delivery strategies, all the interventions (n=9) provided sexual health information and knowledge.

Measured sexual health outcomes included sexual health knowledge (n=7), condom use (n=4) and abstinence (n=4), and HIV testing (n=1). The MQRS results indicated that methodological rigor was high for most studies (n=5), with a median score of 13 on a 22-point scale.

The major methodological strengths of the studies were the use of RCT study design (n=7), discussing the reliability and validity of measures (n=9), and a longer follow-up duration than the intervention(n=8). Methodological weaknesses included follow-up assessments of >12 months (n=8), delivering only one intervention component (n=8), and conducting interventions in a single site (n=7). Overall, most interventions (n=7) significantly improved levels of sexual health knowledge among adolescents/young people.

Conclusions: Our findings support the effectiveness of digital technology-based interventions in improving sexual health knowledge. There is a need for multi-component technology-based interventions that go beyond cognitive change to address contextual drivers of HIV.

Structural HIV prevention interventions

EPC312
Food security reduces multiple HIV infection risks for adolescent mothers and non-mothers in South Africa

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Background: Adolescent mothers in Southern Africa experience high HIV seroconversion and transmission. We need to identify whether poverty is driving these risks, to develop effective responses.

Methods: A cross-sectional study of1712 adolescent girls (11-25 years) in South Africa's Eastern Cape Province in 2018-19. We measured HIV risk behaviours: multiple sexual partners, transactional sex, age-disparate sex, unprotected sex, sex on substances, alcohol, and school non-enrolment; household food security, and covariates. Analyses used generalised estimating equations with a logit link, and adjusted probability differences.

Results: 46% ofadolescent girls were living with HIV (mean age 17.51 years, SD: 2.54), 61% were adolescent mothers. Compared to non-mothers, adolescent mothers had lower alcohol use (AOR: 0.47, CIs:0.29-0.75), but higher multiple sexual partners (AOR: 1.93, CIs:1.36-2.74), age-disparate sex (AOR: 3.26, CIs:2.13-4.99), unprotected sex (AOR: 8.19, CIs:6.03-11.12), school non-enrolment (AOR: 3.07, Cis:2.21-4.26), and sex on substances (AOR: 1.89, CIs:1.11-3.23). Household food security was highly protective for both groups (Figure 1).

Amongst non-mothers, household food security was associated with less multiple sexual partners (AOR: 0.45, CIs:0.26-0.78), transactional sex (AOR: 0.32, CIs:0.12-0.81), and school non-enrolment (AOR: 0.6, CIs:0.37-0.99). Amongst adolescent mothers, household food security was associated with less transactional sex (AOR: 0.17, CIs:0.1-0.28), age-disparate sex (AOR: 0.66, Cis:0.47-0.92), school non-enrolment (AOR: 0.57, CIs:0.41-0.79), sex on substances (AOR: 0.51, CIs:0.32-0.82), and alcohol use (AOR: 0.45, CIs:0.25-0.76).

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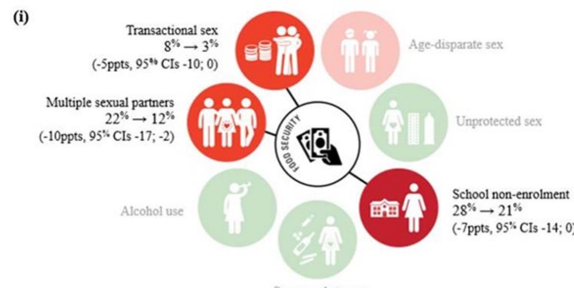

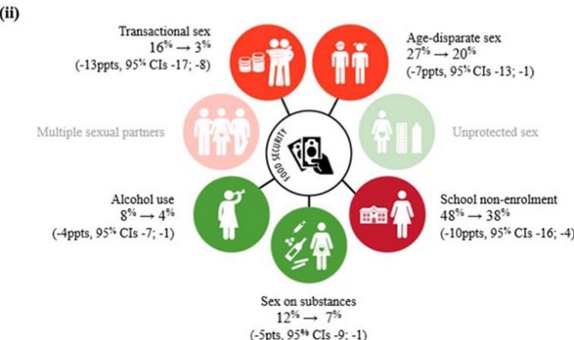

Figure 1: Reductions in HIV-infection and transmission risks for i) adolescent non-mothers and ii) adolescent mothers.

Conclusions: Adolescent motherhood exacerbates vulnerabilities to HIV-infection and transmission. Leveraging social protection to increase access to sufficient food is likely to reduce HIV-risk pathways for adolescent girls and young women, with most numerous impacts for adolescent mothers.

Other new HIV prevention tools

EPC313

Potential end-user and community-level perspectives on new biomedical HIV prevention methods in Zimbabwe

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Background: Zimbabwe is considering new biomedical HIV prevention methods, such as the dapivirine vaginal ring (PrEP Ring) and injectable cabotegravir (CAB-LA), to increase client choice. We spoke with potential end-users and community influencers to gain a better understanding of their needs and concerns about these methods and to inform introduction and rollout efforts using lessons from experiences with oral PrEP.

Description: We conducted 7 group conversations with 71 purposively selected participants who provided verbal consent. Participants included 51 potential end-users (adolescent girls and young women (AGYW), adult women, and female sex workers and 20 community influencers (parents of AGYW, village health workers, and religious and political leaders). Thirty-seven of the potential end-users were current or former oral PrEP users. Detailed notes and audio recordings of the conversations were summarized using Microsoft Excel with common themes identified by participant type.

Lessons learned: Both potential end-users and community influencers thought women would use the ring and CAB-LA because they are discreet, long-acting, and do not require daily adherence. They also cited concerns about the ring, including its relatively lower efficacy, discomfort with a vaginally inserted product, and the possibility of it being felt or dislodged during sex, resulting in involuntary disclosure.

Nine end-users reported stopping oral PrEP due to stock-outs, negative attitudes from health care providers, COVID-19 restrictions and related clinic closures. Helpful strategies for effective oral PrEP use cited by potential end-users included:

Programmatic area	Strategy
Client follow-up	• Routine/periodic follow up by health care providers and lay cadres • Reminders such as phone calls or texts from providers • Support from peers and family (including PrEP champions)
Commodity supply	• Uninterrupted commodity supply
Service delivery (in the context of COVID-19 restrictions and related clinic closures)	• Community based service delivery models including outreach services or home visits for drug delivery.

Table.

Potential end-users preferred integrated PrEP and FP services with synchronized clinic visits for both services. AGYW mentioned non-traditional delivery channels, such as retail shops and key population-friendly spaces (e.g., youth drop-in centres), as potential options to access PrEP services.

Conclusions/Next steps: Potential end-users and community influencers in Zimbabwe expressed desire for expanded PrEP service delivery channels and communication highlighting the benefits of new prevention products. Provision of clear messages addressing community and potential end-user concerns on the products will help optimize uptake and effective use. Leveraging strategies for effective oral PrEP use will be key to successful implementation of new biomedical methods.

EPC314

Considerations for the delivery of new biomedical HIV prevention methods: Zimbabwe healthcare provider perspectives

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Background: Women in Zimbabwe continue to be disproportionately affected by HIV despite available prevention methods, including oral pre-exposure prophylaxis (PrEP). Expanded method choice has the potential to increase the overall uptake of PrEP, especially among adolescent girls and young women. As Zimbabwe considers adopting emerging PrEP methods such as the dapivirine vaginal ring (the ring) and injectable cabotegravir (CAB-LA), effective service delivery strategies need to be considered. We gathered perspectives from healthcare providers (HCPs) on implementation considerations that should be addressed to effectively deliver multiple biomedical HIV prevention methods in Zimbabwe.

Description: We conducted 20 in-person conversations with HCPs (12 oral PrEP and 8 family planning [FP] providers) using thematic discussion guides. The 20 HCPs were drawn from public, private, and church-based facilities, and pharmacies. Detailed notes and audio recordings of the conversations were consolidated into a Microsoft Excel table. Commonly occurring themes by HCP type were identified.

Lessons learned: All HCPs welcomed new PrEP methods because they expand options for clients and will likely increase uptake. Public sector providers were worried about the potential of increased workloads given current staffing shortages. Public providers suggested removing user fees and establishing user support groups for improved service uptake and continuity. Providers came up with implementation considerations around counseling, service integration, tools and support materials to aid implementation. Their suggestions are highlighted in the table below:

Implementation consideration	Main issues with some suggestions for improvement
Counseling	• PrEP providers mentioned that counseling around varying user requirements for multiple methods would be time-consuming. • FP providers reported familiarization with counseling on multiple FP methods as well as FP products with varied efficacy.
Service Integration	• All providers, particularly those from pharmacies and church-based facilities, welcomed integration of FP and HIV prevention services. • FP providers anticipated challenges with clients who opt to receive CAB-LA and the two-month contraceptive injections and suggested the synchronization of visits to reduce client burden. • Oral PrEP providers in larger public and private facilities suggested PrEP be offered across multiple departments to improve client flow and efficiency of service delivery.
Tools and support Materials	• Both PrEP and FP providers desired additional training on new products and follow-up systems, samples of products for demonstrations during counseling, and educational materials such as posters and pamphlets to support client decision-making.

Table.

Conclusions/Next steps: HCPs who participated in our conversations expressed a need for trainings, tools, and support materials to provide comprehensive counseling on multiple PrEP methods.
Ensuring adequate HCPs, particularly in public health facilities, will ensure effective service delivery of multiple PrEP methods. PrEP and FP services need to be integrated and delivered across multiple access points whilst ensuring the synchronization of visits for FP and PrEP products.

EPC315

Obstacles to using event-driven (2-1-1) PrEP: exploring the role of reported barriers on PrEP dosing choice in a national US sample

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Background: The CDC has released, inclusive of event-driven PrEP, or PrEP-211 – an effective dosing regimen, untested in US populations, outside of small trials. While individuals in the US may choose to use their daily PrEP prescription*on-demand*, this use is considered off-label in the US.
With the rollout of new dosing regimens of PrEP, it is imperative that we understand how current off-label users may make choices about their dosing regimen.

Methods: Our sample includes current PrEP users (n=875) from the US—both daily users and those who reported 211 use.
We conducted a bivariate analysis of individuals who regimen choice (daily vs 211), including demographic, provider dosing recommendation, and reported barriers experienced since initiation.
We built univariate and adjusted logistic models predicting how self-reported barriers predicted PrEP-211 choice among individuals who self-selected into PrEP-211 (i.e., chose 211 despite medical provider recommendation for daily).

Results: Our overall sample had 875 PrEP users, about 10% (*n*=89) were following 211 dosing. PrEP-211 users were more concentrated in the northeast (27% vs. 15.4% daily users) and selected this PrEP dosing regardless of their provider recommendation for daily PrEP (62% PrEP 211 vs. 99.6% daily users).
Additionally, PrEP-211 users were significantly more likely to report experiencing side effects and adherence issues (See Table 1).
Table 2 provides our univariate and adjusted regression models predicting choice of PrEP-211 among users whose providers recommended daily PrEP (*n*=838, PrEP 211=6.5%).
Among self-selection PrEP-211 users reporting adherence issues, the odds of PrEP-211 choice were 2 times that of choosing daily PrEP (aOR=2.14 95%CI 1.18-3.92).

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Table 1. Patient demographics, provider dosing counseling, and reported barriers since initiation among current daily and 211 PrEP users from across the US

	n		Daily		211		χ² or Fisher's exact test**	p
	875		786	89.8%	89	10.2%		
Age Group							1.682	0.64
24 or less	182	20.8%	159	20.2%	23	25.8%		
25-29	249	28.5%	224	28.5%	25	28.1%		
30-39	288	32.9%	262	33.3%	26	29.2%		
40+	156	17.8%	141	17.9%	15	16.9%		
Race/Ethnicity							1.99	0.74
White	483	55.2%	436	55.5%	47	52.8%		
Black	71	8.1%	65	8.3%	6	6.7%		
Latino	204	23.3%	183	23.3%	21	23.6%		
Asian and/or Pacific Islander	50	5.7%	45	5.7%	5	5.6%		
Other/Multiracial	67	7.7%	57	7.3%	10	11.2%		
Gender							0.01**	0.5
Cisgender men	864	98.7%	776	98.7%	88	98.9%		
Trans- and/or non-binary person	11	1.3%	10	1.3%	1	1.1%		
Geographic Location							9.1	0.03
Northeast	145	16.6%	121	15.4%	24	27.0%		
Midwest	136	15.5%	123	15.6%	13	14.6%		
South	388	44.3%	358	45.5%	30	33.7%		
West*	184	21.0%	164	20.9%	22	24.7%		
What dosing did your provider recommended for you							< 0.0001**	< 0.0001
Daily	838	95.8%	783	99.6%	55	61.8%		
PrEP 211	36	4.1%	3	0.4%	33	37.1%		
We did not discuss	1	0.1%	—		—			
Reported barrier experienced since initiation								
Side effects	69	7.9%	56	7.1%	13	14.6%	0.01**	0.02
Adherence	182	20.8%	154	19.6%	28	31.5%	0.004	0.01
Paying for PrEP	56	6.4%	49	6.2%	7	7.9%	0.14**	0.49
Following-up and receiving care	50	5.7%	42	5.3%	8	9.0%	0.08**	0.15
Health insurance issues	78	8.9%	67	8.5%	11	12.4%	0.07**	0.23

* Includes US territories
** Reported Fisher's Exact Test

Table 2. Logistic regression models predicting odds of PrEP 211 choice among self-selection participants who reported barriers since initiation (n = 838 PrEP 211 = 55 or 6.5%)

Models	OR	95% CI	aOR*	95% CI
Model 1 and 1a: Side effects	1.60	0.86 - 2.95	1.48	0.59 - 3.68
Model 2 and 2a: Adherence	2.16	1.20 - 3.86	2.14	1.18 - 3.92
Model 3 and 3a: Paying for PrEP	1.5	0.57 - 3.93	1.63	0.61 - 4.36
Model 4 and 4a: Following-up and receiving care	1.81	0.69 - 4.72	1.84	0.68 - 4.94
Model 5 and 5a: Health insurance issues	1.85	0.84 - 4.08	1.78	0.79 - 4.00

*Adjusted models are controlled for age groups, gender, geographic location and race/ethnicity

Conclusions: Our study shows that, for participants who reported any adherence issue since initiation, PrEP-211 dosing choice was significantly more likely than daily dosing. This was done despite a provider recommendation, which shows that considering the patient feedback is key to an effective rollout of new PrEP regimens.

EPC316
A qualitative inquiry on potential barriers to provision and use of the PrEP ring in Kenya

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Background: Although Kenya has made great strides in controlling the HIV epidemic among some populations, women and key populations such as female sex workers (FSWs) continue to be disproportionately affected. New long-acting HIV prevention methods in the pipeline, such as the dapivirine vaginal ring (PrEP ring), may help reach these key communities. LVCT Health engaged stakeholders to understand potential barriers to the provision and use of the PrEP ring.

Description: From May to July 2021, we held one-on-one and group dialogues with HIV prevention service clients (18 young women aged 18-29 years and 17 FSWs aged 21-42 years) and 22 HIV and Family Planning (FP) healthcare providers (HCPs) selected from LVCT Health programs or affiliated public facilities in the Nairobi and Lake regions. Conversations were audio-recorded and thematic analysis was conducted using a two-step rapid analysis process.

Lessons learned: Young women and FSWs described misconceptions about the PrEP ring, including worries that it may fall out, get stuck, or disappear into the body. Young women predicted difficulties in self-insertion and removal of the ring and wondered whether use during sexual intercourse could be discreet. FSWs and HCPs were concerned about the ring's lower efficacy compared to that of oral PrEP. HIV prevention providers were also worried that some women may face challenges practicing good hygiene during insertion and may get infections as a result. FP health providers expressed misconceptions, including that the PrEP ring should be contraindicated for women with multiple sexual partners to reduce the risk of recurrent sexually transmitted infections. They also had misconceptions about side effects, fearing that ring use would cause a long-term increase in vaginal discharge, which would negatively affect the sexual activities health of users.

Conclusions/Next steps: PrEP ring education efforts in Kenya should proactively address multiple reported misconceptions and incorporate product demonstrations of this important addition to the HIV prevention methods basket. Early education of HCPs on the new method and training in practical counseling skills will be key to community understanding and acceptance of the PrEP ring and will enable providers to support users to make informed choices based on their needs and lifestyles.

EPC317
Attitudes and Beliefs regarding an HIV preventive vaccine among sexual and gender minorities in Brazil

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Background: Brazilians have a long-term history of high acceptability of vaccines including, more recently, COVID-19 vaccine. However, fake news, science mistrust, and conspiracy beliefs have emerged globally in recent years, including in Brazil. We explored attitudes and beliefs regarding HIV prevention vaccines among Brazilian sexual and gender minorities (SGM).

Methods: Cross-sectional online survey (July-August 2021) among SGM aged ≥18 years, self-reported HIV negative/unknown status, living in Brazil, and recruited on Grindr, Hornet and Facebook/Instagram. We administered six scales related to HIV knowledge, vaccine-related issues (confidence, conspiracy beliefs, altruism, and social concern), and risk compensation.

We used a 4-point Likert scale to assess willingness to use an HIV preventive vaccine with the question: "Would you use a vaccine to prevent HIV?". Response options were dichotomized: yes = "highly likely" and no = all other re-

	Willingness to use HIV preventive vaccine			
	Total N=3422	Yes N=2634	No N=798	p-value
HIV knowledge scale (12-items; total score rage:0-12; mean, standard deviation)	11.1 (1.2)	11.2 (1.1)	10.9 (1.4)	<.001
Vaccine confidence Index (yes; n, %)				
1-Overall, I think vaccines are important for adults to have.	3359 (97.9)	2589 (98.3)	770 (96.5)	0.002
2-Overall, I think vaccines are safe.	3315 (96.6)	2581 (98.0)	734 (92.0)	<.001
3-Overall, I think vaccines are effective.	3342 (97.4)	2592 (98.4)	750 (94.0)	<.001
4-Vaccines are compatible with my religious beliefs.	3133 (91.3)	2440 (92.6)	693 (86.8)	<.001
Vaccine conspiracy beliefs (scores range 1-7 per item; mean, standard deviation)				
1-Vaccine safety data is often fabricated.	1.8 (1.3)	1.6 (1.2)	2.3 (1.5)	<.001
2-Immunizing children is harmful and this fact is covered up.	1.5 (0.9)	1.4 (0.8)	1.8 (1.1)	<.001
3-Pharmaceutical companies cover up the dangers of vaccines.	2.2 (1.5)	2.0 (1.4)	2.7 (1.6)	<.001
4-People are deceived about vaccine efficacy.	1.9 (1.3)	1.7 (1.2)	2.4 (1.5)	<.001
5-Vaccine efficacy data is often fabricated.	1.7 (1.1)	1.5 (0.9)	2.1 (1.3)	<.001
6-People are deceived about vaccine safety.	1.8 (1.2)	1.6 (1.1)	2.3 (1.4)	<.001
7-The government is trying to cover up the link between vaccines and autism.	1.9 (1.3)	1.8 (1.2)	2.4 (1.5)	<.001
Total Composite Mean Score (standard deviation)	1.8 (1.0)	1.7 (0.9)	2.3 (1.2)	<.001
Vaccine Altruism (scores range 1-4 per item; mean, standard deviation)				
1-I would get an HIV vaccine even if I thought the vaccine might not protect me 100% against HIV infection.	3.3 (1.0)	3.5 (0.9)	2.6 (1.0)	<.001
2-I would get an HIV vaccine that would prevent me from being able to infect other people with HIV, even if the vaccine might not protect me against HIV.	3.1 (1.0)	3.3 (1.0)	2.6 (1.0)	<.001
3- I would be one of the first people to get an HIV vaccine.	3.2 (1.0)	3.4 (0.9)	2.5 (0.9)	<.001
4- My willingness to get an HIV vaccine is important for the good of all people.	3.5 (0.9)	3.7 (0.7)	2.9 (1.0)	<.001
Total Composite Mean Score (standard deviation)	3.3 (0.8)	3.5 (0.7)	2.6 (0.8)	<.001
Vaccine Social Concern (scores range 1-4 per item; mean, standard deviation)				
1- I would be concerned about how my family might react to my getting an HIV vaccine.	3.2 (0.9)	3.3 (0.9)	2.9 (0.9)	<.001
2-I would be concerned about how my sexual partner or partners might react to my getting an HIV vaccine.	3.3 (0.9)	3.4 (0.8)	3.0 (0.9)	<.001
3-I would be concerned about confidentiality (others finding out) if I received an HIV vaccine.	3.1 (1.0)	3.2 (1.0)	2.8 (0.9)	<.001
4-I would be concerned that getting an HIV vaccine would affect my ability to get health insurance.	3.0 (1.0)	3.1 (1.0)	2.7 (0.9)	<.001
5-I would be concerned that getting an HIV vaccine would lead to discrimination against me.	3.2 (0.9)	3.3 (0.9)	2.8 (0.9)	<.001
6-It concerns me that if I were to get an HIV vaccine, the HIV antibody test might show me as being HIV- positive.	2.5 (1.0)	2.6 (1.0)	2.2 (0.9)	<.001
Total Composite Mean Score (standard deviation)	3.1 (0.7)	3.2 (0.7)	2.7 (0.6)	<.001
Risk compensation (scores range 1-4 per item; mean, standard deviation)				
1-Getting an AIDS vaccine means you can have sex without using condoms.	3.4 (0.7)	3.4 (0.7)	3.2 (0.7)	<.001
2-An AIDS vaccine will make safer sex less important.	3.2 (0.8)	3.3 (0.8)	3.1 (0.8)	<.001
3-If I get an AIDS vaccine, I would be more likely to have sex without using a condom.	2.8 (0.9)	2.8 (0.9)	2.8 (0.8)	0.45
4-HIV/AIDS will no longer be a threat when there is an AIDS vaccine.	2.6 (0.9)	2.6 (0.9)	2.6 (0.8)	0.91
5-Everyone who gets an AIDS vaccine will be protected against HIV/AIDS.	2.4 (0.8)	2.4 (0.8)	2.5 (0.7)	<.001
Total Composite Mean Score (standard deviation)	2.9 (0.6)	2.9 (0.6)	2.8 (0.5)	0.022

EPC317 Table.

sponses. We compared scales scores and participant's characteristics according to the willingness to use HIV prevention vaccine (yes vs. no) using chi-square or t-tests, as applicable.

Results: Among 3432 SGM included, median age was 33 years [IQR:27-41], 455 (13.3%) aged 18-24 years, 3351 (97.6%) cisgender men, 1270 (37.0%) Black/Mixed-Black, 2407(70.1%) >secondary education, 2314(67.4%) from Southeast region, and 1477(45.2%) were Christian. Most (2774; 80.8%) reported awareness of HIV vaccines under research. A total of 2634(77.0%) reported willingness to use HIV preventive vaccine. Most respondents reported confidence in vaccines with higher scores among those willing to use an HIV prevention vaccine (Table).

Higher scores for HIV Knowledge, vaccine altruism, vaccine social concern, and risk compensation scales were observed among those willing to use it vs. not. Scores for vaccine conspiracy beliefs items were low overall, but lower among those willing to use an HIV prevention vaccine.

Conclusions: SGM showed positive attitudes and beliefs regarding an HIV prevention vaccine. Willingness to use HIV prevention vaccine was very high considering that no HIV vaccine is currently available. Continuous educational campaigns are essential to avoid mistrust in vaccines.

EPC318

Acceptability of broadly neutralizing antibodies (bNAbs) for HIV prevention: a qualitative investigation among Adolescent Girls and Young Women (AGYW) in India

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Background: Broadly neutralizing monoclonal antibodies (bNAbs) have fuelled optimism for a new HIV prevention product. We conducted a qualitative study among a vulnerable and potential end-user population – adolescent girls and young women (AGYW) – to understand their preferences for product attributes and contextual/behavioral factors that might influence the uptake of bNAbs.

Methods: In 2021, an exploratory qualitative study (6 focus groups and 9 in-depth interviews) was conducted among AGYW in three Indian metro cities. Data were explored using framework analysis, guided by the Theoretical Framework of Acceptability.

Results: Participants' (n=46) mean age was 21 years; the majority had completed higher-secondary education, and two-thirds were single. None had heard of bNAbs pri-

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or to this study; however, once explained, many expressed interest in using it. While most AGYW considered bNAbs as appropriate for sex workers, they also felt it could benefit at-risk AGYW from contracting HIV. Key preferred product attributes included high efficacy (>90%), low cost, no side-effects, quarterly administration of intramuscular injections (on the arm by a healthcare provider).

Some expressed concerns about administering bNAbs injection during pregnancy and early infancy, fearing that it could harm the fetus and infant. Most preferred government hospitals to receive bNAbs as they thought it would be free there.

However, given the lack of freedom of mobility for AGYW, some preferred obtaining bNAbs from nearby private clinics or NGOs. Most single women feared that their character would be questioned for seeking HIV prevention products.

To avoid negative consequences, most single AGYW opined that they would not disclose their decision to take bNAbs to their family/partners; however, married women wanted to inform their husbands to avoid relationship discord.

Conclusions: To facilitate uptake of bNAbs among AGYW, as part of combination HIV prevention, it is essential to provide comprehensive and accurate information about efficacy, safety (especially for fetus/infants), and mode and site of administration.

At the social-structural level, engagement with the families of AGYW and communities is essential to challenge existing social norms on women's sexual life and reduce HIV-related stigma, which in turn can facilitate uptake of bNAbs among at-risk AGYW.

EPC319

Lactobacillus spp interaction with neat and formulated Griffithsin, a candidate for topical HIV prevention

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Background: The Population Council is developing Griffithsin (GRFT), a non-antiretroviral lectin with outstanding anti-HIV activity, as topical PrEP for on-demand use or sustained delivery. Phase 1 trial of GRFT formulated in a carrageenan vaginal gel demonstrated that the gel was safe and GRFT released in vaginal fluids was active against HIV. Previous studies reported high GRFT binding in cervico-vaginal fluids from women with *Lactobacillus*-predominant flora, which could reduce GRFT availability and impact activity. Here we evaluated (i) effect of neat and formulated GRFT on *Lactobacillus* viability and (ii) effect of *Lactobacillus* on GRFT concentrations and anti-HIV activity.

Methods: *L. jensenii* and *L. crispatus* were exposed to neat GRFT for 30 minutes and 24 hours and to diluted gels (starting at 1:100 dilution) for 30 minutes at 37°C and 5% CO_2. The viability of *Lactobacillus spp* was determined based on colony-forming unit (CFU) using methodology that allows to detect 1 Log10 decrease in CFU. GRFT concentrations after incubation with *L. jensenii* were quantified using UPLC-MS. Anti-HIV-1_{BaL} activity of GRFT following incubation with *L. jensenii and L. crispatus* was tested in TZM-bl cells.

Results: GRFT at 100 ng/ml did not decrease the viability of *L. jensenii* and *L. crispatus*. Similarly, incubation with diluted GRFT/carrageenan gels did not decrease *L. jensenii* viability. Although incubation with *L. jensenii* led to only limited decrease in GRFT concentrations, anti-HIV activity of GRFT in the presence of *L. jensenii* and *L. crispatus* supernatants was almost completely blocked ($p<0.05$).

Conclusions: Our data indicate that *Lactobacillus* impacts GRFT activity without significantly changing GRFT concentrations. Lack of GRFT and GRFT/carrageenan gel toxicity in *Lactobacillus spp* confirms the safety of this lectin. These data support further development of GRFT-containing formulations for topical PrEP and emphasize the need to study interactions between microbiota and GRFT.

EPC320

Identification of viral mutations that confer cross resistance to VRC01 antibody in HIV-1 subtype C viruses

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Background: Human immunodeficiency virus (HIV-1) subtype C remains the cause of most of the new HIV infections worldwide. South Africa being the most burdened region, is one of the participating countries in the Antibody Mediated Prevention (AMP) studies investigating broadly

neutralizing antibody (bNAb) VRC01 for HIV prevention. However, the use of this bNAb is hindered by emerging resistant mutations that cause neutralization escape.
Methods: The study focused on the features that are known by experimental evidence and machine learning predictions to contribute to VRC01 binding. The study included seven HIV-1 subtype C envelope sequences from breakthrough infections during VRC01 therapy, from which seven putative escape mutations were identified (D99, K279, E279, E455, W456, T471, and Q471) by analyzing them using information from HIV LANL database.
The role of the identified sites was investigated by reverting them to sensitive residues by site-directed mutagenesis. All wildtypes and their respective mutant pseudoviruses were assessed for neutralization sensitivity towards VRC01 antibody and other related CD4 binding site (CD4bs) bNAbs (VRC07-523LS and 3BNC117) with the use of the TZM-bl neutralization assay.
Results: Four envelopes in which we introduced a single mutation (H0902_K279D, V0217_E279D, V1298_E455T, and V1255_D99N) became sensitive to VRC01 and 3BNC117 compared to their respective wildtypes. They were also sensitive towards VRC07-523LS except for H0902_K279D. Interestingly the single mutant, V1298_E455T was completely sensitive to VRC01 although predicted by machine learning (Q455) to cause resistance.
However, H1798 envelope with the same mutation (E455T) remained resistant. Similarly, single mutation (V1255_D99N) caused partial sensitivity to VRC01, while mutant V1298_D99N was resistant. Neutralization escape for each mutant may be mediated by a different pathway and dependent upon the gp160 background sequence.
Conclusions: The V1298_455 mutation warrants further investigation as this is the first report on E455T to show VRC01 sensitivity in HIV-1 subtype C isolates.
Overall, our data supports the concept that some HIV-1 subtype C isolates change critical CD4 binding features to escape VRC01, some causing cross-resistance to other CD4 binding antibodies. The data also promote continued efforts of characterizing VRC01 resistant sites in preparation for future passive immunity trials that include CD4bs antibodies.

Measuring and enhancing retention and adherence in HIV prevention programmes

EPC321

Retention of clients on daily oral HIV pre-exposure prophylaxis in Vietnam

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Background: Vietnam launched HIV pre-exposure prophylaxis (PrEP) in 2017 to prevent HIV acquisition among high-risk populations. Daily and event-driven PrEP are only effective when used in alignment with clinical guidelines. As most clients in Vietnam are on daily PrEP, they need to adhere to a daily pill. However, analysis of PrEP retention data is limited.
We aimed to evaluate PrEP retention among daily PrEP clients in Ho Chi Minh City, Tay Ninh, and Tien Giang provinces.
Methods: Retention among all new and existing PrEP clients was assessed between October 2020 and September 2021. Kaplan-Meier was used to analyze time from PrEP enrollment to discontinuation stratified by sex, province, age group, and key or priority population. Multivariable Cox regression was used to estimate a hazard ratio (HR) and associations between PrEP retention and other covariates.
Results: Between October 2020 and September 2021, there were 791 clients in the Meeting Targets and Maintaining Epidemic Control (EpiC) PrEP program in three provinces: Tien Giang (326, 41.2%), Tay Ninh (282, 35.7%), and Ho Chi Minh City (183, 23.1%). Most clients were male (665, 84.1%). Men who have sex with men were the largest group of clients (539, 68.1%), followed by negative partners in serodiscordant couples (228, 28.8%). The most common reasons for discontinuation were loss to follow-up (259, 51.9%) and transfers (123, 24.7%).
Median retention was 120 days. Retention rates at three, six, and 12 months were 67.0%, 30.3%, and 8.3%, respectively. Female clients were retained longer than male clients (HR=0.6, $p<0.005$), regardless of population group. In the multivariable model, younger age was associated with PrEP discontinuation, and male clients from Tay Ninh province tended to have higher PrEP discontinuation rates than those from Tien Giang (HR=0.5, $p<0.001$) and Ho Chi Minh City (HR = 0.4, $p<0.001$).
Conclusions: More effort is needed to understand the underlying reasons for discontinuation, especially among males from different provinces and age groups. Targeted interventions designed for men and younger individuals, and tailored to provincial contexts, are needed to address barriers to PrEP retention.

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Acceptability of an mHealth intervention to promote the use of pre-exposure prophylaxis among individuals at increased risk of HIV. The case of the *Jichunge* smartphone app in Dar es Salaam, Tanzania

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Background: Reducing HIV infection rates among at-risk populations is more likely to contribute to achieving the 2030 goal of ending the epidemic.Countries in sub-Saharan Africa, including Tanzania, have started rolling out pre-exposure prophylaxis (PrEP), but adherence to the daily pills poses a challenge. Evidence indicates that mHealth is a promising solution for promoting uptake, retention, and adherence to PrEP. However, evaluation data of its implementation in Africa settings are scarce. This study aimed at assessing acceptability and initial use of mHealth in promoting PrEP use among female sex workers (FSW) and men who have sex with men (MSM) in Dar es Salaam, Tanzania.

Methods: FSW and MSM residing in Dar es Salaam who owned smartphones and were eligible for PrEP were recruited using respondent-driven sampling and provided with the Jichunge, a smartphone-based application designed to promote adherence to PrEP and retention in PrEP services. The app offers users information about HIV and PrEP, reminds them to take their daily pill, allows them to consult a doctor and peer educators, and includes an online forum where may engage in discussions with other PrEP users.

Results: A total of 885 participants (470 FSW and 415 MSM) with a median age of 26 and 21 years, respectively, were recruited. Most (559; 63.2%) opened the app and registered pill-taking (523; 59.1%) at least once. About a third of the participants accessed the app's PrEP and HIV editorial contents (348; 39.3%) and participated in the discussion forum (277; 31.3%). A total of 172(19.4%) consulted a doctor or peer educator via the app. FSW were significantly more likely than MSM to open the app (FSW:74%; MSM: 50.8%; p<0.001), register daily pill use (FSW:71.7%; MSM: 44.8%; p<0.001), access editorial contents (FSW:47.0%; MSM: 30.6%; p<0.001), and engage in the discussion forum (FSW:34.3%; MSM: 27.9%; p=0.044). Online consultation was not statistically significant different between the two populations (FSW:20.1%; MSM: 18.1%; p=0.336).

Conclusions: The use of different services of Jichunge was significantly high. This suggests that mHealth is acceptable and can be a valuable platform to promote the use of PrEP and other services among HIV at-risk populations in Tanzania.

EPC323

"I was scared dating... who would take me with my status?" Living with HIV in the UTT era in Johannesburg, South Africa

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Background: South Africa rolled out Universal Test-and-Treat (UTT) in 2016, extending treatment eligibility to all people living with HIV (PLHIV). We sought to understand how the experience of living with HIV may have changed as the HIV epidemic matured in South Africa, particularly under the expanded treatment access in the UTT era.

Methods: As part of an ongoing randomized controlled trial, in May 2021 we conducted in-depth interviews (N = 27) with adult (≥18 years) PLHIV referred by HIV counsellors at three peri-urban primary healthcare clinics. We also conducted three focus group discussions (N = 27) with PLHIV recruited by snowball sampling through civil society organisations in Johannesburg, South Africa. Interviews and focus group discussions were audio-recorded, transcribed verbatim, translated to English, and analysed thematically.

Results: Participants reported less fear of death and ill health as antiretroviral therapy (ART) was easily and widely accessible. However, they reported feeling guilt and shame about HIV as a sexually transmitted disease. The mode of HIV transmission also elicited some expectation of stigma and judgement as some participants attributed their HIV status to their own reckless behaviour. Others expressed anger and blamed their partner for their status, leading to strong motivation to not become transmitters themselves.

However, most participants lacked knowledge about treatment-as-prevention and feared transmitting HIV to others even after starting ART. ART adherence behaviour was motivated by their own health and a sense of responsibility to be present for loved ones. Despite the normalization of HIV as a chronic condition, the fear of re-

jection by potential partners in response to status disclosure persists. Fear of disclosure was also a barrier to ART adherence, as some PLHIV reported hiding or not taking their medication in front of other people. They considered whether to risk rejection, avoid relationships, or avoid disclosure and felt they had limited options.

Conclusions: Despite normalization of HIV, stigma persists in the domain of sexual partnerships related to the perception that PLHIV are likely to transmit HIV. Disseminating information on treatment-as-prevention could reduce the psychological burdens of HIV including self/internalized stigma, encourage disclosure, and remove barriers to HIV testing and treatment adherence.

EPC324

Geographic disparities in HIV PrEP pharmacy reversals, a novel observational data indicator of PrEP non-adherence

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Background: HIV PrEP adherence is suboptimal in many populations across the world, affecting the impact of this efficacious prevention intervention. Furthermore, common measures of PrEP adherence in observational studies are often expensive, infeasible, or burdensome to collect. We recently introduced PrEP reversals, or when patients fail to pick up PrEP prescriptions, as a novel national population-based measure of HIV PrEP non-adherence, and showed their association with HIV rates. In the current study, we assess reversal and abandonment across four geographic characteristics.

Methods: We used a national claims database covering up to 75% of all HIV PrEP claims across the United States (2015 to 2019). After using a multi-step process to identify new PrEP claims, we calculated the percentage of patients with an HIV PrEP insurer-approved index prescription claim that was reversed (patient did not pick it up and pharmacy withdrew the claim) or abandoned (reversed and still not picked up after 12 months), across ZIP codes classified by: US Census region; Rural-Urban Community Area Codes; low (≤10th percentile) or high (>10th percentile) Area Deprivation Index; and 2019 Ending the HIV Epidemic (EHE) jurisdiction, a US policy initiative targeting areas with high or rising HIV rates.

Results: Across 42,796 newly-prescribed PrEP patients, reversals were significantly (p≤0.001) higher among patients in the Midwest and South (21%) than the Northeast and West (18%); rural (27%) than urban (19%); high deprivation ZIPs (20%) than low (17%); and non-EHE (23%) than EHE (17%) ZIPs (Figure 1). Results for abandonment showed similar patterns.

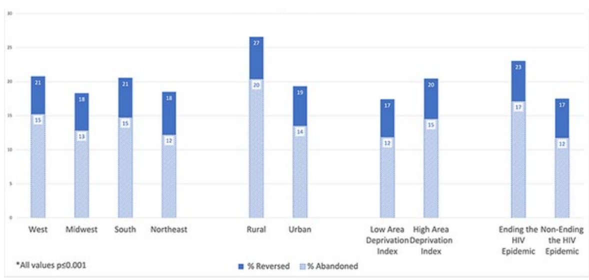

*Figure 1. Geographic disparities in the percentage of PrEP reversals and abandonments in the US population 2016-2019**

Conclusions: The geography of reversals quantifies where PrEP is likely not to make it into the homes of new patients and informs where to invest resources to prevent them. Our results establish baseline values for tracking reversal trends over time or in response to HIV prevention initiatives, and offer a metric for international PrEP surveillance.

EPC325

Putting 2+1+1 into practice: MSM PrEP users' knowledge about safely starting and stopping PrEP in Belgium

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Background: Achieving prevention-effective adherence to pre-exposure prophylaxis (PrEP) requires aligning PrEP use with actual risk-taking, which may change according to intra-, inter-personal and contextual variables. Men who have sex with men (MSM) can safely start and stop PrEP use by respecting the 2+1+1 rule, which entails two pills before having sex and two pill-days after the last sexual act before stopping.

The study's objective was to assess MSM PrEP users' self-perceived and actual knowledge to safely start and stop with 2+1+1 oral PrEP in Belgium.

Methods: We analyzed data from an online survey among 206 MSM PrEP users being male at birth in Belgium (September 2020 – June 2021). We asked: "How do you assess your own knowledge about starting and stopping PrEP safely?" to asses self-perceived knowledge. Actual knowledge was evaluated through two hypothetical scenarios,

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respectively safely starting and stopping. Participants who failed to answer both safe-start-and-stop scenarios correctly were classified as PrEP users with 'insufficient knowledge'. Using bivariate logistic regression we examined associations between sociodemographic and sexual behavioral factors, PrEP use, and insufficient knowledge on safely starting and stopping PrEP.

Results: The majority of the participants (85.0%) perceived their knowledge of safely starting and stopping with PrEP as 'very good'. The proportion correctly indicating how to safely start was 82.0%, whereas 73.3% for safely stopping. Overall, 128 (62.1%) correctly indicated how to safely start and stop. PrEP users who had stopped PrEP use [OR=2.54, 95%CI (1.04-6.20)] or who had been taking daily PrEP [OR=2.13, 95%CI (1.15-3.99)] in the last 3 months were more likely to have insufficient knowledge on safely starting and stopping compared with on-demand PrEP users.

Those not considering their knowledge as 'very good' were also more likely to have insufficient knowledge on safely starting and stopping [OR=2.27, 95%CI (1.05-4.98)].

Conclusions: Although self-perceived knowledge was high, an important proportion failed to correctly answer two hypothetical scenarios on safely starting and stopping PrEP. Emphasis on adherence counselling, including safely starting and stopping is needed, regardless of the PrEP regimen used as MSM PrEP users may experience alternating periods of use and may switch between PrEP regimens.

EPC326

Association of patient Out-of-Pocket costs with HIV Pre-Exposure Prophylaxis (PrEP) pharmacy reversals, a novel measure of PrEP non-adherence, and abandonments

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Background: Out-of-pocket (OOP) costs can be a key barrier for patients to use HIV PrEP. Our prior study introduced PrEP prescription reversals, or when patients fail to pick up PrEP from the pharmacy, as a novel measure of PrEP non-adherence. HIV cases were three times higher among patients who never picked up their prescription (reversed and abandoned) compared to patients who picked it up. In this study, we examined the association of OOP costs with PrEP reversals and abandonment.

Methods: We analyzed claims from a national database with up to 75% of all HIV PrEP claims in theUS (2015-2019). After using a multi-step process to identify new PrEP claims, we examined whether individuals reversed (i.e. patient did not pick up insurance-approved prescription and pharmacy withdrew the claim) or abandoned (not picked up within 365 days) their initial PrEP prescription. Multivariable regressions estimated the odds of reversal and abandonment associated with varying PrEP OOP cost relative to $0 OOP cost.

Results: About 24% of the sample (N=66,819) faced no OOP costs; the remainder faced OOP costs ranging from $>0-10 (35%) to >$500 (8%). While the overall reversal and abandonment rates were 19% and 13%, respectively, rates were higher in greater OOP cost categories, abandonment was lowest (5.5%) when OOP was $0, but double (11%) with OOP $>0-10, and 44% with OOP >$500.

These patterns remained after controlling for sociodemographic, insurance, and clinical factors: with over double the odds of abandonment with OOP $>0-10 and 18 times the odds with OOP >$500, compared with $0 (Figure 1).

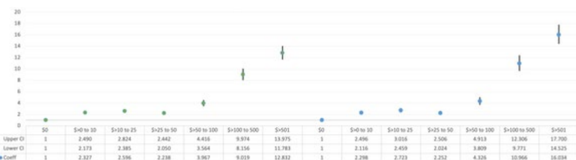

Figure 1. Adjusted odds of reversed and abandoned HIV PrEP prescriptions in the US 2015-2019 by patient out-of-pocket cost.

Conclusions: Even a small OOP cost of ≤$10 was associated with double the odds that a patient will abandon their first PrEP prescription. These results, combined with our prior study, highlight the importance of eliminating PrEP OOP costs to achieve the goal of ending the HIV epidemic.

EPC327

Understanding and addressing barriers to pre-exposure prophylaxis (PrEP) continuation among vulnerable adolescent girls and young women in Namibia

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Background: Understanding the barriers to PrEP continuation is essential to designing programs that meet clients' needs. There is limited information about the factors hindering PrEP continuation among adolescent girls and young women (AGYW) in Namibia despite a low continuation rate (29%) at a one-month follow-up.

This study examines reasons for and outcomes of PrEP discontinuation among AGYW receiving DREAMS services under ACHIEVE, a USAID/PEPFAR-funded project in northern Namibia.

Methods: The retrospective analysis included programmatic data for AGYW aged 15-24 years from April–to September 2021 who missed follow-up appointments and/or discontinued PrEP in four semi-urban health facilities in Rundu district. Nurses and PrEP ambassadors are responsible for contacting PrEP clients by phone after missing one-month follow-up PrEP appointments. Results are recorded on a standardized client tracing form.

During the study period, 1,010 clients newly started PrEP; of those, 614 (61%) missed the one-month follow-up visit, with 376 (age-disaggregated: 138 [15-19 years] and 238 [20-24 years]) followed up. Descriptive analysis was used to present the results.

Results: Sixty percent (225) of 376 AGYW responded, while 15% (55) were not reachable or the phone number was wrong, and 25% (96) refused to respond. Of the 225 respondents, 75 were aged 15-19 and 150 were 20-24 years. The distribution of responses by primary reason for missing appointments was: PrEP no longer needed, 24% (55); forgot the appointment date, 20% (46); traveled away from home, 20% (46); felt unwell after taking PrEP, 13% (29); lack of money to support transport to a facility, 6% (13); lack of food, 5% (12); unclear PrEP instructions, 4% (8); and lack of family/community support, 3% (7). Variation of results by age was not statistically significant.

After clients were contacted, ACHIEVE continued strengthening the provision of PrEP education and counseling. As a result, 27% (60) of the 225 AGYW restarted PrEP, 68% (152) stopped using PrEP though still at risk, and 6% (13) considered themselves no longer at HIV risk.

Conclusions: Understanding the reasons for the discontinuation of PrEP is critical to designing/improving programs to meet clients' needs and to continue addressing HIV risk among vulnerable AGYW.

EPC328

Linking PLHIV lost to follow-up back to care in 5 regions of the Russian Federation

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Background: According to data from the Russian Federation governmental analytics center, the budget for HIV prevention for the year 2020 was insignificant. Consequently, tertiary prevention, that is aimed at improving the quality of PLHIV lives, is deteriorating.

Therefore it is crucial to implement projects directed at retaining PLWH in systems of care provision. In 2020-2023, the E.V.A. Association is implementing a project to initiate/restart LTFU PLHIV on ART with local non-profit organizations in 5 regions of Russia. The main project goal is to find 6,392 PLWH, who are lost to follow-up at AIDS Centers, make contact with 3,388 (53%) of them and retain 3,049 (90%) PLWH in systems of care.

Description: The project focuses on searching for patients lost to follow-up for more than 28 days; documenting their status, including those who have died or relocated; and providing them with motivational counseling, peer navigation and escorting services to initiate or resume ART, as well as retention counselling.

The key groups include people who use drugs, sex workers, men who have sex with men, people who have been incarcerated, migrants, youth (10-24), and pregnant women.

Lessons learned: In implementing the first year of field work from November 2020 through November 2021, regional differences were noted in accompaning LTFU PLWH. The regions where the "Green Corridor" works well show great results in project clients starting/restarting ART. The Green corridor is a system which includes peer navigation, out of order appointments and accelerated clinical examination.

There are also other factors which impact accompaniment and retention of LTFU PLWH. For example, training of medical workers, social and psychological support, mutual support groups, motivational kits, assistance with transport, and ART home delivery. An analysis of regional reports and expert visits confirms the importance of these practices.

Conclusions/Next steps: The "Green Corridor", training of medical workers, social and psychological support, mutual support groups, motivational kits, assistance with transport, and ART home delivery allow for more patients with HIV, who have dropped treatment at the AIDS Center, to be retained in systems of care. It is important to develop similar practices in other regions of Russia.

EPC329

Improving viral load testing uptake for HIV infected cohort on antiretroviral therapy (ART) at a rural setting: lessons learnt from Neno district, Malawi

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Background: To achieve the goal of ending the HIV pandemic by 2030, virological monitoring for HIV suppression is required. Despite recommendation of regular viral load (VL) monitoring, viral load testing uptake still stands to

be a challenge in many resource-limited settings such as Neno District in rural Malawi. We implemented a quality improvement project to increase uptake of viral load testing in a large HIV cohort in 2019.

Methods: A Plan-Do-Study-Act (PDSA) model of quality improvement was used with a goal of 50% improvement in the proportion of HIV patients with an up to date viral load per national guidelines. A root-cause analysis was done through observation using a fishbone graph. A multidisciplinary group approach was utilized to identify bottlenecks of staff non-compliance to the VL testing schedule, Electronic Medical Record (EMR) system failure on reminders of VL, and lack of feedback system on rejected blood samples.

We implemented 3 PDSA cycles between April 2019 and August 2019 with a process-centered approach that identified suitable interventions including:

1. Orienting staff team on new VL flow process and protocol;
2. Re-writing of the logic for generating patient appointment and VL reminder lists in EMR system; and,
3. Introducing a new VL rejection flow process that emphasized sample re-collection if the initial sample was rejected to ensure VL completion.

Results: Prior to the intervention in April 2019, an open cohort of 8210 patients was active eligible for VL testing. However, only 2216 (27.72%) had an up to date VL per national guidelines. After three PDSA cycles in August 2019, the proportion of patients with current VL test increased to 81.20%, representing a statistically significant increase of VL testing uptake (P<0.01).

Conclusions: VL testing uptake in Neno district significantly improved by >50% using a PDSA quality improvement approach in a multidisciplinary approach and thus greater information on virologic suppression and treatment needs of HIV patients. Similar process-based strategies could be used in other rural settings to address quality care challenges in large HIV cohorts.

EPC330

Comparison of adherence measurement tools used in a pre-exposure prophylaxis demonstration study men who have sex with men in China

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Background: Measuring adherence to PrEP remains challenging. Blood drug concentration measurement are reported to be more accurate than other traditional adherence measurements (self-reports, pill counts), but cannot be suitable in resource-limited countries. We aimed to measure PrEP adherence by real-time electronic monitoring and compare with traditional adherence measurements to determine if this new measure is reliable and correlate well with blood drug concentration adherence measurement.

Methods: We recruited 422 MSM PrEP users from four cities of China from September 2019 to December 2020. Plasma TFV concentrations were analyzed in samples collected at baseline and months 3, 6 visits. Self-reported adherence was captured at baseline and months 3, 6 visits by questionnaire by asking participants to report the number of missed pills within the past three months. For pill count, medications were refilled quarterly, and participants were asked to bring in their medication bottles at each follow-up visit. Using Kappa coefficient to compare the adherence measured by real-time electronic monitoring, self-report, pill count, and plasma TFV concentrations.

Results: Of 422 participants, 96.6% completed 6-month follow up. For daily PrEP users, the adherence data from all visits was 93.7% for real-time electronic monitoring, 98.0% for self-report, 91.8% for pill count, while the proportion of TFV concentration have drug levels consistent with TDF/FTC use (adherence no less than 90%) was 78.4%. For ED PrEP users, the adherence data from all visits was 85.7% for real-time electronic monitoring, 98.8% for self-report, 86.8% for pill count, while the proportion of TFV concentration have drug levels consistent with TDF/FTC use (adherence no less than 90%) was 76.5%.

Adherence measured by real-time electronic monitoring was in greater consistence with TFV concentrations (Kappa coefficient=0.68) than self-report (Kappa coefficient=0.08) and pill count (Kappa coefficient=0.19). The cost of average adherence measurement by real-time electronic monitoring (162 USD) was less than half of TFV concentrations (384 USD), while higher than pill count (66 USD) and self-report (49 USD).

Conclusions: Real-time electronic monitoring of adherence measurement could be an alternative inexpensive and accurate approaches to monitor PrEP adherence. It reflects the daily PrEP uptake and can trigger just-in-time interventions before adherence has lapsed for several months.

EPC331

Accuracy of PrEP adherence measures among adolescents men who have sex with men and transgender women in Brazil

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Background: Adherence is fundamental to PrEP effectiveness. Direct measures of adherence are expensive and not sustainable in most PrEP services. Therefore, an indirect measure is a feasible alternative.

The aim of this analysis was to assess the concordance of indirect measures for PrEP adherence comparing them with a direct measure.

Methods: PrEP1519 is a daily PrEP demonstration cohort study among adolescent men who have sex with men (aMSM) and transgender women (aTGW) aged 15-19 years. Indirect measures such as medication possession ratio (MPR), pill-count, and self-report were compared to tenofovir diphosphate (TFV-DP) concentrations in dried blood spot (DBS).

Participants receiving pills of FTC/TDF, had DBS collected and stored at each study visit, were asked to return their PrEP bottles and to recall PrEP use in the last 30 days. A sample of DBS from aMSM, DBS from all seroconverters, and all aTGW were sent for quantification of TFV-DP concentrations.

The accuracy of each indirect measure was assessed using Areas under (AUC) the receiver operating characteristics (ROC) curves for protective TFV-DP levels ≥800fmol/punch equivalent to 4 doses per week or above. Sensitivity (SE), specificity (SP), and predictive values positive (PPV) and negative (NPV) were assessed for the best cutoff points identified by Youden index.

Results: DBS data from 188 participants were included. Coincidental data for indirect measures were: MPR (N=185), pill-count (N= 68) and self-report (N= 174). The AUC was 0.55 (95%CI: 0.47–0.53) for MPR, AUC = 0.67 (95%CI: 0.54–0.80) for pill count, and AUC = 0.72 (95%CI: 0.65–0.80) for self-report. The best cut-off point was 0.90 for MPR with 80.3% SE, 40.4% SP, 25.4% PPV and 51.6% NPV; for pill count was 92.7% with 72.7% SE, 62.9% SP, 29.0% PPV and 35.1% NPV and 83.3% for self-report with 91.8% SE, 46.5% SP, 11.3% PPV and 44.6% NPV.

Conclusions: Pill count and self-report were able to discriminate adolescents with protective levels of TFV-DP. In addition, self-report adherence showed the best performance, and it is feasible and sustainable to be implemented in PrEP services for adolescents.

EPC332

Utilization of oral pre-exposure prophylaxis (PrEP) after FTC/TAF approval in the United States

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Background: Two oral medications are approved for PrEP in the US: emtricitabine/tenofovir disoproxil fumarate and tenofovir alafenamide (FTC/TDF, FTC/TAF). This study describes socio-demographic and clinical characteristics of individuals new to PrEP after the approval of FTC/TAF in the US (October 2019) to better understand PrEP prescription and dispense patterns in clinical practice.

Methods: EMR and dispensing data from Trio Health HIV Research Network (10/2019-11/2021) were used for the study. Included: HIV-negative adults prescribed or dispensed oral PrEP (≥1-month supply) with ≥3 months follow-up. Excluded: indications of HBV or PEP.

Comorbidities, socio-demographic and clinical characteristics for PrEP-naïve participants were compared among those prescribed and (separately) those dispensed FTC/TAF vs FTC/TDF (t-test, chi-square) at the same facilities.

Results: In the prescription cohort (N=2213), most individuals were prescribed FTC/TAF (1821 [82%] vs. FTC/TDF 392 [18%]). A similar distribution was observed for the dispense cohort (N=1794; FTC/TAF 1551 [86%]; FTC/TDF 243 [14%]).In both cohorts, most participants had commercial insurance and FTC/TAF individuals were more likely to be white and male. In the prescription cohort, high-risk behavior and clinical characteristics, including BMI and renal function (eGFR mL/min/1.73m²), were similar for FTC/TAF and FTC/TDF among those with available data [Table].

Individuals dispensed FTC/TAF were more likely to be overweight at baseline (39% vs. 29%; p=.019), with high-risk behavior (75% vs. 63%, p<.001), age >50 (16% vs. 11%, p=.041), and less likely to be age ≤25 (13% vs 18%, p=.018).

Baseline characteristics n (%);	Prescription cohort (n=2213)		Dispense cohort (n=1794)	
mean (std)	FTC/TDF n=392	FTC/TAF n=1821	FTC/TDF n=243	FTC/TAF n=1551
Male Gender	257 (66)	1312 (72)*	124 (51)	1024 (66)#
White Race	190 (48)	1020 (56)†	108 (44)	928 (60)#
Commercial Insurance	264 (67)	1173 (64)	116 (48)	949 (61)#
Age[1]: 18-25 years	61 (16)	326 (18)	44 (18)	195 (13)*
Age[1]: 51+ years	49 (13)	245 (13)	26 (11)	244 (16)*
High-risk Behavior[2]	279 (71)	1372 (75)	154 (63)	1156 (75)#
eGFR (<90 mL/min/1.73²)[3]	257 (74)	1105 (73)	133 (75)	892 (70)
Mean BMI (kg/m²)[4]	27.6 (9.4)	26.9 (7.3)	27.9 (11.1)	27.2 (9.3)

*p<0.05; †p<0.01; #p<0.001 FTC/TDF vs FTC/TAF.
[1]Age category 26-50 years: no differences between FTC/TDF and FTC/TAF.
[2]High-risk behavior: ICD-10 codes for high-risk sexual behavior and exposure to cummunicable diseases.
[3]eGFR = estimated glomerular filtration rate; eGFR values available for 84% (1865) of those prescribed and 81% (1457) of dispensed.
[4]BMI = body mass index; BMI values available for 69% (1567) of prescribed and 71% (1237) of disensed.

Table. Characteristics of individuals prescribed and dispensed PrEP after october 2019.

Conclusions: This retrospective observational study among adults initiating PrEP after FTC/TAF approval showed most new PrEP users were prescribed and dispensed FTC/TAF.

While differences were observed in socio-demographic characteristics between regimens and across cohorts, evidence suggests that individual safety risk factors (e.g., age and renal function) may not factor into prescribing decisions.

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EPC333

Barriers and facilitators to daily, oral pre-exposure prophylaxis (PrEP) use among pregnant adolescent girls and young women (AGYW) in Cape Town, South Africa: A qualitative study

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Background:
Over half of HIV infections globally occur among cisgender women. High HIV incidence among adolescent girls and young women (AGYW) persists during pregnancy and postpartum, and there is evidence that HIV acquisition risk increases by >2-fold during pregnancy and the postpartum period. Rates of unintended pregnancy are disproportionately high among South African AGYW. Research on facilitators and barriers to pre-exposure prophylaxis (PrEP) use among pregnant AGYW is scarce.
Our study aims to evaluate barriers and facilitators to daily, oral PrEP continuation and self-reported adherence among pregnant AGYW in Cape Town, South Africa.
Methods: We purposively enrolled pregnant AGYW (age 16-25 years) from an ongoing cohort study at a busy antenatal clinic between July and September 2020. Trained peers conducted in-depth interviews among pregnant and postpartum AGYW who had initiated PrEP during antenatal care. We purposively recruited participants who continued on PrEP and reported *high adherence* (≥25 days in past 30 days and no missed pick-ups) or *PrEP discontinuation and low adherence* (reporting missing >5 days in last 30 days or missed pick-up). We organized findings thematically and iteratively coded these (using*Nvivo*-v.1.5) with reference to an adapted conceptual framework by Ickovic and Meisler (1997).
Results: We interviewed n=18 pregnant or postpartum AGYW (median age=23 years). Facilitators of PrEP continuation/adherence included: strong desire to protect themselves and their infant against HIV acquisition; risk perception including partners' sexual risk-taking behaviour; social support by family (mother), partner and friends; autonomy of daily, oral PrEP that does not require partner cooperation or buy-in.
Common barriers included: fear of stigma (that they were taking ART and may be seropositive); lack of widespread access to PrEP; limited social support (especially from family); socioeconomic hardship; and the experience of side effects (e.g., nausea) which may overlap with common, pregnancy-related symptomatology.
Conclusions: Oral PrEP needs to be integrated into antenatal care at scale and targeted to at-risk pregnant and postpartum AGYW. Counseling and interventions to improve disclosure and family-/partner support may improve PrEP continuation and adherence. More research is needed on long-acting PrEP such as injectables and vaginal rings which may be effective at improving PrEP adherence in this population.

Key population-led prevention programmes (from reach, recruit, test, treat, prevent and retain)

EPC334

Quantifying delay in HIV program contact among young female sex workers in Mombasa, Kenya: a time-to-event analysis

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Background: Evidence suggests early HIV acquisition risks before or at start of sex work. Until 2018, there were no HIV programs designed for young women who sell sex (YSW) in Kenya.
Methods: We used data from the 2015 *Transitions* Study, a cross-sectional survey of sexually active cis-women aged 14-24 years frequenting sex work venues in Mombasa, Kenya. We transformed cross-sectional data into a virtual cohort using the timing of self-reported events relative to the survey date and estimated the time from self-identifying as sex worker to first contact with an HIV prevention program for sex workers (program contact gap).
We used age-adjusted Cox proportional hazard regression models to identify determinants associated with initial program contact rate(higher rate means shorter contact gap). We estimated the population-level person-years of program contact gap among YSW in Mombasa

using the study sample's estimated contact gap, extrapolating based on published estimates of the YSW population size in Mombasa.

Results: Among 392 YSW, the program contact rate was 0.52 per 100 person-months (95% confidence interval (CI):0.38, 0.68) and median contact gap was 12 months (interquartile range: 2,24). In Mombasa, there was an estimated 11,532 person-years of sex work not reached by programs (estimated population-level contact gap for YSW). Older age at time of first negotiation in exchange for sex (age-adjusted hazard ratio (aHR): 1.2[95%CI:1.0,1.5]) was associated with a higher program contact rate (shorter contact gap) (Figure).

Among variables on perceptions of sex work, the only factor associated with a shorter contact gap was related to the ease/difficulty of earning money through sex work.

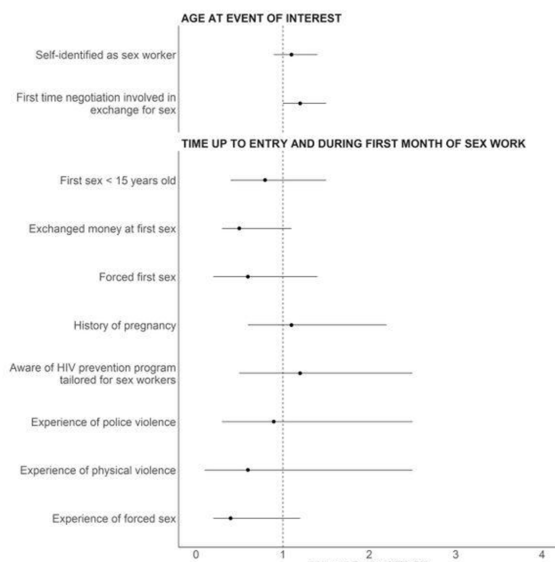

Figure. Forest plot of age-adjusted hazard ratios by determinants on contact gap.
Figure depicts association between determinants and time from self-identifying as a sex worker to first contact by HIV prevention program designed for sex workers (program contact gap).
Hazard ratios are adjusted for current age. A larger hazard ratio means a shorter contact gap.

Conclusions: There exists a large gap between the start of sex work and HIV program contact. Findings signal the need for services to reach YSW before or immediately after self-identifying as a sex worker. Data on start of sex work and program contact allow programs to monitor the local population-level contact gap as a key performance indicator.

Demand creation for HIV testing

EPC335

HIV testing strategies, types of tests, and uptake by men who have sex with men and transgender women: a systematic review and meta-analysis

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Background: Men who have sex with men (MSM) and transgender women (TGW) still face several barriers to HIV testing. The aim was to investigate the effectiveness of testing strategies (community- and facility-based testing) and types of HIV tests (standard laboratory, rapid, self, and multiple test combinations) to reach MSM and TGW, and barriers to testing.

Methods: A systematic review and meta-analysis was performed according to the PRISMA and registered in the PROSPERO. Several databases were searched between June-July/2020. Observational, intervention, and mixed studies that implemented HIV testing strategies for MSM and TGW were included.

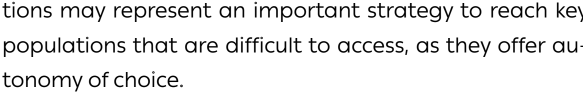
The outcomes analyzed were HIV infection prevalence, new HIV diagnosis detection, and HIV testing uptake. The prevalence and respective confidence intervals(95%CI) were calculated using a random-effects model.

Results: A total of 6,820 references were selected, and 263 were included in the review. Most studies included in this research were from high-income countries. Most the studies used the community or the internet as strategies for demand creation. Standard laboratory test had the highest uptake for MSM (100.0%, 95%CI 99.3–100.0) and multiple test combinations for TGW (100.0%, 95%CI98.6–100.0). The testing strategy with the highest uptake was facility-based for MSM (96.4%,95% CI 96.2–96.7) and TGW (100.0%,95%CI 98.6–100.0).

Facility-based testing strategy showed a high HIV infection prevalence and new HIV diagnosis detection for the MSM (7.7%,95%CI 7.5–8.0; 6.9%,95%CI 6.7–7.2, respectively) and TGW groups (20.4%,95%CI 15.7–25.8; 20.4%, 95%CI 15.7–25.8, respectively). Standard laboratory test showed the highest HIV infection prevalence among MSM (14.3%,95%CI 13.3–15.3) and multiple test combinations among TGW (14.7%,95%CI 12.3–17.3).

Urine test detected the highest rate of new HIV diagnosis detection for MSM (7.1%,95%CI 6.0–8.3) and multiple test combinations for TGW (14.7%,95%CI 12.3–17.3).Psychosocial and structural factors, such as stigma, and fear of positive test results, were the main barriers to HIV testing.

Conclusions: Facility-based testing and standard laboratory test stood out, but the study draws attention to the need for strategy diversification. Multiple test combina-



tions may represent an important strategy to reach key populations that are difficult to access, as they offer autonomy of choice.

Facility-based HIV testing strategies

EPC336

Prospective health setting evaluation of two Point of care Tests for Syphilis and HIV (PoSH Study) for the diagnosis and treatment of syphilis during an infectious syphilis outbreak in Canada

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Background: Alberta (Canada) declared an outbreak of infectious syphilis in 2019 with approximately 20% of cases receiving same day testing and treatment.

We sought to evaluate the performance of two investigational dual point of care tests (POCT) for syphilis and HIV and to determine if POCT could shorten the time to syphilis treatment and facilitate linkage to HIV care.

Methods: Participants undergoing testing for syphilis and HIV were offered POCT from fingerprick whole blood specimens with the INSTI Multiplex HIV-1/2 Syphilis Ab test (bioLytical Laboratories, Richmond, BC) and the Multiplo Rapid TP/HIV test (MedMira, Halifax, NS).

Parallel testing was done using standard laboratory algorithms. POCT results were compared to standard test results from serum specimens, including two indeterminate HIV POCT results which were considered a preliminary positive. Linkages to care for non medically urgent positive HIV POCT results were made after serological confirmation.

Results: Of 1193 participants, 56.8% male (n=678), 43.0% female (n=513), and 0.2% trans (n=2) with a median age of 32.1 years (IQR 26.1-38.1). 1020 tests were conducted in a correctional facility, 64 at an STI clinic, 60 in a First Nations community and 49 in two inner city emergency departments. The HIV prevalence was 1.5% and the syphilis EIA reactive prevalence was 36.0%.

The sensitivity, specificity, positive and negative predictive values (PPV and NPV) of the tests are summarized below:

Two indeterminate HIV POCT were confirmed positive on serologic testing. Of 194 new syphilis cases, 89.6% (n=174) were infectious and 142 (81.6%) of these cases were tested and treated on the same day. Four new HIV positive cases were diagnosed; all were linked to care.

Test	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
INSTI Multiplex HIV1/2 Syphilis Ab				
HIV	100	99.8	90	100
Syphilis (RPR < 8 dils)	52.5	99.7	98.3	87.7
Syphilis (RPR ≥ 8 dils)	97.5	99.7	99.0	99.3
Multiplo Rapid TP/HIV				
HIV	100	99.6	81.8	100
Syphilis (RPR < 8 dils)	70.7	99.7	98.6	92.6
Syphilis (RPR ≥ 8 dils)	98.4	99.4	97.9	99.6

Table.

Conclusions: Both POCT for HIV and syphilis (especially with RPR ≥ 8 dilutions) performed well in health settings using fingerstick whole blood specimens. POCT have the potential to aid in the testing and reduce the time to treatment of infectious syphilis.

EPC337

Associations between service readiness and PMTCT cascade effectiveness: a 2018 cross-sectional analysis from Manica province, Mozambique

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Background: Despite high coverage of maternal and child health services in Mozambique, prevention of mother-to-child transmission of HIV (PMTCT) cascade outcomes remain sub-optimal. Delivery effectiveness is modified by health system preparedness, and identifying modifiable factors that impact quality of care and service uptake can inform strategies to improve PMTCT programs effectiveness.

We estimated associations between facility-level modifiable health system readiness measures and HIV testing implementation and outcomes: early infant diagnosis (polymerase chain reaction (PCR) before 8 weeks of life), ever PCR (before or after 8 weeks), and positive PCR test result.

Methods: A 2018 cross-sectional, facility-level study was conducted in a sample of 36 health facilities in 12 districts in Manica province, central Mozambique, as part of a baseline assessment for the SAIA-SCALE trial (NCT03425136). Data on HIV testing outcomes among 3,427 exposed infants were abstracted from at-risk child service registries. Nine health system readiness items were included in the analysis.

Logistic regression were developed to estimate associations between readiness measures and pediatric HIV testing outcomes. Odds ratios and 95% confidence intervals are reported.

Results: Forty-eight percent of HIV-exposed infants had a PCR test within 8 weeks of life, 69% ever had a PCR test, and 6% tested positive. Staffing levels, gloves stockout and distance to the reference laboratory were positively associated with early PCR (OR =1.36[1.19,1.54], OR=1.73[1.24, 2.40] and OR=1.12[1.07, 1.16], respectively) and ever PCR (OR=1.35[1.18,1.54], OR=1.80[1.26, 2.58] and OR=1.13[1.09,1.19], respectively). Catchment area size and multiple NGOs supporting PMTCT services were associated with early PCR testing (OR=1.47 [1.19; 1.81] and OR=0.54 [0.30, 0.97], respectively).

Facility type, stockout of prophylactic antiretroviral, the existence of quality improvement program and mothers' support groups in the health facility were not associate with PCR testing. No associations with positive HIV result were found.

Conclusions: Salient modifiable factors associated with HIV testing for exposed infants include staffing levels, distance to the reference laboratory, catchment area size, NGO support and stockout of essential commodities. Strategies should target these factors to improve PMTCT performance, particularly at small and rural facilities.

EPC338

Use of an electronic adult HIV screening tool and HIV self-testing for improved targeted HIV testing in Zimbabwe

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Background: In the quest to identify the narrowing gap of undiagnosed people living with HIV (PLHIV), HIV testing in Zimbabwe has increased by 43% from 2011-2019 but with decreasing testing yields ranging from 20% to 5%. This necessitated adoption of HIV screening tools for better targeting of high-risk clients.

In this project, an electronic HIV screening tool was piloted to identify clients aged ≥15 years old at high-risk of HIV in outpatient/inpatient departments (OPD/IPD) for HIV testing at high-volume public health facilities in Zimbabwe.

Description: The tool was a custom-made application uploaded on electronic tablets and designed with a decision support logic to decline or offer HIV self-testing (HIVST) and subsequent rapid HIV-testing to those with a "yes" for at least one of 17 questions assessing:

i. Behavioural HIV-risk exposures,

ii. Tuberculosis symptoms or no previous exposure to HIV testing or within the past 12 months.

Those with STI symptoms (genital rash, sores, or discharge) in the past year were immediately eligible for rapid HIV-testing.

Lessons learned: Between 01 July 2021-31 December 2022, 12,455 patients were screened across 66 health facilities in the OPD/IPD of whom 8,109 (65%) were females with a median age of 30 years (IQR, 22-40). Of these, 1,947 (15.6%) had never been HIV-tested whilst 9,510 (75.8%) reported a previous HIV-negative result. Of 11,457 assessed for HIV-risk behaviours/symptoms, 1,270 (11%) were eligible for direct rapid HIV-testing, 1,245 (98%) were tested resulting in 15.7% being HIV-positive. Of the 11,090 eligible for HIVST, 73.9% received an HIVST with 8% being reactive of whom 95.4% were HIV-positive.

Compared to the July-December 2020 period for same facilities, rapid HIV tests conducted in OPD/IPD decreased by 92% from 21,177 to 1,765 and overall HIV testing yield improved from 11.1% to 39%.

Conclusions/Next steps: An electronic screening tool assists health care workers to consistently and systematically determine and document eligibility of clients for HIV testing.

Wider adoption of the electronic adult screening tool coupled with HIVST will not only reduce numbers HIV tested and improve HIV-positivity yield but also enhance accurate decision-making in determining eligibility for HIV screening and testing.

EPC339

Safe index testing as a high yielding HIV case identification strategy, the successful implementation by Oljabet Health Center, Laikipia, Kenya

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Background: Globally, an estimated 38 million people are living with HIV, and nearly one in five are unaware of their HIV status. WHO introduced safe index and partner notification testing strategy centred on obtaining a list of contacts sharing HIV risk with HIV-positive clients. USAID funded projects (Afya Nyota ya Bonde and USAID Tujenge Jamii) in partnership with Laikipia County have supported the implementation of safe index testing through the Surge initiative from 2019. Oljabet Health Center worked further to develop and adopt context-specific strategies to integrate index testing in service delivery.

Methods: Facility data review sessions were used to track and adopt short learning loops, identifying strategies that worked for scaling up. A multipronged approach where elicitation of sexual contacts from consenting clients was adopted. It involved clinicians, nurses, HTS Service providers, mentor mothers, community link personnel or adolescent champions. This depended on which provider the client had forged a better personal relationship and who the client was most comfortable engaging in the subject of their sexual contacts. Cultural barriers around age and gender on discussions surrounding sex and sexual contacts were taken into consideration.

Results: We included data on index testing for Oljabet Health Center from 2019 to 2021. In the year 2020 the facility after adopting the context-specific strategies for safe index testing realized a 46% contribution of positives from index testing and a 27% positive yield up from 0% in 2019. The improved performance based on the strategies was sustained in 2021 where the facility registered 40% positive contribution from index testing and a yield of 31%. The facility contributed to 9% of the index testing and 21% of the positives identified through index testing for Laikipia County by the end of the financial year 2021.

Conclusions: The implementation of safe index testing is a high impact intervention for HIV case identification. The modality is high yielding and should be rolled out in all the health facilities.

Facilities should implement adaptive learning by continuously evaluating processes to identify and adopt safe index testing strategies that are context-specific based on client needs, cultural beliefs and responsive existing systemic and cultural barriers.

Community-based HIV testing strategies

EPC340

Urban Mobile Testing in key population as a strategy to reduce the HIV diagnostic gap in Lima, Peru

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Background: In Peru, 30% of people living with HIV are unaware of their diagnosis. The HIV epidemic in Peru is concentrated in Lima (58%), in men who have sex with men (MSM, 10%), transgender women (TW, 30%) and sex workers (SW, 1-2%). To reduce the HIV diagnostic gap, the non-profit organization Socios En Salud (SES), together with the Northern Lima Health Directorate of the Ministry of Health, reimplemented a mobile strategy to screen key populations (MSM, TW and SW) in urban areas of Lima.

Description: The regular strategy screens the general population (key and non-key) that arrives at the STD and HIV/AIDS Referral Centers (CERSH), while the mobile strategy (*Urban Mobile Testing - UMT*) screens key population that is invited to screening points on designated dates, where 1 nurse and 2 peer counselors carry out free HIV screening. MSM and TW are recruited through a dating mobile application, while SW are recruited outside of where they work. Five to ten BMU are performed per month, avoiding repeating screening points. Individuals with positive results are linked to the CERSH for treatment initiation.

Lessons learned:

	UMT		CERSH	
	Individuals screened (key population)	Reactivity	Individuals screened (general population)	Reactivity
May	51	7.80%	196	2.55%
June	71	5.63%	226	2.65%
July	46	10.80%	140	5.00%
August	109	11.90%	57	3.51%
September	92	18.18%	136	8.09%
October	97	10.30%	150	7.33%
Total	466	10.70%	905	4.64%

Table. Comparison of number of individuals screened and percentage of reactivity in the UMT versus CERSH between May-October 2021.

Since June, flyers with information of all the dates and points of testing of the month were shared with participants. Since September, condoms were given free to participants. Both events could explain the increases in positive cases since then.

Conclusions/Next steps: The UMT obtains double the percentage of reactivity compared to the regular strategy. UMT is an efficient strategy to reduce the gap in HIV diagnosis in Peru.

EPC341

Maintenance of HIV voluntary counseling and testing service during the COVID-19 pandemic: an Internet-based primary health care network in Guangzhou, China

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Background: In Guangzhou, China, center for disease control and prevention (CDC) of city and district level and the primary health care institution (PHCI) of community level constitute the VCT network. Previously, people knew less about the VCT provided by PHCIs and preferred to acquire VCT at CDCs. Since COVID-19 spread over the world, CDCs in China took the responsibility to combat the pandemic, which compelled the service hour for VCT to be cut. Hence we tried to maintain the VCT service in this circumstance, through an Internet-based PHCI network.

Description: Based on WeChat (a Chinese social application like WhatsApp) Mini-Program Framework, we developed an online VCT service applet named "ChaBei" which can be used on WeChat without installing additionally. "ChaBei" provides consultation function for people to communicate with experts online and appointment function for accessing VCT service offline.

After internal testing within 12 CDCs in 2018, we began to promote "ChaBei" to PHCIs since 2019. As VCT sites on "ChaBei" increased from 108 (2019) to 149 (2020) to 166 (2021), this Internet-based network has covered the entire 11 districts of Guangzhou City.

Lessons learned: For 2019, 87.9% of the total 10528 online appointments on "ChaBei" were seeking for VCT at CDCs. In 2020, due to the impact of COVID-19, the amount of online appointments (6438) was 38.8% lower than 2019. But the proportion of appointments to PHCIs has increased from 12.1% to 39.3%. Despite the VCT service hour of CDCs were further shortened in 2021, the online appointments made on "ChaBei" still had an 27.1% growth. Among, we found the reason may be that the appointments for VCT at PHCIs contributed 51.1% to the total amount (8180).

Conclusions/Next steps: Internet-based VCT model is a promising solution to bind the PHCIs together as a network. Especially under the circumstance like COVID-19, it provides a great opportunity to promote the utilization of VCT at PHCIs, and to maintain the VCT service of the city by the joint efforts of all PHCIs. Further, this model can be utilized well in many cities and helps to develop a nationwide network for people to connect to VCT service more conveniently.

EPC342

Periodic HIV Index Case Testing: a worthwhile approach to reach "the unreached" in the journey to epidemic control

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Background: With over 90% of people living with HIV (PLHIV) already diagnosed in Zambia (MoH-ZAMPHIA, 2018), it has become increasingly difficult to reach the people that remain untested and undiagnosed. The JSI implemented USAID DISCOVER-Health project embarked on a robust initiative to identify potentially untested PLHIV.

Description: Between July and August 2021, USAID DISCOVER-Health project offered index case testing to clients that were already on treatment and had initially undergone index case testing, but have since found new sexual partners. Trained psychosocial counselors provided a brief counselling session that aimed at eliciting the new sexual partners. The partners were then approached and offered HIV counselling and testing in a professional manner either with the help of the index clients or as part of a community level door-to-door HIV testing program.

Lessons learned: Through engaging with 503 (196 males and 307 females) clients that were on treatment from 0-18 months, 572 sexual partners (223 males and 349 females) were elicited.

523 (91.4%) accepted speaking to a counsellor. Of these313 (59.8%) were testedand 210 (40.2%) knew their status, but had not disclosed it to the indexed partner.

Of those tested, 55 (17.6%) were positive. Of the positives, 22 (40%) were male, while 33 (60%) were female. The largest proportion of the positives, 31 (70.9%), were elicited from partners that were on treatment for 13-18 months. While the least, 6 (10.9%), came from those on treatment for 0-6 months, and those on treatment for 7-12 months accounted for 18 (32.7%).

Conclusions/Next steps: Though recipients of index services already on ART will not necessarily transmit HIV to their new partners once they are on treatment and virally suppressed, they remain an important link to the unreached people living with HIV that are not yet diagnosed. This applies especially to those that are on treatment for a longer period, deeming periodic HIV index case testing a worthwhile strategy to finding those that are yet to be

reached. In areas where saturation is evident, the Project has included periodic index case testing among its case identification strategies.

EPC343
A case study: index case tracing and testing of male partners and children in Angola

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Background: In Angola, m2m uses the community tracing and testing approach to reach male partners and biological children of HIV-positive pregnant and breastfeeding women (PBFW) enrolled into the facility program. Lay healthcare cadres, known as Mentor Mothers are trained and accredited to conduct rapid HIV testing in the community.
As health facilities, index clients, who are HIV-positive PBFW are identified and enrolled, and consent is obtained to trace their male partners and biological children under the age of 15 years.
Methods: We conducted a descriptive analysis of data collected from two sites in Angola from January 2020-June 2021. The data included services provided by Mentor Mothers, which was collected using a mobile health application. The sample, consisted of male partners and biological children aged below 15years of HIV positive antenatal and postnatal women registered at health facility level.
Results: Out of 2, 978 women enrolled at facility, 97% consented to index case tracing and testing. 2,976 male partners were named and traced in the community. Out of the 55% of the men contacted, 151 men (9%) were found to be HIV positive and 99% of these men were linked to ART. 55% of the 6,624 children elicited from PBFW and new mothers were traced in their communities, 4% yielded an HIV positive result and 94% of these were linked to care and initiated on ART.

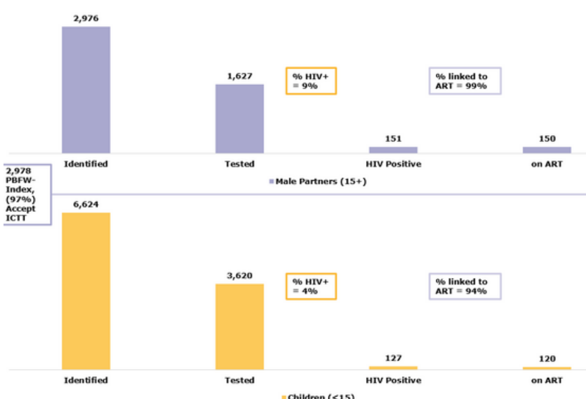

Figure 1. m2m's performance along the HIV case tracing and testing cascade in Angola.

Conclusions: The 9% positivity rate among male partners tested is considerably higher than Angola's **1.9%** HIV prevalence rate, as published by UNAIDS 2019. Children linked to care and initiated on ART, slightly below the 95% treatment target. m2m's performance against the UNAIDS 95-95-95 goals remains high even when implementation of the community-based HIV testing strategy was challenged by the pandemic

EPC344
Implementing Scottish community-led HIVST in the era of COVID-19 (June 2021-2022)

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Background: Widespread availability of HIV self-testing (HIVST) has the potential to overcome disparities in access to and uptake of HIV testing, particularly among key and minoritised groups. Because of the severe disruption of COVID-19 impacted upon sexual health and blood borne virus services (SHBBVs) in Scotland, and in light of advantages of HIVST and reinvigorated policy priorities reflected in zero new HIV Transmissions by 2030, HIV Scotland – funded through Gilead Sciences – developed an online platform for ordering HIVST kits.
Description: HIV Scotland has provided free HIVST since March 2020 in which tests are procured through a dedicated website (HIVTest.scot) and delivered discreetly to everyone in Scotland. This presentation focuses on the period since relaunch and rebrand (June 2021 to June 2022). The service rebrand improved efficiency in ordering process, number of 'contact points' with the end user, enhanced health promotion and had a greater emphasis on follow-up. These efforts were framed within a HIVST service which reflected an Amazon-like e-commerce platform with a dedicated marketing campaign.
Lessons learned: HIV Scotland distributed 4358 HIVST kits with the majority being ordered by males (n = 2747, 63%). A growing number of service users self-identify as female (n = 1131, 26%) and the remaining identified as non-binary (n = 69, 2%) and trans (n = 27, <0.5%). Across this period, 4 provisional positive results have been recorded and support offered. We identified a highly acceptable, engaged click-through journey of the HIVST service. By making changes in the service platform design, as well as a dedicated – diverse- advertising campaign, we expanded the potential reach to potential service users which has been documented in the growing demographic diversity from those who order a HIVST.
Conclusions/Next steps: Community-led HIVST has the potential to increase HIV testing access for a range of demographics and minoritsed groups by circumventing clinic-based structural barriers. Given promising findings from the relaunch, we have received increased funding to strengthen the advertising campaign for HIVST and endeavour to compare future uptakes on a cyclical basis. We

are also exploring opportunities to integrate HCV tests in the postal service to those with further SHBB needs across Scotland.

Peer-led HIV testing strategies

EPC345

Social network strategy: an innovative approach to reach hard-to-reach people who inject drugs in northeast states in India

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Background: India has a concentrated HIV epidemic, with an estimated 2.3 million people living with HIV (0.22% adult prevalence). Key populations (KPs) are disproportionately affected, with HIV prevalence among people who inject drugs (PWID) at 6.26%. High HIV prevalence in northeast states of Mizoram (2.3%), Nagaland (1.45%), and Manipur (1.18%) is driven by injecting drug-use behavior.
Under the PEPFAR/CDC-supported Project Sunrise, FHI 360 implemented social network strategy (SNS), an innovative approach to provide HIV prevention, testing, and treatment services to hard-to-reach PWID in these three states from June 2019 to March 2020.
Description: Community-based organizations (CBOs) hired peers as seed participants and used a chain-referral recruitment strategy and social network connections to reach, test, link, and treat hard-to-reach PWID in six sites in the three states.
Using 139 initial seed participants (14 HIV positive, 125 HIV negative), 3,495 PWID, injecting and sexual partners were recruited and tested for HIV. SNS participant characteristics included predominantly male (95%); young (44% less than 25 years); unmarried (59%); completed basic school (56%); and unemployed (55%).
Three hundred (8.6%) tested HIV positive, of whom 208 (69%) were initiated on antiretroviral therapy. Nine hundred thirty (29%) HIV negative participants were linked to harm reduction programs. Twenty-one (7%) of the 300 HIV-positive clients were females.
Nearly half (n=311) of the new HIV-positive PWID were identified in Aizawl, Mizoram, with a 19% case-finding rate.
Lessons learned: SNS can strengthen CBO networks' ability to penetrate hard-to-reach networks using minimal additional human resources. Early community involvement with SNS processes was critical to the strategy's effectiveness, including the discussion of incentives.
Robust referral networks including network size, syringe services, and injection environment improved identification of undiagnosed PWID. Enrolment of spouse and sexual partners through SNS was challenging.
Conclusions/Next steps: SNS implementation effectively reached unreached populations and provided communities with increased access to HIV services. Based on the results of SNS implementation, National AIDS Control Organization included SNS in expanded outreach interventions to reach new KP individuals. Such network-based referral strategies, including both SNS and index testing services, should be scaled up and integrated to increase case finding to accelerate progress toward achieving the UNAIDS 95-95-95 goals.

EPC346

Advancing peer-driven social network testing (SNT) and index testing to maximize reach of HIV testing services (HTS) among men who have sex with men (MSM) and their contacts in Ukraine

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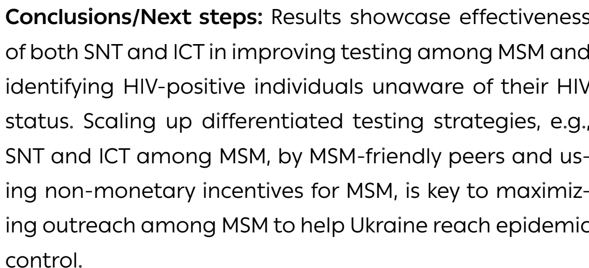
Background: Ukraine's HIV epidemic is concentrated among key populations, with a prevalence of 7.5% among MSM, highlighting a need for additional strategies to more efficiently reach MSM and their contacts. The USAID/PATH Serving Life project introduced SNT and expanded index testing to improve access to HIV testing and linkage services among MSM and their contacts across nine oblasts.
Description: Under the project's SNT approach, trained community workers (peer case finders and social workers) offered HTS to MSM through multiple outlets (e.g, MSM-friendly counseling rooms; hotspot outreach; and virtually through gay dating apps). Community workers counseled MSM on HTS; provided assisted or unassisted HIV self-testing, based on client preference; and offered non-monetary incentives (premium dating app subscriptions; telephone credits; high-quality lubricants) for testing. They followed up with clients to confirm self-test results and link those with reactive results for confirmatory diagnosis and treatment, or PrEP for HIV-negative clients at substantial risk. Community workers also offered HTS to eligible partners and biological children of HIV-positive MSM (current and new) via index testing, with referrals to follow-on services. We analyzed program data from October 2020 to September 2021 for both approaches.
Lessons learned: Among the 5,136 MSM tested through SNT, 127 were newly diagnosed HIV positive (2.5% yield) among whom 120 (95%) were initiated on treatment. 160 (61%) HIV-positive MSM accepted index testing and provided 490 contacts of whom 441 (90%) accepted HTS, with 56 confirmed HIV positive (12.7% yield) and 55 (98%) initiated on treatment. While more people were tested and diagnosed HIV-positive through SNT, the testing yield was more than five times higher under index testing—both approaches were critical to reach overall results. Both models had high linkage to treatment rates, and clients appreciated service delivery by MSM-friendly community workers and the various options provided.



Conclusions/Next steps: Results showcase effectiveness of both SNT and ICT in improving testing among MSM and identifying HIV-positive individuals unaware of their HIV status. Scaling up differentiated testing strategies, e.g., SNT and ICT among MSM, by MSM-friendly peers and using non-monetary incentives for MSM, is key to maximizing outreach among MSM to help Ukraine reach epidemic control.

EPC347

Towards HIV epidemic control: Social Network Strategy as a testing modality to reach underserved key populations for HIV testing and prevention services

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Background: Moving towards HIV epidemic control in Zambia requires innovative approaches to reach the remaining people living with HIV. Social network strategy (SNS) is an incentive-based testing modality which assumes that people in the same social network share similar HIV risks. Through the CIRKUITS project, we used SNS to identify underserved key populations (KPs) in the rural Eastern Province of Zambia.

Description: To implement SNS, we set up safe spaces in the community and conducted SNS and KP sensitivity trainings for 45 peer promoters, nurses, and community liaison officers. Peer promoters identified recruiters from KP communities, including female sex workers (FSWs), men who have sex with men (MSM), and transgender (TG) persons. Each recruiter was given five coupons to distribute to network members.

Upon presentation of the coupon at the safe space, KPs received health education, risk screening, and health services based on their risk profile, including antiretroviral treatment (ART) or HIV pre-exposure prophylaxis (PrEP). Upon coupon redemption clients received an incentive of 20 kwacha (~1.50 USD).

Lessons learned: From October to December 2021, 73 recruiters distributed 323 coupons and 137 (78%) were redeemed, as follows: 49 FSW distributed 243 coupons (104, 98% redeemed), 19 MSM distributed 60 coupons (24, 53% redeemed), and 5 TG distributed 20 coupons (9, 45% redeemed).

Of the redeemed coupons, 132 (96%) accessed HIV testing. Of these 28 (21%) tested HIV positive: 26/105 (25%) FSW, 2/19 (11%) MSM, and 0/8 (0%) TG, with all 28 (100%) linked to ART. Furthermore, 104 (79%) tested negative with 73 (70%) KPs accessing PrEP: 59 FSWs, 10 MSM, and 4 TG.

SNS identified KPs not accessing testing via traditional modalities. FSW recruiters had minimal challenges in inviting their network members to access health services. However, only half of the coupons distributed among MSM and TG were redeemed.

Conclusions/Next steps: In Zambia, SNS was highly successful at identifying PLHIV among FSWs, moderately so for MSM, and did not identify TG. Including KP community members in providing HIV testing services via community safe spaces helped identify underserved KPs who had not yet accessed HIV testing. Linkage to ART and PrEP was high for clients identified via SNS.

EPC348

Enhanced peer outreach approach increases HIV case finding among female sex workers and men who have sex with men in Dar Es Salaam, Tanzania

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Background: In Tanzania, key populations (KPs) are disproportionately affected by HIV with prevalence among female sex workers (FSWs) and men who have sex with men (MSM) estimated at 26% and 25% respectively. Despite community outreach for HIV testing services, higher-risk KP individuals remain hidden due to stigmatization, discrimination, and criminalization. The USAID- and PEPFAR-funded EpiC project implemented the enhanced peer outreach approach (EPOA) to improve HIV case identification among FSWs and MSM in Dar Es Salaam, Tanzania.

Description: Peer-led coupon network mobilization was implemented in an urban region of Dar Es Salaam. Twenty Peer Educators (PEs) were trained to identify hard-to-reach KP members and invite them to access HIV testing services (HTS) using a coupon promotion. Ten Health Care Providers (HCPs) were trained to screen clients accessing HTS and select those with higher-risk peer networks to become peer mobilizers (PMs). PMs were given coupons to distribute to their risk networks and invite them to receive comprehensive HIV services. Each PE and PM was given five coupons and provided with monetary incentives for each one returned. Weekly network analysis was done to identify PEs and PMs with productive networks for continued coupon distribution. We compare case identification rates from EPOA and traditional mobile testing, used Chi-squared test to determine if the difference is statistically significant.

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Lessons learned: EpiC distributed 1,893 coupons (1,325 FSWs and 568 MSM) between July 2020 and September 2021; 1,590 (84%) individuals returned with coupons. Of those, 100% were offered and accepted HIV testing. HIV case finding rate was 14.3% (169/1,179) among FSW tested through EPOA and 6.5% (1,257/19,411) through traditional mobile testing. Among MSM, case finding rate was 16.1% (66/411) through EPOA and 10.4% (534/5,126) through traditional mobile testing. The odds of testing positive were 2.4 times higher among FSW in EPOA compared to traditional mobile testing (2.42 Odds ratio, 2.03-2.89 95%CI), and 1.6 times higher among MSM tested through EPOA (1.65 Odds ratio, 1.23-2.18 95%CI).

Conclusions/Next steps: EPOA is effective in identifying high-risk FSWs and MSM, especially those who are difficult to reach through traditional methods. EPOA provides a viable option in settings where case finding has proven to be a challenge.

EPC349

"Lesotho's eMTCT Detectives": mentor mothers' tireless work towards HIV epidemic control through m2m's comprehensive PMTCT services

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Background: m2m's peer-led integrated service platform employs HIV positive women as 'Mentor Mothers' to deliver innovative and proactive approaches for uptake of PMTCT cascade services. With funding from USAID/the President's Emergency Plan for AIDS Relief (PEPFAR), m2m is working closely with the Lesotho Ministry of Health (MOH) to improve the lives of pregnant and breastfeeding women (PBFW) and their families.

From January - March 2019 as part of the comprehensive PMTCT services package, Mentor Mothers accelerated their support in linking or access of PBFW and HIV-exposed infants (HEIs) to HIV testing services.

Methods: The data sampled included data from July 2018 to June 2021, an analysis of uptake of PMTCT services among HIV-positive PBFW and HEIs (aged 0-2 years) from a sample of 31 sites was performed.

The evaluated indicators include rates of HIV infections to exposed infants by measuring the MTCT rates, early infant diagnosis (EID) services uptake, and outcome test.

Results: Rates of MTCT among this sample ranged from 0% - 3.3%, with a final rate reported at 1.7% in April – June 2021. The positive trends can be appreciated starting from the first quarter of FY19 when m2m started to implement a comprehensive PMTCT program, which increase in EID testing within two months and documentation of the outcomes of the HIV Exposed Infants.

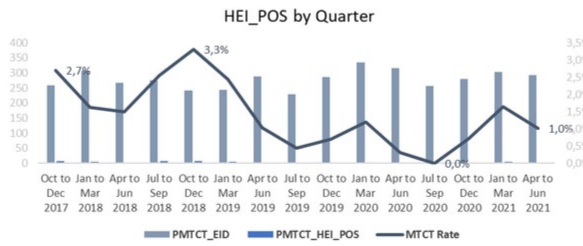

Figure. HEI_POS by quarter.

Conclusions: The results highlight the importance of having competent mentor mothers in achieving lower rates of mother to children transmission, and increase access to early infants' diagnosis services. The scaling up of the comprehensive model resulted in increasing EID contributing to the general positive desired results across the country.

Our findings underscore the important work of Mentor Mothers ('eMTCT detectives') in reaching every possible client who may potentially benefit from comprehensive PMTCT services.

HIV testing with virtual and/or digital support

EPC350

Going Online: pilot of a complementary virtual approach to engage key populations and other hard-to-reach people with HIV services

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Background: The PEPFAR- and USAID-funded Meeting Targets and Maintaining Epidemic Control (EpiC) project, led by FHI 360 in Liberia, is piloting Going Online (GO), a complementary approach to maximize reach and provide a comprehensive package of HIV services to key populations (KPs) and other hard-to-reach people. GO is primarily intended to increase reach to unreached individuals, engage them using online platforms, and connect them to HIV services.

Description: EpiC Liberia used an app called QuickRes developed by FHI 360 to manage clinic appointments and complete the cascade of HIV services. EpiC identified and trained two community peer outreach workers (OWs), as well as "elite" outreach workers (elite OWs). The latter are professional health workers recruited for their skill and rapport with clients. Peer educators assisted clients with taking an online risk assessment that helped the client decide which services they needed. The app then walked clients through the booking process, helping them identify the nearest of seven PEPFAR-supported facilities where they could receive HIV services.

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Lessons learned: We launched QuickRes on July 19, 2021, and have reporting through December 8, 2021. EpiC successfully reached and booked 311 clients (236 KP clients booked by peer OWs, and 75 general population clients booked by elite OWs). All 311 clients (100%) arrived at the facilities, and 30 clients who rebooked for antiretroviral therapy (ART) refilled successfully, for a total of 341. Overall, 62 clients (18%) tested positive, and all were initiated on ART; this is the highest case-finding rate within the subsets of case-finding strategies for EpiC Liberia. The HIV case finding from KP clients booked through community OWs was 21.6% (51/236). The HIV case finding from elite OWs was 14.7% (11/75). Ordinary outreach testing in the project had a case-finding rate of 11% during the reporting period.

Conclusions/Next steps: Using peer OWs improved reach among key population individuals, who are more likely to be positive. There are ongoing efforts to document and scale up best practices from the pilot as we strive to replicate results in other areas of Liberia.

EPC351

National HIV Testing Week: an effective tool for increasing HIV testing at scale in key populations during and beyond COVID-19

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Background: National HIV Testing Week (NHTW) is an annual campaign devised by Terrence Higgins Trust, delivered by HIV Prevention England, and funded by the UK government's Office for Health Improvement and Disparities. NHTW aims to increase HIV testing amongst key populations.

Description: The campaign ran in five cycles from 2016 to 2021, targeted gay and bisexual men and people of Black African ethnicity (BA) in England, and focused on "real people telling real stories" to encourage HIV testing.

A multi-modal approach was used to reach populations at scale:

- User-testing and coproducing campaign imagery, themes and messaging with key populations
- social marketing using digital, press, outdoor and influencer-led channels to generate HIV self-sampling kit (HSS) online orders
- physical community-based outreach and testing
- engaging healthcare professionals to promote testing.

Lessons learned: Findings: From 2016, NHTW led to over 112,000 people testing through HSS and community-based HIV testing. More than a quarter tested for the first time. 77% of all those tested were from key populations, and the overall reactivity rate was 0.85%.

During COVID-19 (2020-21), NHTW maintained high levels of engagement and over 30,000 HIV tests were ordered online. However, a lower proportion of BA people ordered tests compared to previous years.

Due to lockdowns, in-person community and clinic-based testing was curtailed. However, the introduction of a digital community engagement model ensured that some grassroots outreach was maintained.

	Average per year pre-COVID-19 (2016-20)	COVID-19 year (2020-21)
Media promotion		
Numbers reached*	137,131,415	177,475,200
Numbers engaged**	80,662	91,092
Tests ordered^	18,608	30,613
Community outreach		
Numbers engaged	7,141	3,557
Numbers tested	1,761	514
*Through all media channels. **Click-through rates. ^Test availability was determined by funding		

Table.

Conclusions/Next steps: NHTW is a high-impact campaign which increased HIV testing at national scale for key populations, including during COVID-19 constrained situations.

There was an increase in HSS during NHTW 2020-21. While this may indicate increased acceptability of HSS, it could mask issues for those BA people who did not access HSS kits ordered online.

It is essential to ensure that equitable access for key populations is prioritised for both face-to-face and online HIV testing services.

EPC352

SelfCare's Cat and Pao: the use of community-led automated virtual assistance and peer support in an unassisted HIV self-testing program in Metro Manila, Philippines

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Background: Ease of access is one factor in getting tested for HIV. Community quarantines caused by the COVID-19 pandemic limited this access further. An automated virtual assistance system was developed and used to provide assistance to maintain the unassisted nature of HIV blood-based self-testing in the Philippines. This was initiated by the community-based organization LoveYourself under the program SelfCare.

Description: This entire virtual assistance system was developed and implemented built-in into Facebook Messenger, which was used because of its familiarity, being

the most-used online messaging platform in the country. In order to access the service, clients just need to send a message to the SelfCare Facebook page. To organize all information collected from the clients, the conversation flow was divided into five parts: expression of interest, qualification, delivery, guided self-testing, and post-testing.

This assisted the clients in ordering the self-testing kits, guiding them on how to use the kits (via instructional videos), reporting their HIV test results, submitting feedback, and guiding them to HIV combination prevention strategies (PrEP if HIV non-reactive, linkage to confirmatory testing and same-day ART if HIV-reactive).

Conversations were made more interactive by creating Cat (an online version of Miss Universe 2018 Catriona Gray, in English) and Pao (an online version of Paolo Gumabao, one of the actors in a popular Filipino HIV-themed film Mga Batang Poz, in Filipino). After reporting the result, peer counselors are on standby to answer questions and other concerns.

Lessons learned: Out of 1,292 individuals who reported their test results through this system, 106 participants reported a reactive result (8.20% reactivity). 60% of those HIV reactive were successfully linked to HIV treatment. The design made data gathering and report generation easier on the implementers' part by viewing a created message database. This also paved the way for online peer volunteers to assist clients who tested reactive for linkage to confirmatory testing.

Conclusions/Next steps: Using alternative platforms like SelfCare enabled a platform to provide care and support virtually. This mechanism can guide implementers to use innovations in order to provide assistance and support to key populations, especially during this time.

EPC353

Home HIV testing with virtual assistance Ppomotes linkage to care

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Background: During 2020, many clinicians at Access Health Louisiana (AHL), a Federally Qualified Health Center with clinics across southeast Louisiana, provided care via tele-health, limiting the availability of in-person HIV screening. In response, with funding from the Bureau of Primary Health Care, AHL introduced a free, virtually-assisted home HIV testing program for residents of southeast Louisiana.

Description: Prospective patients may request tests through an online survey or by calling or emailing the home HIV testing team. Once the request is received, the Home HIV Testing Coordinator contacts the patient via phone and completes a limited registration, requiring only a name, phone number and address for kit delivery, and schedules the patient for their virtual appointment. During the appointment, the Coordinator provides counseling, assists the patient with interpreting test results, and links the patients to care depending on outcomes. Patients are contacted again three months after their virtual appointment for follow-up testing.

Lessons learned: From December 2020 to December 2021, AHL received 84 test requests. Of these, 37 were registered as patients and delivered a test kit. 31 patients, or 84%, completed virtual appointments, and 1 patient tested independently. Seventy-two percent of participants identified as female, while the remaining 28% identified as male. 15 patients provided responses for race/ethnicity, with 53% identifying as Black/African American, 40% as White, and 7% as Asian. Patients ranged from ages 18 to 53, with an average age of 32 years. 11 patients disclosed sexual orientation, with 18% identifying as lesbian, gay or homosexual and 82% identifying as straight or heterosexual. Of the patients who completed a virtual appointment, 32% were linked to care at AHL. Limitations on this data include sample size and reported sexual orientation and race/ethnicity.

Conclusions/Next steps: Home HIV testing programs can effectively supplement in-person screening, especially when coupled with virtual assistance. This format allows for increased accessibility and privacy, while still providing the necessary support and linkage to care, as evidenced by the 32% of patients linked from this program.

The next phase of this project will incorporate additional screenings, such as STIs and HCV, and expand to other regions in the state.

HIV self-testing

EPC354
HIV self-testing programming acceptability among injured persons seeking emergency care in Nairobi, Kenya

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Background: ED-based HIV self-testing (HIVST) is an innovative approach to deliver HIV testing services (HTS) to populations that may not engage through standard pathways, and that could increase identification of PLHIV. However, patient acceptability for ED-based HIVST is unknown.
Methods: A prospective cohort of adult injured persons seeking emergency care was enrolled during March-May 2021 at Kenyatta National Hospital (KNH) in Nairobi, Kenya. Demographic, information and data from eleven Likert items with five-point response ranges were collected. The Likert items encompassed Likert scale domains for ED-HIVST programs of: general acceptability (Domain 1), personal acceptability (Domain 2) and acceptability to distribute to social/sexual networks (Domain 3). Ordinal regression was performed yielding adjusted odds ratios (aOR) with associated 95% confidence intervals (CI).
Results: Of 600 participants, 88.7% were male and the median age was 29 years. Approximately half (55.0%) had a primary care providers (PCP) and 86.2% had prior HIV testing. Across all Likert items, the majority of participants reported the highest level of agreement (range 55.7%-71.8%).
Adjusted analysis found that those <25 years of age had a greater odds of favorable response for general acceptability as comparted to those >25 years (aOR=1.67, 95% CI: 1.36-2.08, p<0.001), as did those with prior HIV testing versus those without (aOR=1.68, 95% CI: 1.27-2.21, p<0.001) (Domain 1). For Domain 2 pertaining to personal acceptability, those with a PCP had greater odds of favorable response than those without (aOR=3.31, 95% CI: 2.72-4.03, p<0.001) as did those with prior HIV testing (aOR=1.83, 95% CI: 1.41-2.38, p<0.001).
In assessment of acceptability to distribute to social/sexual networks for use (Domain 3) having a PCP had greater odds of favorable response (aOR=2.42, 95% CI: 2.01-2.92, p<0.001) as did those with prior HIV testing (aOR=1.79, 95% CI: 1.38-2.33, p<0.001).
Conclusions: Among the population studied, ED-HIVST programming was highly acceptable. Those with previous HIV testing had significantly greater acceptability across all domains, as did younger persons for general acceptability and having a PCP for personal acceptability and acceptability to distribute to social/sexual networks.
These data provide a foundation to inform development of strategies to implement effective ED-HIVST programming in Kenya.

EPC355
A qualitative analysis of male partner engagement in HIV care

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Background: Low HIV testing rates among male partners of pregnant women living with HIV is a key challenge to prevention of mother-to-child transmission (PMTCT) programs in sub-Saharan Africa. Understanding facilitators of and barriers to male engagement in antenatal care is critical for optimizing the benefits of PMTCT.
Methods: The Obumu study was a randomized trial to evaluate secondary distribution of HIV self-test kits (HIVST) by 500 pregnant women living with HIV in Uganda on the uptake of HIV testing and subsequent linkage to HIV prevention (PrEP) or treatment (ART) by their male partners.
Men who attended the clinic after receiving an HIVST or invitation for HIV testing from their pregnant partner were enrolled (N=212).
A purposefully-selected subset of 45 men took part in qualitative interviews exploring experiences of HIV testing, study participation, relationships, and linkage to care. Qualitative data were coded and inductively analyzed to identify themes representing men's motivations for attending clinic and testing for HIV.
Results: Four key themes that explain men's decisions to attend clinic and test for HIV emerged from the qualitative data:

1. *Role fulfillment:* Some men felt it was their responsibility as a husband and father to know more about their health status so they could remain healthy and continue to take care of their family;
2. *Reciprocity:* Others felt respected and cared for by their partners and wished to reciprocate their support;
3. *Valuing stability:* Male partners also wanted to avoid conflict at home, thus preserving their relationships; and,
4. *Trust:* Men were reassured by counseling from lay male healthcare workers, giving them more confidence to overcome initial concerns about testing.

Receipt of an HIVST or invitation letter did not appear to be a main driver of decisions to attend clinic. Overall, a sense of trust, support, and duty within relationships facilitated clinic attendance and HIV testing among male partners.

Conclusions: Relationship dynamics and counselor support are important factors in encouraging men to attend antenatal clinics and test for HIV. Tailoring HIV testing strategies and messages to address the role of relationships may enhance male partner engagement in care, thus improving PMTCT outcomes.

EPC356

Improving ART initiation among men who use HIV self-testing in Malawi: a qualitative study

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Background: HIV self-testing (HIVST) increases HIV testing uptake among men; however, linkage to antiretroviral therapy (ART) among HIVST users can be low. We qualitatively examined barriers to linkage to care and ART initiation for men who used HIVST, and their preferences for innovative strategies to improve treatment engagement following self-testing.

Methods: Semi-structured in-depth interviews were conducted with men (≥15 years) in Malawi who tested HIV-positive using HIVST between 2018-2020, and their female partners (≥15 years) who distributed HIVST kits to men. Medical records from seven facilities were used to identify respondents.

We included men who received HIVST from a health facility (primary distribution) and those who received HIVST from female sexual partners (secondary distribution). Interviews were conducted in the community and were audio-recorded, translated and transcribed, and analyzed using constant comparison methods in Atlas.ti v.8.4, comparing themes by men who received HIVST through primary versus secondary distribution strategies. Data were collected between 2019-2020.

Results: Twenty-seven respondents were interviewed: 16 respondents in male/female dyads, eight men without a female partner, and three women who represented men who were unreachable. Among the 19 men represented, seven received HIVST through primary distribution and 12 through secondary distribution. Six men never initiated ART (all secondary HIVST distribution users).

Barriers to ART initiation centered on the absence of health care workers at the time of diagnosis and included lack of external motivation that pushed men to link to care (men had to motivate themselves) and lack of counseling before and after testing (leaving ART-related fears and misconceptions unaddressed) – the latter was especially true within secondary HIVST distribution.

Desired interventions were similar across primary/secondary HIVST distribution and included ongoing peer mentorship for normalizing treatment adherence, male-tailored counseling (focused on how HIV treatment can support men's role as financial providers, maintaining a strong physical body, and ensuring a promising future for their children), outside-facility HIV treatment for convenience and privacy, and help understanding how to navigate ART clinics.

Conclusions: Male HIVST users face unique challenges to ART initiation, especially those receiving HIVST through secondary distribution. Male-tailored interventions are desired by men and may help overcome barriers to care.

EPC357

National surveillance of home-based HIV testing among Australian gay and bisexual men, 2018-2020: uptake after commercial availability of HIV self-tests

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Background: HIV self-testing allows people to collect samples and test themselves at home, addressing known barriers to facility-based testing. Despite strong evidence about its benefits, HIV self-testing became commercially available in Australia in a restricted way (online only) at the end of 2018.

We aimed to measure the uptake of home HIV testing among Australian gay and bisexual men (GBM) between 2018-2020 and among subgroups where there are known gaps in the frequency of HIV testing.

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Methods: Data were analysed from the Australian Gay Community Periodic Surveys (repeated behavioural surveillance of GBM at venues, events and online). We used Poisson regression models to assess trends in-home HIV testing among non-HIV positive GBM between 2018 and 2020 and multivariable logistic regression to assess factors associated with home versus facility-based testing.

Results: Overall, 24,214 non-HIV-positive GBM completed surveys in 2018-2020. The use of home HIV testing was low, but slightly increased during 2018-2020 (from 0.3% to 0.8%, RR=1.54, 95%CI=1.23-1.92, p-trend<0.001).Testing at home was more likely among non-HIV-positive GBM who were born overseas and recently arrived in Australia (OR=4.71, 95%CI=2.59-8.56), at higher risk of HIV (OR=2.17,95%CI=1.15-4.09), infrequent HIV testers (OR=2.09, 95%CI=1.18-3.72), and was less likely among GBM who had not been diagnosed with a sexually transmitted infection in the last year (OR=0.41,95%CI=0.18-0.94).

Conclusions: The uptake of HIV home testing by GBM after its commercial availability in Australia remains extremely low, but a small increase occurred in 2020 during COVID-19 lockdowns. The greater use of home testing in priority groups such as infrequent testers, recent migrants, and men at higher risk of HIV was encouraging.

Compared to HIV home testing, COVID-19 rapid antigen in Australia has been quickly made available in various distribution channels, such as clinics, pharmacies, and supermarkets. Learning from the COVID rapid antigen test kit distribution in Australia, there is an urgent need for policy and practice changes to make kits affordable and accessible to cater for different population needs.

EPC358

Accuracy of the home-based rapid HIV urine antibody test and the preference among men who have sex with men: a discrete choice experiment study

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Background: This study was to evaluate the accuracy of self-administered rapid HIV urine antibody test among men who have sex with men (MSM) in China. A discrete choice experiment (DCE) was applied to elicit their preferences for different attributes of home-based rapid HIV test.

Methods: We compared the self-administered rapid HIV urine test with HIV venous blood test in terms of sensitivity and specificity. In the DCE, four attributes were identified: type of test (finger prick vs urine sample), instruction on how to conduct the test (regular instruction vs instructional video), the interpretation of test result (by themselves vs by clinic staff) and cost of the test (free, 3USD, 7.5USD, 12USD). Each participant was asked to choose between two alternatives that comprised four attributes across 8 choice sets (Table 1 is an example of a choice set).

	Test A	Test B
Type of test	Finger prick	Urine sample
Instruction on how to conduct the test	Regular instruction	Instructional video
The interpretation of test result	By yourself	By clinic staff
Cost of the test	Free	3USD
Which test would you prefer?	□	□

Table 1. An example of a choice set

Results: A total of 1096 participants provided venous blood samples for HIV-testing, of whom 4.65% (51) were HIV positive. The sensitivity of the urine test was 80.4% performed by participants themselves, with 100.0% specificity. Our results identified significant preference heterogeneity for all attributes (Table 2). Finger prick sample (β=0.41, P< 0.01), using regular instructions (β=0.18, P<0.01), interpreting test result by themselves (β=0.13, P=0.04) and lower cost (β=-0.02, P<0.01) were preferred.

Attributes		β	95%CI	P
Type of test				
	Finger prick vs urine sample (control)	0.41	(0.32, 0.50)	<0.01
Instruction on how to conduct the test				
	Regular instruction vs instructional video (control)	0.18	(0.08, 0.29)	<0.01
The interpretation of test result				
	By themselves vs by clinic staff (control)	0.13	(0.01, 0.26)	0.04
Cost of the test		-0.02	(-0.021, -0.017)	<0.01

Table 2 DCE parameter estimation (N=964)

Conclusions: The accuracy of the self-administered rapid urine test was unfavorable. It suggests the rapid urine test might need to be further validated. Another possibility would be to standardize or health professionals guide the testing process and interpretation of the test results, similar as demands of the DCE results showed.

EPC359

The role of oral HIV self-testing in ending the HIV epidemic: lessons learned from Bhutan

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Background: Bhutan envisions ending HIV epidemics by 2030. One of the major bottlenecks of achieving this vision is the testing gap. Since the detection of the first case in 1993, a total of 795 cases were diagnosed till November 2021, 599 of them are currently alive and 580 on ART. However, UNAIDS modelling predicts a total of 1300 cases resulting in a detection gap of 39%. HIV Self Testing (HIVST) was used and found to be an effective approach to test the hidden key populations (KPS) in many countries to make early diagnoses, linkage to treatment, and prevent transmission. Therefore, a demonstration project to see the feasibility of uptake and delivery models of HIVST by the KPs was initiated.

Description: We present lessons learned from the HIVST demonstration project implemented in five identified epidemiological zones of Thimphu-Paro, Phuntsholing, Gelephu, Samdrup Jongkhar, Wangdue-Punakha from August-November 2021. The cross-sectional mixed methods study protocol was approved by the Research Ethics Board of Health.

The identified laymen from KPs were trained on HIV Counseling and Testing to conduct HIVST for the first time. A total of 438 (233-MSM, 62-TG and 143-FSW) KPs were tested using rapid oral HIVST. Several methods like social media, dating apps, telephonic contacts, meetings in person and peer-driven methods were used to network and initiate the contacts.

Lessons learned: All of the respondents preferred to be contacted for delivery of HIVST for self-testing, follow-up on test results and HIV education program. About 98.6% (432/438) accepted the HIVST while 1.4% didn't accept. Around 70.7% preferred assisted self-testing and 22.6% preferred unassisted self-testing while the remaining 6.7% preferred blood-based testing through VCT centres indicating the preference of saliva over blood as a sample of choice for HIVST.

Conclusions/Next steps: The demonstration project found that HIVST can be implemented in Bhutan as one of the new testing strategies to reach the hidden KPs. Following this demonstration project, MoH will scale up HIVST throughout the country as a part of community-based testing services for KPs. We posit that HIVST will play a critical role in meeting the 95-100-95 national targets to end the AIDS epidemic by 2030.

EPC360

Evaluating effect modification by HIV testing history to understand the mechanisms behind the impact of announcing HIV self-testing availability in a clinic system in Kenya

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Background: In sub-Saharan Africa, truckers and female sex workers (FSW) have high HIV risk and face challenges accessing HIV testing. Adding HIV self-testing (HIVST) to standard of care (SOC) programs increases testing rates. However, the underlying mechanism is not fully understood. HIVST may decrease barriers (inconvenient clinic hours, confidentiality concerns) and we would thus expect a greater impact among those not accessing SOC testing (barriers prevented previous testing).

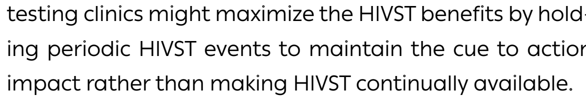
As a new biomedical technology, HIVST may also be a cue to action (the novelty of a new product motivates people to try it), in which case we might expect the impact to be similar by testing history.

Methods: We used data from two randomized controlled trials evaluating the announcement of HIVST via text-message to male truckers (n=2260) and FSWs (n=2196) in Kenya. Log binomial regression was used to estimate the risk ratio (RR) for testing ≤2 months post-announcement in the intervention versus SOC overall and by having tested in the past 12-months (12m-tested) and we assessed interaction between the intervention and 12m-tested. We also estimated risk differences (RD) per 100 and tested additive interaction using linear binomial regression.

Results: We found no evidence that 12m-testing modified the HIVST impact. Among truckers, those in the intervention were 3.1 times more likely to test than the SOC (p<0.001).Although testing was slightly higher among those not 12m-tested (RR=3.5, p=0.001 versus RR=2.7, p=0.020), the interaction was not significant (p=0.683).

Among FSWs, results were similar (unstratified RR=2.6, p<0.001; 12m-tested: RR=2.7, p<0.001; not 12m-tested: RR=2.5, p<0.001; interaction p=0.795). We also did not find significant interaction on the additive scale (truckers: unstratified RD=2.8, p<0.001; 12m-tested RD=3.8, p=0.037; not 12m-tested RD=2.5, p=0.003; interaction p=0.496. FSWs: unstratified RD=9.7, p<0.001; 12m-tested RD=10.7, p<0.001, not 12m-tested RD=9.1, p<0.001; interaction p=0.615).

Conclusions: The impact of HIVST was not modified significantly by 12m-tested among truckers and FSWs on the multiplicative or additive scale. Announcing the availability of HIVST likely served primarily as a cue to action and



testing clinics might maximize the HIVST benefits by holding periodic HIVST events to maintain the cue to action impact rather than making HIVST continually available.

EPC361

Introduction of oral-based HIV self-testing in Ukraine through the national-scale HealthLink Project: distribution strategies and key results

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Background: Before 2019, OraQuick HIV self-tests were not legally registered in Ukraine and therefore not allowed for official distribution. CO "100%LIFE", the largest patient-led organization in Ukraine, initiated the registration process and was the first to introduce oral-based HIVST in testing programs.

In particular, the distribution of OraQuick HIVST kits became a priority intervention for the HealthLink Project that aims at increasing the overall number of people who know their HIV status in Ukraine.

Description: Between 2019 and 2021, HealthLink distributed kits through community-based strategies, including primary and secondary distribution by social workers at 27 NGOs, online orders at two websites, and distribution via 10 vending machines. The geography of the intervention included all Ukrainian regions.

Considering the context of Ukrainian epidemic, intervention was targeted at hard-to-reach KP representatives, primarily MSM, as well as adult heterosexual men with risk behavior.

The overall aim was to reach persons with high risk of HIV who refuse from testing at traditional settings like NGOs or HCFs. All tests were distributed with contact information for follow-up calls and additional counseling.

Lessons learned: Out of all distributed kits in FY2021 (n=21035), 74% were received by men, 26% by women. Men outnumbered women across all distribution strategies, but in case of vending machines the difference was the smallest. The percentage of KP representatives varied by the distribution strategy, but MSM were the most covered group (56% of all kits were provided to MSM), followed by GP with reported risk behavior (39%).

Online strategies and vending machines were not popular among PWIDs, and they were mostly reached by NGO workers at community sites.

In total, 4% of tests were received by PWIDs, and 5% of all tests were taken by PLHIV for further secondary distribution. In total, 86 persons who obtained self-testing kit were later retested positive at project sites.

Conclusions/Next steps: Program results provided valuable insights for all future projects aiming to reach the ‚first 95' in Ukraine. Healthlink significantly contributed to generating demand for home-based HIV testing and provided evidence that oral-based HIVST has huge potential for reaching undiagnosed populations in Ukraine, primarily among men and MSM.

EPC362

Estimating the impact of HIV self-testing on HIV testing services, diagnoses, and treatment initiation at the population-level with routine data: the example of the ATLAS program in Côte d'Ivoire

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Background: HIV self-testing (HIVST) is a critical testing approach particularly for reaching those at HIV risk who are hesitant or unable to access existing services. While the discreet and flexible nature of HIVST is appealing to users, these features can limit the ability for programmes to monitor and estimate the population-level impacts of HIVST implementation. This study triangulates publicly available routine programme data from Côte d'Ivoire in order estimate the effects of HIVST distribution on access to testing, conventional testing (self-testing excluded), HIV diagnoses, and antiretroviral treatment (ART) initiations.

Methods: We used quarterly programmatic data (Q3-2019 to Q1-2021) from ATLAS, a project that aims to promote and implement network-based HIVST distribution in West Africa, in addition to routine HIV testing services program data obtained from the PEPFAR dashboard. We performed ecological time series regression using linear mixed-models.

Results: Between Q3-2019 and Q1-2021, 99,353 HIVST kits were distributed by ATLAS in 78 health districts included in the analysis. The results (Table 1) show a negative but non-significant effect of the number of ATLAS HIVST on the volume of conventional tests (-190), suggesting the possibility of a slight substitution effect. Despite this, the beneficial effect on access to testing is significant: for each 1000 HIVST distributed via ATLAS, 390 to 590 additional HIV tests were performed if 60% to 80% of HIVST are used . The effect of HIVST on HIV diagnosis was significant and positive, with 8 additional diagnoses per 1,000 HIVST distributed. No effect of HIVST was observed on ART initiations.

Outcome variables	Effect for 1000 HIVST distributed by ATLAS	95% CI	p-value
HIV testing (utilisation rate of HIVST of 80%)	+590	356 to 821	<0·001
HIV testing (utilisation rate of HIVST of 60%)	+390	160 to 625	<0·001
Conventional testing	-190	-427 to 38	0·10
HIV diagnosis	+8	0 to 15	0·044
ART initiations	-2	-8 to 5	0·66
[1]CI = Confidence Interval. ART = antiretroviral treatment.			

Table 1: Linear effect of number of HIVST distributed via ATLAS on access to HIV testing, on 'conventional' testing, HIV diagnosis and ART initiation, in 78 health districts monitored by PEPFAR in Côte d'Ivoire (Q3-2019 to Q1-2021), adjusted by quarter year and region.

Conclusions: Our study provides a standard methodology for estimating the population-level impact of HIVST that can be used across countries. It shows that HIVST distribution was associated with increased access to HIV testing and diagnosis in Côte d'Ivoire. Wide-scale adoption of this method will improve HIVST data quality and inform evidence-based programming.

EPC363

HIV self-testing to increase combination prevention demand among men who have sex with men (MSM) and transgender women (TGW): a randomized clinical trial and sub-study of the ImPrEP project

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Background: HIV self-testing (HIVST) is highly accurate and recommended by WHO to increase HIV testing. This study evaluated the feasibility and effectiveness of HIVST secondary distribution by PrEP users to increase demand for HIV combination prevention among MSM/TGW.
Methods: This randomized controlled trial enrolled MSM and TGW using PrEP for at least six months from the ImPrEP demonstration study at two sites in Rio de Janeiro, Brazil, and three sites in Lima, Peru. Participants were 1:1 randomized to receive 5 HIVST+vouchers (to be distributed together) or 5 vouchers (control arm) and were instructed to distribute them to their MSM/TGW network. All participants randomized to HIVST+Vouchers were trained on the HIVST. All vouchers invited individuals for combination HIV prevention services at study sites, including HIV testing, PrEP, TasP, and PEP. Each voucher contained a barcode allowing the linkage of participant who distributed the test to the recruited individual attending the site. Chi-square testing was used to compare the recruitment yield by arms stratified by country.
Results: From July/2019 to January/2021, Brazil invited 705 participants and enrolled 418 (59%), while in Peru, 325 were invited and 276 (85%) were enrolled; randomization resulted in balanced groups. Recruitment yield was slightly higher in the voucher-only group in Brazil (p=0.069), whereas in Peru recruitment yield was much higher among voucher-only holders (p<0.001).

	HIVST + Voucher			Voucher Only			
	# Successfully recruited	# HIVST + Vouchers distributed	% Successfully recruited participants	# Successfully recruited	# Vouchers distributed	% Successfully recruited participants	Chi-2 p-value
Brazil	68	747	9.1	87	724	12.0	0.069
Peru	62	518	12.0	104	475	21.9	<0.001

Among the 135 recruited in Brazil, 14 (10%) were identified as HIV-positive (9 via HIVST arm) and 73 (54%) were enrolled in PrEP. Among the 177 recruited in Peru, 20 (11%) were identified as HIV-positive (8 via HIVST arm), and 137 (77%) were enrolled in PrEP. All individuals identified as HIV-positive started antiretroviral treatment.
Conclusions: Both arms successfully recruited MSM/TGW for HIV combined prevention consultation. In Peru the voucher-only arm was more successful at recruiting individuals to health services. HIVST may have contributed to awareness of HIV status among MSM and TGW in the community, although not possible to quantify. Individuals with HIVST negative result may deem additional HIV services unnecessary, despite PrEP availability at all sites.

EPC364

HIV self-testing to reach African American and Latino MSM in Alameda County (California)

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Background: The Centers for Disease Control and Prevention (CDC) recommends that people at higher risk of acquiring HIV should test for HIV annually. For African-American (AA) and Latino MSM, HIV-related stigma, discrimination, and homophobia are barriers to accessing HIV testing. The COVID-19 pandemic significantly disrupted HIV prevention and testing activities. In April 2020, the CDC issued guidance encouraging programs expe-

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riencing a disruption to consider the use of self-testing. Research demonstrates self-testing effectively increases testing among MSM, including those previously not tested. Self-testing increases access to testing for populations who have not sought testing for reasons cited previously. Building Healthy Online Communities and NASTAD began offering HIV self-testing through TakeMeHome in March 2020. Alameda County Public Health Department (ACPHD) joined the program in September 2020.

Description: ACPHD implemented self-testing to increase access to HIV testing for priority populations, including AA and Latino MSM, specifically focusing on younger MSM. Self-test kits are available to Alameda County (AC) residents 18 or older who report not having tested for HIV in 12-months or longer. Kits are shipped directly to the requestor with instructions on collecting the oral-fluid specimen and interpreting results. Local referral resources are provided. Kits are promoted on gay dating apps and other social media. ACPHD partnered with local organizations and neighboring health departments to promote self-testing.

Lessons learned: Between September 2020 and September 2021, 226 kits were distributed. 84% were ordered by males. Of these, 42% were ordered by AA or Latinos compared to 19% by Whites. Compared to published national self-testing data, ACPHD reached higher percentages of non-white participants (68% vs. 44%) and those 35 or younger (75% vs. 69%); in AC 39% of kits were ordered by people 24 and younger. More AC testers (42%) report not testing previously compared to the national data (36%). A higher percent of AC participants (42%) reported no previous test. Of those testing previously, 58% report not testing in the last year.

Conclusions/Next steps: HIV self-testing successfully reaches MSM of color, including younger MSM. ACPHD will expand self-testing to include HIV dried bloodspot, multisite gonorrhea and Chlamydia, and syphilis.

EPC365

Facilitators and barriers to HIV self-testing among female sex workers in Bulawayo Province, 2021

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Background: Understanding the factors that facilitate and obstruct utilization of HIV self-testing among female sex workers will assist in demand-creation for HIV testing services in Bulawayo Province. This study presents the facilitators and barriers to HIV self-testing among female sex workers in Bulawayo Province, Zimbabwe.

Methods: An unmatched case-control study involving 66(37.3%) cases and 111(62.7%) controls was carried out from 31.08.2021 to 01.12.2021 at Bulawayo Province in Zimbabwe. Convenience sampling was used to select participants which were interviewed using a structured interviewer-administered questionnaire. Univariate analysis and forward-stepwise logistic regression were used to predict uptake of HIV self-testing within the past three months, with the model adjusting for age and employment status.

Results: The mean age of the respondents was 27.8 years (SD 5.76). The following factors emerged significant from the univariate analysis; private hospital space (OR 4.9, 95% CI 2.5-9.4, p<0.001), perceived seriousness of HIV infection (OR 3.3, 95% CI 1.7-6.2, p<0.001), access to peer support (OR 3.3, 95% CI 1.7-6.2, p<0.001), employment status (OR 3.3, 95% CI 1.0-5.3, p<0.006), recent illness (OR 2.9, 95% CI 1.5-5.5, p<0.001), having been treated for a sexually transmitted infection (STI) (OR 2.0, 95% CI 1.0-3.7, p<0.027), knowledge of were to get tested (OR 2.0, 95% CI 1.1-3.8, p<0.030), access to HIV information (OR 0.5, 95% CI 0.3-0.9, p<0.001) and delays in turnaround time (OR 0.4, 95% CI 0.2-0.7, p<0.001).

Findings from the multivariate logistic regression revealed that perceptions that hospitals were a private space (aOR 4.4, 95% CI 2.5-9.4, p<0.001), perception of the seriousness of an HIV infection (aOR 2.7, 95% CI 1.3-5.9, p<0.01), having peer support to do an HIV test (aOR 2.3, 95% CI 1.0-5.3, p<0.001) and delays in turnaround time (aOR 0.3, 95% CI 0.1-0.6, p<0.001) were significantly associated with using HIV self-testing.

Conclusions: Strategies to improve uptake of HIV testing by female sex workers in Bulawayo Province should consider these factors, particularly the need to improve peer support and awareness of HIV. The emergent barriers of waiting time and privacy signify the need to rollout the HIV self-testing model without delay.

EPC366

Acceptability and feasibility of HIV self-testing among street adolescents in Togo in 2021

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Background: HIV self-testing is a complementary testing strategy especially for populations with limited access to health care facilities such as street adolescents. The aim of this study was to assess the acceptability and feasibility of HIV self-testing among street adolescents in Togo.

Methods: A cross-sectional study was carried out in July 2021, in Lomé (capital city of Togo). Adolescents of both sexes, living in the street at least three months, aged 13 to 19 years were included. A face-to-face questionnaire was administered to document their knowledge and practices on sexual and reproductive health (SRH). A blood sample was taken for HIV testing according to national strategies. In addition, a self-test (OraQuick®) was used.
We defined Acceptability as the proportion of participants who completed the self-test and Feasibility was the proportion of street adolescents who took the test and reported valid self-test results.
Results: A total of 307 street adolescents of median age 15 years, interquartile range (IQR) [14-17], of which 5.2% (n=16) were female were included in this study. Nearly 7 in 10 street adolescents (69.5%) were sexually active, of whom 71.2% (n=221) reported not using a condom during their last sexual intercourse. A history of HIV testing was reported by 16.6% (n=51) of street adolescents. HIV prevalence was estimated at 1.0% (n=4), 95% confidence interval (95% CI) [0.3-3.1]. The self-test was offered to 171 street adolescents. Acceptability was 91.9% (157/171), 95%CI [86.5-95.3] and feasibility was 97.5% (153/157), 95%CI [93.2-99.2]. The results of the self-test were correctly read by 96.8% of street adolescents.
Conclusions: Self-testing is acceptable and feasible among street adolescents in Lomé. The implementation of the self-test, particularly through advanced listening centers, could help improve access to screening services and allow rapid care for street adolescents.

EPC367
Designing an intervention to support HIV self-testing among women engaged in sex work and drug use in Kazakhstan

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Background: In Kazakhstan, women who exchange sex and use drugs (WESUD) are at increased risk of HIV infection, yet face barriers to consistent testing. HIV self-testing (HST) is one promising method to facilitate more consistent testing, and has been shown to be acceptable and effective among WESUD in other regions. To inform the expansion of HST access for WESUD in Kazakhstan, we evaluated their preferences for HST access, use and training and developed an intervention to increase uptake of HST and encourage consistent or frequent HIV testing.
Methods: We conducted 30 in-depth interviews and 4 focus groups with 48 WESUD in two Kazakhstani cities, Almaty and Taldykorgan. Participants were recruited through snowball sampling at two local, trusted NGOs serving WESUD. We utilized the framework method for pragmatic analysis of data and intervention mapping methods to develop an intervention and HST programming.
Results: WESUD have high interest in HST due to HIV stigma experienced through other HIV testing settings. Four implications for HST programming emerged:
1. Training and HST kit access that is responsive and adaptive to WESUD needs (training in-person and virtually at multiple locations, access to HST at a variety of locations);
2. Social support and stigma (learning with social network members, interest in training fellow sex workers, impact of HIV and intersectional stigma on uptake of HIV testing);
3. Linkage to care/referrals (concerns around confirmatory HIV testing, need for services like legal aid, gynecologists, and psychologists);
4. Potential negative impacts of HST (depression, suicidal ideation and attempts in response to positive results, client and intimate partner violence, loss of work/livelihood).
Based on these results, we designed a 4-session intervention to support HST, linkage to HIV care (if positive) and prevention (if negative) by addressing awareness, access, outcome expectancies, stigma, negative outcomes, and social support.
Conclusions: A HST training and support program for women who exchange sex work and use drugs in Kazakhstan must reflect the needs and preferences of this key population. Also needed are structural, community and institutional interventions to reduce both potential negative consequences of and thus barriers to testing, such as social stigmatization, exclusion and loss of material resources.

EPC368
Availability and accessibility of HIV self-tests and self-sample kits at community pharmacies in the Netherlands

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Background: In 2016 the WHO declared HIV self-testing and self-sampling an effective and safe test option that can reduce testing barriers. Supporting the use of HIV self-tests and self-sampling kits (HIV-ST/SS) is not included in the Dutch national HIV policy, but HIV self-tests are

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available for purchase at Dutch community pharmacies since 2019. We investigated the availability and accessibility of HIV-ST/SS in community pharmacies and factors associated with the HIV-ST/SS offer.

Methods: A survey by email among all Dutch community pharmacies (n=1,987) was conducted in April-June 2021 through the Royal Dutch Pharmacists Association (KNMP). Pharmacy/pharmacist characteristics associated with the HIV-ST/SS offer were explored by logistic regression analysis. Experiences of pharmacists with the HIV-ST/SS offer were descriptively analyzed. Last, we analyzed pharmacy HIV-ST/SS dispensing data (2019-2021) from the Foundation for Pharmaceutical Statistics (SFK database).

Results: In total, 465 pharmacists completed the questionnaire; covering an estimated 20.0-23.4% of all Dutch community pharmacies. Of the responding pharmacists, 6.2% (29/465) offered HIV-ST/SS. The majority (78.6%) sold only small numbers per year: 0-20 tests, 13.8% sold 20-40 tests, and 3.4% >40 tests. In total, pharmacies sold an estimated 370 HIV-ST/SS per year. The SFK database showed similar results: an average of 355 HIV-ST/SS dispensations per year between 2019-2021.

Pharmacies that offer HIV-ST/SS were less often located in moderately urbanized to rural neighborhoods (OR 0.35, 95%CI 0.16-0.77 versus highly urbanized), and less often located in low-to-medium SES neighborhoods (OR 0.40, 95%CI 0.18-0.88 versus high SES). Important reasons for not offering HIV-ST/SS by pharmacists were no or little demand (69.3%), and not being familiar with HIV-ST/SS (17.4%). Of the pharmacists, 52% provided information about testing to clients who buy a test. Options to improve the test offer, reported by pharmacists, were giving advice to test buyers (72.4%), placing the tests visible on the counter (51.7%), and advertisement (37.9%).

Conclusions: HIV-ST/SS have limited practical availability in Dutch community pharmacies since its introduction in 2019, especially in lower urbanized and lower SES areas. Pharmacists see opportunities to improve the test offer. Further research is needed to explore how to expand access to HIV-ST/SS through community pharmacies in the Netherlands.

EPC369

Launching oral-based HIV self-testing (HIVST) in Sri Lanka through the COVID-19 pandemic

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Background: HIV testing services are compromised due to COVID -19 pandemic. Availability of HIV self-testing (HIVST) may help to increase awareness of HIV infection for people who would not otherwise get an HIV test. Oral HIVST kits distribution was piloted to expand HIV testing access, in the context of COVID-19.

Description: Ten thousand (10,000) Oral kits were secured by the National STD/AIDS Control Program (NSACP) for distribution starting in December 01.2020, through cycles of COVID-19 waves. Kits were distributed through many entry points, the network of community-based organizations (CBOs), public Sexually Transmitted Diseases (STD) clinics, web-based portal (www.know4sure.lk), social media posts, and a hotline that was established for clients to order a free kit. User demographic information was collected upon distribution of a kit to a client.

Reporting client's self-test result was encouraged, but not mandatory. Following distribution, staff or peers supported clients to access for services for PrEP, STI testing & ART services.

Lessons learned: As of December 31, 2021 a total of 7996/10000 (80%) HIVST kits were distributed to 32 sites across Sri Lanka, of which 16 were CBOs (5275 kits), 11 were government STD clinics (2475 kits) throughout Sri Lanka. Of the distributed kits, nearly 3500 individuals reported their results. A total of 17 self-tests were reactive, of which 14 reactive cases were reported through CBOs, one reactive reported through government STD clinic and two were reported by ordering through social media and hotline system. Of these reactive individuals 14 were confirmed being positive and linked to ART services. HIVST was useful in identifying individuals who are not accessing routine public STD clinics for HIV testing, and CBOs were particularly well placed to pivot and support clients seeking HIVST kits.

Conclusions/Next steps: This is the first pilot in Sri Lanka that showcases HIVST is well accepted by individuals through a variety of outlets for distribution. Based on our

findings, HIVST is an effective way to reach key populations who have never tested for HIV. An additional 10,000 kits have been secured and additional models of distribution, including pharmacies, are being explored. More in-depth analysis is underway in order to inform national scale-up.

EPC370

Feasibility of OraQuick HIV self-test in people who inject drugs, men who have sex with men, female sex workers, and transgenders in Iran: a national study

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Background: This study was designed to evaluate the feasibility (percentage of satisfaction and acceptance) of using the OraQuick HIV self-test (OraQuick HIVST) in PWIDs and the development and availability of this test in the populations of MSM, FSWs, and TGs in more parts of Iran.
Methods: This study was a cross-sectional study that was conducted in November 2021, at 23 centers from 8 provinces in Iran including Tehran, Alborz, Iranshahr, Yasuj, Kurdistan, Mazandaran, Hamedan, and Lorestan.
The study population was included high-risk groups of MSM, FSWs, and TGs in order to develop the use of OraQuick HIVST and access PWIDs for evaluating the test feasibility.
The sampling method in this study was convenience sampling and the test distribution methods were facility-based, home-based HIV testing and counseling (HTC).
Results: In total, the participants in the present study were 1384 PWIDs and 1563 MSM, FSWs, and TGs. Overall, the test result was reactive in 21 patients (1.52%) of the PWIDs participating in the study.
Approximately, 97% of the participants stated that they had no problem with the confidentiality of information when preparing or performing the test (satisfaction). In general, the average feasibility based on 5 assessment questions in this group was equal to 6.25 out of 7.
The acceptance of using HIV self-tests in injecting drug users was 100%. Of the total groups of MSM, FSWs, and TGs, 1059 people (67.75%) were FSWs, 258 (16.51%) were MSM, 83 (5.31%) were TGs and the rest were sexual partners.
The test result was reactive in 15 participants (0.96%), of whom 3 were FSWs, 2 were partners of FSWs, 7 were MSM, 1 was a partner of MSM, and 2 were TGs.
Conclusions: The results of the present study showed that the OraQuick HIVST in the high-risk populations of Iran, including MSM, FSWs, TGs, and PWIDs, had very high acceptability. Therefore, according to these results, this type of test can be used in these high-risk populations for access to the hidden community of these populations, early and appropriate identification of key HIV-infected people, and proper implementation of screening, care, and treatment programs related to HIV.

EPC371

Tailoring HIVST to local communities can improve uptake: lessons learned from a virtual HIV self-testing intervention in India

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Background: To achieve UNAIDS 95-95-95 targets in India, innovative strategies are needed to increase uptake of HIV testing among unreached groups. HIV self-testing (HIVST) offers a promising way to reach new clients and overcome barriers to in-person testing.
Description: A web-based platform for HIVST was launched in June 2021. Virtual counsellors contacted clients across 28 Indian states and territories on dating apps and social media platforms and directed interested clients to HIVST via home delivery or pick up at a community site. Linkage to confirmatory testing, ART, or PrEP was provided as needed. Descriptive statistics were used to characterize outcomes. We conducted in-depth interviews over the phone from Dec 2021-Jan 2022 with clients who ordered HIVST kits. Respondents were purposively sampled by region, gender, age, kit retrieval method, and HIVST result. Transcripts were analyzed using deductive thematic analysis.
Lessons learned: Between June 30, 2021-Jan 21, 2022, 2,610 total clients ordered an HIVST kit and 2,185 received one. Among them, 2,018 (92%) uploaded results, 93 (5%) screened positive, and 31 (33%) were linked to confirmatory testing. 25 (81%) were confirmed positive and 25 (100%) initiated ART. We interviewed 20 of these clients aged 19-45years (75% men, 5% women, 20% transgender women), 18 of whom screened negative and 2 screened positive. Clients said they were interested in HIVST because they could test privately, get results quickly, and avoid stigmatizing experiences at facilities. Clients appreciated the option of home delivery, confidential packaging, and picture/video instructions showing how to complete the kit. Clients shared that virtual counselor support and patience was instrumental in guiding and motivating them

to complete HIVST, and for those who screened positive, pursue confirmatory testing. Reported barriers included a lack of local languages on the website and kit instructions, and lack of messaging from trusted sources on the accuracy of HIVST. Clients felt strongly that HIVST should be promoted widely to general as well as key populations.
Conclusions/Next steps: HIVST reaches populations who remain unreached with existing HIV testing approaches. Tailoring HIVST strategies to incorporate local languages and counseling options can help build trust among communities and further improve uptake of HIVST.

EPC372

A comprehensive population-based approach to HIV testing, including nominal, anonymous and directed HIV self-testing

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Background: Ontario's HIV testing strategy has long included population targeted nominal and anonymous testing for gay, bisexual or other men who have sex with men, people who use injection drugs, African, Caribbean and Black people, and Indigenous Peoples. To incorporate self-testing in a comprehensive strategy, and to increase access to HIV testing during the COVID-19 pandemic, Ontario implemented a free HIV self-testing program targeted to key populations, where participants register and complete a self-assessment online (www.GetaKit.ca). Participants receive kits by mail, report their results in a secure portal, and are linked to care and resources.
Methods: Nearly all HIV testing in Ontario is conducted at the Public Health Ontario's laboratory, and HIV testing is monitored by demographics and risk factors. In preparation for self testing licensure in Canada, GetaKit launched July 20, 2020 in Ottawa, Canada with special access; licensure was approved in Nov 2020, and the program expanded across Ontario April 1, 2021.
Results: The pandemic had a profound impact on HIV testing, (2019: 677,254 tests; 2020: 500,517 tests). Anonymous testing was particularly impacted (2019: 16,478 tests; 2020: 5,309 tests). When HIV risk factors were known, the percent of tests within target populations increased (2019: 25%, 2020: 27%). The positivity rate was unchanged at 0.01% for all testing, and increased in anonymous tests (2019: 0.47%, 2020: 0.81%). GetaKit sent 1,748 tests from July 2020 to Dec 2021, with a test result report rate of 64% (1,111/1,748). In preliminary analysis, ~70% of testers reported risk and demographic factors of targeted populations. There were 8 confirmed positive tests, with a test positivity of 0.46% (8/1,748) overall, and 0.72% (8/1,111) for all reported results.
Conclusions: HIV self-testing is a critical component of a comprehensive testing program. During the pandemic, self-testing provided a needed resource for people at risk for HIV. As clinic access improves with the pandemic, and self-testing is more widely available, the demographics and positivity rates of GetaKit participants must be monitored. The high positivity rates for both anonymous testing and self-testing during the pandemic indicate that those programs are well targeted to those populations at greatest risk of HIV.

EPC373

HIVST among children, adolescents and pregnant and breastfeeding women: implementation results and enablers for scale-up

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Background: In 2020, ART coverage was 44% for children and 45% for pregnant women living with HIV in Nigeria. Since 2016, WHO has recommended HIV self-testing (HIVST) for under-reached populations, and in 2019, approved use among children aged 2-11 years by trained professionals. National guidelines for HIVST further allow caregiver-assisted testing; however, HIVST for all populations is limited. CHAI is supporting the Federal Ministry of Health (FMoH) to demonstrate effective HIVST delivery models and identify enablers for scale-up.
Methods: Between April- December 2021, CHAI and FMoH supported training and commodities for HIVST among children aged 2-11 of index clients via HIV testing services (HTS) officers at 9 facilities, adolescents/ young people (AYP) via adolescent champions at 9 Adolescent and Youth Friendly Centers (AYFC) and pregnant and breastfeeding women (PBFW) via 8 traditional birth attendants (TBAs) in Anambra and Akwa-Ibom states. Data collected included client demographics, testing history, HIVST mode, results, confirmatory testing and ART linkage from FMoH monthly summary forms and operational insights from CHAI-led learning sessions.
Results: Across models, 2,100 HIVST kits were distributed and 2,049 (98%) utilized. Thirty-eight (2%) clients self-reported reactive results, 32 (84%) received confirmatory testing and 32 (1.6%) were identified HIV-positive (Table). Yields were 0.9%, 2.9% and 1.8% in facility index testing, AYFC and TBA models respectively, and all were linked to ART. Overall, 95% of tests were for first-time testers and 94% were conducted with assistance by distributors.

Distribution Model	HIVST Kits Distributed	HIVST kits distributed for secondary use	HIVST kits distributed for First- Time Testers	HIVST Conducted	HIVST Assisted by Distributor	Results Reported	Reactive Results	Clients receiving Confirmatory Tests	Clients Identified HIV-Positive	Clients Linked to ART
Facility index testing for children aged 2-11	1,100 (52%)	n/a	1,100 (100%)	1,054 (96%)	1,054 (100%)	1,023 (97%)	10 (1%)	9 (90%)	9 (0.9%)	9 (100%)
AYFC for AYP and their peers	451 (21%)	152 (34%)	443 (98%)	446 (99%)	330 (74%)	443 (99%)	13 (3%)	13 (100%)	13 (2.9%)	13 (100%)
TBA for PBFW	549 (26%)	n/a	444 (81%)	549 (100%)	542 (99%)	549 (100%)	15 (3%)	10 (67%)	10 (1.8%)	10 (100%)
Total	2,100		1,987 (95%)	2,049 (98%)	1,926 (94%)	2,015 (98%)	38 (2%)	32 (84%)	32 (1.6%)	32 (100%)

EPC373 Table.

At AYFCs, 34% of HIVST kits were collected for secondary use. Distributors and target populations recommended community sensitization, incentives such as condoms, additional distribution points and resources for follow-up to improve uptake and confirmatory testing.

Conclusions: Decentralized, peer-driven models for HIVST can be effective for testing, including adolescent social network testing, and ART linkage; however, uptake was low and further research is needed on improving yields among children. To optimize impact, HIV programs should leverage existing venues and cadres serving target populations, prioritize demand generation and train distributors to provide support aligned with client preferences.

EPC374

Promoting HIV self-testing services among adolescents and young people using social marketing technologies: a case study of SMARTPack intervention in Lagos, Nigeria

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Background: Adolescents and Young People (AYP) are under-served by the convectional HIV Testing Services due to social stigma and inadequate youth-friendly services in Nigeria. Only 1 out of 5 AYP (15-24 years) know their HIV status; thus, the need for innovative testing strategies targeting AYP. HIV Self-Testing (HIVST) is a promising approach towards fast-tracking the 95-95-95 UNAIDS target by 2030. However, implementable and sustainable strategies of HIVST among AYP in Lagos, Nigeria are unknown. This study explored the use of SMARTPack intervention to increase uptake of HIV testing services among AYP.

Methods: The OraQuick HIVST kit was re-branded and repackaged as "SMARTPack" with value added commodities including: male and female condoms, lubricants, wrist band, Free STI services upon completion of user journey, coupon referrals to Youth Friendly Health Centers (YFC) to qualify for raffle draws for chances to win prizes and following a peer-led approach by AYP and for AYP. It was then marketed to AYP in Lagos State from August, 2019 to March, 2020. Data on socio-demographic, sexual history, and previous HIV testing were collected using structured questionnaires at baseline and after 6 months of follow-up. Information on SMARTPack perception in relation to affordability and stigma reduction were also collected. Descriptive statistics using mean, standard deviation and proportion were employed.

Results: A total of 114 AYP comprising 60 males (52.6%) with mean age 21.0±2.9years were reached. At follow-up, 91% had undertaken a second HIV self-test and 71% had been linked to YFC for confirmatory testing irrespective of their HIVST result, either reactive or non-reactive. Forty-six percent of AYP diagnosed with STI at the YFC received treatment including those confirmed HIV positive enrolled into care. Also, 85% agreed that SMARTPack reduced social stigma associated with HIV testing; 59% were willing to disclose their result to a caregiver. About half (52%) of AYP could afford SMARTPack every 6 months at a mean price of N1,225.35(USD3.22)±NGN803.86(USD2.11).

Conclusions: AYP in Lagos perceived SMARTPack as a discreet and affordable HIVST option which could improve testing rate and referrals. Scaling up strategies such as SMARTPack could accelerate efforts to achieve the 95-95-95 UNAIDS targets.

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EPC375

Uptake of free mail-home hiv self-tests among gay, bisexual, queer, and trans men and two-spirit and non-binary people across Canada: the Sex Now 2021 Test@Home Implementation Science Study

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Background: Canada approved its first HIV self-test in 2020. We developed a community-based implementation study that provided free mail-home HIV self-tests. We sought to examine which gay, bisexual, trans, and queer men as well as Indigenous Two-Spirit and non-binary people (GBTQ2) across Canada opted-in to participate.

Methods: Participants were recruited from 03/2021-09/2021 via an online community health survey that used advertisements on sociosexual websites/apps, and community-based organizations' social media and email lists. Eligible participants were at least 18 years old, lived in Canada, and either identified as non-heterosexual or reported recent sex with a man.

Women were ineligible. After completing a baseline questionnaire, participants could opt-into Test@Home and request up to 3 free HIV self-tests that were mailed within 36 hours to their chosen address, which could be used by the participant or distributed to others.

Participants completed a 2-week follow-up survey. Trained peer support was available via text, email, or toll-free telephone. Chi-square tests compared participants who opted into Test@Home versus not on demographic and sexual health indicators ($p<0.05$ significant).

Results: Of 6098 Sex Now participants, 2261 (37.1%) opted into Test@Home with 5395 self-tests distributed (mean=2.39/participant).

Test@Home participants were more likely to be aged <30 (33.1% versus 26.2%), born outside Canada (25.2% versus 19.6%), live in urban cores (32.4% versus 24.7%), experience financial strain ("cannot make ends meet": 10.3% versus 6.5%), be single (54.3% versus 43.5%), report a past-year STI diagnosis (22.7% versus 17.6%), have an HIV Incidence Risk Index-MSM score >10 (56.4% versus 40.6%), and to identify as a person of colour (20.2% versus 14.9%) and disabled (18.1% versus 13.3%). Test@Home participants were less likely to identify as bisexual (17.2% versus 31.0%), be first-time testers (9.2% versus 16.5%) and self-report living with HIV (3.9% versus 9.6%).

At follow-up, participant experiences with HIV self-tests were positive (e.g., 88.0% reported it was easy to use, 94.9% would recommend to others); the greatest benefits of Test@Home were convenience (80.9%), privacy (65.9%), and free-cost (50.7%).

Conclusions: Mail-home HIV self-tests reached several, but not all, key sub-populations of GBTQ2. Additional follow-up to 6-months will further understandings of HIV self-test use, distribution, and linkage to care.

EPC376

Expanding free HIV Self-Testing (HIVST) with community health-based follow-up in New York City

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Background: GMHC's Testing Center, located in New York City, provides free and confidential HIV testing and counseling, and linkage to medical and supportive services. The COVID-19 pandemic disrupted free HIV/STI testing services, thus free at-home HIV Testing (HIVST) was introduced, facilitated by the local health department (NYC DOHMH). GMHC distributed HIVST to community members and monitored testing outcomes.

Description: From April 2020 to December 2021 the HIVST program provided coupon codes for clients to order a free OraQuick In-Home HIV test. The NYC DOHMH program provided over 4,300 coupon codes to partners throughout New York; GMHC provided 549 codes to clients. The program was available to anyone who might need an HIV test, including both first-time testers and those who test regularly. Clients were mailed kits and then were contacted by a GMHC test counselor two weeks after.

Lessons learned: GMHC distributed HIVST to 510 clients and successfully followed up with 241(47.3%) clients. 219(90.9%) clients reported using their kits and 30 PrEP, 3 PEP, and 10 STI referrals were made. In comparison with those who chose to be tested in person, HIVST users were more likely to be women or heterosexuals. Most notably we saw an increase in first-time testers with 23.9% (n=221) HIVST users compared to 7.9% (n=4718) in-person testers.

Conclusions/Next steps: HIVST has been shown as an effective additional testing option. However, concerns have been cited with difficulty in result-reporting and providing appropriate medical follow-up. Patients have cited the price of HIVST as a barrier. Our program demonstrated high uptake of HIVST when the cost barrier was removed, particularly among first-time HIV testers. Counselors were able to successfully connect with clients to confirm kit arrival and us and to provide counseling, education, and medical referrals virtually.

The ability to provide accurate, safe and free at-home testing represents a pathway to provide testing to individuals who might not otherwise seek services. Programs such as the one described in this project, where public health departments partner with community-based organizations and primary care providers to establish a network of test distribution and follow-up, can be a powerful tool to engage more at-risk individuals in regular testing.

EPC377

Examining the use of HIV self-testing to support PrEP initiation and continuation: a systematic literature review

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Background: While HIV pre-exposure prophylaxis (PrEP) access has been expanding globally, initiation and continuation remain low and service delivery challenges persist. HIV self-testing (HIVST) has the potential to expand PrEP reach and access by simplifying delivery.

We conducted a systematic literature review to understand the evidence on HIVST use for PrEP initiation/continuation.

Methods: We searched electronic databases, clinical trial registries, and conference abstracts until 25 August 2021; our search strategy included terms to identify studies focused on HIVST use for PrEP initiation and/or continuation.

We included studies that measured: effectiveness (including comparative and case studies with no comparison), values and preferences (V&P), and economic outcomes.

Two authors identified studies for inclusion and extracted data; we reported outcomes descriptively and resolved any disagreements through consensus.

Results: After screening 1,053 records, we identified 18 relevant studies: 15 effectiveness (7 randomized trials, 8 case studies), 3 V&P, and 3 economic studies (3 studies were included in multiple categories).

Most studies occurred in sub-Saharan Africa (67%, 12/18) and included diverse populations. All studies (100%, 18/18) reported PrEP continuation and few (22%, 4/18) reported initiation.

Of the trials and case studies, 71% (5/7) and 38% (3/8 respectively were protocols with no reported outcomes.

One trial used HIVST to reduce the number of PrEP clinic visits in half with at-home interim testing, another trial used HIVST to provide supportive testing between quarterly clinic visits; both found either non-inferior or no statistically significant differences in refilling and/or adherence (i.e., continuation) compared to standard-of-care delivery.

In the case studies, HIVST helped optimize PrEP delivery and facilitate PrEP initiation/continuation in new settings (e.g., retail pharmacies) at levels similar to clinic-based delivery.

The V&P studies found that HIVST-supported models of PrEP delivery were preferred; the economic studies found that people were willing to pay for these models.

Conclusions: Our review found that HIVST use for PrEP initiation and continuation largely resulted in similar outcomes to standard-of-care PrEP delivery. HIVST-supported PrEP-delivery models were also found to be preferred by various populations. This review will inform the development of WHO guidelines. This remains an important area for further review following the completion of ongoing studies.

EPC378

The impact of the COVID-19 pandemic on profiles of STI testing and sexual behaviours among clients attending a STI self-testing clinic in Quebec: A Latent Class Analysis

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Background: Sexually transmitted infections (STI) self-testing clinics aim to reduce barriers and stigma experienced by clients and reach high-risk populations that may not be engaged in regular medical care. We examined how STI testing and sexual behaviours changed as a result of the COVID-19 pandemic.

Methods: Prélib is a STI self-screening clinic that combines an Internet-based consultation and self-screening in Quebec, Canada. Prospective data was collected from anonymous questionnaire on demographics and sexual risk between December 2018-2021.

We used a Latent Class Analysis to identify distinct phenotypes of client attending the clinic based on recent condomless sex, the number of sexual partners in the past 2 months, sex under the influence of drugs, STI testing habits, past diagnosis, and MSM (men who have sex with other men).

We then evaluated if phenotypes changed as a result of the pandemic. Logistic regression was used to estimate the association of testing positive to any STI and latent class membership.

Results: Of 22,927 participants included in the analysis, 6,633 attended the clinic pre-pandemic and 16,294 post-pandemic. Clients were on average 28 years old, 45% female, and 10% MSM. We identified 4 phenotypes (see Figure 1) that remained consistent over time: "Safe sex with stable partner" (pre-; vs post-pandemic: 20%,17%), "Recent condomless sex with occasional testing" (35%; 49%), "Casual sex partners with regular testing, MSM" (18%; 11%), and "First time testers" (28%; 23%).

Compared to "safe sex", other class membership was associated with odds of testing positive to at least one STI (Chlamydia, Gonorrhea, syphilis, HBV, HIV) (OR=2.7 [95% CI: 2.0-3.7]; 5.8 [4.2-8.1]; 3.3 [2.4-4.4], respectively).

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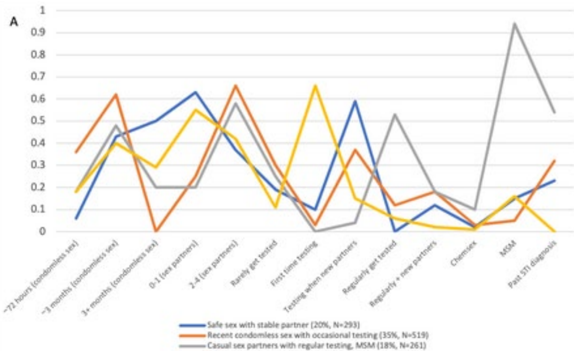

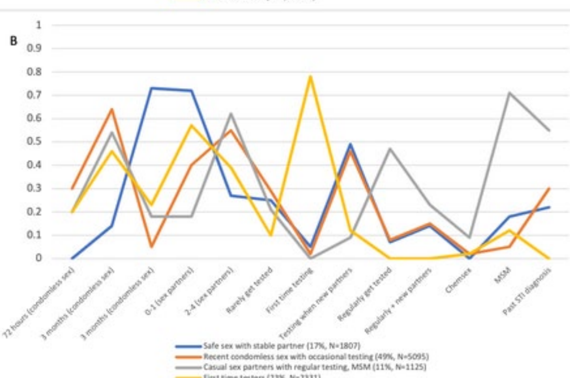

Figure 1. Sexual risk factor profile by latent class among individuals attending clinic A) before March 14, 2020, and; B) after May 14, 2020, based on predicted probability of class assignment.

Conclusions: The clinic was accessed by high-risk groups as well as first time testers. While testing increased post-pandemic, the characteristics of groups of clienteles attending the clinic remained constant, illustrating the resilience and importance of the self-testing clinics for sexual health.

EPC379

Feasibility of using Motorcycle Riders to distribute HIV Self-testing kits to notified contacts of HIV positive Index patients in Kampala Uganda

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Background: Despite a policy promoting HIV Self-test (HIVST) among contacts of HIV positive index patients, some notified clients fail to visit the health facility to take the test. We evaluated the impact of using motorcycle riders in the delivery and uptake of the oral HIVST among notified clients of HIV positive index patients.

Methods: From May 2019 to December 2021, we examined the feasibility of using motorcycle riders to deliver HIVST kits to notified contacts of HIV positive Index patients (IP). Participants were recruited through assisted partner notification (APN) and the Ante Natal clinics. We determined feasibility based on willingness of notified partners to give a trusted motorcycle rider the HIVST kit. Upon receipt of the kit, the contact was assisted on phone by the health provider to carry out the test in private. Results of the HIVST were shared with the provider on phone/via whatsapp and the used kits returned by the rider to the provider for accountability and verification.

Results: Half of the patients (55.55%) were male, average age 33 years. Approximately half (48.7%) preferred and used motorcycles suggesting that motorcycle delivery was acceptable. 147 (13.6%) tested positive, 933 (86.4%) tested negative. Positivity yield among motorcycle users was 83 % (122/147) compared to 17% (25/147) among facility mode. The motorcycle users were 7 times AOR more likely to test positive compared to those who use visited the facility 7.16 (4.26 – 12.03) (p-value 0.0000). Males were three times more likely to use the motorcycle compared to females (AOR 2.83 (2.11- 3.79), (p< 0.05). Age was positively associated with using a motorcycle. Men aged 30-49 were 8 more likely to use as a motorcycle times AOR 8.54 (2.28 – 31.10), p. Clients notified through APN were 67% less likely to come to the facility for testing AOR 32.81 (13.11 – 82.07) p<0.000.

Conclusions: Use of motorcycles is an effective strategy for notified clients of HIV positive index patients who are least likely to utilize the hospital for testing (particularly men). Using a motorcycle was associated with positive test, suggesting that we are capturing Individuals with an unknown HIV status, had they not accessed HIVST using motorcycles.

EPC380

Understanding the bottlenecks that affect the supply chain of HIV self testing; a qualitative study from key stakeholders' perspective

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Background: HIV self-testing (HIVST) offers users an opportunity to check their HIV status in the comfort of their homes. However, there are key challenges with supply chain management that influence the availability and accessibility of HIVST in Nigeria. The study aimed to explore key stakeholders' perspectives on supply chain challenges affecting the availability and accessibility of HIV self-testing in Nigeria.

Methods: We conducted a qualitative descriptive study between July – August 2021 through semi-structured in-depth interviews with key supply chain stakeholders of HIVST kits in Nigeria. Data was uploaded, coded, and summarized using a qualitative software package, Nvivo. Data were transcribed verbatim and analyzed using thematic analysis and bottlenecks were identified.

Results: Our findings showed that manufacturers face challenges with forecasting and are often scared to manufacture enough HIV self test kits which leads to delays

and stock-outs. Disruptions of operations due to COVID-19 and poor insights into the number of kits per language to produce were additional bottlenecks identified by manufacturers.

Furthermore, distributors identified disruptions due to insecurity, storage issues due to Nigeria climate and potential profitability of HIV self testing as bottlenecks at each step in the supply chain. These bottlenecks had an impact on HIV self test kit supply and distribution in Nigeria, thus preventing potential users from accessing kits.

The manufacturers and distributors also stated they encountered difficulty when introducing new HIV self test products to the Nigerian market under local regulations especially with the high cost of clinical testing requirements mandated by regulators.

Conclusions: While there are various bottlenecks observed in impacting HIVST supply and distribution in Nigeria, utilizing existing data to improve forecasting, review of processes for new HIVST products and contingency planning can reduce the bottlenecks experienced in the supply chain thus improving the accessibility of HIVST by consumers.

EPC381

How much does HIV self-testing cost in low and middle income countries? A systematic review of evidence from economic studies

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Background: HIV self-testing (HIVST) has been proposed as an innovative strategy to diagnose human immunodeficiency virus (HIV). While HIVST offers the potential to broaden accessibility of early HIV diagnosis and treatment initiation, this testing strategy incurs additional cost and requires individuals with positive ST to follow up with confirmatory testing and treatment. We have conducted the first systematic review to date, summarizing the currently economic literature for HIVST in low and middle income countries (LMICs).

Methods: A search strategy was developed including key terms for HIV, self-testing and costs and was conducted in two databases. Studies published up until October 15, 2021 were included. Abstract and full text screening was conducted and a standardized data abstraction form was used for included studies.

Results: We identified 23 studies, that provided both cost and outcome data on HIVST. There was significant heterogeneity in the HIVST intervention, study population, costs included and outcomes reported among included studies. Cost per person tested ranged from $2-144 USD. Cost per case diagnosed ranged from $23-1249 USD. Cost-utility estimates ranged from cost-saving to $2000 USD per DALY averted. Higher cost-effectiveness estimates were associated with more expensive testing algorithms with increased support for linkage to care and post-test counseling.

Conclusions: All studies considered HIVST cost-effective although major drivers were identified included underlying HIV prevalence, testing cost and linkage to care. HIVST is likely to be cost-effective in a LMIC context, however policy makers should be aware of the drivers of cost-effectiveness when implementing HIVST programs as these underlying factors can impact the overall cost-effectiveness of HIVST.

EPC382

An Economic Model of HIV Self-Testing

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Background: HIV self-testing (HIVST) is an innovative strategy that has been shown to increase the accessibility and uptake of HIV testing compared to conventional facility-based testing. It can be provided with digital or community based supports that help facilitate linkage to post-test counselling and confirmatory testing after a positive self-test.

Methods: We developed a cost-effectiveness model to predict the cost-utility of HIVST in addition to facility based testing alone among the general population (15-65 years of age). We included a base case estimate and several emblematic scenarios where HIVST scaleup may be considered. We parametrized a combined Markov and decision tree model using comprehensive literature reviews on the cost, effectiveness and epidemiological parameters associated with HIVST along with digital or community based supports.

Results: We found that HIVST is cost effective at a threshold of 3xGDP per capita in all scenarios tested. Our base case scenario predicted that HIVST would be highly cost effective and associated with a cost of $513 USD/DALY averted. Our model predicted that the cost/DALY averted through HIVST was lowest when modeled in Malawi (a low-income, high prevalence setting) and highest when modeled in Brazil (a middle-income, low prevalence setting). Implementing HIVST among high-risk subgroups, such as men who have sex with men (MSM), increased cost-effectiveness due to increased underlying prevalence of undiagnosed HIV.

Conclusions: Both digital and community based supports for HIVST were associated with increased cost, but similar cost utility due to improved uptake and linkage to care. The cost utility associated with HIVST varied between contexts and the drivers of cost utility should be carefully considered prior to implementation of HIV self-testing programs. Main drivers of cost utility included underlying HIV prevalence, testing & programmatic costs, linkage to care and antiretroviral (ART) initiation rates. On a policy level, these drivers should be considered prior to implementation of HIVST programs.

It is imperative to investigate the cost-effectiveness of screening programs, to advocate for the most efficient allocation of resources. Our model suggests that HIVST is cost-effective due to improved diagnosis, treatment and ultimately mitigation of the morbidity and mortality associated with HIV/AIDS.

EPC383

Why does secondary distribution happen? A social network modeling study in HIV self-testing among Chinese MSM

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Background: Many innovative strategies for HIV self-testing (HIVST) promotion were developed, such as secondary distribution. In HIVST secondary distribution (HIVST-SD), individuals (defined as indexes) first apply for multiple HIVST kits and then distribute these HIVST kits to their social network neighbors in their social network (defined as alters). In this study, we aim to find reasons why secondary distribution happens in an HIVST-SD implementation program by understanding how an edge (between the index node and the alter node) comes into being among Chinese MSM.

Methods: There are two types of edges between the index node and the alter node: unidirectional edge and bidirectional edge. Through unidirectional edges, the index plans to distribute kits to his target alters according to the baseline survey completed by indexes. Through bidirectional edges, the index successfully distributed kits to alters as the testing result was returned and the testing survey was completed by the alter. Followed by descriptive analysis and ego-centric network analysis, multilevel models and exponential random graph models (ERGM) were used to interpret the formation of unidirectional edges and bidirectional edges (i.e., why secondary distribution happens in edges) respectively.

Results: There were 309 MSM indexes participating in our HIVST-SD program in Zhuhai, China. The multilevel modeling results showed that some factors (e.g., index-alter relationship) were significantly associated with secondary distribution choices of the indexes (i.e., distribution willing in unidirectional edges).

For instance, compared to other non-specified relationships, the index and the alter being lovers mostly increased the odds ratio of the index being willing to distribute kits (aOR=54.95, 95% CI=[3.21, 94.16], p<0.01).

ERGM also showed that some factors could lead to the real happening of secondary distribution (i.e., distribution behavior in bidirectional edge).

For example, if the absolute value of ages' difference between the index and the alter is smaller, then the secondary distribution is more likely to appear (Monte Caro MLE estimates=-0.068, Std.Error=0.014, p<0.001).

Conclusions: Our study discovered the endopathic factors (intrinsic dynamics) of secondary distribution happening instead of the exopathic factors (external interventions) in previous HIVST-SD studies (e.g., monetary incentives). This work can provide insights into guiding HIVST-SD implementation programs in the future.

EPC384

A pilot feasibility study of HIV self-testing with online supervision among MSM who attend sexualized drug parties in Thailand

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Background: A volatile HIV epidemic is emerging among MSM in Asia, particularly among MSM who attend sexualized drug parties (SDP). While sustained HIV testing is an effective intervention tool, venue-based testing present numerous challenges. This study examines the feasibility of HIV self-testing with online supervision (STOS) among MSM who attend SDP.

Methods: Between September and December 2021, MSM age 18+ who reported HIV negative or unknown status, and had attended at least one SDP in the past 12 months were recruited with the assistance of community-based partners and social media platforms (e.g., private Line® chat groups, private Facebook® groups, and private Twitter® groups). STOS involves sending a 4th generation Alere Determine™ HIV-1/2 finger prick self-testing kit to the participant's home, coupled with support from a counselor via video conferencing.

Participants who tested positive confirmed results at our community-based clinic partner. Exit interviews with 10 MSM were conducted to assess intervention fidelity and acceptability.

Results: Of 508 MSM recruited, 303 were eligible and willing to conduct STOS. Of these, 267 successfully conducted STOS at baseline where 25.8% tested positive and 1.9% were inconclusive. At 3-month follow-up, 175 participants were sent test kits and 153 successfully conducted STOS where 100% tested negative. Participants preferred STOS, compared to venue-based testing. They also felt that STOS was more convenient, free from stigma and discrimination by health care providers, and the process was more confidential and their identity/personal information (e.g., HIV test results) was better protected. Participants who tested positive were quickly linked to HIV care, treatment and support (100% linkage).

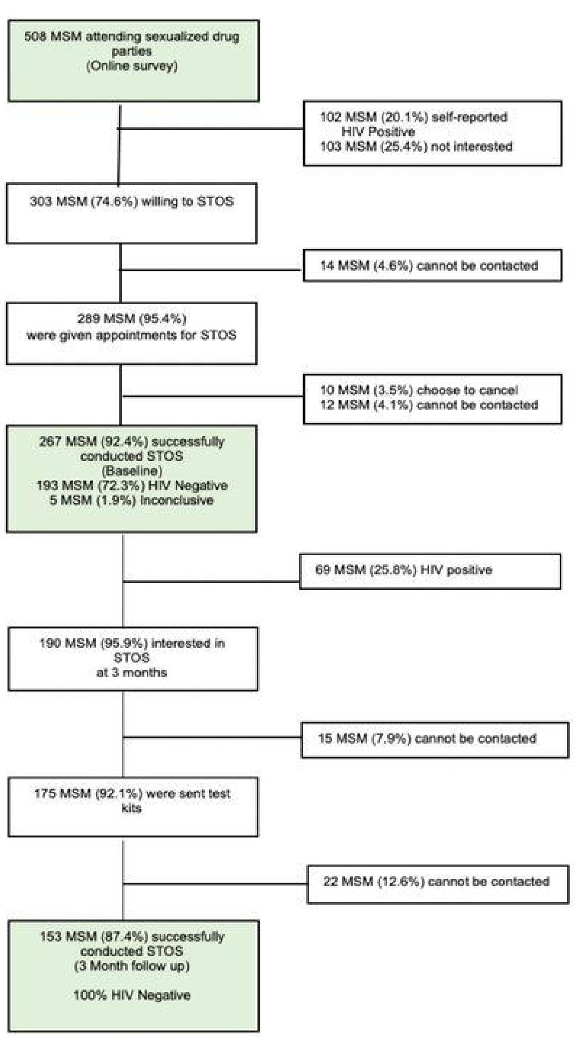

Figure 1. HIV self-testing with online supervision (STOS) among MSM attending sexualized drug parties.

Conclusions: STOS proved to be feasible and acceptable among MSM who attend SDP, particularly during the COVID-19 lockdowns where many HIV testing venues were closed. For a population where HIV prevalence is high, STOS may be a viable option for sustained testing.

EPC385

Peer-led community HIV self-testing (HIVST) distribution models improves access to HIV testing services (HTS) among key populations (KP) in Uganda

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Background: Key populations (KP) in Uganda continue to be disproportionately affected by HIV, with a prevalence two-to five-times greater than the general population, driven by deep-rooted stigma and harsh cultural and legal environments. More targeted HIV case-finding strategies tailored to KP preferences are required to improve reach and access to HTS services.

Through the Unitaid/STAR-III project, PATH worked with Ministry of Health to introduce peer-delivered, community HIVST delivery models in three central Ugandan districts to strengthen HIV testing services for KPs.

Description: KP peer leaders provided community-based HIVST services through: household outreach, community outreach events, KP hotspots, and KP drop-in centers. Peer leaders were trained to deliver HTS counseling, and provide assisted and unassisted HIVST.

For KP opting for unassisted HIVST, peer leaders followed up by phone or WhatsApp to confirm HIVST result and provided escorted referrals for confirmatory diagnosis and treatment initiation. Peer leaders were given transportation and airtime to support follow-up and referrals.

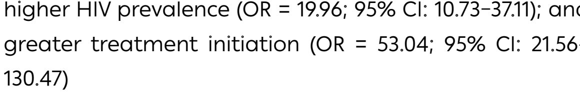
We analyzed program data from Wakiso, Kampala, and Mukono Districts from November 2020 to December 2021 to understand these models' contribution to KP HIVST uptake and linkage to treatment.

	HIVST distributed	HIVST results returned	Reactive HIVST results	Linkage to confirmatory diagnosis	Confirmed HIV-positive	Initiated on treatment
Community distribution	65,222	64,974	712	697	686	681 (99%)
Other distribution modalities	96,354	93,965	793	697	528	380 (71%)
Total	161,576	158,839	1,505	1,394	1,214	1,061

Table.

Lessons learned: As summarized in the table, 40.4% of all HIVST kits distributed during the implementation period was through peer-driven community.

Peer-led community distribution model led to higher percentage of HIVST results returned (odds ratio [OR]= 6.66; 95% confidence interval [CI]: 5.84–7.59); higher reactivity rate (OR = 1.31; 95% CI: 1.18–1.45); greater linkage to confirmatory diagnostic services (OR = 6.40; 95% CI: 3.67–11.13);



higher HIV prevalence (OR = 19.96; 95% CI: 10.73–37.11); and greater treatment initiation (OR = 53.04; 95% CI: 21.56–130.47)

Conclusions/Next steps: Our results highlight the feasibility, acceptability, and effectiveness of peer-led community HIVST distribution models to reach KPs with HTS and link clients to treatment services. Peer-led models that offer differentiated and decentralized HTS should be scaled up further to address KP barriers to testing and help Uganda reach epidemic control.

HIV testing algorithms

EPC386

Gap in diagnosis ofHIV exposed infantsin Cambodia Exposes theneedfor the integration ofpoint-of-care testingto achievethe elimination of mother-to-child transmission

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Background: Cambodia's progress in the elimination of mother-to-child transmission (eMTCT) achieved 95% antenatal care coverage, 90% HIV screening in ANC, and 86% antiretroviral coverage.

However, early infant diagnosis (EID) coverage is only 78% and the vertical transmission rate is high at 12%. Cambodia's HIV testing guidelines recommend DNA PCR tests for HIV exposed infants (HEI) at birth (PCR1), 6 weeks (PCR2), and 6 weeks post-breastfeeding (PCR3).

Description: To understand the gaps in adherence of the testing algorithm for HEI, NMCHC and NCHADS analyzed nationwide HEI testing data from 2020 to 2021 using the annual laboratory database maintained by the government. This analysis was based on an algorithm where 2020 and 2021 data, extracted from the national lab is used to reflect the gaps in the testing cascade and sample transportation, in the context of COVID-19 disruption. A total of 1,649 samples were analyzed over the 2-year period.

Lessons learned: Limited point-of-care testing and COVID-19 disruptions led to substantial turnaround time (TAT) and loss to follow up, with the number of samples reduced by 30% in 2021. Over 50% of patients experienced long TAT for test results, defined as >2 weeks from sample collection to lab result dispatch.

- Testing algorithm adherence was low in the 2020-2021 period due to COVID-19. In 2020, 64% received at-birth testing or a PCR1 test, 22% received a PCR2 test, and only 1.4% received a PCR3 test. In 2021, at-birth or PCR1 testing was at 40%, PCR2 testing was at 34%, and PCR3 testing was not observed. Substantial testing decline is rooted in high LTFU and limited monitoring.
- 43% of samples had TAT of <2 weeks in 2020, and this figure declined to 19% in 2021, illustrating a critical need for efficient sample transport.

Conclusions/Next steps: Limited EID access to reach 0-3 day TAT and low adherence to the testing algorithm are major barriers to achieving Cambodia's goal of eMTCT by 2025. Cambodia should explore point-of-care DNA-PCR testing (GeneXpert) to reduce TAT and improve adherence, thereby reducing LTFU for pregnant women and children. Strengthening breastfeeding data and testing to inform HIV vertical transmission estimates reduce vertical transmission via breastfeeding.

HIV testing to support prevention

EPC387

Exploring profiles of HIV and STI testing. A latent class analysis of men who have sex with men (MSM) in Sweden

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Background: Aggregated evidence on the effective antiretroviral therapies effects on HIV transmission contributes to further importance of differentiated HIV testing strategies, to shorten the time between infection and diagnosis. With substantial proportions of late presenters among men who have sex with men in Sweden and increases in STI incidence, there is a need for increased knowledge on testing behaviors to inform future HIV and STI testing strategies.

This study aimed to identify sub-groups of MSM based on HIV and STI testing behaviors and study associated factors.

Methods: Data were collected through a cross-sectional survey at six HIV testing venues in Sweden, three community-based and three within the public health care system in Sweden. Inclusion criteria were identifying as a man,

≥18 years, having had sex with a man during the preceding 12 months, and not reporting an HIV diagnosis, which resulted in a sample of 669 MSM. Heterogeneity of testing profiles in the sample was analyzed through latent class analysis (LCA), and associated factors examined through multinomial logistic regressions.

Results: Based on model fit and interpretability,a five-class model was deemed optimal, identifying five distinct sub-groups of MSM; Class 1 "Seldom community testers", Class 2 "Routine community testers", Class 3 "Seldom health care testers", Class 4 "Frequent health care testers", and Class 5 "Medically motivated testers". Multinomial logistic regression showed associations between HIV-risk related covariates and class membership, in comparison to class 1, with larger effect sizes in classes 4 and 5, predominantly testing within the health care system.

Conclusions: Groups with MSM who predominantly got tested within the health care system had higher probabilities of risk-associated behaviors and bacterial STI infections. Groups predominantly getting tested at community-based venues would likely benefit from improved STI testing frequencies.

EPC388

Low uptake of exposure-influenced HIV testing among a sample of pre/post-exposure prophylaxis (PrEP/PEP) naïve young men who have sex with men in two U.S. cities: implication for targeted interventions

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Background: Numerous studies have documented the prevalence and predictor of HIV testing uptake among YMSM in the US. However, these findings can be confounded by failing to disentangle the contexts in which HIV testing is initiated. For instance, whether HIV testing is self-initiated due to perceived heightened HIV risk after recent sexual exposure to HIV (i.e., exposure-influenced HIV testing) or triggered by scenarios such as research participation, PrEP candidacy evaluation, or HIV testing for financial incentives (i.e., passive HIV testing). As exposure-influenced HIV testing represents a crucial HIV testing mechanism to detect individuals with the highest probabilities of HIV seroconversion, we conducted the present study to pinpoint its prevalence and correlates.

Methods: A cross-sectional study was conducted in Nashville, TN, and Buffalo, NY, among YMSM self-reported as PrEP/PEP-naïve and having engaged in various risky sexual behaviors (e.g., condomless anal sex, substance use before sex, and/or group sex) in the past 24 months before the study participation. Data were collected using a self-administered questionnaire survey on various demographics, psychosocial factors, substance use, risky sexual behaviors, HIV prevention indicators, and frequency of exposure-influenced HIV testing (*never/rarely vs. mostly/always*). We used multivariable log-linked Poisson regression models to assess the significant correlates of seeking exposure-influenced HIV testing.

Results: Of the 261 eligible YMSM, only 26.5% reported *mostly/always seeking* exposure-influenced HIV testing in the past 24 months. Multivariable analyses showed that younger age, sexual orientation non-disclosure, perceived HIV stigma, internalized homophobia, lower general resilience, and lower perceived social support were associated with a lower likelihood of mostly/always seeking exposure-influenced HIV testing.

YMSM who *never/rarely* sought exposure-influenced HIV testing were more likely to use recreational drugs before sex, binge drinking alcohol, have group sex; while less likely to be aware of PrEP, test for sexually transmitted infections, and demonstrated condom use self-efficacy compared to those *mostly/always seeking*exposure-influenced HIV testing.

Conclusions: Exposure-influenced HIV testing is suboptimal among YMSM at high HIV risk (i.e., non-PrEP/PEP using YMSM who frequently engage in risky sexual behaviors). Findings from our study may help inform the design of future targeted interventions to promote exposure-influenced HIV testing among high-risk YMSM in the US.

EPC389

Experiences implementing partner notification in the private sector in Jamaica

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Background: The USAID/PEPFAR funded Health Connect Jamaica (HCJ) project aims to expand access to high-quality HIV-services in the private health sector for prevention, testing, treatment, and viral suppression. Services are provided through a network of private clinicians and laboratories across the entire country.

Description: All HIV positive persons accessing services within the network are offered partner notification services (PNS). Those who accept are linked to trained contact investigators who use the Partner Notification Register to collect information on is used to collect socio-demographic, sexual history, and medical information on reported contacts. Contacts are then contacted directly or using the Online Reservation Application (ORA) that sends anonymous messages to contacts who are difficult to locate, suggesting that they should go and do a HIV test.

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Lessons learned: During a 15-month period (October 2020 to December 2021), 199 persons were offered PNS and 80.4% (160/199) accepted; 74 (37.1%) were ART Naïve/Newly Diagnosed with HIV and 125 (62.8%) were ART Experienced. A greater proportion of males (87% [72/84]) than females (75.5% [88/115]) accepted PNS (p<0.05).

Provider referral (32%) was the most common requested method for contacting partners followed by contractual referral (11%) while 56% did not have a preference.

Of the 280 contacts, 126 (45%) were tested for HIV and 13 (10.3%) were HIV positive; while 50 (29 males and 21 females) contacts were known HIV positive cases; 35 (12.5%) refused testing while 69 (24.6%) were not found due to incomplete, incorrect, or missing contact information. Uptake for testing was significantly higher (p<0.01) among males (69.4%, [86/210]) than females (57.1%, [40/70]).

The average age of an index case that accepted partner notification was 36 years, while the average age of a contact elicited was 34 years. Lack of perceived confidentiality was the most common reason cited by index cases who refused to participate in the PNS. Many index cases who did not provide contacts on first request did so during follow up visits.

Conclusions/Next steps: There is a high uptake of PNS among HIV-positive persons accessing services in the private sector. Further investigation will be required to develop a comprehensive understanding of PNS among this population.

HIV testing to support identification of new cases of people living with HIV

EPC390

Predicting HIV testing outcome among vulnerable children and adolescents: analysis from a large PEPFAR program in Nigeria

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Background: Out of the 191,395 children and adolescents estimated to be living with HIV (CALHIV) in Nigeria in 2020, only 46,461 (24%) are on treatment. Children and adolescents are being left behind in the fight against HIV.

The Pediatric ART Saturation Strategy (PASS) is an integrated pediatric case-finding model implemented across PEPFAR/USAID-funded states in Nigeria which leverages community-based OVC case managers to close gaps across the pediatric clinical cascade for CALHIV. We examined HIV testing from the PASS.

Methods: Trained OVC community case managers conducted HIV testing among CALHIV in areas with high HIV prevalence in three states from May-July 2021. Inclusion criteria were being a biological child of PLHIV, children living with positive caregivers, and survivors of gender-based violence.

Associations between the client's gender and HIV status were assessed using chi-square tests. ANOVA was used to determine associations of HIV positivity by age band (0-4, 5-9, 10-15, and 16-19) and by state. We conducted a linear regression analysis to predict any relationship between age and HIV positivity.

Results: Number of tests, N=18076 (Male – 8126, Female – 9950), positives= 94 (Male – 50, Female – 44), Positivity rate, 0.5% (Male– 0.6%, Female – 0.4%). Testing for the different age bands: 1-4 (tested n=2169, pos n=14), 5-9 (tested n=4497, pos n=22), 10-14 (tested n =5514, pos n =22) and 15 -19 (tested n=5896, pos n =36).

There is no significant association between gender and HIV positivity yield -$\chi^2(1)$, p=0.119. No significant difference in HIV test and positivity yield across the different age bands by state -Tested: F (4, 69) = 0.898, p =0.471: Positive F (4, 69) = 0.898, p=0.471).

A linear regression analysis predicted that testing children aged 15-19 could significantly increase HIV positivity yield -F (1, 13) =13.31, p= 0.00332.

Conclusions: Testing adolescents (15-19) gives higher testing positivity yield compared to other age bands. A focus on this age group is essential towards ensuring HIV epidemic control among children and adolescents.

The low testing positivity yield among children <15 could be due to a significant reduction in vertical transmission of HIV from mother to child over the years. Further studies will be required to ascertain this finding.

EPC391

Prison-based assisted partner notification (APN) services to increase HIV testing among sex and drug-injecting partners of HIV-positive incarcerated men in Indonesia

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Background: With assisted partner notification (APN), trained health care workers assist people diagnosed with HIV to voluntarily identify their at-risk sex and/or drug-injecting partners and to inform these partners of possible HIV exposure along with offering access to voluntary HIV testing. Despite numerous studies demonstrating APN's

efficacy, little is known of its success when used with prison populations. To help address this gap, we describe pilot findings from a randomized trial in Indonesia to evaluate the effects of APN on increasing HIV testing among sex and/or needle-sharing partners of HIV-positive men incarcerated in Indonesia.

Methods: We recruited 55 HIV-positive inmates from 5 all-male correctional facilities in Jakarta as index participants for a pilot, 2-group randomized trial comparing the effects of APN versus self-tell partner notification (NCT04155320).

Participants voluntarily provided names and contact information for partners with whom they possibly had shared an HIV sex and/or drug-injecting exposure immediately before incarceration.

Men randomized to a self-tell condition were encouraged and coached to notify their partners by phone or in person within 6 weeks.

Men randomized to APN could choose to self-tell or have a nurse or peer counselor notify their partner(s) anonymously. Logistic regression using robust standard errors to account for clustering due to index participants with multiple partners examined group differences in partner outcomes.

Results: Overall, index participants (n=55) named 117 partners (70% female, 30% male). Compared to self-tell notification, APN resulted in nearly a 6-fold increase (uOR=5.9, 95%CI: 2.5, 13.6,*p*<0.001) in the odds of named partners being notified of exposure (56.8% of partners, 29/51, were notified in the APN group versus 18%, 12/66, in the self-tell notification group.

Moreover, about half of notified partners in the APN group (51.7%, 15/29) completed HIV testing, compared to no partners in the self-tell notification group. One third of APN partners who completed HIV testing (33%, 5/15) were newly HIV-diagnosed.

Conclusions: APN shows promise to increase HIV testing and diagnosis among sex and drug-injecting partners of incarcerated men with HIV and should be considered for implementation in jails and prisons in Indonesia and elsewhere.

EPC392

Index partner testing among recency testing clients in BMA health facilities in Bangkok, Thailand, 2020 - 2021

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Background: Bangkok Metropolitan Administration (BMA) started index partner testing services in December 2019 and recency testing in October 2020. We describe index partner testing among newly-diagnosed HIV-infected persons who accepted recency testing in health facilities during October 2020 – September 2021.

Methods: Newly diagnosed PLHIV at least 13 years of age receiving HIV services at 15 BMA sites were offered the Asante Rapid Test for Recent Infection (RTRI), followed by viral load test (Recent Infection Testing Algorithm, RITA) to confirm recent infection status. Index testing services were offered to all HIV-infected clients during the initial visit. Exposed contacts of index clients (i.e., sexual partners and drug injecting partners within the past year, biological children, or biological parents if child was the index client) were elicited and offered HIV testing services. Recency and index testing results were reported in separate databases and linked with an Application Programming Interface. Descriptive statistics and Fisher's exact test summarized results of index partner testing among HIV recent and long-term infection (LT) clients.

Results: Of 492 eligible newly diagnosed cases consenting for RITA, 295 (60%) were offered index testing services and 150/295 (51%) provided contact information. Of 43 recent index cases, 9 (21%) accepted index testing with an elicitation ratio of 1:1.1. Of the 6 partners successfully contacted, 1 was already aware of HIV-positive status and 1/5 (20%) tested HIV-positive. Of 449 LT index cases, 141 (31%) accepted index testing with an elicitation ratio of 1:1. Of the 102 partners successfully contacted, 16 were already aware of HIV-positive status and 26/86 (30%) tested HIV-positive. Partner HIV-positivity did not differ by recency status (p>.05) and 25/27 (93%) HIV-positive partners initiated antiretroviral treatment (ART) within 7 days. No locatable information was mainly cited by recent and LT index cases whose contacts could not be elicited (55% and 44%, respectively).

Conclusions: Integrating recency and index testing services is feasible. Index partner testing identified high HIV-positivity yield among partners of recent and LT index cases. Increased coverage of index testing will generate a more robust effort to improve partner solicitation and testing to help Thailand end AIDS by 2030.

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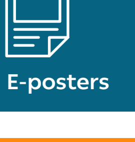
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Identifying population-specific HIV diagnosis gaps in Western Africa and assessing their impact on new infections: a modelling analysis for Côte d'Ivoire, Mali and Senegal

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Background: Progress towards HIV elimination in Western Africa may be hindered by diagnosis gaps among people living with HIV (PLHIV), especially among key populations (KP) such as female sex workers (FSW), their clients, and men who have sex with men (MSM).
We aimed to identify largest gaps in diagnosis by risk group in Mali, Côte d'Ivoire, and Senegal, and project their contribution to new HIV infections.
Methods: Deterministic models of HIV transmission/diagnosis/treatment that incorporate HIV transmission among KP were parameterized following comprehensive country-specific reviews of demographic, behavioural, HIV and intervention data.
The model was calibrated to country- and group-specific empirical outcomes such as HIV incidence/prevalence, the fractions of PLHIV ever tested, diagnosed, and on treatment.
We estimated the distribution of undiagnosed PLHIV by risk group in 2020 and the population-attributable-fractions (tPAFs) (i.e. fraction of new primary and secondary HIV infections 2020-2029 originating from risk groups of undiagnosed PLHIV).
Results: From 46% (95% UI: 38-58) to 69% (59-79) of undiagnosed PLHIV in 2020 were males, with the lowest proportion in Mali and the highest proportion in Senegal, where 41% (28-59) of undiagnosed PLHIV were MSM. Undiagnosed men are estimated to contribute most new HIV infections occurring over 2020-2029 (Table).
Undiagnosed FSW and their clients contribute substantial proportions of new HIV infections in Mali, with tPAF=20% (10-36) and tPAF=43% (26-56), respectively, while undiagnosed MSM in Senegal are estimated to contribute half of new infections. A lower proportion of new HIV infections are transmitted by undiagnosed KP in Côte d'Ivoire (tPAF=21%(10-38)).

	Mali	Côte d'Ivoire	Senegal
All women	43% (35-54)	35% (29-42)	16% (9-22)
All men	67% (59-73)	56% (48-65)	72% (60-80)
FSW	20% (10-36)	6% (2-14)	8% (3-17)
Clients of FSW	43% (26-56)	16% (7-33)	15% (6-24)
MSM	5% (2-10)	2% (1-5)	51% (37-68)
KPs combined	53% (35-67)	21% (10-38)	68% (54-79)
Non-KPs women	25% (18-32)	30% (23-37)	7% (4-13)
Non-KPs men	21% (8-36)	39% (22-50)	6% (2-13)

Table. Estimated fraction of all new primary and secondary HIV infections over 2020-2029 originating from undiagnosed PLHIV from risk groups (tPAF: median and 95% uncertainty interval). The sum of the tPAFs over mutually exclusive groups exceeds the tPAF of their combined group as it accounts for secondary transmissions that may overlap for different groups.

Conclusions: Current HIV testing services and approaches are leaving members of KP behind. Increasing the availability of confidential HIV testing modalities in addition to traditional tests may substantially reduce gaps in HIV diagnosis and accelerate the decrease of new HIV infections in Western Africa since half of them could be transmitted by undiagnosed KP.

EPC394

The feasibility and acceptability of prison-based voluntary assisted partner notification among incarcerated men with HIV and their community partners

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Background: Assisted partner notification (APN) safely and effectively increases HIV testing, but it has not been well-studied for implementation in correctional settings. We report findings from a 2-group randomized trial examining the acceptability and feasibility of prison-based APN among incarcerated men with HIV and their sex and needle-sharing partners in Indonesia (NCT04155320).
Methods: We recruited 55 male prison inmates with HIV who consented to voluntarily name and notify partners with whom they had shared a sex and/or drug-related exposure immediately before incarceration. Participants were randomly assigned initially to either a self-tell condition or an APN option that allowed them to choose between sell-tell or having a trained nurse or counselor

notify their partner(s). After 6 weeks, APN services were offered to participants in both groups to inform sell-tell partners whom they had failed to notify themselves. We examined APN's uptake, number of partners notified, and inmate/partner satisfaction with APN when offered in a prison setting.

Results: Participants (n=55) named 117 partners for notification with whom they had shared a possible HIV exposure before incarceration. Including selection at 6-weeks, APN was the preferred notification method for 70% of partners (82/117) whom index participants chose to notify.

Overall, nearly half of partners selected for APN (49.4%) were successfully notified. Successful notification did not differ statistically by partners age or gender. Neither did notification rates vary statistically among main sex partners (58%), drug-injecting partners (52%), and casual or regular sex partners (41%, *p*=0.366).

At follow-up, index participants indicated mostly favorable attitudes toward APN with few regrets about notifying partners. Follow-up interviews with partners (n=28) indicated that APN was favorably received, with most partners (75%) concluding they were better off having been notified.

Conclusions: Prison-based APN appears a feasible and acceptable service to implement among incarcerated men with HIV who otherwise have limited means to notify their at-risk partners in the community.

EPC395

Confidentiality counts: HIV testing among U.S. adolescents more likely in states with laws protecting the confidentiality of minors insured as dependents

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Background: In the United States, adolescents are the age group least likely to be aware of their HIV infection, contributing to disproportionately low rates of viral suppression and increased risk of transmitting HIV to others. Confidentiality concerns are a major barrier to health care for adolescents, suggesting that state laws related to confidentiality in sexual health services may influence their HIV testing practices.

This study tested the hypothesis that state laws protecting the confidentiality of minors insured as dependents (e.g., to prevent parental disclosure through a health insurance explanation of benefits statement) would be significantly associated with lifetime HIV testing among a large, representative sample of sexually active U.S. high school students.

Methods: Data were aggregated from 27 states that participated in the 2019 state-level Youth Risk Behavior Surveillance System (N=26,754). We utilized multilevel logistic regression to evaluate the relationship between state laws protecting the confidentiality of insured dependents and lifetime HIV testing, adjusting for individual- (i.e., sex, grade, race/ethnicity, sexual risk behavior) and state-level covariates (i.e., estimated population, median household income, percentage of the population that graduated high school, percentage of the population that is non-Hispanic white, percentage of the population without health insurance, lifetime HIV testing among adults).

Results: Of the full sample, approximately 48% were male, 50% were white, 39% were in the 12th grade, 69% reported sexual risk behavior, and 19% reported lifetime HIV testing.

Consistent with our hypothesis, state laws protecting the confidentiality of insured dependents were significantly associated with lifetime HIV testing (AOR: 1.39, CI: 1.35-1.43, *p*<.001).

When results were disaggregated by sex, state laws protecting the confidentiality of insured dependents were associated with lifetime HIV testing for male adolescents only (AOR: 2.37, CI: 2.21-2.53, *p*<.001).

Conclusions: This study provides initial evidence of an association between state laws protecting the confidentiality of minors insured as dependents and lifetime HIV testing among sexually active U.S. high school students – particularly males.

Findings underscore the need to address confidentiality-related barriers to HIV testing in order to improve health outcomes among the age group least likely to be aware of their HIV infection.

EPC396

Expanding index testing to social networks among female sex workers in Burundi

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Background: The PEPFAR- and USAID-funded Meeting Targets and Maintaining Epidemic Control (EpiC) project implemented an HIV prevention and treatment program for key populations (KPs) in Burundi.

The purpose of the program was to reach KP to support them to access HIV and other health services to reduce HIV acquisition and transmission, and work toward achieving the UNAIDS 95-95-95 goals.

Description: From April to September 2021, risk network referral (RNR) was implemented among newly diagnosed FSWs to improve the reach and delivery of HIV testing to members of their social networks who were at risk of HIV but had not yet tested. RNR was offered during index testing and was the fifth referral option after the traditional four options (passive, dual, contract, provider) recommended by the World Health Organization. An index case was offered coupons to distribute to members of their sexual, social, and risk networks to encourage them to get tested for HIV.

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Lessons learned: RNR was an effective HIV testing strategy among FSWs compared to other testing options. For RNR, a total of 414 coupons were distributed and 352 (85%) were returned. Most individuals (87%) who returned the coupons reported being friends with the person who gave them it, and most agreed to get tested (345/352, 98%). About 75% of those who tested HIV positive were ages 25-39 years. Those who had been tested within the last six to 12 months had an HIV case-finding rate of 25%.
Overall case finding among FSWs through all testing modalities was 6.6% compared to 17% among RNR contacts. Using the Pearson Chi^2 test, these results were found to be statistically significant, as the RNR outcome had a higher positivity rate than standard testing (p-value = <0.001).
Conclusions/Next steps: Effective and efficient testing modalities are necessary to reach the first 95 UNAIDS goal. RNR was successful in identifying a higher number of newly diagnosed individuals who were social contacts of FSW compared to other testing modalities. RNR should be scaled among social networks, but also among individuals in their sexual networks as contact information among paid and occasional partners may be limited.

EPC397

Earlier HIV diagnosis of clients at higher CD4 counts: effectiveness of community-led HIV testing sites within key populations in Thailand

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Background: Late HIV diagnosis and delayed antiretroviral therapy (ART) initiation can significantly increase mortality among people living with HIV. In a study using the national AIDS database within eight provinces in Thailand, the median CD4 count at diagnosis for those initiating ART at public hospitals from 2014 through 2018 was 162 (IQR 44-353 cells/mm3). Those with CD4 counts below 200 were four times as likely to die within five years.
Methods: The USAID/PEPFAR-support EpiC project supports key population (KP), community-led HIV testing and treatment for men who have sex with men (MSM), transgender women, and sex workers (SWs) at 13 sites in provinces with high HIV prevalence. HIV counseling and testing are conducted according to national guidelines, and point-of-care CD4 testing is conducted after HIV diagnosis is confirmed. We evaluated CD4 at the time of diagnosis and factors significantly associated with being diagnosed at higher CD4 counts. CD4 was treated as a categorical variable, and Pearson chi-squared tests were conducted to explore factors associated with being diagnosed at CD4 ≥ 200.
Results: From October 2016 through September 2021, 6,119 clients were diagnosed with HIV. A total of 6,077 received CD4 testing, 98% (n=5,955) of whom were male at birth. Mean CD4 at time of diagnosis was 397.1 with a standard deviation of 226.4. CD4 was ≥200 among 81.9% (n=4,796).
Factors significantly associated with higher CD4 at diagnosis included younger age, method of being reached for HIV testing, and KP group. Walk-in clients had lowest percentage of high CD4 at HIV diagnosis [78.9%] compared to clients reached via peer referral [85.7%] or trained community outreach workers [86.6%] [X^2=39.42, p<0.0001. All SWs [87.3%] and MSM [81.5%] more likely to have higher CD4 compared to transgender women [79.6%] and non-KPs [73.2%], [X^2=19.63, p<0.0001]).
Conclusions: Community-led HIV testing diagnosed clients earlier than testing at public hospitals. Those reached by trained community outreach workers or peer referral were more likely to be diagnosed at a higher CD4 count than walk-in clients; however, all HIV testing at community-led health services diagnosed clients at higher CD4 counts. National programs should support expansion of community-led HIV testing.

EPC398

Improving HIV partner notification in the Netherlands: a qualitative study from the perspective of index patients, notified partners, and community actors

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Background: A (cost-)effective approach to earlier detect HIV is to test partners of newly diagnosed individuals. This study explored barriers for partner notification (PN) and options to improve PN, by interviewing index patients, notified partners, and community actors.
Methods: Semi-structured interviews with 18 index patients (14 MSM, 2 bisexual men, 1 transwoman, 1 heterosexual woman) and 10 notified partners (by telephone), and 10 key actors (face-to-face) from community organizations. Focus group discussions were held with peers: 5 HIV+ MSM and 5 HIV+ migrant women. Interviews were recorded, transcribed, and thematically analyzed.
Results: *Index patients* expressed a need to first process the diagnosis before being able to notify partners. Barriers to PN were providing openness about numbers of sex-partners, lacking contact information of sex-partners, fear for negative reactions, and unwanted disclosure.

Notified partners preferred face-to-face notification or by telephone. For most the notification was a surprise; half were never tested or >10 years ago, and most were unfamiliar with PrEP.

Community actors emphasized the importance of professional- (or peer-) assisted tailored PN when index patients feel ready. Suggestions to improve testing for notified partners include facilitating home-sampling kits for partners, delivered by index patients or via the PN-tool (partnerwaarschuwing.nl).

Advantages of home-sampling kits for partners, addressed by community actors, were quick results, and testing at your own time and place. Possible disadvantages included index patients who feel responsible for partner testing while still processing their diagnosis, reliability of test results, and the impact of a positive result (e.g. fear of partner violence, lack of professional support). Bringing partners to test at sexual health centers (SHCs) or HIV clinics was acceptable for most interviewees.

Most preferred PN via the SHC (professional & reliable), but some favored a choice between home testing for partners and/or through the SHC, depending on type of partner and the need for a quick result.

Conclusions: There is no single solution for overcoming barriers to PN for HIV. Tailored PN is essential. Expansion of the current test offer by delivering home-sample kits to index patients for partners or through the online PN-tool should be further explored.

EPC399

Comparative analysis of facility and community-based implementation models for index testing services in Akwa Ibom State: a non-inferiority study

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Background: HIV index case testing (ICT) has been heralded as an efficient testing strategy. To sustain the gains from ICT in identifying people at high risk of HIV, the Meeting Targets and Maintaining Epidemic Control (EpiC) project in Akwa Ibom State, Nigeria, scaled-up provision of safe and ethical ICT services using a community-service model. We compare outcomes across the service cascade for the facility- and community-based models (FBMs, CBMs) and hypothesize their noninferiority.

Methods: We reviewed data collected during ICT in facilities and the community from April 2020 through September 2021. As part of routine ICT, newly identified HIV-positive adults and those with unsuppressed viral load and no history of intimate partner violence were prioritized for HIV ICT counselling and asked to refer their sexual partners and biological children (<14 years) for HIV testing. The FBM used health care providers, while CBM used trained lay providers (i.e., community index tracers/testers) to follow clients across the ICT cascade of services.

We compared acceptance rates (proportion of index that accepts ICT services), elicitation rates (ratio of the index to contacts elicited), testing rates (proportion of elicited contacts with known HIV status), and linkage rate (proportion of identified HIV-positive individuals linked to antiretroviral therapy [ART]) for both models using Mann Whitney U test in SPSS v26 at 0.05 significance level.

Results: A total of 119,650 records were reviewed: 25,807 in the FBM, 93,843 in the CBM. Overall, 119,220 (99.6%) were ages 15 years and older, while 67,696 (76.8%) were females. ICT acceptance, elicitation, testing, positivity, and linkage rates were 91.24% (23,546/25,807), 1:1.7 (40,719/23,546), 77.8% (31,678/40,719), 10.3% (2,769/26,842), and 85.1%, respectively in the FBM, vs. 77.8% (73,041/93,843), 1:1.6 (116,736/73,041), 86.5% (100,954/116,736), 27.1% (26,953/99,578), and 99.03%, respectively, in the CBM.

In comparative analysis, the CBM had significantly higher testing (U;1,398, 95% CI: 0.064-0.123, p<0.01), and partners linked to ART (U;789, 95% CI: 0.110-0.162, p<0.01) than FBM. There was no difference in partner elicitation (U;3,403, 95% CI: 0.129 -0.030, p=0.201).

Conclusions: The CBM expanded the reach of ICT and could be an add-on strategy for reaching last-mile clients.

EPC400

Uptake of HIV testing among Active-Duty Military Personnel, their Dependents and Surrounding Communities: Descriptive Analysis from 18 PEPFAR-supported African countries, October 2018-September 2021

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Background: Military and other uniformed subpopulations are considered priority populations for HIV services due to their high mobility. The Department of Defense through the United States President's Emergency Plan for AIDS Relief (PEPFAR) implements interventions provid-

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ing quality HIV testing services (HTS) to military personnel, their dependents, and civilian communities. Despite progress toward epidemic control, HIV testing remains the major challenge to achieving UNAIDS' 95-95-95 goal.

Description: PEPFAR programmatic data from 18 African countries spanning October 2018-September 2021 were used to assess HIV testing uptake among military personnel, their families, and surrounding communities. Data was analyzed by five testing strategies: provider-initiated testing and counseling (PITC), index case testing (ICT), voluntary counseling and testing (VCT), mobile testing and voluntary medical male circumcision (VMMC) testing. Descriptive analysis included standardized indicators: number of HIV tests performed, number of HIV-positive test results, and positivity yield.

Lessons learned: From October 2018-September 2021, 1,683,762 tests were administered, yielding 97,831 newly identified positives (6%, range: 0.2%-Ethiopia to 12%-Eswatini). More males (887,865) tested than females (795,897) but females had higher yield (7%) than males (5%). Across 17 countries (excluding Ethiopia due to limited data), PITC accounted for 53% of all testing and 44% of all new diagnoses. Mobile testing and VCT yields were higher among females (8%; 7%, respectively) than males (4%; 5%, respectively). ICT had the highest yield in all countries and for both sexes, except for females in Eswatini, where VCT had the highest yield, while VMMC yielded the lowest percentage of positives in each country.

Conclusions/Next steps: In military settings, similar to the general population, ICT is the most efficient testing approach, with the highest positivity rates, while PITC identifies the largest volume of clients but much lower positivity rate. The data reflect high positivity in military settings and indicate the need for enhanced context-specific, tailored testing strategies at military sites. Programs should continue to scale up the implementation of state-of-the art combination prevention interventions including HTS and pre-exposure prophylaxis adapted to military settings to identify and prevent new HIV infections.

EPC401

Mother-Baby Pairs: a way to establish reliable national Early Infant Diagnosis (EID) coverage

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Background: In 2015, Botswana University of Maryland School of Medicine Health Initiative (Bummhi) implemented the prevention of mother-to-child transmission program through a 5-year project. With 70-80% early infant diagnosis (EID) coverage in 2019, Bummhi faced challenges in establishing reliable coverage measurements using PEPFAR's proxy EID calculation. To establish a more accurate reflection of EID coverage in Botswana, Bummhi paired mothers and babies. We describe the methodology used and benefits for reporting.

Methods: Bummhi piloted the mother-baby pair (MBP) methodology in two districts (Serowe, Palapye) starting August 2019. The program was scaled up to 13 Bummhi-supported districts in October 2019. The methodology prospectively tracked pregnant women from initial antenatal care (ANC) registration through labor and delivery. Tracking continued for the exposed infant's first HIV test through their final outcome test at 18-24 months. Data were collected from ANC and baby testing registers and captured into the Health Information System (DHIS2); pairing was done using mothers' IDs and other identifiers. Data were triangulated with electronic medical record data to verify babies not found in manual registers. The MBP data were then compared to the PEPFAR proxy EID which was calculated as the number of babies tested in a given period divided by the number of HIV-positive women during the same period.

Results: Implementing the MBP methodology showed overall quarterly EID coverage between 91% and 95% compared to proxy EID calculation between 77% to 87% (Figure 1). Of the 13 Bummhi-supported districts, only 2 were under 90% coverage (Gaborone [83%] and Francistown [89%]), with 6 districts over 95% EID coverage.

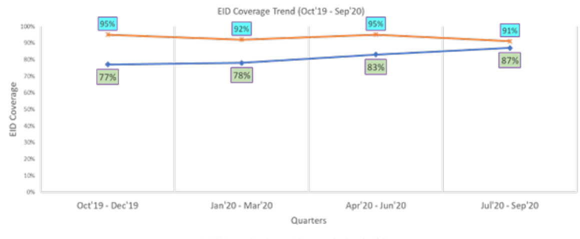

Figure 1.

Conclusions: The implementation of the MBP methodology provided Bummhi a more reliable EID coverage than the proxy calculation. This pairing methodology was scaled-up to remaining Bummhi-supported districts. The next step is to complete linking of mothers and babies prospectively at the time of data collection.

EPC402

HIV rapid testing to support identification of new cases among partners of HIV-positive clients at healthcare facilities of Leningrad region of Russian Federation: 2019-2021 results

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Background: WHO recommendations outline the need of testing of partners of people who live with HIV; however, this approach is not systematically implemented in Russia. Rapid HIV testing in 6 districts of Leningrad region started in 2013. The project is implemented at government healthcare facilities by Regional AIDS center in cooperation with Russian NGOs and with the support of AIDS Healthcare Foundation (AHF Russia). Testing partners is one of the main foci of this activity.

Description: Anonymous free rapid HIV testing and consulting is performed by medical staff. Client receives pre- and post-test consultations and provides information about age, risk behavior, belonging to risk groups, previous testing experiences, etc. The procedure lasts for 15-30 minutes; in the end client gets prevention materials and condoms. To attract more partners of HIV-positive people, AIDS center staff is actively encouraging their patients to bring partners to test.

Lessons learned: From January 1, 2019 to December 31, 2021, overall 31,820 clients were tested with 1,633 (5,1%) positive results. Among these, 5,825 IDUs were tested with 528 (9,1%) positive results, 2,964 partners of HIV+ people with 273 (14,8%) positive, 3,667 partners of people with risk behavior with 320 (8,7%) positive, 19,364 other groups with 345 (1,8%) positive results.

The highest positivity rate was found among partners of HIV-positive people. Among 1,490 males tested there were 238 positive results (16% positivity); among 1,474 females - 202 positive results (13,7%). 45% of all tested partners were 30-39 years old, 28% 40-49 years old. There are no statistically significant differences in the positivity level between different age groups. Linkage to care in this group was 88%, with upward trend over the past 3 years, which is the same high value as in general group.

Conclusions/Next steps: The results confirm the need to work with the partners of HIV-positive clients. Rapid HIV testing at healthcare facilities has proven its effectiveness and has several advantages including easiness of bringing partners of HIV-positive people to test and almost immediate linkage to care. It is necessary to study behavioral traits, including additional risk factors of clients from this group.

EPC403

Late HIV diagnosis among patients with newly diagnosed HIV/AIDS in Kazan, Russia: a cross-sectional study

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Background: The effectiveness of prevention measures is limited in part by the long period of asymptomatic HIV infection, which affects the timeliness of HIV detection and helps to sustain the epidemic process of HIV infection. Late HIV diagnosis contributes to its spread and is an obstacle to achieving the early treatment goal. The present study aimed to specify factors associated with the late HIV diagnosis.

Methods: The study included data from 348 adult patients, permanently residing in Kazan, who were diagnosed with HIV infection for the first time in 2019. The proportion of patients with late HIV diagnosis was determined. The criteria for late HIV diagnosis were the presence of stage 3 – Acquired Immunodeficiency Syndrome (AIDS) and/or the CD4+ cell level of less than 200 cells/mm3 at the time of diagnosis.

The assessment of the influence of probable factors on the timeliness of diagnosis was carried out using binary logistic regression. The regression model included data from 307 people; others were excluded due to the lack of data on the HIV stage and/or CD4+ cell levels within 3 months after HIV detection. The adjusted odds ratios (aOR) and their 95% confidence intervals (95% CI) for each factor are calculated.

Results: Late HIV diagnosis was noted in 32.6% of cases of HIV infection. Examination for clinical indications was associated with late diagnosis in comparison with examination for preventive purposes (aOR 2.427, 95% CI 1.184 – 4.973).

The age of 50 years and older was associated with late HIV diagnosis in comparison with persons 30-49 years old (aOR 3.348, 95% CI 1.542 – 7.265). The odds of late HIV diagnosis under the age of 30 years are 5 times lower than in the group of 30-49 years (aOR 0.200, 95% CI 0.072 – 0.556).

The odds of late HIV diagnosis are significantly higher among people infected with injecting drug use compared to those infected heterosexually (aOR 2.012, 95% CI 1.042–3.885).

Conclusions: To control the spread of HIV infection in the population, it is necessary to increase the HIV screening testing coverage for all population groups, especially older people and injecting drug users.

EPC404
Characteristics and clinical outcomes of patients receiving HIV diagnoses in emergency departments in Philadelphia, 2014-2019

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Background: Decreasing new HIV infections requires reaching populations that are at increased risk of acquiring HIV but do not access regular testing. Acute care, comprised of emergency department (ED) visits and associated hospitalizations, serve as the only healthcare many individuals at increased risk of HIV receive.
We describe the population of Philadelphians who received their HIV diagnoses in EDs and compare their clinical outcomes with those who received their diagnosis in community-based settings.
Methods: A population-based surveillance analysis of new HIV diagnoses from 2014-2019 in Philadelphia compared demographic and clinical characteristics and HIV care continuum outcomes of those diagnosed in the ED (and hospital) to those diagnosed in community-based settings (outpatient medical settings, correctional systems, STI/HIV testing sites.)
Characteristics included year, age, sex at birth, race/ethnicity, transmission risk categorized as men who have sex with men (MSM), heterosexual sex, people who inject drugs (PWID), and no identified risk factors (NIR), concurrent AIDS at diagnosis, and insurance type (public, private, none, other/unknown).
Chi-square tests and multivariable logistic regressions evaluated the association between diagnosis location and patient characteristics, linkage to care within 30 days, receipt of any care, and retention in care and viral suppression one year after diagnosis.
Results: Between 2014-2019, 2,968 individuals were diagnosed with HIV in Philadelphia, including 323 (10.9%) in EDs. 29.7% were diagnosed with concurrent AIDS. Age over 50, non-MSM transmission risk, concurrent AIDS diagnosis, and having no insurance were significantly associated with diagnosis in EDs compared to community-based settings ($p<0.05$). Linkage to HIV care was similar for both groups, however, the odds of being retained in care (aOR 0.65, 95% CI 0.50, 0.85) and virally suppressed (aOR 0.69, 95% CI 0.541, 0.875) one year after diagnosis were significantly lower among those diagnosed in an ED/hospital compared to community-based settings.
Conclusions: About 1 in 10 HIV diagnoses were made in an ED visit; almost 1 in 3 of those individuals were diagnosed with AIDS at the same time.
Patients diagnosed in the ED experienced poorer care continuum outcomes compared to those diagnosed in the community. New strategies for routine testing and linkage to care for patients diagnosed in EDs are needed.

EPC405
Optimizing HIV case finding through Screening and testing non-patients at outpatient department (OPD): A pilot case from Kombewa County referral hospital (KCRH) in Kisumu, Kenya

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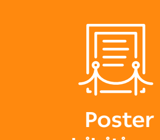
Background: The 2018 Kenya Population-based HIV Impact Assessment estimates Kisumu county's HIV prevalence in western Kenya at 17.5%, while the national prevalence is 4.9%. Recently, Kenya has adopted innovative testing strategies, including targeted provider-initiated counseling and testing (PITC); yet over 20% of Kenyans are unaware of their HIV-positive status.
Convenient and people-centered approaches are needed to facilitate greater uptake of HIV testing services (HTS) and enhance case identification.
Methods: Trained expert clients at OPD waiting areas in Kombewa County Referral Hospital (KCRH) in Kisumu County conducted short HIV educational sessions to encourage relatives and friends accompanying patients (referred to as non-patients) to test for HIV.
Consenting non-patients were escorted to a private room for eligibility screening. If eligible, an HTS provider conducted the test using the national HIV diagnosis algorithm and connected those tested to either prevention or treatment services, depending on their result.
Results: Between October 2020 to September 2021, 1,699 non-patients screened for HTS, including 397 males and 1,302 females, and 256 (15%) were eligible for testing (90 males, 166 females). The majority of non-patients (245) consented and were tested resulting in the identification of 25 new positive cases (9 males, 16 females), representing a 10% yield. Testing of non-patients accounted for 33% of total newly identified positives at KCRH by PITC and 15% of total positives diagnosed through all testing modali-



ties. Linkage to treatment was 88% (8 males and 14 females), and providers are now following up on the three unlinked individuals. All those who tested HIV-negative were offered prevention services.

Conclusions: Screening and testing non-patients at health facilities is an additional opportunity to identify people living with HIV (PLHIV) unaware of their status, particularly those who might not seek health services otherwise. The intervention was highly acceptable at KCRH, and Kisumu County is planning expansion to other facilities in the region.

HIV programs should consider offering HIV testing to non-patients, particularly in areas with high numbers of undiagnosed PLHIV. This approach can be further refined to target subpopulations of interest, such as men or young adults, more likely to be undiagnosed.

EPC406

The use of a customized Electronic National App to improve ICT(Index-Contacts-Testing) performance and the identification of new cases of HIV: ISPD/BRIDGE experience and implications for the Haitian Ministry of Health

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Background: To achieve the first 95 of the UNAIDS goals, the Ministry of Health (MoH) implemented index-contacts testing (ICT) according to WHO guidelines in 2020 with limited results. In response, MoH collaborated with key partners to develop an electronic Application to monitor ICT, aimed at improving HIV-testing services (HTS) process for indexes' partners. BRIDGE project implemented the ICT-App at its affiliated health facilities.

We present here the results of our interventions combined with the ICT-App that help increase the proportion of contacts accessing HTS.

Description: For the project first semester, two sites were using ICT paper-based forms. During the second semester, providers and community health workers (CHWs) received ICT-App training followed by weekly mentoring. We ensured availability of high-speed internet and tablets/computers/smartphones. We monitored closely the data collected daily on the ICT-App, compared them with HTS/Laboratory registers and prompt feedback for timely mitigation. Two other sites started implementing ICT in the third semester and three others the fourth semesters. The app was introduced right away for the new sites.

Lessons learned: From January to June 2020,from the 203 contacts identified by 106 index-patients, only 37% (N=75/203) knew their HIV status including 60 who were newly tested from whom 15% (N=9/60) were HIV-positive and linked to care.

Following adoption of ICT-App in July 2020, an improvement was reported for the following semester (July-December 2020), showing 247 contacts tested out of the 400 listed (62%) including 230 newly tested for HIV with a seropositivity yield of 23% (N=53/230).

The use of national ICT-App by trained/mentored providers led to substantially improve contacts' access to HTS (75_607) and identify new HIV cases (9_253) while protecting confidentiality.

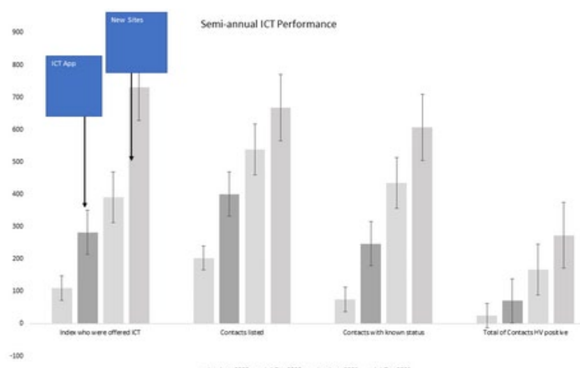

Figure.

Conclusions/Next steps: ICT-App implementation led to increase the proportion of contacts identified and newly diagnosed with HIV without stigma. We recommend wider use of ICT-App to help achieve the first 95 of UNAIDS goals.

Integration of HIV testing with other services

EPC407

Integrating routine antenatal testing for curable, asymptomatic STIs in a high HIV prevalence setting, Botswana

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Background: Routine, rapid antenatal HIV testing has expanded ART coverage and reduced vertical transmission of HIV throughout Sub-Saharan Africa. However, testing for other STIs, including *Chlamydia trachomatis* (CT) and *Neisseria gonorrhoeae* (NG), is not routine in most countries and asymptomatic infections are likely missed.

This study assessed the integration of STI testing into antenatal care and prevalence of asymptomatic infections among pregnant women in a high HIV prevalence setting, Botswana.

Methods: The Maduo ("results"in Setswana) Study is an ongoing prospective, cluster-controlled trial in Gaborone, Botswana to compare a diagnostic CT/NG testing and treatment intervention among asymptomatic pregnant women with the standard of care (syndromic management based on symptoms). Using baseline data (February 2021-January 2022), we assessed the integration of STI testing, including uptake of testing, receipt of results and treatment, and the prevalence and correlates of CT/NG infections. Correlates were evaluated using a multivariable logistic regression.

Results: Among 427 eligible women, 406 (95%) enrolled, 188 were assigned to the "standard of care" arm, and 218 to the "STI testing" arm at their baseline visit. The HIV prevalence was 18% (72/406); 10 of 72 women were newly diagnosed with HIV. In the testing group, 23% (51/218) tested positive for CT or NG, 49 with CT and 2 with CT and NG. Among women living with HIV infection in the testing arm, 23% (11/48) had CT and/or NG. All women testing positive for CT/NG were treated; those with a test of cure (n=40) were all negative.

In regression analyses, older age was associated with lower odds (OR: 0.91; 95% OR: 0.84-0.98) and harmful alcohol use during pregnancy was associated with increased odds (OR: 6.81; 95% CI: 1.24-37.41) of testing positive for CT/NG, after controlling for marital status, nationality, education, income, primigravida, and depression risk.

Conclusions: Integrating routine STI screening in antenatal care was highly acceptable and feasible. We found a high frequency of curable asymptomatic infections, known to be associated with adverse pregnancy and birth outcomes, including vertical transmission of HIV. Antenatal STI testing has the potential to decrease morbidity among pregnant women and infants.

EPC408

Provision of HIV testing services to pregnant women in Nigeria: HIV/AIDS Indicator and Impact Survey (NAIIS), 2018

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Background: Mother-to-child transmission remains a significant contributor to HIV burden in Nigeria. In 2018, Nigeria conducted the HIV/AIDS Indicator and Impact Survey (NAIIS 2018), a population-based household survey.

This study assessed the provision of HIV testing services during pregnancy and at delivery among Nigerian women.

Methods: We analyzed data from NAIIS 2018, a two-stage cluster sampled nationally representative survey. We extracted data of women aged 15-49 years who reported deliveries within three years prior to the survey. Bivariable analyses and multiple logistic regression were used to estimate associations between socio-demographic, health seeking variables and the offering of HIV testing services during antenatal care (ANC). We presented weighted results using STATA 16.

Results: Of the 88,593 women aged 15-49 years interviewed, 23,612 (25.7%) had delivered within three years prior to the survey. About 47.2% of these women were between 25-34 years (median: 28.8years). Most (76.3%) reported attending ANC during their last pregnancy, and 61.8% and 12.2% of these women were offered HIV testing during pregnancy and at delivery respectively. Women residing in the southeast, southsouth, and southwest zones had significantly higher chances of being offered HIV test at ANC, 74.7%, 71.1% and 68.8% respectively, when compared to those residing in northcentral, northeast, and northwest zones with 62.6%, 50.6% and 48.7% respectively.

In adjusted analyses, women who attended ANC facilities in urban communities had higher odds of being offered HIV testing compared to women who attended ANC facilities in rural areas [aOR=2.1, 95%CI:1.8–2.5]. Women who reported being able to make their own healthcare decision were more likely to be offered HIV testing compared to women who rely on others to make such decision for them [aOR=1.9, 95%CI:1.1–3.5].

Also, women with tertiary level of education were more likely to be offered HIV testing at ANC, compared to women with no formal education [aOR=5.6, 95%CI:4.5-6.9].
Conclusions: While about 3-in-4 women attended ANC, offering of HIV testing services to pregnant women at ANC was low, which significantly affects uptake of HIV testing among the women. To enhance uptake, HIV programs can focus on improving routine HIV services at ANC especially across northern regions of Nigeria.

EPC409

Missed opportunities for HIV testing among those tested for sexually transmitted infections: a systematic review and meta-analysis

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Background: Of 37.7 million people living with HIV in 2020, 6.1 million still do not know their HIV status. There may be opportunities to reduce this gap if HIV testing was routinely implemented among those attending a sexually transmitted infection (STI) service, tested for other STIs or diagnosed with STIs.
We aimed to synthesize the evidence for the proportion of people receiving HIV testing in the above scenarios and their HIV test positivity.
Methods: We conducted a systematic review (Prospero: CRD42021231321) using five databases (Ovid MEDLINE, Ovid Embase, Ovid Global Health, EBSCO CINAHL Plus and Web of Science Core Collection), and clinical trial registries (clinicaltrials.gov, WHO international clinical trials registry platform). We included publications between 2010 and May 2021 that documented primary data on concurrent HIV testing uptake among people receiving STI services. We conducted a random-effects meta-analysis to report a pooled proportion who were tested for HIV.
Results: Of 7582 articles, 612 full texts were examined and 96 included in our final analysis. Most (73%) studies were from high-income countries, with a third from general populations (36%) and sexual minorities (30%).
Eighteen studies provided estimates for the meta-analysis for the proportion of people tested for HIV who attended an STI service, 15 studies for those tested for STIs, and 13 studies for those diagnosed with STI.
The pooled percentage of people tested for HIV who attended an STI service was 71.0% [95% confidence intervals: 61.0-80.1, I^2=99.9%], people tested for HIV among those who were tested for STIs was 61.3% [53.9-68.4, I^2=99.9%], people tested for HIV among those who were diagnosed with an STI was 35.3% [27.1-43.9, I^2=99.9%]. Only three studies provided estimates for HIV testing among patients presenting with STI symptoms, with pooled percentage of 27.1% [20.5-34.3].
Conclusions: There is an urgent need for better integration of HIV and STI services where there may be opportunities for greater synergies to improve prevention, testing, early diagnosis, and linkage to care for people living with HIV.

EPC410

Key population led primary care services integrates HIV and STI testing into comprehensive annual preventive health assessments

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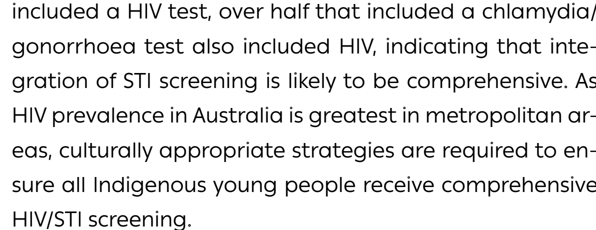
Background: The World Health Organisation recommends comprehensive health assessments inclusive of HIV and STI testing for key populations. Annual health assessments for Indigenous people in Australia are delivered in primary care and reimbursed by the universal health insurance program, through Medicare Benefits Schedule (MBS) Item 715.
We examined for the first time inclusion and completeness of testing for HIV and STIs within annual health assessments for Indigenous young people aged 16 – 29 years in Aboriginal Community Controlled Health Services.
Methods: Using routinely collected electronic medical record data from a national sentinel surveillance system (ATLAS), we performed a cross-sectional analysis on tests for HIV, chlamydia, gonorrhoea and syphilis completed within one day of the MBS 715 health assessment.
We used logistic regression to assess correlations between test completion and age, sex, area of residence and year of consultation.
Results: Of 13,892 health assessments conducted between 2018 - 2020, 11.5% included tests for all four STIs and 23.9% included a test for any STI. Of health assessments that included a chlamydia/gonorrhoea test, 59% also included HIV and 57% also included both syphilis and HIV.
In the multivariate model, inclusion of HIV test was associated with patient aged 20 – 24 (OR 1.40, 95% CI 1.23 to 1.58)) and 25 – 29 (OR 1.33, 95% CI 1.18 to 1.51)) compared to 16 – 19, patient being male (OR 1.15, 95% CI 1.04 to 1.26) compared to female, and patient residing in very remote (OR 3.47 (95% CI 2.95 to 4.08)), remote (OR 1.87 (95% CI 1.57 to 2.23)) and regional areas (OR 2.30 (95% CI 2.01 to 2.64)) compared to metropolitan. Similar correlates were observed for other STIs.
Conclusions: Integration of HIV and STI was higher in remote areas where disease burden from STIs is greatest. While only a small proportion of total health assessments



included a HIV test, over half that included a chlamydia/gonorrhoea test also included HIV, indicating that integration of STI screening is likely to be comprehensive. As HIV prevalence in Australia is greatest in metropolitan areas, culturally appropriate strategies are required to ensure all Indigenous young people receive comprehensive HIV/STI screening.

Strategies to improve HIV linkage and ART initiation

EPC411
The disruption of COVID-19 pandemic on individual level HIV care continuum

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Background: The COVID-19 pandemic is likely to disrupt global HIV care continuum services and impede ending the HIV epidemic. However, limited real-world data has supported such a hypothesis. Using state-wide data, this study compared the HIV care continuum outcomes before and during the COVID-19 outbreak.

Methods: Extractedthrough an electronic reporting system in South Carolina, the study population was people living with HIV (PWH) diagnosed between January 2000 and December 2020 and followed up until June 2021. Linkage to care was measured as having at least one CD4 or viral load (VL) test within 30 days after initial HIV diagnosis. Using the sub-population who had at least one year of follow-up information, retained in care was measured as the percentage of persons with diagnosed HIV who had two or more CD4 or VL tests, performed at least 3 months apart.

Similarly, time to first viral suppression was the time interval from initial HIV diagnosis to the first time of VL test result of <200 copies/ml. The timepoint of March, 2020 was used to differ pre- and post-COVID-19 status. Logistic regression and Cox proportional hazards models were employed for these analyses.

Results: Among a total of 12,999 people with HIV (PWH), PWH who were diagnosed after the COVID-19 pandemic were less likely to be linked to care (OR: 0.60, 95%CI: 0.48, 0.75). While PWH had a lower likelihood of being retained in care during the COVID-19 pandemic than before (OR: 0.55, 95%CI: 0.52, 0.59), non-significant differences were observed regarding time to first viral suppression before and during the pandemic (HR: 1.09, 95%CI: 0.98, 1.22). Blacks, Hispanics, or younger individuals were less likely to be either linked to care or retain in care (all p-values<0.05) yet men who have sex with men were more likely to achieve the initial viral suppression during the pandemic than their counterparts (HR: 1.21, 95%CI: 1.04, 1.41).

Conclusions: The COVID-19 pandemic has a generally negative impact on HIV care continuum outcomes, particularly for vulnerable populations. Resources should be directed to ensuring sustainable HIV care (e.g., home-based testing, and telemedicine) to mitigate any adverse effects of COVID-19 related disruption on HIV care.

EPC412
Extended working hours increase linkage to ART services among key populations in Kilimanjaro region

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Background: Tanzania's linkage to antiretroviral therapy (ART) services remains low among men who have sex with men (MSM) and female sex workers (FSWs). MSM and FSWs feel insecure about accessing highly visible ART clinics and find standard facility hours inconvenient. Health care workers (HCWs) are perceived as unaccepting, and criminalization of MSM and FSWs in the community leads to low use of traditional facilities.

Traditional approaches to enhance service quality, including HCW counseling, peer navigation, and escorted referrals, have not been successful. The Meeting Targets and Maintaining Epidemic Control (EpiC) project introduced HCW engagement and extended working hours to complement linkage to ART services among key populations.

Description: Through routine client feedback, extended clinic hours were identified as a way to better meet the needs of FSWs and MSM. An assessment was conducted in 14 care and treatment center (CTC) sites in Kilimanjaro to determine feasibility of extending opening hours to improve linkage to ART services. EpiC began an incentive system offering CTC nurses transport reimbursement for working during extended hours (before 7 a.m. or after 3 p.m. on weekdays, or on a weekend). EpiC trained 19 HCWs from 19 health facilities on key-population-friendly services during extended working hours.

Lessons learned: Linkage rates increased from 82% to 99% among FSWs and MSM after the introduction of extended working hours and HCW training on the provision

of key-population-friendly services. Extended working hours may better meet the needs of key populations and enhance linkage rates among populations that are traditionally difficult to reach.

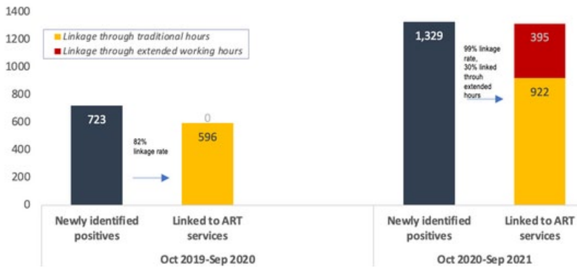

Figure. Rates of ART linkage before and after introduction of extended working hours.

Conclusions/Next steps: There should be a scale-up of key-population-friendly services during extended clinic hours to all EpiC regions to increase linkage among FSWs and MSM. These interventions are simple to implement and could be tested among other populations to accelerate progress toward the Joint United Nations Programme on HIV/AIDS (UNAIDS) 95-95-95 goals.

EPC413

Characterizing the impact of the Key Populations Investment Fund (KPIF) on HIV prevention and treatment programs for key populations in Malawi

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Background: In 2021, there remain gaps in HIV prevention and treatment programs for key populations (KP) in Malawi. To address these gaps, the Key Populations Investment Fund (KPIF), implemented through the Meeting Targets and Maintaining Epidemic Control (EpiC) project, augmented and expanded existing differentiated services for KP beginning in January 2020. We examined the impact of this program on HIV case finding and antiretroviral therapy (ART) initiation among female sex workers (FSW), men who have sex with men (MSM), and transgender persons (TG).

Methods: Routinely collected individual-level program data were collected through implementing partners across six Malawi administrative districts from October 2018–April 2021. Data were assembled across multiple forms to construct an analytic cohort. HIV testing outcomes and subsequent dates of ART initiation were used to generate monthly estimates of 30-day ART initiation. We utilized a single group interrupted time series analysis with unadjusted segmented Poisson regression models to assess the impact of the KPIF intervention on HIV testing and ART initiation outcomes.

Results: 7,176 tests HIV tests were reported from Oct 2018–April 2021, yielding 1,235 positive tests (FSW 304/2,100; MSM 382/3,121; TG 291/1,154), with 1,114 (90.2%) of those testing positive through EpiC initiating ART within 30 days (FSW 242/304; MSM 351/382; TG 276/291). KPIF implementation (January 2020) resulted in an immediate increase in HIV test positivity (IRR: 1.44, 95% CI 1.01–2.06) and 30-day ART initiation (IRR: 1.26, 95% CI 1.07–1.47), and trends were sustained over the following year (*Figure*).

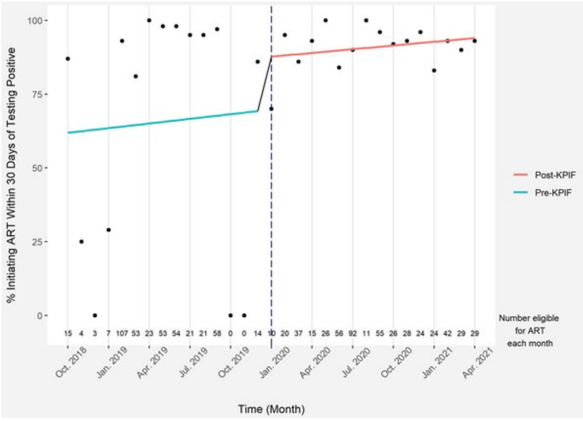


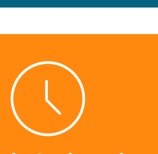
Figure. Estimated 30 day ART initiation after testing positive through program.

Conclusions: The expansion of differentiated HIV services through KPIF implementation was associated with a rapid and sustained increase in HIV case finding and ART initiation for KP.

These findings highlight the potential impact of scaling investments in dedicated programs for KP in Malawi as central to addressing unmet individual and community needs and overall efforts at achieving HIV epidemic control.

Oral abstracts

Poster exhibition



E-posters

Late-breaker abstracts

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EPC414

Identifying HIV-infected patients at high risk of defaulting treatment

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Background: There is a significant gap in South Africa between HIV diagnosis and antiretroviral therapy (ART) initiation. The objective of this study was to develop a simple risk assessment tool to identify patients at highest risk for ART non-initiation.

Methods: A prediction model was developed in a primary cohort that consisted of 498 patients with HIV in South Africa, and data was gathered from June 2014 to June 2015. Risk factors for treatment non-initiation included demographics, clinical measures, indicators of religiosity, mental health, perceived stress and social support. The least absolute shrinkage and selection operator (LASSO) regression analysis was used to optimize variable selection. Multivariable logistic regression analysis was applied to build a predicting model based on the predictors selected from the LASSO analysis using 80% of the primary cohort as a training dataset. The model was validated using the remaining 20% of the primary cohort (hold-out sample) and an independent cohort of 96 patients (external cohort). Model calibration and discrimination were assessed by the Hosmer-Lemeshow goodness of fit (GOF) test and C-statistic, respectively. A point-based risk score was developed.

Results: Of 498 participants with mean age 35.7, 38% were treatment non-initiators. Specific predictors (Age, recruitment from Soweto, feeling abandoned by God, coping with alcohol/drugs, not having concentration problems, and not feeling overwhelmed by difficulties) were selected by LASSO (Table 1).

The logistic model had a good fit (GOF p=0.89) and C-statistic values of 0.74 and 0.60 in the hold-out sample and the external test sample, respectively. Total points associated with different risk levels ranged from -4 to 14, corresponding to a 3% and 86% default risk, respectively.

Conclusions: A simple risk score using patient characteristics and including behavioral factors at ART screening may predict ART non-initiation in newly diagnosed HIV+ patients in South Africa. It may help a priori identify patients less likely to initiate treatment and focus individualized counselling and risk assessment.

Intercept and variables	Coefficients	P-values	Odds ratios	Confidence intervals
Intercept	-1.571	<0.05	0.208	(0.054, 0.730)
Age	-0.029	<0.05	0.971	(0.948, 0.994)
Lives in Soweto	0.419	0.087	1.520	(0.940, 2.457)
Feels abandoned by God	0.507	0.072	1.660	(0.956, 2.888)
Copes using drugs	1.023	<0.05	2.782	(1.326, 6.043)
No concentration problems	1.194	<0.05	3.300	(1.370, 9.008)
No problems facing barriers	0.731	<0.05	2.077	(1.111, 4.036)

Table 1.

EPC415

Impact of Linkages Case Management (LCM) in improving ART initiation and early retention amongst PLHIV in Eswatini

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Background: Although the initiation of Anti-Retroviral Treatment (ART) was decentralized in Eswatini, many People Living with HIV (PLHIV) were reluctant with test and treat initiative following Human Immunodeficiency Virus (HIV) diagnosis. This resulted with the country having slow increase in ART initiation among newly diagnose PLHIV, as in 2018 it was still below 90%.

Some barriers to early ART initiation included long waiting time/ queues, fear of stigma and disclosure, denial, feeling healthy and fear of medications side-effects. Therefore, the LCM initiative was introduced to assist and support with bridging these barriers identified.

Description: LCM was implemented as of May 2019 in the four regions of Eswatini. Newly initiated PLHIV are voluntarily enrolled into LCM during health facility visits and are paired with an Expert Client (EC) for a period of 3 months. On the day of HIV diagnosis clients are escorted for ART initiation and informed about the facility layout to reduce waiting time.

The EC routinely review the chronic care file to identify issues to be deliberated with the client before calling the client. During the three months, the EC provides four telephone calls to provide support on how clients are coping with treatment and to remind them of their next appointment.

For clients delaying ART, follow up calls are made to offer counselling until they are ready for initiation. Three face-to-face counselling sessions are also provided to offer ongoing support on disclosure, index testing and adherence counselling.

Lessons learned: According to Eswatini HIV annual reports (2018 - 2020) and routine program data, the introduction of LCM increased ART initiations from16,755/26131 (64.1%) in 2018 to 22,104/23,970 (92.2%) in 2019 and 10,350/11,138

(92.9%) in 2020. Retention at six months increased from 78% in 2018 to 89% in 2019 and 99% in 2020. This is in alignment with the decline of lost-to follow ups from 7,880 in 2018 dropping to 6,974 in 2019.

Conclusions/Next steps: Providing targeted psychosocial support, relevant educational information and motivational counselling on the benefits of early enrolment and disclosure improved ART initiation, retention, and viral suppression. We recommend implementation of LCM for priority populations that seem to be lagging behind.

EPC416

Associations between alcohol use and antiretroviral therapy uptake among people living with HIV in Central Uganda

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Background: Alcohol use among people living with HIV (PLHIV) is common and associated with negative impacts on the HIV care cascade. In 2017, Uganda implemented the universal test-and-treat (UTT) strategy, which expanded access to antiretroviral therapy (ART) to all PLHIV. However, gaps in ART coverage persist in certain populations.

We evaluated the relationship between alcohol use and ART uptake among PLHIV and linked to care in Uganda. We also assessed ART adherence among a sub-sample of participants.

Methods: PATH/Ekkubo was a cluster-randomized trial that evaluated a linkage to HIV care intervention in four districts of Central Ugandan, Nov 2015-Sept 2021.

Our sample included: 1) baseline data from individuals not enrolled in the trial (previously diagnosed HIV+ and linked to care); and 12-month follow-up data from those enrolled in the control group (previously diagnosed, but not linked to care, or newly diagnosed HIV+ at enrollment). Alcohol use was measured as any current (AUDIT-C>0), harmful (AUDIT-C women ≥3, men 4≥), and binge use (≥6 drinks on one occasion).

ART use was assessed with, "Are you taking ARVs?" ART and alcohol use were examined using logistic regressions adjusting for age, gender, marriage, education, religion, wealth, depression, and baseline or control group.

We assessed ART adherence among the control group, dichotomized as any versus no missed doses in the past four days.

Results: Among 931 HIV+ adults, 40% reported current (32% of women, 61% of men); 21% reported harmful (19% of women, 28% of men); and 18% reported binge alcohol use (14% of women, 29% of men).

In multivariable models, those with current (adjusted Odds Ratio [aOR] 0.46; 95% CI: 0.30-0.72), harmful (aOR 0.32; 95% CI: 0.20-0.51), and binge use (aOR 0.32; 95% CI: 0.19-0.51) were significantly less likely to be on ART. In the sub-analysis, current (aOR 5.25; 95% CI: 1.69-16.33) and binge use (aOR 5.16; 95% CI: 1.45-18.35) were associated with increased odds of missed ART doses.

Conclusions: Any current, harmful, and binge alcohol use were associated with lower uptake of ART and adherence. Tailored interventions for individuals who use alcohol may be needed to optimize the benefits of the UTT strategy.

EPC417

95,95,95 – an analysis of linkage and retention of newly identified HIV positive key and priority populations at AIDS Information Centre (AIC) Kampala, Uganda

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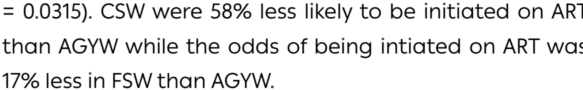
Background: The 95, 95, 95 strategy aims to accelerate HIV epidemic control and end AIDS by 2030. Targeted testing for key and priority populations (KP/ PPs) contributes to the first 95 however without linkage to and retention in care, new infections will remain unchecked.

AIC provides integrated HIV prevention and treatment services for KP/ PPs and endeavors to link and retain all new positives in care. As part of continuous improvement activities, analysis of linkage and retention are periodically conducted to address implementation gaps and inform strategies for improvement.

Description: An analysis of linkage and retention was conducted for 117 newly diagnosed HIV positive KP/PPs between January – December 2021 by AIC Kampala. Data was extracted from the Uganda National KP Tracker (online database) and analyzed using descriptive statistics, logistic regression and multivariate analysis. KP/PPs were classified into pre-defined groups such as Female sex workers (FSW), Adolescent Girls and Young Women (AGYW), Clients of sex workers (CSW), discordant couples (DC) among others.

Lessons learned: Of the 117 KP/PPs, 95 (81%) were successfully linked to care (84%male, 80%Female) with FSW achieving 88% linkage and CSW the least (50%); AGYW and DC achieved linkage rates of 75.8% and 100% respectively. Using logistic regression, there was a significant relationship between classification and initiation on ART (p



= 0.0315). CSW were 58% less likely to be initiated on ART than AGYW while the odds of being intiated on ART was 17% less in FSW than AGYW.
No significant relationship was found between gender and ART initiation (p= 0.8684) although the odds of males being initiated on ART was 8% less than females.
A multivariate analysis demonstrated that classification and age had a significant association with ART initiation (p= 0.02).
Despite 88% linkage, only 50% of FSW remained in care by 6 months and 30% at 12 months while CSW had 100% retention at 12 months. Overall males had a higher retention (100%) at 12 months than females (71%). All KP/PPs retained in care were virally suppressed.
Conclusions/Next steps: Targeted innovative strategies are required to secure linkage of particularly young people and men to care and retain FSW in HIV care.

EPC418
Antiretroviral therapy initiation at entry into HIV care, Croatia, 2015-2020

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Background: In Croatia, persons living with HIV (PLWH) are treated and supplied with antiretroviral therapy (ART) only at the University Hospital for Infectious Diseases, Zagreb. Since about 55% of PLWH are not from Zagreb, we introduced ART on the first day of entry into care. We examined the frequency, virologic outcome, and factors related to same-day ART initiation from 2015-2020.
Methods: Included were Croatian citizens/permanent residents ≥16 years old. Same-day ART was defined as ART initiation at the date of entry into care or the next day (Days 0 & 1). Multivariable logistic regression was done to assess factors related to same-day ART. We measured time from ART initiation to HIV-1 RNA < 50 copies/ml by Kaplan- Meier estimates.
Results: Of 540 persons who entered HIV care, 530 started ART. Same-day ART was present in 348/530 (65.7%)(Table). Median time to ART initiation from HIV diagnosis was 8.0 days, rapid ART (within 7-days of HIV diagnosis) was initiated in 264/530 (48.9%). Of 348 same-day ART starters, 211 (60.6%) initiated ART within 7-days of HIV diagnosis. Same-day and rapid ART initiation was more frequent in 2018-2020 vs. 2015-2017 and increased from 2015 to 2020 (Figure-A&B). Persons with no clinical AIDS were more likely to start same-day ART vs. those with clinical AIDS as were those living outside Zagreb (Figure-C). Same-day ART resulted in earlier viral suppression (Figure-D).

Characteristics	Total N=530 (%)	Same-day ART initiation N=348 (%)	Not same-day ART initiation N=182 (%)	P-value
Males	507 (95.7)	331 (95.1)	176 (96.7)	0.394
Age, median (Q1-Q3)	36.2 (28.7-44.3)	35.1 (27.8-42.6)	37.7 (30.4-47.2)	0.008
MSM	470 (88.7)	305 (87.6)	165 (90.7)	0.298
CD4+ cell count**per µL, median (Q1-Q3)	315.0 (139.5-486.0)	338.0 (193.0-486.0)	244.0 (45.0-475.0)	<0.001
CD4+ <200 per µL**	169 (32.5)	91 (26.8)	78 (43.1)	<0.001
HIV RNA >100 000 copies/ml	245 (46.2)	140 (40.2)	105 (57.7)	<0.001
Had clinical AIDS	93 (17.5)	30 (8.6)	63 (34.6)	<0.001

ART, antiretroviral therapy. MSM, men who have sex with men. Q1-Q3, first and third quartile.
*At entry into care (Days 0 & 1) **Based on 520 persons, 10 did not have an CD4 cell count measurement.

Table. Comparison of major HIV characteristics of persons who initiated same-day antiretroviral therapy versus those who did not in Croatia from 2015 to 2020.*

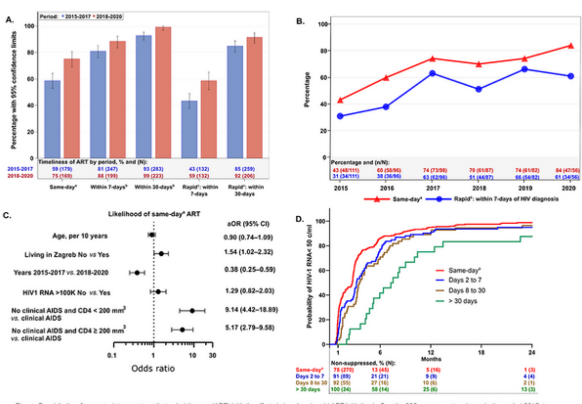

Figure.

Conclusions: Same-day ART became more frequent in recent years, it was associated with not having clinical AIDS and living outside Zagreb, and had a favorable virologic outcome.

EPC419
MenConnect: engaging men living with HIV through an mHealth platform

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Background: Despite modern advances in the treatment, management and spread of HIV, many men who become HIV positive still feel shame and self-stigmatisation. This limits men seeking medical advice in public spaces like local clinics. Since adequate treatment is a means of near-halting transmission, this poses a health risk both to men living with HIV (MLHIV) and the general spread of the virus.
Description: MenConnect is an innovative mHealth chatline for MLHIV in South Africa delivered via WhatsApp and SMS/USSD. It was developed in partnership with the Men-

Star Coalition program led by PEPFAR. Men who register are segmented through a psychographic assessment to receive a personalised messaging regime navigating the realities and responsibilities of living with HIV. These messages provide medical and mental support, with the aim of improving antiretroviral initiation and adherence, and improving mens' sense of self-worth. A qualified HelpDesk also fields any personal questions men have beyond the existing content.

Lessons learned: While recruitment has been slow due to the COVID-19 pandemic, 2766 men have registered between July 2020 - Feb 2022, those who join appear highly engaged with the platform, receiving over 293'000 reliable content messages across them (avg. messages per man > 100). Of these, 747 men (27%) have sent in over 1800 questions to the helpdesk, with emerging themes including understanding HIV testing, treatment access and prevention of mother-to-child transmission (PMTCT).

Conclusions/Next steps: While self-report tests indicate reduced self-stigmatisation of users across their journey, this is also met with declining treatment knowledge over time. A comparative impact assessment is still needed to know what effects exist outside of men's normal progression with the disease.

Despite this, MenConnect has clearly provided helpful and seemingly valued information to thousands of MLHIV. This has been shown by mens' engagement with the platform and men being able to ask questions they may not otherwise not have been able to.

EPC420

Awareness of current ART benefits and policies is associated with treatment acceptance and successful outcomes among people who inject drugs in Ukraine

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Background: In 2015, Ukraine adopted a new HIV treatment protocol that emphasized the importance of immediate antiretroviral therapy (ART) for newly diagnosed individuals. People who inject drugs (PWID) in Ukraine have a disproportionately high risk of infection and have the lowest ART coverage compared to the general and other key populations.

This study investigates whether higher awareness of ART benefits is associated with greater prevalence of ART enrollment among PWID.

Methods: We performed analysis of cross-sectional Bio-Behavioral Surveillance (BBS) data collected in 12 cities in 2020 using Respondent-Driven Sampling (RDS). A standardized, interviewer-administered questionnaire collected socio-demographic characteristics, behavioral risks, knowledge about HIV treatment approaches, and ART use. We restricted multivariate regression analyses to known HIV-positive respondents (n=784) to identify co-variates associated with greater ART engagement.

Results: Almost half of the HIV-positive PWID (n=576, 46%) were not on ART and the majority (n=669, 51.3%) were unaware that sexual transmission is zero if the person living with HIV (PLHIV) has an undetectable viral load (VL).

Almost 25% (n=303) of PWID did not realize that PLHIV should start ART immediately after an HIV diagnosis, and 35% (n=432) thought ART could be delayed if a PLHIV "felt healthy". The adjusted analysis controlled for age and use of other HIV-related services, such as harm reduction and opioid agonist therapy was done to estimate the independent association between knowledge and ART use. PWID who correctly reported that sexual HIV transmission can be prevented when VL is undetectable had 1.9 higher odds to be on ART (95% CI: 1.27-2.94).

Those who reported that ART should be started immediately after diagnosis had 1.74 higher odds of being on ART (95%CI: 1.08-2.82). PWID who knew that ART should be started even if a person feels healthy had 3.59 higher odds to be on ART (95% CI: 2.32-5.55).

Conclusions: This investigation demonstrates a lack of awareness among HIV-positive PWID about the benefits of early ART initiation and the effect of ART on secondary sexual prevention. Given that better knowledge of HIV correlates with improved access to treatment services, more efforts might be taken to educate PWID on current ART benefits and policies.

EPC421

The effect of opioid agonist therapy on HIV care cascade among PWID in Ukraine

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Background: People who inject drugs (PWID) constitute more than 50% of all people living with HIV in Ukraine, and most of them were using opioids. Opioid agonist therapy (OAT) is known to reduce risks associated with injecting drug use, improve access to ART and adherence. OAT in Ukraine is expanding gradually, currently reaching >17,000 patients. In this study we assessed the effect of OAT on HIV care cascade outcomes.

Methods: A cross-sectional survey was conducted in 6 regions of Ukraine in 2021, with half of participants recruited using simple random sampling among OAT patients and another half using respondent driven sampling among out-of-treatment PWID. PWID seeds were selected from clients of harm reduction programs. The survey questionnaire administered anonymously, and included questions

on HIV and OAT treatment history, adherence, barriers to care, and mental health. HIV care cascade outcomes were compared using Chi-square tests.

Results: The survey recruited 652 OAT patients (17% women) and 650 PWID (25% women). Ever tested for HIV were 632 (96.9%) among OAT patients and 516 (79.4%) among PWID (p<0.001). Of those tested, 217 (35.2%) of OAT patients and 84 (17.2%) of PWID disclosed their HIV positive status. HIV care cascade for two groups is presented in Figure 1.

All indicators, including having confirmatory testing and being registered in HIV care, being prescribed ART, currently taking ART, and ART adherence were significantly higher in the OAT group (p=0.002, p=0.007, p<0.001, p<0.001, respectively).

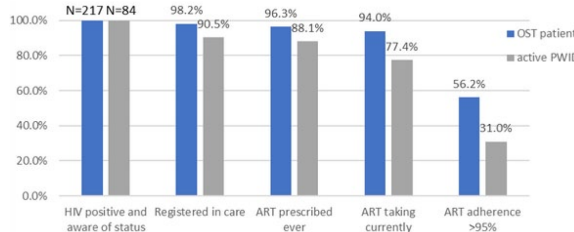

Figure. HIV care cascade among OAT patients and PWID in Ukraine

Conclusions: ART uptake was relatively high in OAT patients and out-of-treatment PWID in Ukraine. Despite the limitations of cross-sectional design, the study confirmed the significant positive effect of OAT on HIV treatment engagement and adherence. ART adherence remains suboptimal in both groups.

Further analysis will identify factors associated with OAT engagement and adherence to ART to inform strategies to reach 95-95-95 goals in this population.

Strategies to improve early retention in care (first year on ART)

EPC422

The HIV care cascade among transgender women living with HIV

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Background: The prevalence of HIV among transgender women (TGW) in Argentina is estimated at 34%, as compared to 0.4% in the general population. Stigma and discrimination are barriers to healthcare, but information about HIV care cascade and clinical outcomes among TGW living with HIV (TGWLHIV) is limited.

Methods: This is a retrospective cohort study conducted between February-2011 and August-2020; TGWLHIV aged ≥18 years linked to care in an HIV clinic in Buenos Aires, Argentina, were included. Demographic, clinical variables and other care cascade associated factors were analyzed at baseline and during the first 12 months of follow-up.

Results: A total of 220 TGWLHIV were included, with a median age of 31 years (IQR 26-35). Median baseline CD4 count was 360 cells/uL (IQR 140-659); 51.8% had low level of education (<10 years) and 141 (64.1%) were sex workers. At the time of enrollment, 67 (30.5%) had an AIDS-defining illness, being tuberculosis the most frequent (n=24).

At the end of the year of follow-up, 9 (4.1%) patients had died and 30 (13.6%) were transferred to a different center. Of the remaining 181 TGWLHIV, 120 (66.3%) were retained in HIV care. Among those retained, 101 (84.2%) were on ART. Of those on ART, 69 (68.3%) achieved virological suppression (viral load <40 copies/mL) after one year.

AIDS-defining illness at baseline and low educational level were associated with lower ART use (OR: 0.2, 95% CI: 0.07-0.61, p<0.01 and OR: 0.34, 95% CI: 0.12-0.93, p=0.031), but without significant association with retention in HIV care (OR: 0.77, 95% CI: 0.39-1.52, p=0.45 and OR: 0.87, 95% CI: 0.47-1.62, p=0.66) and virological suppression at 12 months within patients who were on ART (OR: 1.63, 95% CI: 0.54-4.93, p=0.38 and OR: 0.53, 95% CI: 0.22-1.25, p=0.15).

Conclusions: Additional efforts are necessary to address structural barriers and to achieve UNAIDS 95-95-95 targets in this population. More studies that compare the HIV care cascade in different populations and scenarios are necessary for a better understanding of the current situation of TGWLHIV worldwide.

EPC423

Factors associated with timing of HIV diagnosis and antiretroviral therapy and its impact on mortality among newly reported people living with HIV in Guangdong Province, China: a prospective cohort study

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Background: Earlier HIV diagnosis and antiretroviral therapy (ART) are essential for better disease progression among people living with HIV (PLHIV).

In this study, we explored factors associated with timing of HIV diagnosis and ART and its impact on mortality among newly reported PLHIV in Guangdong Province, China.

Methods: A prospective cohort study was conducted to recruit newly diagnosed PLHIV from six cities in Guangdong Province from May 2018 to June 2019. Participants were followed up till August, 2020. Data were collected from a questionnaire and the national HIV surveillance system. Multinomial logistic regression was conducted to explore factors associated with timing of HIV diagnosis and ART. Propensity Score Matching (PSM) and Cox proportional hazard regression model were used to explore the impact of timing of diagnosis and treatment on mortality.

Results: Among the 1018 participants, 920 (90.37%) were on ART and 106 (10.41%) died during the study period. Compared to the early diagnosis with early ART group, personal monthly income <3000 yuan (a*OR*=0.20, 95%*CI*: 0.05~0.87) was negatively related to early diagnosis with late ART.

Sample source of voluntary counseling and testing (VCT) clinics (a*OR*=0.64, 95%*CI*: 0.45~0.91), previous willingness of HIV testing (a*OR*=0.67, 95%*CI*: 0.45~0.99), high level of social support (a*OR*=0.65, 95%*CI*: 0.48~0.89) were negatively related to late diagnosis with late ART.

Age of 30 to 49 years (a*OR*=1.79, 95%*CI*: 1.12~2.86), age over 50 years old (a*OR*=1.97, 95%*CI*: 1.09~3.56), having HIV-related symptoms in the past year (a*OR*=2.23, 95%*CI*: 1.65~3.01), and having not used HIV self-testing kits (a*OR*=2.31, 95%*CI*: 1.29~4.13) were positively related to late diagnosis with late ART.

After weighted by PSM, the Cox regression results showed that the risk of death for late diagnosis with delayed treatment group and untreated group were 5.53 times (95%*CI*: 3.05~10.03, *P*<0.001) and 10.29 times (95%*CI*: 5.19~20.41, *P*<0.001) compared to that of early diagnoses with early treatment group, respectively (*P*<0.001).

Conclusions: Timing of HIV diagnosis and ART among newly reported PLHIV in Guangdong Province was relatively late and resulted in higher risk of mortality. Targeted interventions should be tailored to facilitate early HIV diagnosis and ART, ultimately to reduce the risk of mortality among PLHIV.

EPC424

Implementation of a hub-and-spoke telemedicine model to deliver HIV care and treatment services in Zambia: Lessons learned for program expansion and replication

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Background: The Morehouse School of Medicine Zambia Program implements activities aimed at improving antiretroviral treatment (ART) treatment initiation, patient retention, viral load testing and reporting, and viral load suppression for people living with HIV (PLHIV).

The rapid spread of the SARS-CoV-2 pandemic has presented challenges in delivering HIV care and treatment services in high-density clinic settings in Zambia and globally.

Description: To ensure continuity of care for adult PLHIV on ART during the COVID-19 pandemic, we worked with the Ministry of Health (MOH) and implemented a telemedicine program using a hub-and-spoke model in Lusaka, Zambia. The program has been operational since June 2021 in one tertiary hospital, four secondary hospitals serving as hubs, and nine primary health clinics serving as spokes. From June 2021 to January 2022, we have provided 855 women, 563 men and 3 adolescent girls and young women on ART with enhanced adherence counseling, tuberculosis preventive therapy, treatment post-initiation reviews, abnormal vital sign reviews, and mental health services via the telemedicine program. The telemedicine program aligns with the MOH's eHealth goal of developing and implementing efficient e-Health solutions for quality health service delivery.

Lessons learned: Successful implementation of telemedicine services in Zambia requires significant initial investment in information technology and regulatory support. With the appropriate investment in technology, human resource training and regulatory support, telemedicine can complement health service delivery for PLHIV.

Community health workers (CHWs) have demonstrated effectively persuading HIV clients to receive care via telemedicine.

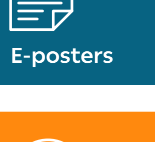
We learned that switching clients from in-person HIV-related visits to virtual visits requires CHWs trusted by clients to make the transition. By working with CHWs, we reduced missed appointment ratesfor those newly initiated on ARTfrom 18% in October 2021 to 3% in December 2021.

Conclusions/Next steps: More research is needed to understand the challenges and enabling factors for telemedicine service uptake. There is need to continuously assess the virologic suppression rates of individuals receiving care via telemedicine.

Furthermore, more work is needed to plan for the delivery of HIV care in Zambia using telemedicine beyond the COVID-19 pandemic and to ensure a positive telemedicine experience for clients.

Oral abstracts

Poster exhibition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Strategies to improve retention in care beyond the first year on ART

EPC425

Predictive modeling for retention in care using electronic healthcare records from multiple healthcare systems in Chicago

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Background: Improving retention in care for People Living with HIV (PLWH) is critical to ending the HIV epidemic. Predictive modeling can identify healthcare factors that affect retention in care. We used a large, multi-site, non-curated database of electronic healthcare records (EHR) to build predictive models of retention in care.
Methods: We used data from 2011-2019 from the Chicago Area Patient-Centered Outcomes Research Network (CAPriCORN), a database that includes a majority of PLWH in Chicago. CAPriCORN uses a hash-based data deduplication method to follow people across multiple Chicago healthcare systems with different EHRs, providing a unique city-wide view on retention in care for PLWH.
From the database, we utilized diagnosis codes, medications, laboratory tests, demographics, and encounter information to build predictive models. We included PLWH with at least two HIV care encounters in the database, resulting in 17,169 PLWH with a total of 192,562 encounters.
Our primary outcome was retention in care, which we defined as having no more than 12 months between subsequent HIV care encounters.
We built logistic regression, random forest, and elastic net logistic regression models using all factors, and compared their performance to a baseline logistic regression model containing only demographics and retention history.
Results: All models outperformed the baseline logistic regression model, with the most improvement from the elastic net logistic regression model (AUC 0.752 [0.744-0.760] vs 0.676 [0.667-0.682], p <0.001). Top predictors included retention history, being seen by an Infectious Disease provider (vs. primary care provider), site of care, and laboratory testing for Gonorrhea, Chlamydia, and TB.
The random forest model (AUC 0.744 [0.735-752]) revealed age, insurance type, and chronic comorbidities such as hypertension as important in predicting retention in care.
Conclusions: We used a real-world approach to leverage the full scope of data available in modern EHRs to predict retention in care.
Our findings reinforce previously known factors, such as retention history, while also showing the importance of laboratory testing, chronic comorbidities, and individual clinic-specific factors for predicting retention in care for PLWH in Chicago.
This work provides a framework allowing others to use data from multiple healthcare systems to examine retention in care using EHR.

EPC426

Medication-hiding behaviors and antiretroviral treatment adherence among people living with HIV: early findings from the Florida Cohort Study

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Background: Antiretroviral therapy (ART) access is critical to ending the HIV epidemic. It is unknown whether medication-hiding behaviors to prevent others from discovering one's HIV status influence ART adherence. The purpose of this study is to describe medication-hiding behaviors and factors associated with these behaviors among a cohort of people living with HIV (PLWH) and to assess whether medication hiding is associated with ART adherence or running out of medication.
Methods: The ongoing Florida Cohort Study has been enrolling local adult PLWH since October 2020. In this analysis, participants (n=309, mean age 50, 56% male, 44% Non-Hispanic Black, 16% Hispanic) were asked about having at least 90% ART adherence in the preceding 30 days and running out of ART medications for more than 24 hours in the past year. Participants were also asked if they engaged in at least one of five medication-hiding behaviors to prevent others from finding out their HIV status in the past year.
Results: Thirty percent of the sample had less than 90% ART adherence and 14% ran out of their medication. Many (44%) reported engaging in at least one behavior to hide their ART medications. The most common medication-hiding behaviors were hiding medication bottles (35%), removing prescription labels (25%), moving medications to another bottle (16%), changing where they got their medications (6%), and traveling at least 30 miles to obtain medications (4%). PLWH who were under 50 years old had greater odds of engaging in medication-hiding behaviors (OR=2.47, 95% CI=1.54-3.97, p=0.002).There was no association between medication-hiding behavior and running out of medication. However, PLWH who engaged in medication-hiding behaviors were more likely to have less than 90% ART adherence (OR=3.10, 95% CI=1.41-6.79, p=0.006)
Conclusions: Taking action to conceal HIV medications to hide one's HIV status was common. PLWH under 50 were more likely to engage in medication-hiding behaviors. Medication-hiding behaviors were associated with less than 90% ART adherence. These findings suggest that

PLWH may want to receive ART medications in ways that ensure privacy. Further research is necessary to determine the impact of other behaviors to hide one's HIV status on ART adherence and health outcomes.

EPC427
Developing theory-driven Treatment-as-Prevention and U=U communication materials for persons living with HIV and health workers in South Africa

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Background: Messages on HIV treatment-as-prevention (TasP) and undetectable=untransmittable (U=U) have not historically been emphasized during HIV counselling in South Africa.
We sought to develop video-based communication materials to support HIV counsellors and persons living with HIV (PLHIV) in confidently sharing accurate information on TasP.
Methods: We followed the Intervention Mapping protocol, including consultations with a stakeholder planning group, formative research consisting of five focus group discussions (FGDs, N=47) with healthcare workers, three FGDs (N=27) with PLHIV from civil society organisations, and 27 in-depth interviews with PLHIV at primary healthcare clinics. Data were analysed thematically.
We adapted the Information Motivation and Behaviour (IMB) skills model, refined strategies to enhance the intervention's acceptability, and developed storyboards and scripts for the videos.
Results: Our formative research revealed that:
a. Counsellors and PLHIV had doubts that TasP worked and needed support to improve their confidence in sharing TasP information;
b. They felt it essential to promote TasP alongside standard condom use as prevention strategies;
c. PLHIV were motivated to achieve viral suppression but needed counselling to improve their viral load literacy;
d. PLHIV worried a lot about transmitting HIV to others and felt that TasP promoted self-acceptance and peace of mind.
Following this evidence, we will develop a series of short videos featuring PLHIV's testimonials of experience with TasP. The videos will be embedded in a tablet-based mobile application and presented in local languages.
The video themes – quotes from the participants – are:
1. "My treatment boosts how I look at myself. I am a full human again.";
2. "HIV does not control me. I control it and I keep my partner safe.";
3. "My child is my testimony. U = U really works";
4. "Now that I am virally suppressed, I can talk about HIV without feeling like I'm the victim or a villain";
5. "We have been practising U=U for years now. She is positive and I'm still negative."
Conclusions: Our engagement with healthcare providers and PLHIV as well as advocates of U=U informed the development of a theory and contextually grounded communication intervention to support counselling on HIV TasP.

EPC428
Scale-up of enhanced adherence counseling through targeted mentorship and telemedicine: lessons from a general hospital in Lusaka, Zambia

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Background: Enhanced adherence counseling (EAC) uptake at Matero General Hospital (GH) in Lusaka, Zambia has historically been low for persons living with HIV (PLHIV) due to transport costs, waiting times, and limited staff capacity. In June 2021, Morehouse School of Medicine implemented a hub and spoke telemedicine program model at Matero GH, which serves as a hub with nine peripheral and primary care health centers serving as spokes. One of the goals of this model is reduce SARS-CoV-2 transmission in antiretroviral treatment (ART) clinics at GHs.
We also provided targeted mentorship on EAC service delivery to 16 out of 18 clinicians at Matero GH. We hypothesized that telemedicine services and EAC mentorship at Matero GH and its two associated peripheral health centers contributed to increased uptake and completion of EAC sessions.
Description: We analyzed EAC enrollment and completion rates between February 2021 and December 2021. We conducted a cross-sectional study to assess EAC completion rates among adult PLHIV on ART at Matero GH. We compared EAC enrollment and completion rates between individuals receiving HIV care between February 2021 and June 2021 and those receiving HIV care July 2021 and December 2021. We collected data from the national electronic medical record system and facility's high viral load register to identify unsuppressed adult PLHIV needed to be enrolled in EAC. We conducted descriptive statistics on the collected data.

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Lessons learned: Only 218 out of 363 clients (60%) with high viral load test results were enrolled for enhanced adherence counselling at Matero GH in the period between February and June 2021, leaving a deficit of 145 (40%) clients required to be enrolled for EAC. By December 2021, all 363 ART clients had enrolled into EAC in-person or via telemedicine. A total of 355 clients (98%) had completed EAC and 344 (97%) had achieved viral load suppression.

Conclusions/Next steps: Targeted EAC mentorship for clinicians serving PLHIV coupled with telemedicine services during and beyond the COVID-19 pandemic has the potential significantly improve EAC uptake and health outcomes for PLHIV. There is need to provide continued mentorships to clinicians serving PLHIV to ensure that gains from these investments are not lost.

EPC429

Telemedicine results in shorter clinical visit turnaround time for adult recipients of care in Lusaka, Zambia: implications for treatment initiation and adherence

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Background: The amount of time it takes for Recipients of Care (RoC) to receive healthcare services is a significant contributor to adherence to their HIV treatment and viral load suppression. RoC must visit health facilities regularly to maintain their wellbeing, receive medications, and check viral load. The length of their visits often determines their willingness to keep future appointments based on other responsibilities competing for their time.

The Morehouse School of Medicine in Zambia is implementing a telemedicine program to improve care for people living with HIV (PLHIV) and to compare the turnaround time (TAT) for RoC utilizing the telemedicine platform with in-person visits at government clinics.

Description: We collected patient TAT data in Ministry of Health (MOH) ART clinics from April 2021 to September 2021 from four Morehouse School of Medicine-supported health facilities in Zambia: Chawama, Chilenje Kanyama, and Matero General Hospital. Patient TAT for telemedicine services was collected from July 2021 to September 2021. We worked with the MOH and the Lusaka Provincial Health Office to assess the amount of time the RoC spent waiting to receive a health service.

We utilized a quantitative data collection tool to capture time in and time out and compared the waiting time and duration of visits between the telemedicine platform and in-person visits.

Lessons learned: The mean length of waiting time for the in-person facility visit against the telemedicine platform improved from 45 minutes to 15 minutes for tuberculosis preventive therapy, from 52 minutes to 23 minutes for enhanced adherence counseling, and from 45 minutes to 21 minutes for new treatment post-initiation review.

Conclusions/Next steps: We have demonstrated that telemedicine significantly reduces clinical visit turnaround times for RoC. Expansion of telemedicine services to more RoC has the potential to contribute to improving clinical appointment adherence and treatment out comes by reducing length of appointments.

Strategies to improve re-engagement

EPC430

Change in HIV clinical characteristics from time of loss to follow-up to return to care

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Background: Consistent contact with HIV care improves outcomes among persons with HIV (PWH); however, many PWH have gaps in care.

In this study, we evaluated loss to follow-up (LTFU) and patient characteristics between LTFU and return to care (RTC).

Methods: Among PWH initiating HIV care (≥2 HIV clinic visits in 12 months) from 1996-2019 in the UNC CFAR HIV Clinical Cohort, we estimated

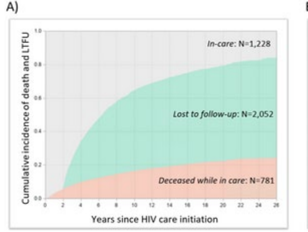
(1) time from first visit to LTFU (24 months alive without a visit) and

(2) time from LTFU to RTC (first subsequent visit), censoring PWH on 12/31/2021 and accounting for competing risk of death (from health records and death registries).

For PWH returning to care, we compared CD4 counts and virological suppression (HIV RNA <400 copies/mL) at LTFU and RTC.

Results: The median age at first visit among 4,061 PWH was 38 years (IQR: 30-46), and 28% were women, 60% Black, 29% White, and 7% Hispanic. During a median follow-up time of 6.2 years (IQR 3.2-11.2), 781 (19%) had a documented death and 2,052 (51%) were LTFU.

LTFU was highest during the first few years of HIV care (Fig. A). Among patients with LTFU, 27% (N=561) returned to care, and 16% (N=331) died without RTC (Fig. B).



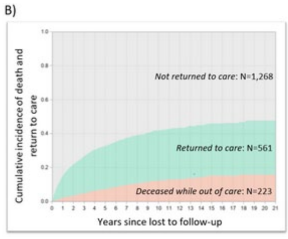


Figure. Stacked cumulative incidence of (A) loss to follow-up (LTFU) and (B) return to care (RTC). Deaths treated as a competing event.

Among patients who RTC (N=561), the median gap in care was 3.1 years (IQR: 2.4-4.9). Upon RTC, CD4 cell counts decreased, stayed the same, and increased among 50, 17, and 32% of patients respectively; 45% had undetectable HIV RNA levels at LTFU, versus 33% at RTC.
Conclusions: In this large HIV clinic population over 1996-2021, >50% of patients experienced gaps in care, with <10% returning to care with evidence of receiving effective HIV therapy elsewhere. Further work is ongoing to assess LTFU patients who died or RTC with low CD4s to inform clinic-based interventions for re-engagement.

EPC431

Loss to follow-up in HIV care: Issues in retention and re-engagement among People Living with HIV (PLHIV) in 13 African countries

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Background: Retention of People Living with HIV (PLHIV) in care is critical to attaining favorable treatment outcomes and the overall achievement of the 90-90-90 objectives. However, despite the importance of retention in HIV care, LFTU continues to pose serious challenges to effective HIV antiretroviral therapy.
Given the above, this study aims to identify factors contributing to disengagement from HIV care and the factors contributing to retention among previous LFTU clients in 13 African Countries.
Methods: This study was a descriptive cross-sectional study among PLHIV who have ever disengaged from care between January 2019 and December 2020 in 13 African AHF-supported countries. Based on individual preferences (face-to-face or telephone), survey responses were collected from 430 participants. The participating countries include Uganda, South Africa, Nigeria, Ethiopia, Rwanda, Zambia, Eswatini, Lesotho, Kenya, Malawi, Mozambique, Zimbabwe, and Sierra Leone. Data was aggregated using google forms and analyzed using Statistical Package for Social Sciences Version 20.0.
Results: The average age of the participants was 34 years, and most were females (62.3%). Uganda accounts for the highest (19.8%) number of participants. 40% of the participants were currently receiving treatment in another facility, and the primary reason (89.8%) for going to another facility is distance.
Factors leading to exiting the clinic include personal challenges (75%), health facility-related issues (10%), treatment fatigue (5%), spiritual beliefs (3%), and others (7%) which include stigma, medication side effects, and work. About half (48.6%) had experienced symptoms of mental illness in the last year. Most of the respondents (72.9%) who are currently not receiving treatment are willing to return to care, and about 15% returned within one month after the survey.
Predictors of poor retention in care were low socio-economic status, poor adherence, not being a support group member, previous history of mental illness, stigma, and non-disclosure to partners.
Conclusions: Understanding clients' present status and their reasons for disengagement are helpful in designing appropriate strategies necessary for minimizing LFTU and improving retention/re-engagement.
Attention needs to be paid to the client's mental health status and participation in support group activities. Also, scheduled follow-up might be useful in client re-engagement even after a client has been declared LFTU.

EPC432

Substance use and psychosocial factors limit inpatient to outpatient transition of HIV care

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Background: For patients hospitalized with HIV-related illness, timely outpatient follow-up serves the dual role of engagement (or re-engagement) in care and prevention of disease complications. Despite significant efforts to improve linkage and retention in care, hospital follow-up outcomes remain understudied in HIV treatment settings. We sought to characterize factors associated with missed follow-up appointments and hospital readmission.
Methods: The Owen Clinic is an HIV primary care center affiliated with a tertiary-care university hospital in San Diego, California. An inpatient transitions-of-care team assesses all hospitalized patients with HIV and schedules outpatient follow-up appointments within 14 days as appropriate.
We retrospectively analyzed data from 114 patients who were referred for an early hospital follow up appointment (EHFUA) between June, 2020 – November, 2021.
Multivariate logistic regression was used to determine factors associated with attendance at the EHFUA, attendance at a discharge visit within 30 days of hospitalization, and hospital readmissions within 45 days of discharge.
Results: 70.7% (80/114) of patients attended their scheduled EHFUA and 79.9% (91/114) attended a visit within 30 days of discharge (Table 1). In multivariate analysis, active substance use disorder (SUD) was associated with lack of EHFUA attendance (OR 0.33; 95% CI [0.14-0.82] and the presence of the composite of SUD, mental health disorder (MHD), and unstable housing was associated with lack of attendance to a discharge visit within 30 days (OR 0.23

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95% CI [0.08-0.65]). Additionally, 19.3% (22/114) experienced hospital readmission within 45 days. Having the composite of SUD, MHD and unstable housing was associated with hospital readmission (p=0.004, OR 4.48 (1.63-12.28), while follow-up appointment attendance was not.

Patient Characteristics	Total (n=114)	Attended visit (n=80)	Missed visit (n=34)	Unadjusted P-value
Median Age (IQR)	51 (40-60)	51 (39-61)	51 (43-60)	0.46
Sex assigned at birth (%) Female	15 (13.2)	11 (13.8)	4 (11.8)	1.00
Race (%) White Black Asian Other/Mixed Race Unknown	 63 (55.3) 20 (17.5) 4 (3.5) 25 (21.9) 2 (1.8)	 42 (52.5) 11 (13.8) 4 (5.0) 22 (27.5) 1 (1.3)	 21 (61.8) 9 (26.5) 0 (0) 3 (8.8) 1 (2.9)	0.08
Undetectable HIV viral load (%)	42 (36.8)	34 (42.5)	8 (23.5)	0.06
Diagnosed with Substance Use Disorder (SUD) (%)	63 (55.3)	38 (47.5)	25 (73.5)	**0.01**
Diagnosed with a mental health disorder (MHD) (%)	72 (63.2)	46 (57.5)	26 (76.5)	0.06
Homeless or have unstable housing (%)	50 (43.9)	30 (37.5)	20 (58.8)	**0.04**
Presence of SUD, MHD and unstable housing (%)	37 (32.5)	21 (26.3)	16 (47.1)	**0.048**
Have insurance-related barrier to care (%)	28 (24.6)	16 (20.0)	12 (35.3)	0.10

Table.

Conclusions: Despite high rates of hospital follow-up, challenges remain in re-engaging patients with certain psychosocial barriers, particularly SUDs and unstable housing. Prompt identification of these barriers and inpatient treatment of SUDs with appropriate follow-up may further improve outpatient participation in HIV care.

EPC433

Data linkages, resource sharing, and collaboration: optimizing HIV Out-of-Care Re-engagement between siloed public health entities in Florida, USA

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Background: Florida - the third most populated US state - had the third highest HIV incidence rate in 2019 (23.9/100,000). In 2020, 20% of people with HIV (PWH) were presumed out-of-care (OOC). The Florida Department of Health (FDOH) utilizes HIV surveillance data to identify cases for targeted re-engagement throughout the state. Highly prioritized OOC PWH are assigned to case managers at county health departments (CHDs). Current FDOH re-engagement efforts reach a fraction of the OOC population.

The US government funds six high-incidence regions in Florida via Ryan White Part A (RWPA), to improve HIV care provision. Florida's RWPA programs are governed at the county level - meaning the state cannot share person-identifiable data with these programs. This results in inefficient/duplicative re-engagement efforts and underutilized RWPA funding, limiting efficacy of efforts to end the HIV epidemic.

Description: Georgetown University (GU) is funded by the Health Resources and Services Administration to assist with data integration for improved HIV care outcomes. GU supports FDOH in designing an optimized HIV care re-engagement program. FDOH receives data from the six RWPAs, matches these data to state systems, and returns updated data to the RWPAs for OOC re-engagement. FDOH will simultaneously send expanded OOC lists for re-engagement to the CHDs, utilizing RWPA funded staff. This circumvents privacy regulations that prevent data sharing of non-clients with the RWPA programs.

Lessons learned: Communication and collaboration between agencies and their data systems is crucial in optimizing high-quality data use for widespread OOC re-engagement. In one RWPA, 494 clients presumed OOC reduced to 189 after an FDOH match. This initiated re-engagement for a subset of the initial client list, reducing time spent on individuals who were deceased or already receiving care.

Conclusions/Next steps: Resource sharing and collaborative planning between various arms of the public health sector can allow for drastic increases in the number of OOC clients who are receiving re-engagement services – improving prospects for re-engagement into HIV care.

Further analysis of the implications of expanding the CHD OOC re-engagement effort due to resource sharing by the RWPA is needed, and the impact of routine data sharing will be evaluated as this program grows.

Epidemiology of COVID-19

EPC434

The impact of COVID-19 on a health workforce providing HIV services in South Africa

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Background: The COVID-19 pandemic has decreased access to HIV services, in part due to impacts on the health workforce. There is limited evidence about how COVID-19 has affected HIV-service providers.

Methods: Anova Health Institute is a PEPFAR partner supporting five districts in South Africa. All COVID-19 cases and exposures in health care workers (HCW) employed by Anova were reported from Apr2020-Dec2021. Anova supported testing for symptomatic and exposed HCWs and maintained a database of cases.

We report monthly incidence and factors associated with COVID-19 diagnosis in each wave using logistic regression.

Results: 5653 individual HCW were employed at any time during the study period. 1529 (27%) were diagnosed with COVID-19, 130 (8%) had multiple episodes. Monthly incidence was 7% in the Alpha wave (July 2020), 4% in Beta and Delta (January and July 2021) and 13% in Omicron (December 2021).

The highest proportion of HCW off work was in Alpha and Omicron waves. During the peak week of Alpha, 540 HCW (14%) were off (331 quarantined; 209 cases). During the peak week of Omicron, 500 HCW (16%) were off (225 in quarantine; 275 cases). There was at least one HCW off work due to COVID-19 every week during the study period (91 weeks), and only 14 weeks when there were fewer than 10 HCWs off work.

In the Omicron wave, COVID-19 infection was less likely among HCW in allied roles (OR=0.45, 95%CI 0.24; 0.85), more likely among those who had COVID-19 in the first wave (OR=1.67, 95%CI 1.17;2.38) and less likely among those who had COVID-19 in the third wave (OR=0.58, 95%CI 0.34;0.98). Associations varied in each wave.

In November 2021, 67% of HCW reported being vaccinated, which increased to 81% by the end of the Omicron wave. 85% of cases in the fourth wave were vaccinated.

Conclusions: This primary care-based HIV workforce was heavily impacted by COVID-19. Although the number of HCW quarantined due to exposure decreased, it was still substantial by December 2021.

To ensure continuity of services, there is an urgent need to update South African COVID-19 quarantine and isolation guidelines to account for higher levels of natural and vaccine-related immunity.

EPC435

Preliminary estimate of SARS-CoV-2 vaccine effectiveness among healthcare workers – Zambia, 2021

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Background: During the COVID-19 pandemic, healthcare workers (HCWs) have been at a higher risk of infection because of frequent patient interactions. Deployment of SARS-CoV-2 vaccines, which have demonstrated remarkable vaccine effectiveness (VE), is key to protecting the health workforce.

However, VE data from countries in Africa are limited. We evaluated SARS-CoV-2 VE in preventing symptomatic COVID-19 among Zambian HCWs.

Methods: A test-negative case-control study among HCWs with COVID-like illness (CLI) was initiated in June 2021 and this preliminary analysis presents data through 30th November 2021 (the period before the Omicron variant was detected in Zambia). Cases had confirmed COVID-19 and controls tested COVID-19 negative.

A standardized questionnaire was administered that included information on demographics, medical history, and COVID-19 testing. COVID-19 testing was done with either PCR or RDTs.

The odds of symptomatic COVID-19 by vaccination status were assessed using mixed-effects logistic regression, adjusting for age, comorbidities, test week, and province (random-effects term). VE was calculated as 1 minus the adjusted odd ratios of vaccination times 100.

Results: Among 549 HCWs (348 cases and 201 controls) with CLI, 256 (46.6%) had received ≥1 vaccine dose, with 104 (18.9%) being vaccinated with their first dose ≥14 days before testing, but only 14 (2.6%) having completed their primary series. Of the 104 HCWs, 100 (96.2%) received AstraZeneca and four (3.8%) received Janssen. Having received ≥1 vaccine dose ≥14 days before COVID-19 testing was associated with a VE against symptomatic COVID-19 of 40.4% (95% confidence interval [CI]: 1.7–63.7).

Conclusions: Covid-19 vaccines were effective at reducing symptomatic COVID-19 among HCWs in Zambia. The VE point estimate is consistent with studies from other countries where persons were partially vaccinated and the Delta variant was the dominant strain, as in Zambia during the study period. Many Zambian HCWs recruited were unvaccinated, signaling a high-risk group in which to rapidly scale-up vaccination.

EPC436

SARS-CoV-2 antibodies prevalence among sexual and gender minorities youth in Brazil

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Background: Brazil was strongly affected by the COVID-19 and it is still unknown how it affected sexual and gender minorities' youth in the country during its burdensome first wave. The aim was to estimate the seroprevalence of antibodies to SARS-CoV-2, and analyze factors associated with the infection among young men who have sex with men (yMSM) and transgender women (yTGW).

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Methods: A cross-sectional survey nested in PrEP1519, a cohort that investigates the effectiveness of PrEP, and monitors sexual practices among yMSM and yTGW in Salvador, Northeast of Brazil. Serum samples were collected from yMSM and yTGW aged 15-22 years between June-October/2020. IgG and IgM anti-SARS-CoV-2 were detected by chemiluminescence, and data were collected through a socio-behavioral questionnaire.

Descriptive, bivariate, and multivariate analyzes with estimated adjusted odds ratios (aOR) and 95% confidence intervals(95%CI) were carried out.

Results: Among the 137-youth participants, the joint prevalence of IgM and IgG was 20.4% (95%CI:14.4- 28.1), and separately: 11.7% (95%CI: 7.2-18.3) for IgM and 16.8% (95%CI:11.3-24.1) for IgG. The rate of self-reporting COVID-19 infection based on symptoms but without tests was 7.6% and based on tests was 5.3%. Most remained sexually active during quarantine measures reporting sex with steady and/or casual partners(67.2%); 19.1% reported never wearing a mask in public venues, and 23.9% believed they could easily recover from COVID-19.

Among the participants with positive SARS-CoV-2 antibodies, most remained sexually active during quarantine measures reporting sex with steady and/or casual partners (66.6%); little more than a third reported not wearing a mask in public venues (36%), and believed they could easily recover from COVID-19 (34.4%).

The multivariate analysis estimated a statistically significant association between SARS- CoV-2 infection and reports of no use of masks in public venues (aOR=3.11; 95%CI:1.02-9.42), and among those who believed that they could easily recover from COVID-19 (aOR=2.68; 95%CI:1.03-6.95).

Conclusions: The prevalence of SARS-CoV-2 antibodies among yMSM and yTGW was higher than that estimated in seroprevalence surveys conducted in 2020 in the general population of Salvador, indicating a low perception of risk and low adherence to quarantine measures among yMSM and yTGW during the first wave, and likely underreporting of official seroprevalence data for Salvador.

EPC437

Knowledge, attitudes, practices and perceptions of the populations of the Koulikoro region (Mali) on the COVID-19 pandemic

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Background: Given the seriousness of the COVID-19 pandemic, with 16,294 confirmed cases including 574 deaths, a case fatality rate of 3.51% as of November 5, 2021, its impact on the global economy and, by extension, on Mali (growth forecasts for the year 2020 have dropped from 5% to 0, 9%), the NGO SOUTOURA, with financial support from CDC Atlanta, conducted a CAP research project aimed at collecting the knowledge, attitudes, and practices of the populations of the Koulikoro region on the COVID-19 pandemic.

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Methods: Analytical cross-sectional study conducted from November 1 to 30, 2021. A two-stage cluster search was conducted in the health districts. Univariate and multivariate analyses were performed using SPSS 25 software.

Results: One thousand (1000) people were interviewed in the Koulikoro region. The respondents (94.7%) knew about preventive measures. In fact, the majority of respondents (93%) do not see the need for vaccination in adulthood, except in the case of international travel and, more widely, vaccination against tetanus in the event of accidents.

Notwithstanding those in favor of vaccinating family members against COVID-19, a significant proportion of respondents said "I don't trust the COVID-19 vaccine" (14.6%) to indicate their lack of support for vaccination against COVID-19. The majority of respondents feel that they alone are in control of their decision to be vaccinated against COVID-19 Me (44.8%), followed by those who leave it to My spouse/partner (28.2%) and My father (19.7%).

Inevitably, the population as a whole has not been happy with the arrival of COVID-19 in their daily lives, with its attendant inconveniences due to the many upheavals in their daily routine

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Conclusions: In practice, however, certain ambiguities remain to be resolved in order to achieve the objectives of the fight against COVID-19 in terms of collective immunity.

Epidemiology of COVID-19 among persons living with HIV and / or including tuberculosis

EPC438

HIV infection and risk of COVID-19 death in sub-Saharan Africa. A meta-analysis

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Background: Little is known about COVID-19 outcomes among People living with HIV in sub-Saharan Africa. The goal of this meta-analysis was to determine the relationship between HIV infection and the risk of coronavirus disease 2019 (COVID-19) mortality in Sub-Saharan African countries.

Methods: From December 1, 2019 to December 31, 2021, we systematically retrieved papers from PubMed, Google Scholar, Europe PMC, and EMBase. Studies from Niger, the Democratic Republic of the Congo, Uganda, Kenya, and South Africa are all represented in this meta-analysis.

The quality of the included studies was assessed using the Newcastle–Ottawa Scale (NOS). To quantify heterogeneity, the Cochran Q test and I2 statistics were used.

The odds ratio (OR) and 95% confidence intervals (CI) were calculated and plotted as forest plots. The Egger test and the funnel plot were used to look for potential publication bias. The review manager version 5.4 was utilized to analyze all the statistical data.

Results: Through computerized searches, a total of 560 records were found. Six papers were finally included in this review. In total, 7208 COVID-19 patients with HIV infection and 53073 COVID-19 patients without HIV infection were included. Among COVID-19 patients with HIV, the mortality rate was 10.90% (786/7208).

According to one study, those living with HIV have a greater risk of COVID-19 death than those who do not have HIV. According to five studies, there was no link between HIV infection and COVID-19 mortality risk. The OR effect size ranged from 0.03 to 10.27 in the various investigations. There was no substantial heterogeneity among the six studies (Q=2.92, p 0.71; I2=0%).

In this meta-analysis, the overall effect size (OR) was 1.13 (95% CI 1.04–1.23). The funnel plot analysis revealed symmetry among the research considered. The Egger test revealed that there was no publication bias (t = 0.56, P =0.586).

Conclusions: This meta-analysis found a link between HIV infection and the probability of death from the COVID-19. Those with HIV co-infection should be treated as a priority group during COVID-19 clinical treatment to reduce death risk.

EPC439

SARS-CoV-2 seroprevalence in children born to women living with HIV on life-long antiretroviral therapy (ART) in Zimbabwe: PEPFAR-PROMOTE study

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Background: There is paucity of data on seroprevalence of SARS-CoV-2 infection in children, especially in children born to women living with HIV (WLHIV) who may be at higher risk of severe disease and mortality due to immune compromise.

We retrospectively estimated SARS-CoV-2 antibody prevalence within the PEPFAR-PROMOTE observational cohort between July and October 2021 in Zimbabwe.

Methods: Children were enrolled in 2016 in the PEPFAR-PROMOTE longitudinal cohort to study long-term effects of perinatal exposure to maternal HIV and ART. Blood was collected six-monthly at scheduled visits during the 5-year study and stored in -70C conditions. Stored plasma samples from children who attended study visits during the study period and for whom consent was available were tested using 2021 EUROIMMUN qualitative antibody assay for IgG antibodies to SARS-CoV-2 spike protein. Point prevalence estimates and 95% confidence intervals (CI) were calculated by age group and sex.

Results: Plasma samples from 578 children born to 386 WLHIV were tested, of which 270 (46.7%) were male and 7 (1.2%) were living with HIV. Children were aged <2 years (predominantly being breastfed; n=74, 12.8%); 2-5 years (pre-school, n=134, 23.2%); and >5 years (mostly school-going; n=370, 64%).

Almost all participants resided in high-density urban areas of Harare and Chitungwiza, Zimbabwe. The overall SARS-CoV-2 IgG seroprevalence was 47% (43–51%). Seroprevalence estimates by category were 45% (34-56%) for 0-2 years, 43% (35-52%) for 2-5 years49% (44-54%) for >5 years, 41% (35 – 47%) for males and 51% (46 – 57%) for females.

No association with age band was evident (p=0.36) in this cohort, however, seropositivity was more common among female children (p=0.03).

Conclusions: Prevalence of SARS-CoV-2 antibodies was high in this population of HIV/ART exposed urban children during the third COVID-19 wave. Further analysis is required to assess sero-concordance within mothers and siblings and to assess associations with clinical symptom, Innovative prevention strategies are required to avoid spread of the virus in children within families and communities taking into account prevailing cultural and living conditions. The long-term consequences of these infections remain to be elucidated.

EPC440

Social vulnerability and COVID-19 vaccination rates among people living with HIV in Michigan

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Background: People living with HIV (PLWH) are a priority population for COVID-19 vaccination due to potential for immunodeficiency if not virally suppressed. They are also more likely to reside in socially vulnerable census tracts.

Methods: HIV surveillance data was matched with immunizations records to ascertain the COVID-19 vaccination status of people living with HIV in Michigan as of July 30, 2021.

Results: As of July 30, 2021, 59% of PLWH had initiated a COVID-19 vaccine. People in the most vulnerable 25% of census tracts were less likely to initiate vaccination (OR [95% CI]: 1.9 [1.7-2.1]), as were younger PLWH, Black PLWH, and women. People who were virally suppressed and people who had received a Ryan White (RW) service in the past year were significantly more likely to have initiated vaccination.

Social Vulnerability	Vaccine Initiation	
	OR	95% CI
1 (Least Vulnerable)	1.903	(1.712,2.115)
2	1.68	(1.527,1.848)
3	1.34	(1.234,1.454)
4 (Most Vulnerable)	(reference)	

Table. Association Between SVI Theme Quartile And Vaccine Initiation In People Living With HIV, Michigan, July 30, 2021

Conclusions: Living in a socially vulnerable census tract was associated with lower vaccination likelihood for people living with HIV, indicating a need for targeted approaches to vaccination campaigns based on SVI components of socio-economic status; household composition and disability; racial/ethnic minority status and language; and housing type and transportation.

EPC441

COVID-19 outcomes and vaccination coverage among migrants living with HIV in Catalonia, Spain: a propensity score-adjusted analysis using the prospective PISCIS cohort

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Background: Migrants are disproportionally impacted by some transmissible infections affect because of the social and structural determinants affecting this group.
We performed a retrospective propensity-score matched cohort study to assess COVID-19 outcomes and SARS-CoV-2 vaccination coverage among migrants and natives living with HIV.

Methods: Leveraging data from the PISCIS cohort of people living with HIV (PLWH) in Catalonia, Spain between March 1, 2020, and July 18, 2021, we matched 4770 migrants with 4770 Spanish PLWH using a greedy nearest-neighbor algorithm. Patients were matched by age, sex, socioeconomic deprivation, HIV acquisition risk group, latest CD4 count, latest plasma HIV-RNA, number of comorbidities, and backbone antiretroviral therapy (ART).
We compared COVID-19 testing, test positivity, hospitalization, intensive care unit (ICU) admission, associated mortality, and vaccination coverage between the two groups.

Results: There were 14939 PLWH in our overall cohort (males: 82%; median age: 46.4 years) of which 8808 were Spanish and 6131 migrants. After propensity score matching, all variables were adequately matched (standardized mean differences [SMD] <0.10 were achieved on all covariates). After matching, 82.8% and 82.4% of Spanish-born PLWH and migrants respectively were males (SMD=0.011) with a median age of 44.8 years.
More than half (58.2%) of participants were men who have sex with men (MSM). The median CD4 count was 681 cells/mm3, and 89.2% and 88.9% of natives and migrants respectively had undetectable HIV viraemia (SMD=0.011). COVID-19 testing was significantly lower among migrants (56.3% vs 59.2%, P=0.004) but test positivity was higher (14.0% vs 11.5%, P<0.00001).

Among positive cases, we found no significant differences between the two groups in terms of hospitalization (P=0.43), ICU admission (P=0.87), and mortality (P=0.99). Regarding vaccination, coverage was higher among Spanish PLWH than migrants (70.4% vs 60.8%, P<0.00001).

Conclusions: Migrants living with HIV tested lower for SARS-COV-2, had higher test positivity, and lower vaccination coverage compared to their native counterparts. Country of origin does not significantly impact COVID-19 clinical outcomes among PLWH, including hospitalization, ICU admission or mortality.

These results reinforce the importance of identifying and addressing the structural determinants that are currently acting as barriers to health services among migrant populations in our settings.

EPC442

Safety and immunogenicity of SARS-CoV-2 vaccines among a marginalized urban population of people living with HIV

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Background: We sought to evaluate the uptake, safety and immunogenicity of SARS-CoV-2 vaccines among structurally-marginalized people living with HIV who use drugs.

Methods: Study participants completed an interviewer-administered questionnaire and provided a dried blood spot sample (DBS) between June-September 2021 in Vancouver, Canada. DBS samples were tested on the V-PLEX COVID-19 Coronavirus Panel 2 (IgG) by Meso Scale Discovery (MSD).

Mixed-effects models were used to identify baseline correlates of SARS-CoV-2 vaccine uptake, adverse events, and SARS-CoV-2 IgG antibody response.

Results: We enrolled 97 participants living with HIV, of whom 56 (57.7) reported receipt of two SARS-CoV-2 vaccine doses, and 17 (17.5%) reported being unvaccinated. Self-reported COVID-19 infection was associated with a lower odds of vaccination (Odds Ratio [OR]=0.28, 95% confidence interval: 0.08-0.92, P=0.036).

Among those who were unvaccinated, the anti–SARS-CoV-2 Spike antibody geometric mean titre (GMT) was 34.1 AU/mL. Among people who had received two SARS-CoV-2 vaccine doses, the anti–SARS-CoV-2 Spike antibody GMT was 1,088.7, 2,213.8, 2,357.2 and 1,595.8 AU/mL among those receiving their second vaccination within 0-30, 31-60, 61-90 and 91-120 days of DBS collection, respectively (trend P=0.679).

We did not observe any significant associations between sociodemographic factors, substance use or clinical conditions and adverse events or vaccine immunogenicity (P>0.05). No serious adverse events were reported, and the most common adverse events included pain at injection site (n=23, 23.7%) and fatigue (n=13, 13.4%).

Conclusions: The observed vaccination uptake among this marginalized urban population (57.7% with two doses) was below the rate (75.0%) reported in the provincial population at the time data were collected. Anti-SARS-CoV-2 Spike antibody responses appeared to wane among participants after 90 days following vaccination although this trend was not statistically significant.

Adverse events and vaccine immunogenicity did not appear to vary across sociodemographic, substance use or clinical subgroups.

Given that suspected prior COVID-19 infection was associated with lower odds of vaccine uptake, education efforts focused on the benefits of vaccination among those with previous COVID-19 exposure may be worthwhile among marginalized populations with high rates of COVID-19 infection.

EPC443

Characterizing COVID-19 outcomes among PLHIV in India: findings from community-based national survey

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Background: Most data on COVID-19 impact among people living with HIV (PLHIV) derive from clinic-based samples.In India, over 490,000 people have died from SARS-CoV-2 infection, yet not much is known about the COVID-19 burden and impact among the estimated 2.3 million PLHIV.

Methods: We conducted an online survey in January 2022 (self-administered online or conducted over the phone in local languages). Community-based organizations facilitated recruitment. Eligible participants were living with HIV and ≥18 years. The survey included questions related to COVID-19 symptoms, testing, and treatment history and COVID-19 risk behaviors. Multivariable logistic regression was used to assess factors associated with a positive COVID-19 diagnosis and hospitalization.

Results: 1,749 PLHIV responded to the survey across 36 Indian states/union territories (32.8% central, 2.6% north, 27.6% east, 27.8% west, 7.8% south, and 1.5% northeast regions). Mean age was 34 years; 41% self-identified as male, 58% female and 1% transgender or gender diverse.

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About half (51.3%) reported experiencing COVID-19 symptoms in the past year. Of the 934 (53.4%) who had ever been tested for COVID-19, 349 received a positive result. 78 (22.3% of people with COVID-19) were hospitalized, of whom 40 (51.2% of hospitalized) were put on a ventilator. There were no observable differences between men and women; transgender/gender diverse people (n=18) demonstrated higher disease burden and severity (Figure).

Key correlates associated with a positive COVID-19 test were working in-person during lockdown (aOR=2.0, 95%CI: 1.6-2.5) and any household member testing positive for COVID-19 (aOR=8.0, 95%CI: 5.1-12.2). Those who reported missing taking ART for at least one week or longer in the past year were 10 times more likely to report hospitalization (aOR=10.0, 95%CI: 4.5-22.0).

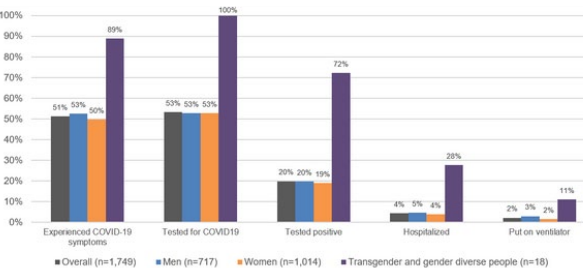

Figure. COVID-19 outcomes among 1,749 PLHIV in India stratified by gender.

Note: Percentages are relative to total population size per gender category.

Conclusions: These findings suggest substantial COVID-19 burden among PLHIV, particularly among transgender and gender diverse PLHIV. It is critical that HIV programs integrate access to non-pharmaceutical interventions and vaccines to address this burden.

Effects of the COVID-19 on HIV epidemiology and prevention

EPC444

HIV mortality among adult PLHIV in PEPFAR-supported programs - 12 countries, October 2019 - September 2021

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Background: In 2019, the United States President's Emergency Plan for AIDS Relief (PEPFAR) began collecting interruption in treatment (IIT) and mortality data among people living with HIV (PLHIV) receiving antiretroviral treatment (ART) in PEPFAR-supported programs. The COVID-19 pandemic disrupted HIV service delivery worldwide and COVID-19 has disproportionately impacted older populations. We reviewed mortality over time to assess if mortality increased among older adult (50+) PLHIV on ART during the COVID-19 pandemic.

Methods: PEPFAR-supported programs submit aggregate data quarterly using standardized indicators disaggregated by age and sex. Relevant indicators, including TX_ML, which captures information on IIT and mortality, were reviewed to assess deaths reported for adult PLHIV (15–49 and 50+) on ART from October 2019–September 2021 for countries with at least 80% TX_ML reporting completeness (n=12). The proportion died was calculated quarterly as number of reported deaths in the current reporting quarter divided by the sum of the number of PLHIV on ART in the previous quarter and the number of PLHIV newly initiated on ART in the current quarter.

Results: The proportion died ranged quarterly across countries from 0.12%–0.50% and was higher in the 50+ age group and among men (Figure). Increases in proportion died were observed only in the 50+ group with increases of 0.11% (men) and 0.09% (women) compared to a 0.02% decrease (men) and no change (women) in the 15–49 group over time. In the 50+ group, proportion died

ranged between 0.24%–0.50% and was higher among men than women (range: 0.38%–0.50% (men) versus 0.24%–0.34% (women)).

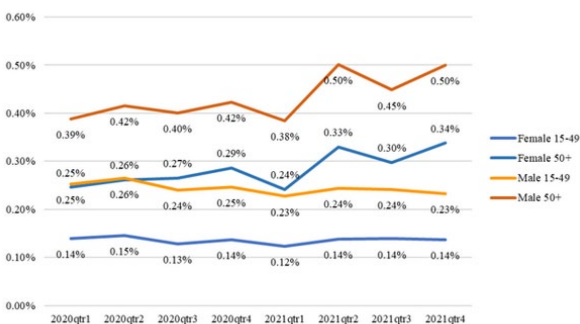

*Figure. Mortality proportion among adult persons living with HIV (PLHIV) on antiretroviral treatment (ART) by sex, age group and reporting quarter — 12 PEPFAR-supported countries, October 2019-September 2021**

** Countries included inthe analysis were Angola, Cameroon, Dominican Republic, Eswatini, Lesotho, Malawi, Nigeria, Rwanda, South Africa, Tanzania, Uganda and Vietnam.*

Conclusions: During the COVID-19 pandemic, HIV mortality increased among PLHIV 50+ in PEPFAR-supported countries with more complete data reporting. To better understand the impact of COVID-19 on HIV mortality, future studies could examine the roles of higher risk of severe COVID-19 in older populations, HIV IIT, and comorbid conditions.

EPC445

Examining the impacts of the COVID-19 pandemic on syndemic conditions and PrEP use among HIV among gay, bisexual and other men who have sex with men in Vancouver, Canada

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Background: The secondary impacts of the COVID-19 pandemic may disproportionately affect the health and wellbeing of gay, bisexual and other men who have sex with men (GBM), particularly related to HIV. We assessed trends of syndemic production and trends and correlates of pre-exposure prophylaxis (PrEP) interruptions among HIV-negative/unknown GBM in Vancouver.

Methods: Sexually-active GBM, aged ≥16 years, were recruited through respondent-driven sampling (RDS) from February 2017 to August 2019. Participants completed a Computer-Assisted Self-Interview every 6 months and data were linked to BC HIV Drug Treatment Program to assess PrEP uptake and continuation. We used univariable generalized-linear mixed models to examine:

1. Trends in syndemic conditions (i.e. anxiety, depression, interpersonal violence, polysubstance use, alcohol use) and;
2. Trends in PrEP interruptions (6-month periods) among HIV-negative/unknown GBM.

We also applied 3-level mixed-effects logistic regression with RDS clustering to examine the individual additive and interaction effects of syndemics among GBM reporting PrEP use before study visit and factors associated with PrEP use interruptions. Follow-up analyses includes data from before and during the COVID-19 pandemic (March 2018-April 2021).

Results: Our study included 760 participants/data on 2339 visits, from March 2018-April 2021. Depressive symptoms increased over the study period (OR=1.33, 95%CI=1.14-1.54) with an increase after the onset of COVID-19 pandemic in Canada. We also found an increasing trend of GBM reporting PrEP interruptions over time (aOR=2.59, 95%CI=1.96, 3.42). The time-period after the onset of COVID-19 (Sept 2020-April 2021) had greater odds of PrEP interruptions (aOR=16.33, 95%CI=4.73, 56.44) compared to the March 2018-March 2020 time-period. The only associated syndemic condition was depression (aOR=7.22, 95%CI=1.12,46.47). We did not find interactions with other syndemic conditions. Assessing HIV risk, GBM who met clinical eligibility for PrEP were less likely to report PrEP interruptions than GBM who were not PrEP eligible (aOR=0.15, 95%CI=0.04-0.53).

Conclusions: We found increased depressive scores and PrEP interruptions among HIV-negative/unknown GBM since the onset of the COVID-19 pandemic. However, those most at risk for HIV were less likely to have PrEP interruptions. Additional mental health services and targeted follow-up for assessment for PrEP continuation may be needed to mitigate the impacts of the pandemic on GBM.

EPC446

The treatment cascade and continuum care of pregnant women living with HIV in Brazil: were there impacts due to COVID-19 pandemics?

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Background: The elimination of HIV mother-to-child transmission(HIV-MTCT) as a public health problem is a national priority. For an adequate policy planning, it is fundamental to analyze the treatment cascade and continuum care and of pregnant women living with HIV (PW-

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HIV). It is more important since the COVID-19 pandemic has affected the care of all people living with HIV. The aim was to show trends in the cascade of PW-HIV from 2018-2020, in Brazil, and identify possible impacts of COVID-19.

Methods: We estimated a comprehensive cascade of care for PW-HIV, using national programmatic data related to laboratory exams and antiretroviral therapy (ART) from 2018-2020. PW-HIV using ART are those identified in the ART system, including both who became pregnant on ART or started during pregnancy. Women undetectable at delivery are those on ART whose HIV viral load exam was ≤50 copies/mL 180 before or 15 days after delivery. We defined late presenters as PW-HIV with a TCD4+ lymphocyte count≤350cells/mm^3.

Results: The number of PW-HIV identified dropped 22.3% (from 10,055 in 2018 to 7,979 in 2020). PW-HIV on ART and undetectable at delivery remained around 95% and 75% during the analyzed period, respectively. However, late presentation increased from 23% in 2018 to 26% in 2020 among those women.

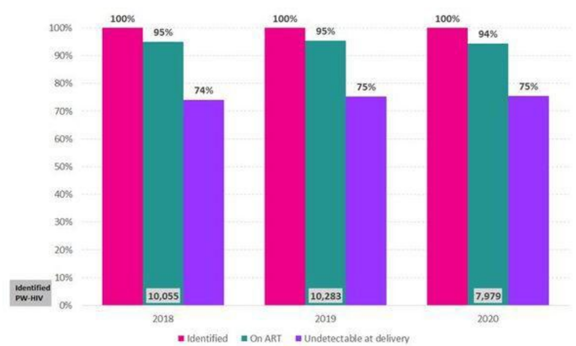

Figure 1. Continuum of care cascade of pregnant women living with HIV - Brazil 2018-2020

Identified: all PW-HIV identified in the laboratory and/or ART systems; On ART: PW-HIV that were on ART in any moment of pregnancy; Undetectable at delivery: PW-HIV who present HIV-VL <50 copies/mL between 180 days before or 15 days after delivery.

Conclusions: There was a decrease in the overall number of PW-HIV identified in 2020, possibly as an impact of COVID-19 pandemic on birth rate and on access to antenatal care (ANC). However, for PW-HIV who accessed health system, we observed a maintenance on the cascade steps before and during the pandemic. It may suggest that adjustments recommended by Ministry of Health to reorganize HIV services and prioritize ANC for PW-HIV was worthy, and contributed to the HIV-MTCT prevention. The challenge remains to improve diagnosis and linkage to diminish PW-HIV presenting late to ANC.

EPC447

When pandemics collide: impact of the COVID-19 pandemic on HIV and STI testing, treatment and PrEP use in a Boston community health center

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Background: The COVID-19 pandemic disrupted care for many HIV-positive and at risk people. Trends in HIV/STI testing and PrEP at a Boston health center specializing in HIV care were analyzed throughout the pandemic.

Methods: The analyses divided the pandemic temporally (Pre-pandemic: 12/2019-2/2020; Early pandemic: 3/2020-5/2020; Delta surge: 6/2021-8/21; Post-Delta: 9/2021-11/2021; plus Omicron month: 12/1-31/2021), to compare the prevalence of HIV and STI tests performed, test positivity, new HIV diagnoses and PrEP starts. Comparisons were made using Student's t tests for means and chi-square tests for proportions.

Results: The monthly average of HIV tests decreased from 1685 pre-pandemic to 575 in the early pandemic (p=.017), but rebounded and remained stable during subsequent periods (NS). Although monthly average of new HIV diagnoses declined from 7 pre-pandemic to 3.7 during the early pandemic (p=.206), it increased significantly after Delta, averaging 17 new diagnoses a month (p=0.02).

Monthly plasma HIV RNA tests dropped significantly from 336 to 145 between the pre-pandemic and first surge period (p=0.007), and has not returned to pre-pandemic levels, though virologic suppression rates remained over 90% throughout the pandemic. PrEP starts and restarts dropped between the pre-pandemic and first wave periods (p=0.014 and 0.071 respectively), but restarts increased significantly through the post-Delta period (p=0.049). New PrEP starts remained lower at each period of the pandemic compared to pre-pandemic. The mean number of syphilis, gonorrhea (GC) and chlamydia (CT) tests performed monthly decreased during the early pandemic compared to pre-pandemic (p=0.012 and 0.01 respectively) with a rebound approaching, and then reaching, pre-pandemic levels during Delta and Omicron surges. GC/CT test positivity increased significantly during the early pandemic ($p<0.0001$), but returned to pre-pandemic levels by the Delta surge (p=0.478). Syphilis test positivity remained at 1.8-2% until 12/2021, but then increased to 2.8%.

Conclusions: The COVID-19 pandemic initially led to major decreases in HIV/STI testing and services in a Boston clinic. Monthly HIV RNA tests declined throughout the pandemic, but viral suppression rates remained high, raising questions whether some patients disengaged from care. HIV/STI screening, STI test positivity, and PrEP start/restart trends suggest a progressive increase in sexual risk and the use of sexual health services.

EPC448

Retention on treatment and mortality of methadone maintenance therapy patients before and after take-home dosing policy change during COVID-19 pandemic in Ukraine

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Background: The aim of this research is to assess the effect of the expansion of methadone maintenance treatment (MMT) take-home dosing, a drug dispensing policy relaxation implemented due to the COVID-19 pandemic, on retention and mortality of patients who inject drugs (PWID) in Ukraine.

Methods: A prospective quasi-experimental Kaplan-Meier survival analysis was applied to compare MMT retention and mortality between OUD patients enrolled in treatment during the year before the take-home dosing regulation update (03/18/2020), induced by COVID-19 restrictions, and those enrolled during the year following the policy change. Age, sex, HIV status, methadone dosing, take-home dispensing, and previous MMT experience were assessed for their effect on treatment retention and death using Cox multivariate regression models.

Results: Among the pre-(N=3,350) and post-(N=3,775) COVID policy change cohorts, 26% and 55% of patients were transferred to take-home dosing within 365 days, respectively. Patients enrolled in treatment post-COVID had significantly (p<0.0001) higher retention at 1(98%vs.96%) and 12(82%vs.78%) months (Fig.1); and higher (p<0.0001) survival probability at 1(99.6% vs. 99.2%) and 12(97.9%vs.95.1%) months (Fig.2).

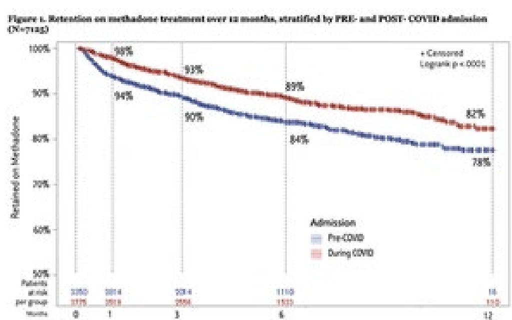

Figure .1

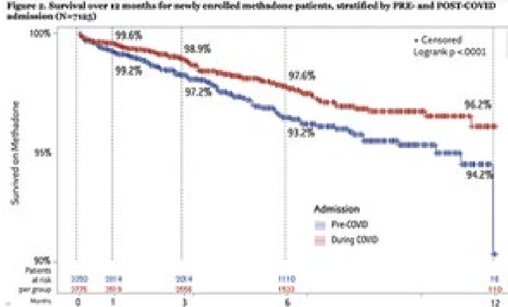

Figure. 2

Patients enrolled post-COVID had 29%(p<0.0001) lower risk for dropout and 30%(p=0.03) lower risk of death at 12 months controlling for methadone dose, HIV-status. MMT retention and patient mortality didn't differ after controlling for take-home dosing, indicating that take-home dosing is significantly associated with higher treatment retention and survival in a post-COVID group (Table 1).

	Crude			Adjusted for dose and HIV status			Adjusted for dose, HIV-status, and Take-Home Dosing		
	cHR	95% CL	p-val.	aHR	95% CL	p-val.	aHR	95% CL	p-val.
Risk of Drop-Out in the Pre-COVID Cohort Compared to the Post-COVID Cohort									
12 months	0.64	0.56-0.73	<.0001	0.70	0.61-0.80	<.0001	0.90	0.83-1.25	0.158
Risk of Death in the Pre-COVID Cohort Compared to the Post-COVID Cohort									
12 months	0.72	0.49-0.91	0.01	0.70	0.52-0.96	0.03	0.80	0.60-1.1	0.168
Legend: cHR: crude hazard ratio; aHR: adjusted hazard ratio; CL: confidence limits;									

Table 1. Cox regression model of factors associated dropout and death on opioid agonist therapy, N = 7,125

Conclusions: The proportion of patients transferred to take-home dosing during the post-COVID period was more than double compared to pre-COVID period. Take-home dosing contributed to higher retention and survival in the post-COVID group, presenting further opportunity for the treatment scale-up as cost-effective HIV-prevention strategy in Ukraine.

EPC449

Interpreting trends in new HIV diagnoses in England in the COVID-19 era

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Background: England has set an ambition to end HIV transmission by 2030. While the number of new HIV diagnoses fell between 2019 and 2020, the COVID-19 pandemic affected social mixing, sexual behaviour and access to HIV testing.This combined with a reduction in data reporting (COVID-19 staff redeployment) resulted in challenges in data interpretation. We described our approach in the COVID-19 era to understand recent trends in new HIV diagnoses.

Description: The Health Security Agency analyses reports of people newly diagnosed with HIV in England collected through the HIV and AIDS Reporting System (HARS). These were compared to the number having an HIV test in specialist sexual health services (SHS) reported to GUMCAD STI surveillance. New diagnoses were ascertained through multiple sources, and monthly data quality checks were undertaken to mitigate against underreporting.

Lessons learned: After adjustment for missing exposure, among gay/bisexual men, diagnoses fell by 41% from 1,500 in 2019 to 890 in 2020, and the number testing for HIV at SHS decreased by 7% from 157,710 in 2019 to 146,900 in

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2020. This compares with the 132,770 men tested in 2018. The high and sustained number of gay/bisexual men having an HIV test in 2020 combined with continuing provision of PrEP indicates the fall in HIV diagnoses reflects reduced HIV transmission.
Among heterosexual adults, HIV diagnoses fell by 23% from 1,320 In 2019 to 1,010 in 2020, and the number tested fell by 33%, from 1,142,950 to 760,260 respectively.The number of tests fell by 41% and 29% among men and women respectively (coverage in specialised SHS reduced from 77% to 57%, and 56% to 38% among men and women respectively).Among heterosexual adults, the reduced number testing for HIV is likely the main contributor to fewer HIV diagnoses. Missed testing opportunities in 2020 may mean late diagnoses rise in future years.
Conclusions/Next steps: In the era of ending HIV transmission, and in the context of COVID-19 causing under-reporting, multiple source cross-checks are needed to mitigate against undercounting diagnoses. Trends in new diagnoses must be analysed by exposure group and interpreted in the context of testing activity.

EPC450
Impact of the COVID-19 pandemic on time to HIV viral suppression in the U.S. Deep South

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Background: Between 2012 and 2018, states in the United States (US) Deep South, the epicenter of the US HIV epidemic, achieved year-over-year reductions in time to viral suppression (VS) following HIV diagnosis, critical to improving outcomes and reducing transmission. However, the COVID-19 pandemic disrupted HIV services and may have reduced previous gains.
Methods: We conducted a retrospective, population-based cohort study of all persons ≥ 13 years with newly diagnosed HIV from 2018-2020 in Alabama (AL), Louisiana (LA), and Mississippi (MS), using data collected in the Enhanced HIV/AIDS Reporting System (eHARS), a standardized HIV surveillance system maintained in each state. We used the Kaplan-Meier method to describe time in days to VS by year of diagnosis.

Results: In AL (n=570) and LA (n=703), median time to VS in 2020 increased 21 and 16 days, respectively, while MS (n=412) improved by 4 days compared to 2019, reversing prior trends in rates of improvement from 2018 (Figure 1).
Compared with 2019, there was an increase in proportion of new HIV diagnosis with Stage 3 presentations in AL (23.7% vs 22.3%) and LA (23.3% vs 22.3%), and a higher proportion of missing data in HIV method of transmission in all 3 states (AL=70.9% vs 46.5%, MS= 46.4% vs 45.1%, LA=25.5% vs 17%) in 2020. The proportion achieving VS at 180 days also decreased in 2020 compared with 2019 (AL: 64.1% vs 64.9%, MS: 57.7% vs 59.1%, LA: 66.9% vs 68.3%).

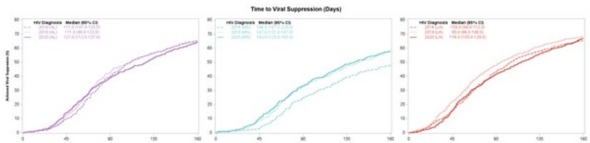

Figure 1.

Conclusions: The COVID-19 pandemic within the HIV epidemic has complicated efforts in ending HIV in the US South. Prior to COVID-19, consistent improvements in median time to VS were seen in AL, LA, and MS.
This positive trend has been stunted with HIV treatment and prevention impacts including later stage presentations and challenges to public health agencies' ability to collect information critical to informing targeted HIV prevention programming.

EPC451
How did use of HIV prevention methods change during the COVID-19 pandemic in Manicaland, Zimbabwe?

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Background: The Covid-19 pandemic, it's associated lockdowns and reallocation of healthcare resources has the potential to disrupt HIV prevention efforts globally.
This study aims to assess the impact of Covid-19 on uptake of HIV prevention methods among HIV negative adults reporting sexual risk behaviours in eastern Zimbabwe.
Methods: Data were taken from two rounds of a general population open-cohort survey in Manicaland, Zimbabwe shortly prior to (July 2018 to December 2019) and a year following the outbreak of Covid-19 (February to July 2021). Descriptive statistics and logistic regression were used to assess changes in sexual risk behaviours (multiple partners in the past year, transactional sex, concurrent partners, and (for women) age-disparate relationships); and in use of HIV prevention methods among HIV-negative adults aged 15-54 years.

		Males 15-54yrs reporting sex in past year				Females 15-54yrs reporting sex in past year			
Risk Group	Reported prevention method(s)	Pre-Covid-19 % (95%CI)	During Covid-19 % (95%CI)	Adjusted Odds Ratio AOR(95%CI)	p value	Pre-Covid-19 % (95%CI)	During Covid-19 % (95%CI)	Adjusted Odds Ratio AOR(95%CI)	p value
≥1 sexual risk behaviour	Male condoms	54.5 (50.5-58.4)	52.0 (48.4-55.6)	0.91 (0.73-1.13)	0.39	14.8 (13.2-16.7)	20.3 (18.4-22.3)	1.42 (1.19-1.71)	<0.001
	PrEP	0.32 (0.08-1.31)	0.14 (0.02-0.96)	0.35 (0.03-3.90)	0.39	0.51 (0.26-0.98)	2.11 (1.51-2.94)	4.49 (2.12-9.49)	<0.001
	Faithfulness to one partner	46.6 (42.7-50.6)	51.4 (47.8-55.0)	1.29 (1.03-1.62)	0.03	86.5 (84.9-88.0)	86.8 (85.1-88.4)	1.02 (0.83-1.24)	0.87
	Abstinence	10.5 (8.47-13.1)	23.7 (20.7-26.9)	2.72 (1.20-3.71)	<0.001	5.90 (4.91-7.07)	8.93 (7.63-10.4)	1.64 (1.26-2.13)	<0.001
≥1 recent sexual riskbehaviour: Transactional sex in past 3 months, multiple partners in past month, concurrent partners.	Male condoms	64.4 (58.2-70.0)	62.1 (55.9-67.9)	0.90 (0.61-1.33)	0.60	40.2 (33.7-47.1)	43.2 (35.6-51.2)	1.14 (0.74-1.76)	0.55
	PrEP	0 (-)	0 (-)	-	-	0.89 (0.21-3.62)	7.74 (4.43-13.2)	7.08 (1.46-34.3)	0.02
	Faithfulness to one partner	36.8 (31.1-42.9)	40.7 (34.8-46.9)	1.26 (0.87-1.84)	0.22	56.9 (50.1-63.5)	61.3 (53.3-68.7)	1.58 (0.97-2.56)	0.06
	Abstinence	3.53 (1.88-6.55)	9.09 (6.10-13.3)	3.14 (1.43-6.92)	0.004	5.87 (3.39-9.99)	6.45 (3.49-11.6)	1.05 (0.42-2.61)	0.92

EPC451 Table 1.

Results: During Covid-19 more men reported sex in the past year compared to the pre-Covid period (92.9% vs. 88.5%; AOR 1.72, 95%CI 1.37-2.16); and more of these men reported ≥1 sexual risk behaviours (40.1% vs. 34.0%; 1.33,1.16-1.54). No differences in these indicators were found for women (p>0.05); and no changes in sexual risk behaviours in the past 1-3 months were found for either sex.

Amongst people with ≥1 sexual risk behaviours, more men reported sexual abstinence and faithfulness to one partner during Covid-19 than before Covid-19 and more women reported using abstinence, male condoms, and PrEP for HIV prevention (Table 1).

Amongst people with sexual risk behaviours in the past 1-3 months, more men reported periodic abstinence during Covid-19 and more women reported using PrEP (7.74% vs. 0.89%; 7.08, 1.46-34.3).

Conclusions: Despite the impacts of Covid-19, our study population continued to report high levels of sexual risk behaviours for HIV acquisition. Overall, we found no significant disruption to uptake of HIV prevention methods during the Covid-19 pandemic and promising increases in women's use of PrEP were reported.

EPC452

Impact of COVID on PrEP use and HIV/STI testing: a community based survey of MSM, San Francisco

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Background: Before COVID-19, San Francisco was on track to achieve zero HIV infections by 2030. New diagnoses dropped 65% from 2012 to 2019. However, the COVID-19 pandemic threatens access to two successful pillars for ending the epidemic: HIV testing and PrEP. In a community-based survey among men who have sex with men (MSM) in San Francisco in 2021, we assessed barriers in obtaining PrEP, HIV testing, and STI testing as a result of the COVID-19 pandemic.

Methods: Data are from the National HIV Behavioral Surveillance survey, which are cross-sectional surveys led by the CDC in 23 US cities. The MSM survey uses venue-based sampling/recruitment. Due to COVID-19, the sampling method changed to online venue recruitment. Participants were approached on MSM-oriented dating apps and social media groups on random days-time periods. A structured interview was conducted virtually; participants were mailed HIV and STI home tests. Eligibility criteria were adult men (18+) who had sex with men, English-or Spanish-speaking, and San Francisco resident. Interviews collected demographics, risk behaviors, and use of preventive services.

Results: Of 505 MSM enrolled, 99 (19.6%) were HIV-positive. The majority was white (74.3%); the average age was 43 years. Of 406 HIV-negative MSM, 267 (65.8%) sought PrEP during the COVID-19 epidemic, with 25 (9.4%) reporting difficulties in obtaining PrEP due to COVID-19. Difficulties in getting HIV testing were reported by 151 (37.2%).

Among HIV-positive and negative MSM, 193 (38.2%) reported difficulties in getting STI testing. Younger respondents were more likely to report barriers to obtaining PrEP, HIV testing, and STI testing (p<0.001, differences in mean ages). No racial/ethnic differences were noted in attempting or obtaining PrEP, HIV testing, or STI testing.

Conclusions: Delivery of healthcare including HIV prevention have been challenged by the COVID-19 pandemic. We corroborate substantial barriers to HIV testing among MSM during the COVID-19 epidemic, as noted by a 44% drop in monthly tests performed at community testing sites compared to 2019. Under10% of MSM reported barriers to obtaining PrEP. Programs to increase home HIV and STI testing, and longer-acting PrEP, may help meet HIV prevention needs during the current and future pandemics.

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EPC453
The impact of the COVID-19 pandemic on sexual behavior and HIV prevention and treatment services among US MSM in the post-lockdown era: a comparison of two studies

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Background: Early in the COVID-19 pandemic, disruptions to sexual health services and changes to sexual behavior due to the first COVID-19 lockdowns were common among gay and other men who have sex with men (MSM) globally. Less is known about the persistence of these changes after this initial lockdown period.

Methods: Data from two independent longitudinal studies of US MSM surveying participants at multiple timepoints in 2020 through January 2021 were used to assess changes in sexual behavior and service access attributed to the COVID-19 pandemic. We classified the post-lockdown period as June 2020 to present.

Results: A total of 1,694 MSM comprised the two study samples, which both demographically and geographically approximated the US MSM population. Though one study observed reduced sexual behavior impacts later in the pandemic, nearly half of participants continued to report reduced sexual partners throughout 2020. For MSM not living with HIV, initial disruptions to HIV testing and preexposure prophylaxis prescriptions continued in late 2020 for 15% and 7% of participants, respectively.

For MSM living with HIV, care access was reduced throughout 2020; in late 2020, approximately 19% of participants reported a decrease in HIV medical care visits, down from 28% in April 2020. Few participants in either study reported disruptions in their access to antiretroviral therapy.

Conclusions: COVID-related disruptions to HIV prevention and treatment services continued into January 2021. Although sexual behavior also did not return to pre-pandemic levels in the post-lockdown period, the reduced access to HIV prevention, testing, and treatment services during this period could result in an overall increased HIV transmission rate.

Ongoing assessment of pandemic-related disruptions are needed as the COVID-19 pandemic and associated lockdown policies continue to evolve.

	American Men's Internet Survey COVID Impact Survey (AMIS-COVID) April 2020 (n=1,051) n (%)	AMIS-COVID July 2020[1] (n=572) n (%)	AMIS-COVID September 2020[1] (n=373) n (%)	Love & Sex in the Time of COVID Study (LS-COVID) April - May 2020 (n=643) n (%)	LS-COVID November 2020 - January 2021[1] (n=180) n (%)
Reported a Decrease in Number of Sexual Partners[2]	542 (51.5)	320 (58.4)	189 (53.5)	356 (58.2)	84 (49.4)
Reported a Decrease in Getting HIV Testing[3,4]	142 (16.1)	62 (13.0)	47 (15.2)	–	–
Reported Being Stopped from Getting HIV Tested[3,5]	–	–	–	183 (31.0)	34 (20.7)
Reported Trouble Getting Preexposure Prophylaxis (PrEP) Prescription[6,7]	18 (8.8)	8 (8.4)	6 (7.3)	–	–
Reported Stopped or Reduced PrEP Medication[6,8]	–	–	–	35 (22.6)	7 (17.9)
Reported a Decrease in HIV Care Clinical Visits[9,10]	33 (27.5)	19 (33.3)	6 (19.4)	–	–
Reported Being Unlikely to go to Health Provider for Routine HIV Care[9,11]	–	–	–	22 (42.3)	3 (20.0)
Reported a Decrease in Taking HIV Medication Every Day as Prescribed[9,12]	6 (5.0)	1 (1.8)	2 (6.7)	1 (1.9)	0 (0.0)

[1]Post-lockdown periods. Lockdowns varied by US state and locality but in most US jurisdictions, lockdown restrictions were lifted by June 2020.
[2]For AMIS-COVID, this represents participants who reported a decrease in the number of sexual partners because of COVID-19. For LS-COVID, this represents participants who reported a smaller number of sexual partners during the COVID-19 pandemic (for April-May 2020 survey, since the pandemic began, for November 2020–January 2021 survey, in the 3 months before survey completion), as compared to the 3 months before the COVID-19 pandemic.
[3]For men not known to be living with HIV.
[4]Represents participants who reported a decrease in getting HIV tested because of the COVID-19 pandemic.
[5]Represents participants who reported that the COVID-19 pandemic stopped them from getting HIV tested.
[6]For men on PrEP.
[7]Represents participants who reported trouble getting PrEP prescription from their doctor because of the COVID-19 pandemic or the public health efforts to manage it.
[8]Represents participants who reported that the COVID-19 pandemic meant that they had to stop or reduce taking their PrEP medication.
[9]For men known to be living with diagnosed HIV.
[10]Represents participants who reported a decrease in getting HIV care clinical visits because of the COVID-19 pandemic.
[11]Represents participants who reported being somewhat unlikely or extremely unlikely to go to a health provider for their routine HIV care during the current COVID-19 pandemic.
[12]For AMIS-COVID, this represents participants who reported a decrease in taking HIV meds every day as prescribed because of COVID-19. For LS-COVID, this represents participants who reported that the COVID-19 pandemic meant that they had to stop or reduce taking their antiretroviral therapy (ART) medication.

EPC453 Table 1. Reported prevalence of selected HIV prevention and treatment-related changes as a result of the COVID-19 pandemic—AMIS-COVID and LS-COVID, April 2020–January 2021

EPC454

Analysis of HIV case finding and continuity on treatment strategies and outcomes before and during the COVID-19 pandemic: The RISE Nigeria experience

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Background: The COVID-19 pandemic has posed challenges in ensuring continued access to HIV services globally. The Reaching Impact Saturation and Epidemic control (RISE) project, with funding from PEPFAR through USAID and in partnership with the government of Nigeria, implemented HIV case finding, treatment initiation and continuity of treatment strategies to maintain services during the COVID-19 lockdown in four Nigerian states: Akwa Ibom, Cross River, Adamawa and Niger.

Methods: Two six-month aggregate datasets were compared to analyze testing and treatment volume and outcomes in the six months prior to COVID-19 (Period A) and during the first six months of the COVID-19 pandemic (Period B).

Chi-square tests were used to determine the association between testing and treatment outcomes in community and facility settings before period A (October 2019 - March 2020) and during period B (April - September 2020) respectively, at p-value of 0.05.

Results: The total number of clients that were counselled, tested and received results during the two time periods (A and B) were 236,049 and 302,100 respectively. HIV positivity during these two periods were 4.5 and 4.7% respectively. The number of clients supported on ART increased from 47,482 to 62,763 (period A and B). Program growth increased from 25.8% from 31.6% in period A and B, respectively.

The proportion of clients tested in the community in period A and during period B period differ significantly ($p < .001$) with increased of 29% in period B, likewise, clients tested in the facilities during the period A as compared to period B differ significantly ($p < .001$) with increased of 29% in period B.

In addition, index client tested in the community increased by 67% and index client tested in the facility increased by 55% during periods A and B with differ significant difference of ($p < .001$) respectively.

Conclusions: The early COVID-19 pandemic period did not have a negative impact on HIV testing and treatment services provided by the RISE project in Nigeria. Strategies utilized by RISE improved HIV program outcomes and sustained growth in the size of the treatment cohort during the initial COVID-19 pandemic period, April to September 2020.

EPC455

The effects of COVID- 19 on HIV detection in Mexico

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Background: COVID-19 has had a negative impact on the HIV response, with effects on late diagnosis, morbidity, mortality, and increase of new infections. In Mexico, HIV detection in the first half of 2020 fell 59%, compared to 2019. The objective of this study was to describe the behavior of HIV detection in terms of new diagnoses and late diagnoses.

[i] National Center for the Prevention and Control of HIV and AIDS. World AIDS Day 2020 Bulletin. December 2020. Available at: https://www.gob.mx/censida/documentos/boletin-dia-mundial-del-sida-2020

Methods: Cross-sectional descriptive study that included HIV detections carried out during 2019 and 2020, as well as new cases reported, and late diagnoses admitted to care at the Ministry of Health (CD4+ <200 cells/ml). Data from the Health Information System, the National Registry of HIV/AIDS Cases (national), and reports from the bulletins published by the Ministry of Health were used. For the analysis, the data was disaggregated by state.

Results: HIV detections in men who have sex with men (MSM) decreased more than 50% between 2019 and 2020 (75,496 and 36,373, respectively). The three states with the highest number of accumulated HIV and AIDS cases reported a decrease in detection around 25 and 46% in this period (Mexico City 25%, State of Mexico 42%, Veracruz 46%). Mexico City reported 71% less cases in 2020 compared to 2019, State of Mexico 52%, and Veracruz 94%. Late diagnoses increased, Mexico City went from 29% to 45% of late diagnoses, State of Mexico, 42% to 58%, and Veracruz, from 49% to 52% (Figure 1).

Figure 1. HIV detections carried out in the Mexico Ministry of Health in three states, 2019-2020.

Conclusions: The response to HIV and AIDS is facing old and new challenges in the context of the health emergency. Implementing effective strategies, based on scientific evidence (such as HIV self-testing), as well as maintaining partnerships with civil society, is essential to successfully reach key populations and achieve the 2030 diagnostic goals.

EPC456

Viral sequence-based near real-time cluster monitoring of HIV-1 reveals the impact of the COVID-19 Pandemic on HIV testing in Japan

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Background: Pathogen genomic sequencing is essential for understanding their epidemics. To assess the regional trends of HIV-1 transmission networks in near real-time settings, we developed a search program for HIV nationwide clusters by sequence (SPHNCS). SPHNCS enables identification of domestically transmitted clusters (dTCs) and their network structures based on HIV sequences of newly diagnosed HIV/AIDS cases collected through the Japanese HIV Drug Resistance Surveillance Network. Using SPHNCS, we compared the transmission dynamics of HIV-1 before (2018–2019) and during the COVID-19 pandemic (2020–2021).

Methods: Protease-reverse transcriptase sequences of 1,836 newly diagnosed cases in 2021–2022 were recruited from our surveillance network. Using SPHNCS, dTCs of 1,460 subtype B and 232 CRF01_AE cases reported in 2018–2021 were identified. The number of outbreak events, and newly identified cases in dTCs, involving late diagnosis or rare detection by the SPHNCS reporting and alerting system were investigated. dTCs reported in < 3 cases over the last three years were considered rare. Time-based phylogenetic trees of some dTCs with outbreaks or late diagnoses were inferred using BEAST1.

Results: In 2020–2021, 693 newly diagnosed cases were registered in our surveillance, whereas 1,143 were registered in 2018–2019. Ten of the top 20 identified dTCs in 2019 were not detected during the pandemic; instead, ten less reported dTCs were ranked. The number of outbreak cases (n = 23) also decreased by two-thirds of those in 2018–2019 (n = 34), and more newly diagnosed cases (n = 52) were found in rarely detected dTCs (OR = 0.61, p = 0.043).

Thus, the number of dTC-affiliated cases remained constant. The proportion of acute cases in 6/10 newly ranked dTCs increased from 0 to > 0.3 during the pandemic.

Conclusions: Monitoring with SPHNCS indicated a pattern shift to detection of rarer HIV-1 transmission cases during the COVID-19 pandemic. Reduction in both the recruited cases and outbreaks demonstrated a negative impact of the pandemic on HIV testing and prevention in Japan. Increased acute cases in some dTCs suggests that the high sensitivity of the healthcare system to acute febrile illnesses might result in episodic improvement.

EPC457

The COVID-19 pandemic affects immune status of new HIV clients enrolled in two Brazilian reference services

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Background: HIV care and treatment services (HIV-C&T) under the Tropical Medicine Foundation (FMT) of Manaus/Amazonas, and Correia Picanço Hospital (HCP) of Recife/Pernambuco, function as principal HIV-C&T reference centers in Brazil. Since 2017, Aids Healthcare Foundation (AHF-Brazil) works on projects in partnership with these centers, aiming to improve quality of care.

The objective of this study was to evaluate how the pandemic affected access to HIV-C&T by monitoring the HIV immune status of new clients enrolled.

Methods: This is an observational study using retrospective data from the AHF-Brazil monitoring tool. All new clients with no documented previous ART use and with baseline-CD4 count (b-CD4) enrolled in these 2 services from January 2019 to September 2021, were included.

Considering that the 1st official case of COVID-19 in Brazil was identified in February 2020, our analysis will separate and compare the b-CD4 profile of clients in two groups; group 1 with clients enrolled from January 2019 to March 2020, and group 2 with clients enrolled from April 2020 to September 2021.

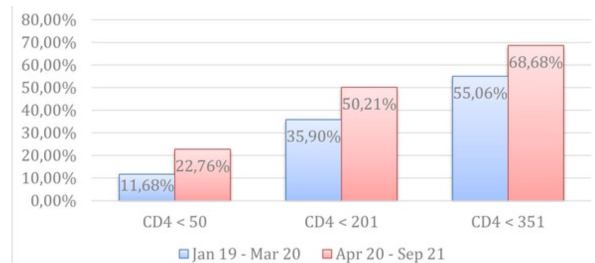

Figure. Baseline CD4 - new enrolles clients without previous use of ART at FMT and HCP

Results: From the 2,242 new clients enrolled, 1,284 were from group 1 and 958 group 2. In group one 55% (N=707) clients had a b-CD4 <351 cells/mm³, 35% (N=461) <201 cells/mm³. Group 2 had 69% (N=658) clients with b-CD4 <351 cells/mm³, 50% (N=481) <201 cells/mm³, evidencing 13% increase in the number of late presenters, and an 14% increase in people presenting at HIV-C&T with advanced aids.

Conclusions: The onset of the COVID-19 pandemic has shown an increase in the number of late presenters in HIV-C&T in Brazil. Both the FMT and the HCP are central hospitals in their states for HIV care and the arrival of a greater proportion of late presenters may be associated with obstacles in the HIV diagnosis networks, affecting timely access to HIV diagnosis. New arrangements in HIV-C&T, adapting to this new scenario are required.

EPC458

Impact of the COVID-19-related economic crisis and the mitigation effects of social protection on HIV/AIDS and Tuberculosis: an integrated economic, mathematical and epidemiological study

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Background: The COVID-19 pandemic will have impactful long-term effects on the global growth of poverty and social inequalities. Morbidity and mortality from poverty-related infectious disease will increase and the current trends will compromise the achievement of the health-related Sustainable Development Goals. To face these trends, the implementation of large-scale social protection policies is paramount to mitigate these adverse effects of the global economic crisis. We aimed to evaluate the impact of the sudden increase in poverty rates on HIV/AIDS and Tuberculosis (TB) incidence and mortality, and the mitigation effects of social protection in one of the world's largest Low- and Middle-Income Countries (LMIC): Brazil.

Methods: We integrated economic, mathematical, and epidemiological models to forecast the trends of HIV/AIDS and TB according to possible economic crisis scenarios and their alternative poverty-reduction policies response up to 2030. Two mathematical models of infectious diseases composed of nonlinear ordinary differential equations to model HIV/AIDS and TB transmission dynamics were proposed. As a novel approach, we forecast poverty trends, which were calculated by autoregressive and deterministic approaches, and inserted in the model parameters. The HIV/AIDS and TB models were calibrated considering a multiobjective genetic algorithm to fit the AIDS and TB incidence and mortality rates.

Results: These models showed that the implementation of poverty-reduction policies could mitigate the potential large and long-lasting rise in poverty over the next few years, avoiding an increase of 41% and 50% of HIV/AIDS incidence and mortality respectively, and of 32% and 53% for TB incidence and mortality. Overall, more than 250 thousand new cases and 43 thousand HIV/AIDS and TB deaths could be averted up to 2030.

Conclusions: Our effort to understand and model complex phenomena - such as the COVID-19-pandemic effects on poverty rates and population health - required the integration of methodologies from different areas such as economics, mathematics, and epidemiology. Using a comprehensive approach, it was possible to show the importance of large-scale social protection interventions to avert dramatic increases, during the future post-pandemic period, in morbidity and mortality from poverty-related diseases such as HIV/AIDS and Tuberculosis.

EPC459

Impact of the Covid-19 pandemic on HIV testing in a global HIV/AIDS support program

F. Fernandes Fonseca[1], W. Odoke[1], J. van den Hombergh[1], E. Waweru[1], B. Biwot[1], J. Nakhumwa[1], A. Benzaken[1]

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Background: The COVID-19 pandemic is associated with severe disruptions in health care services and nonpharmacological measures such as social distancing and restrictions had an impact on access to HIV-tests at facilities and outreach activities. The impact of the pandemic on the HIV testing program of AIDS Healthcare Foundation (AHF) was assessed by comparing monthly test activity and outcomes for 2019 (pre-pandemic) and 2020-2021.

Methods: Observational study using retrospective data from the AHF Global Quality Program, including HIV testing data from 44 countries in Asia, Latin America and the Caribbean, Europe and Africa. Information on HIV testing numbers and proportion of positive results were compared, from 1 January 2019 to 31 December 2021.

Results: Over 1,000,000 people were tested in the last trimester of 2019. In the first trimester of 2020, the number of HIV-tests reduced for the first time (N=883,928), and the lowest performance coincided with Covid-19 pandemic waves, from April-June 2020 (N=545,501). The number of HIV-tests ranged from 811,201-917,526, not achieving the performance of 2019.

In 2019, 4,311,168 people were tested, 3.2%(N=138,421) positivity ratio. In 2020 this number decreased to 3,127,408 with an increased positivity ratio of 3.5% (N=109,685). 3,448,939 people were tested in 2021, 3.3% positivity ratio (N=117,119).

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The number of people tested for HIV reduced 27% and 20%, and identification of new HIV cases reduced 21% and 15%, respectively, in 2020 and 2021, compared to 2019.

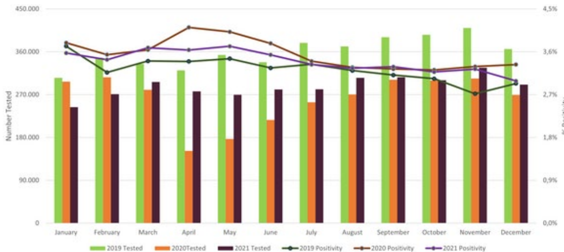

Figure. Number of persons tested for HIV and average positivity rate (2019 to 2021) by Month

Conclusions: Despite inter-country heterogeneity, COVID-19 appeared to be associated with a significant reduction in the number of people tested for HIV, probably related to less access to HIV testing at health facilities, due to restrictions and lockdowns. The slight increase in the percentage of positive tests might be related to the programmatic decision to intensify testing of sexual partners of PLHIV in health services and because of a major shift towards health facility based testing.

EPC460

HIV prevention and treatment in the era of COVID-19 in South Africa

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Background: The COVID-19 pandemic overwhelmed health services and critically disrupted the routine provision of essential health services globally. When the World Health Organization declared COVID19 a public health emergency, the South African government in response to an increase in cases and to mitigate the spread of COVID19 implemented several measures to limit the spread of COVID-19, which unfortunately reduced the use of health services and affected continuity of care for people with TB, HIV and other chronic diseases like diabetes and hypertension.

This study seeks to assess the effect of COVID-19 on HIV prevention and treatment programs as well as on mortality.

Methods: A retrospective mortality line-list review was conducted on COVID-19 deaths from 27th March to 28th February 2021 from all nine provinces in South Africa. Descriptive statistics were used to summarise mortality data reports from provinces. In addition, retrospective HIV testing and ART initiation data were extracted from the District Health Information System (DHIS) for the 2019-2021 period.

Results: A review of DHIS data indicated a 1,1% decline of HIV tests done in 2020 compared with 2019. In 2021, there was a further decline in HIV testing of 35.4% compared to 2020. In 2019, 81.8% of those who tested positive were initiated on ART; however, the figure declined to 71,6% in 2020, rising marginally to 74,7% in 2021.

COVID-19 mortality data shows that of the total 50 148 deaths reported during the review period, 4% were HIV positive patients and 58% were female. TB-HIV co-infection was reported in 13% of the HIV deaths, diabetes was reported in 24.2% of the HIV positive deaths, whilst a combination of HIV, diabetes and hypertension was reported in 13% of the deaths.

Conclusions: Lockdown measures impacted an already fragmented health system, including HIV testing and treatment services. Management of COVID-19 for patients with HIV is further complicated by co-morbidities such as hypertension and diabetes.

Preparing for pandemics and having a resilient health system (especially the primary health care system) is vital to ensure continuity of care. In addition, the importance of designing health systems to treat patients with multi-morbidities should be prioritised.

EPC461

Lower CD4 count in new clients enrolled during Covid-19 pandemic in a global HIV program

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Background: Late presenters are priority for HIV programs. Baseline CD4 cell count (CD4) is essential as the best predictor of disease status and risk of death and identifies those with advanced HIV disease. This study evaluates how the pandemic affected access to HIV care by monitoring CD4 of newly enrolled clients.

Methods: Analysis of retrospective CD4 data from the AHF Global Program (32 countries in Asia, Latin America and the Caribbean, India, and Africa), from 1 January 2019 to 31 December 2021.

Results: Comparing 2019, 2020 and 2021, the number of new people enrolled into care declined (N=95,131 in 2019, N=91,536 in 2020, and N=70,000 in 2021). In the same period, the CD4 coverage (proportion of clients who had a CD4 at baseline) ranged from 58% to 62%, with a marked reduction in total clients who had a CD4 (N=55,518 in 2019, N=54,032 in 2020, and N=43,275 in 2021).

The number and the proportion of clients enrolled with CD4≤350 cells/mm^{3}is increasing over the years (N=27,854, 50% in 2019; N=31,491, 58% in 2020, and N=23,992, 55% in 2021) whereas the proportion of those presenting with advanced AIDS (CD4<200cell/mm^3) ranged from 27% (N=14,963) in 2019 to 35% (N=18,700) in 2020 and 31% (N=13,386) in 2021.

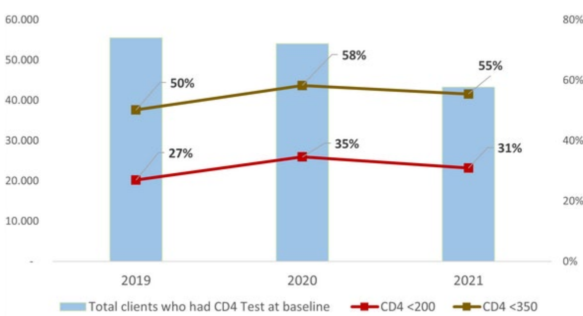

Figure. 2019-2021 Trend late presenters (CD4 <200 or CD4 <350) as proportion of clients with a baseline CD4 result.

Conclusions: The Covid-19 pandemic negatively impacted health services. The first 2 years of the Covid-19 pandemic saw an increase of people living with HIV presenting late to care with 1/3 of all having a CD4 presenting with advanced AIDS. Low CD4 at enrolment is associated with high co-morbidity, early mortality, higher direct health-care costs and poor retention in care.
Healthcare teams must be trained to manage complex patients including prophylaxis and treatment of OIs, and adopt a fast-track approach for clients with advanced AIDS, avoiding that Covid-19 takes the control over the HIV pandemic.

EPC462

Determinants of psychological distress and perceived changes in associated HIV/HCV risks during the COVID-19 pandemic among people who use drugs in Montreal, Canada

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Background: Psychological impacts of the COVID-19 pandemic have been widely reported, however data is limited among people who use drugs (PWUD). This study aimed to determine HIV/HCV risks prevalence and correlates of psychological distress among PWUD during the pandemic period, and assess whether these differ between certain sub-groups of people who use different types of drugs.
Methods: We conducted a rapid assessment study from May-December 2020 among participants recruited in HEPCO, a community-based cohort of people who inject drugs (PWID) in Montreal (N=127), and community organizations serving people who use illicit drugs (N=99).
Among individuals reported past 6-months drug use, we collected and analyzed data on socio-demographics and drug use, including perceived changes in drug use behaviours and survival needs since COVID-19 was declared a public health emergency. Past-month psychological distress was assessed with the Kessler K6 scale. Multivariable logistic regression was conducted to examine correlates of high psychological distress (score ≥13) stratified by recent drug injection (past 6 months, yes/no).
Results: Of 226 survey participants (mean age 48 years old, 22% female, 42% recent drug injection), one quarter (n=56) screened positive for severe past-month psychological distress.
In multivariable analysis among participants with recent drug injection (42%), higher distress was associated with perceived increases in food insecurity (adjusted odds ratio = 6.16 [95% confidence interval: 1.71, 22.20]), non-injection drug use (8.15 [1.22,11.21]), and non-fatal overdose frequency (9.43 [1.39,64.19]) since declaration of the health emergency.
Among those recently using non-injection drugs only (58%), variables associated with high distress included younger age (per year of increment: 0.94 [0.91, 0.97]), any past 6-month alcohol use (5.67 [1.55, 20.77]), and perceived increase in food insecurity (2.64 [1.04, 6.72]).
Conclusions: This study documented a high prevalence of psychological distress among PWUD during the COVID-19 pandemic. Psychological distress was associated with increased food insecurity in both sub-groups of PWUD. Increased overall non-injection drug use in addition to drug injecting and self-reported overdoses were associated with high psychological distress among PWID, while alcohol use and younger age were significant determinants of high distress among those who used non-injection drugs. Ongoing monitoring of distress and tailored interventions are urgently needed to mitigate negative impacts of the pandemic in this vulnerable population.

EPC463

Effect of COVID-19 on HIV prevention among the LGBTQ+ population in New York City (NYC)

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Background: The COVID-19 pandemic has caused widespread disruptions to HIV services worldwide. Although a number of innovative mitigation strategies have been employed, a significant reduction in HIV prevention services has been noted. Key populations and communities disproportionately impacted by HIV, including LGBTQ+ individuals, are particularly vulnerable to these disruptions. To better understand the effects on this population, we examined PrEP access and use of HIV and STI testing among LGBTQ+ individuals in New York City during the COVID-19 pandemic.
Methods: Self-reported LGBTQ+ adults living in New York City (N=1,038) were recruited from June to December 2021 to participate in an online survey. The survey included questions related to their sociodemographic characteristics, COVID-19 burden, practices, and impact, vaccination

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willingness and uptake, and access to health care and HIV prevention services. Descriptive statistics and multivariable analysis were conducted.

Results: Most participants (67%) reported that the pandemic had not affected their ability to access STI or HIV testing services. However, 20% indicated that they had not tried to access those testing services since the pandemic began. Of all participants, 27% reported that their last HIV or STI test was over a year prior to the survey, 22% 6-12 months ago, and 46% within the last 6 months. Of HIV-negative participants assigned male at birth who reported casual sexual partners in the past three months, 44% had not been tested for HIV in the past 6 months, and 19% said that the pandemic had made testing harder. For participants currently taking PrEP (n=190), 27% said the pandemic had affected their ability to access PrEP.

Conclusions: The findings suggest that the pandemic had a moderate impact on the ability to access PrEP and HIV and STI testing services among this group. Over half of participants, including those assigned male at birth who had recent casual sexual partners, had not been tested in the past 6 months suggesting the need for intensive educational outreach and efforts to make testing more accessible.

COVID-19 testing

EPC464

SARS CoV-2 seroprevalence in a cohort of people living with HIV before COVID-19 vaccination, Rio de Janeiro, Brazil

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Background: The study aimed to determine the seroprevalence of SARS-CoV-2 infection from a single referral center for people living with HIV (PLWH) before the COVID-19 vaccination.In Brazil, the initial dose of COVID-19 vaccination was available by the end of April 2021 for this population.

Methods: Participants from the Evandro Chagas National Institute of Infectious Diseases cohort of PLWH in Rio de Janeiro, Brazil, with available leftover sera samples from routine outpatient CD4/CD8 cell counts and or viral load testing between November 26th, 2019, and May 5th, 2021, were included in this cross-sectional study. SARS-CoV2 IgG and IgM anti S were measured using the Abbott SARS-CoV-2 IgG II Quant and the Abbott Architect SARS-CoV-2 IgM chemiluminescent microparticle immunoassays. Both Architect IgM and IgG results were interpreted together. Any reactive IgG and IgM result was considered positive for COVID-19 infection.

Results: Overall, 11,423 serological assays were performed in 3,964 participants (68.8% male), median age 44.5 (IQR: 35.6-54.4), median CD4 cell count 676 cell/µL (IQR:443-913], 85.9% with viral suppression, 98.5% on antiretroviral therapy. The overall seroprevalence for SARS-CoV-2 was 23.2% (1989/8559, 95% CI 22.3-24.1), increasing from 1.62% in the first three months [(November 2019-January 2020 (17/1051, 95% CI 1.39-1.83)] to 42.18% (577/1368, 95% CI 39.56-44.80) in March-May 2021 (figure).

During the study period, 33 (0.83%) participants died, eight (24.2%) with suspected/confirmed COVID-19, and 25 (75.8%) with other causes. All patients who died with COVID-19 had negative serology for SARS-CoV-2. The median time from negative serology for SARS-CoV-2 to death in these participants was 139 days (IQR: 51-180.8).

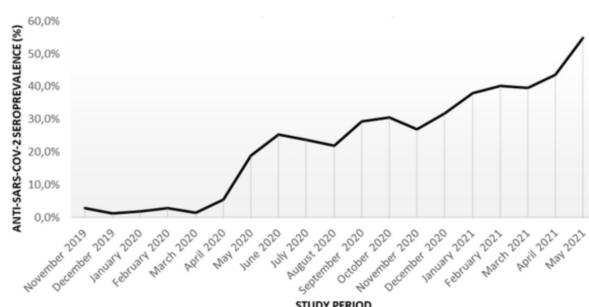

Figure. Month by month anti-SARS-CoV-2 seroprevalence, Evandro Chagas National Institute of Infectious Diseases HIV cohort, Rio de Janeiro, Brazil.

Conclusions: SARS-CoV-2 antibodies were detected before the first reported COVID-19 cases in Rio de Janeiro, Brazil. A high SARS-CoV-2 seroprevalence was observed in PLWH before the launch of COVID-19 vaccination for this population, and overall death related to COVID-19 was low in this setting.

COVID-19 prevention

EPC465

Lopinavir/Ritonavir post-exposure prophylaxis did not protect against Covid-19

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Background: Early in the Covid-19 pandemic, the HIV protease inhibitor lopinavir/ritonavir (LPV/r) was hypothesized to have antiviral activity against SARS-CoV-2.
Methods: We conducted an open-label cluster-randomized controlled trial of LPV/r as COVID-19 PEP at 6 sites in Canada.'Rings' of individuals in close contact with a case of SARS-CoV-2 infection within the preceding seven days were randomized to receive LPV/r 800/200mg twice daily for 14 days, or no intervention, if they could be contacted within 48 hours. Participants self-collected throat/nasal swabs on days 1, 7 and 14, plus a saliva specimen on day 14, for SARS-CoV-2 PCR testing.
The primary outcome was SARS-CoV-2 infection by day 14 among those testing negative at baseline. We estimated PEP efficacy using a generalized estimating equation with exchangeable correlation structure to account for clustering of participants in rings.
Secondary outcomes included safety, symptomatic disease, hospitalization, respiratory failure, and mortality. Widespread availability of COVID-19 vaccines in Spring 2021 rendered recruitment of participants impractical and the trial was formally terminated in 09/2021.
Results: Of 1634 referred patients with SARS-CoV-2 infection, 1104 were reached to ask about close contacts; 671 close contacts underwent screening and 123 were enrolled, representing 84 rings.Mean (SD) participant age was 31.7 (16.5) years, 64.2% were female, 43.3% were White, and 43.9% were born outside Canada. Most (94.3%) were exposed in the community and time since last contact with the case was 5.3 (3.4) days. Of the 94 participants with negative or indeterminate baseline SARS-CoV-2 tests, 46 (48.9%) received LPV/r.
The primary outcome was reached in 12/46 and 3/48 of intervention and control participants, respectively (OR=4.5, 95%CI=1.1,18.4). Symptomatic SARS-CoV-2 occurred in 9/46 and 3/48 respectively (OR=3.52, 95%CI=0.84,14.7). The proportion of LPV/r participants with an adverse event at least possibly related to study drug was 30.4% (14/46), primarily gastrointestinal and dermatologic (9/14 or 64.3% and 3/14 or 21.4% of events, respectively). We observed no COVID-related hospitalizations, respiratory failure or deaths in either arm.
Conclusions: We observed no signal that LPV/r has efficacy as SARS-CoV-2 PEP in this prematurely terminated trial. Possible reasons for the unexpected direction of the final results include small sample size and changes in behaviour in this unblinded trial.

EPC466

Coronavirus vaccine safety in people living with HIV/AIDS

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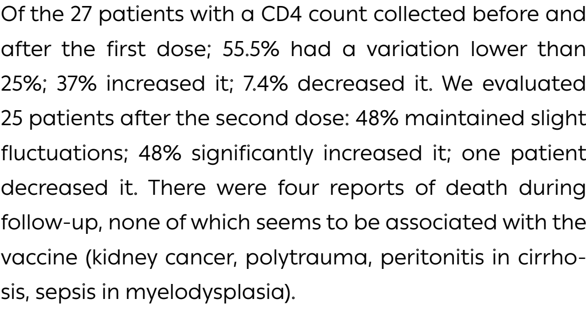
Background: Current evidence points against an increased risk of severe COVID-19 in PLWHA. Nevertheless, little is known about the effects of the immune response, either to the virus or the vaccines, in immunological and virological parameters. This study aims to evaluate the safety of COVID-19 vaccines in PLWHA.
Methods: Retrospective cohort of 470 HIV/AIDS adults who received the first dose of COVID-19 vaccine at the São Carlos Chronic Infection Care Center, SP, Brazil, from 05/13/2021 to 07/16/2021. We assessed the Ministry of Health report system for therapeutic history, CD4 counts and HIV viral load, and the "Vacivida" system for vaccine information.
Results: 68.1% of patients were male, mean age 41.8 years. All patients were on antiretroviral treatment; 42.8% were on tenofovir, lamivudine and dolutegravir. 156 of the patients had a CD4 count within six months before vaccination (median 644.5; IQR 394-932). 59.1% patients had a viral load within six months before vaccination; 84.9% had undetectable viral load (UVL) (< 40 cp/mL).469 patients received ChAdOx-1 vaccine; 448 had both doses from this immunogen.
After the first dose, 89.4% had UVL; 88.9% after the second dose. Assessment of viral load variation after the first dose was possible in 67 patients: 73.1% maintained an UVL; 13.4% undetected a previously detectable viral load (DVL); 10.5% maintained a DVL; 3% had a detection after a previously UVL. 90 patients were compared between pre-vaccination and after the second dose; 82% maintained an UVL; 10.1% undetected a previous DVL; 3% maintained a DVL; 4% had a detection after a previous UVL.



Of the 27 patients with a CD4 count collected before and after the first dose; 55.5% had a variation lower than 25%; 37% increased it; 7.4% decreased it. We evaluated 25 patients after the second dose: 48% maintained slight fluctuations; 48% significantly increased it; one patient decreased it. There were four reports of death during follow-up, none of which seems to be associated with the vaccine (kidney cancer, polytrauma, peritonitis in cirrhosis, sepsis in myelodysplasia).

Conclusions: Apparently, COVID-19 vaccination has no impact on virological and immunological response of PLWH. However, the epidemic may have impacted healthcare of these patients.

EPC467

Omicron: infection rate and clinical outcomes in Johannesburg, South Africa

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Background: The Omicron SARS-CoV-2 variant spread globally from November 2021. We compared infection rates and clinical data from a prospective cohort of healthcare workers and others at high risk of infection, throughout Delta and Omicron waves in Johannesburg, South Africa, where the Omicron epidemic first emerged.

Methods: This investigator-led study evaluated repurposed drugs as pre-exposure prophylaxis for 24 weeks for participants at risk for SARS CoV-2 infection. Participants were evaluated every 4 weeks, or if symptomatic, for new infections.All participants were tested for PCR and/or antibodies at each study visit.The cumulative incidence of infections was compared between the Delta and Omicron waves using Kaplan-Meier analysis.

Results: We enrolled 828 participants from December 2020 to December 2021 (561 participants prior to/during the Delta wave, 397 during the Omicron wave). Overall, 50% were women, 99% Black, with mean age 24 years. Risk factors included obesity (21%) and elevated blood pressure (8%); 20% received at least one vaccine dose during follow up. Of the 561 participants evaluated during the Delta wave, 125 (22%) were infected, with 43 (33%) symptomatic infections. Of the 397 participants evaluated in the six weeks from start November 2021 (Omicron wave), 188 (47%) were infected by 18 December 2021, with 46 (24%) symptomatic infections. Infection rates were significantly higher for the Omicron wave ($p<0.001$).

In each wave, antibody testing identified more infections versus PCR testing alone (Figure 1a-1b). There was one COVID-19-related death and one hospitalization during Delta, with none in the Omicron wave. Clinical symptoms were otherwise mild.

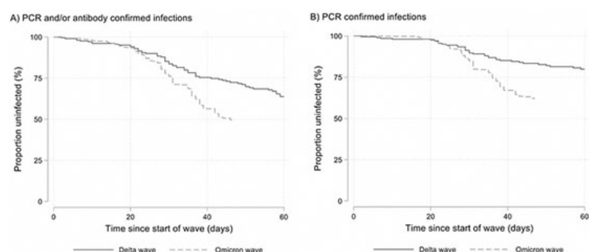

Figure 1a & 1b

Conclusions: During the Omicron wave, 47% of participants were infected in 6 weeks, 76% asymptomatically. This analysis suggests that PCR testing alone could underestimate the incidence of new omicron infections.

If the intervals between PCR tests are too wide, short intervals of viraemia may be missed and infections only detected after the subsequent emergence of antibodies.

EPC468

Nitazoxanide as post exposure prophylaxis (PEP) of COVID-19 household contacts (FH-53 PENTZ)

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Background: PEP could have a potential role in the management of COVID-19, in particular among unvaccinated or immunocompromised individuals. Nitazoxanide (NTZ) has shown in vitro activity against SARS-CoV-2 and is currently being studied in several clinical trials to control viral infections.

Methods: We conducted a pilot, cluster-randomized, double-blind, placebo-controlled trial in Buenos Aires to evaluate the efficacy and safety of nitazoxanide as PEP (NCT04788407). Household contacts of COVID-19 confirmed cases were offered to participate. After consenting, a salival sample for SARS-CoV-2 PCR was obtained from asymptomatic unvaccinated individuals with negative COVID-19 IgM/IgG rapid test. Patients were randomly assigned by household 1:1 to receive a 7-day course of ni-

tazoxanide (500 mg) three times daily or placebo (PBO). Our primary endpoint was confirmed SARS-CoV-2 infection (PCR+ at day 14 or IgM/IgG+ at day 28) in participants who were randomized and had a baseline PCR negative. Secondary outcomes included safety and treatment adherence.

Efficacy analysis in the modified intent-to-treat population was performed using a mixed-effects model. Other comparisons were carried out using T-test and Chi-square.

Results: We enrolled 221 participants between December/2020 and August/2021: (NTZ:110, PBO:111). Mean age was 38.5 (SD 13.0), 18% had baseline PCR+ (NTZ:16, PBO:27), and 6.7% (NTZ:4, PBO:8) discontinued due to loss to follow-up or consent withdrawal.

During a 28-day follow-up, 23 participants (13%) developed a SARS-CoV-2 confirmed infection, without statistical significance between arms: mITT=[PBO:16.7% vs NTZ:22.3% OR: 2.08 (95%CI:0.06-99.0); p:0.67]. Adverse events were more frequent with NTZ vs PBO (66.3 % vs 23.4%, respectively; p<0.001), most commonly reported mild gastrointestinal upset.

Overall adherence was 82% (NTZ:76.6%-PBO:85.7%). A dramatic reduction of cases in the study period and the broad expansion of the national vaccination program prevented the completion of the planned recruitment.

Conclusions: Nitazoxanide did not show efficacy as PEP among household contacts of COVID-19 cases in the studied sample. Safety was comparable to previous studies, and adherence was acceptable. More studies are needed to understand the potential role of NTZ in preventing COVID-19, including vaccinated and post COVID populations.

EPC469
Anti-SARS-CoV-2 antibodies after vaccination in people living with and without HIV

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Background: COVID-19 vaccines have become the mainstay in the management of the global SARS-CoV-2 pandemic. However, while vaccines have proved a high degree of protection from SARS-CoV-2 infection and a severe course of COVID-19, comparative data from people living without (PLw/oH) or with HIV (PLWH) are scarce.

This study aimed to compare the humoral response to standard vaccinations against SARS-CoV-2 in PLw/oH and PLWH.

Methods: Retrospective single center case-control study, comparing anti-SARS-CoV-2-antibodies after a COVID-19 standard vaccination in PLw/oH with PLWH with a CD4 cell count > 450 cells/µL after matching 1:2 for age, sex, time between vaccination and measurement of anti-SARS-CoV-2-antibodies, and standard vaccination scheme (mRNA-containing yes/no). Groups were compared using Wilcoxon-Mann-Whitney test for continuous and chi-square tests for binary outcome variables.

Results: Overall, 86 people living without HIV were matched to 172 people living with HIV, resulting in an overall sample size of 258 subjects (median age: 43 [IQR 36; 52] years; 185 [71.7(%)] men). Among people living with HIV, median CD4 cell count was 804 (IQR 649; 971) and 162 (94.2 %) had a HIV-PCR < 50 copies/mL. Median anti-SARS-CoV-2 antibody concentrations were 1425 (IQR 794; 2248) and 1055 (IQR 516; 1770) for people living with and without HIV, respectively (p=0.007).

	PLWH	PLw/oH	p-value
Age, median [years] IQR	43 (36;52)	44 (36;53)	0.520
Male sex, n (%)	123 (71.5)	62 (72.1)	1.000
mRNA-containing scheme, n (%)	151 (87.8)	70 (81.4)	0.233
Time from last vaccine dose, median [days] IQR	54 (40;75)	56 (43;84	0.113
Antibody concentration, median [BAU/mL] IQR	1425 (794;2248)	1055 (516;1770)	0.007

Table.

Conclusions: In our study, people living with HIV with at least 450 CD4 cells/µL demonstrated higher concentrations of anti-SARS-CoV-2 antibodies after a standard vaccination when compared to matched, uninfected controls. It is unclear if this translates into an overall better protective effect in people living with HIV and warrants further investigation.

EPC470
"Why do you want to kill me again? Isn't HIV enough?" Acceptability and factors influencing uptake of COVID-19 vaccines among persons living with HIV in three districts in Uganda

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Background: Since 2019 when COVID-19 was declared a pandemic,various control measures have been instituted globally including vaccination.However vaccine hesitancy remains a big challenge in many communities in Uganda with only 4.2% of the population fully vaccinated.

This study aimed to understand acceptability of COVID-19 vaccines and evaluate factors influencing vaccine uptake and acceptance among persons living with HIV who are among the vulnerable populations.

Methods: Following ethical approval,we conducted a mixed methods study among persons attending rural and urban HIV clinics in the three districts of Kampala, Wakiso and Mpigi with the highest prevalence of COVID-19 in Uganda. Interviewer administered face-to-face

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questionnaires, focus group discussions and in depth interviews were used to collect data. Quantitative data was cleaned and analysed using STATA version 15 and qualitative data was coded and analysed using emerging themes.

Results: 282 participants were enrolled in the quantitative study and 24 in the qualitative. Majority (118) were aged 25-40 years, 97.9 % were Ugandans and 59.6% females in monogamous relationships. 66% had some level of formal education, 63.9% were employed and majority (97%) had heard about COVID-19 and its prevention methods. 81.1% of the participants had not received any COVID-19 vaccine and of these the majority (67.6%) were not willing to receive the vaccine if offered to them.

Reasons cited were fear of side effects of the vaccine, myths and misconceptions, lack of trust in government programs and fear of co-infection of HIV and COVID-19 through vaccination.

Multivariate analysis showed that marital status, education level, employment status, awareness of signs and symptoms of COVID-19, prior history of COVID-19 diagnosis and treatment for friends and relatives, source of information about COVID-19 and self-perceived risk for the disease were significantly associated (p value < 0.001) with vaccine uptake.

Qualitative study identified lack of vaccine knowledge, lack of transparency and trust in government programs, myths and misconceptions, side effects,religious and cultural beliefs (herbs) and no history of infection as factors hindering vaccine uptake.

Conclusions: Findings demonstrate the importance of social demographic characteristics, adequate awareness and risk communication, engagement of all stake holders with transparency in government programs in attempt to increase vaccination uptake among persons living with HIV in Uganda.

EPC471

Safety and immunogenicity of Sputnik-V, AstraZeneca and Sinopharm vaccines against SARS-CoV-2 in people living with HIV

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Background: Information about safety and immunogenicity of Sputnik-V, AstraZeneca and Sinopharm SARS-CoV-2 vaccines in people living with HIV (PLWH) remains limited. We aimed to describe such outcomes in PLWH in Argentina.

Methods: Prospective, observational, descriptive study in PLWH assisted in an HIV ambulatory care center (March-December 2021), and who received at least one dose of SARS-CoV-2 vaccination. Participants completed an online questionnaire. Clinical-epidemiological data, variables linked to vaccination and local or systemic adverse events probably related to vaccination and immunization (AEFIs) were collected and classified according to WHO guidelines.

Detection of S1-RBD IgG antibodies was performed between days 28-60 after the second dose in a subgroup of individuals (ADVIA Centaur® SARS-CoV-2 IgG chemiluminescent immunoassay, Siemens).

A multivariate analysis was applied to evaluate the relationship between AEFIs with age, sex, viral load (VL), immunological status (according to CD4+ T cell count) and type of vaccine received. A linear regression analysis was performed to evaluate correlation between antibody titers and CD4+ T cell count.

Results: 867 PLWH completed the survey. Median age: 45 years (18-84); male: 69.5%. VL <20 HIV RNA copies/mL: 92.9%; Median CD4+ count: 682.7 (492.5-841) cells/mm^3. Of the 867 doses applied, 36.7% were Sputnik-V; 46.3% AstraZeneca; 13.3% Sinopharm and 3.59% other vaccines. 311 AEFIs (35.8%) were reported: 99.7% non-severe vaccine product-related reactions and one severe coincident event. Prevalence of AEFIs was higher with AstraZeneca (60.4%) and Sputnik-V (29.5%) than with Sinopharm (5.4%) (OR=1.4, p=0.005, 95%CI=1.42-1.52).

On multivariate analysis, AEFIs were associated with viral vector vaccines (OR=1.7, p=0.032, 95%CI=1.5-1.8). 97/100 of the individuals assessed (97%) reached S1-RBD IgG antibody titers ≥1 U/mL (positive); median titer was 44 U/mL. Higher antibody titers correlated with higher CD4+ T-cell counts (p=0.011).

Conclusions: In PLWH, Sputnik-V, AstraZeneca and Sinopharm vaccines showed a safety profile comparable to clinical trials in general population. Higher frequency of AEFIs was observed with viral vector vaccines.

Vast majority of patients developed adequate humoral response with a positive correlation between antibody titers and CD4+ T-cell count.

EPC472

Early receipt of COVID-19 vaccines among people living with HIV: age, knowledge, and trust as determinants

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Background: Race/ethnicity and trust have been associated with the uptake of voluntary vaccinations, including COVID-19 vaccines. It is unclear whether:

1. Race/ethnicity and trust in the medical system affected early vaccination in people living with HIV (PLWH), and;
2. Which organizations involved in vaccine rollout are most trusted by PLWH.

Methods: The Florida Cohort Study is a National Institute of Health-funded study enrolling adult PLWH from 7 clinical and community-based sites. Participants who enrolled between March 2021 and October 2021 and self-reported their COVID-19 vaccination status were included in this analysis (n=146, 63% male, 34% non-Hispanic Black, 22% Hispanic, average age 52 years).

Early vaccination was defined as receiving the first vaccine before the end of April 2021.Survey questions included COVID-19 knowledge and trust in 5 organizations involved in vaccine development and promotion. A cumulative trust score was calculated based on previous research on influenza vaccination, with values ranging from 5 to 25 (Cronbach's alpha= 0.91). COVID-19 knowledge was measured as the number of correct responses to 5 questions about transmission and risk groups.

We assessed whether demographics (race/ethnicity, age, gender, and education), trust, and knowledge were associated with early vaccination using simple and multivariable logistic regressions.

Results: Overall, 51% reported early COVID-19 vaccination, 45% answered all knowledge questions correctly, and trust scores were relatively high (median 19, IQR 16-23). Healthcare providers were the most trusted (79% endorsing "agree" or "strongly agree"), followed by the Centers for Disease Control and Prevention (77%), the Food and Drug Administration (64%), the World Health Organization (51%), and pharmaceutical companies (46%).

Early vaccination was associated with higher trust scores (aOR 1.2, 95% CI 1.07-1.31), older age (aOR 1.1 95% CI 1.05-1.21), and higher COVID-19 knowledge (aOR 1.6 95% CI 1.10-2.37). Early vaccination did not differ significantly by race/ethnicity (51% in non-Hispanic Whites, 55% in non-Hispanic Blacks, and 47% in Hispanics, p=0.76).

Conclusions: There were no disparities by race/ethnicity in early vaccination. Greater trust in organizations involved in vaccine rollout was associated with increased early acceptance independent of other factors. Efforts to increase trust within this community may help improve vaccine acceptance.

EPC473

Multiple strategies are needed for enrolling individuals in randomized COVID-19 trials. Lessons learned from a home base postexposure trial in Argentina

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Background:
Post-exposure studies require immediate access to exposed candidates. This work presents a home recruitment strategy for post-exposure COVID-19 household contacts in Argentina (NCT04788407).

Description: This study enrolled participants between December 2020 to July 2021. Recruiting strategies were: Strategy 1 (S1) Public Health Emergency Operations Center (EOC) offered index cases to invite their household contacts; if interested, EOC referred the list of individuals to be contacted.Due to the difficulty of enrolling on time, we included: Strategy 2 (S2) Self-referrals through a mass media communication campaign inviting household contacts to fill an online form to be contacted, Strategy 3 (S3) Direct referral of providers who cared for index cases. All potential candidates were interviewed by phone and the eligible ones were scheduled for a home visits.

S1 required official clearance, was more complex to navigate, needed to coordinate with multiple individuals, and proved less sensitive, as clinical research was not its primary objective.

S2 required both financial investment and attractive marketing to generate interest, and the public reacted in waves. However, its implementation resulted in a 61% increase in the study admissions.

S3 had a limited scope due to few providers being aware or interested in the study.

At the end of the enrollment period, 2972 potential candidates were identified, 2421 were interviewed by phone, and 231 were randomized, mostly reached by S1 (S1:67%, S2:25%, S3:8%). However, when we analyze effectiveness (randomized/interviewed per strategy), the relationship was inverse (S1:7%, S2:19%, S3:59%).

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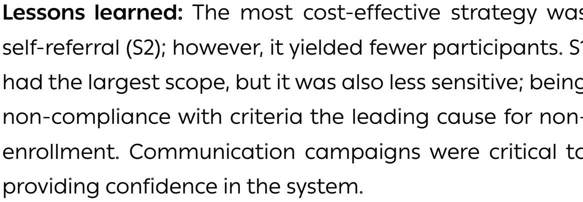

Lessons learned: The most cost-effective strategy was self-referral (S2); however, it yielded fewer participants. S1 had the largest scope, but it was also less sensitive; being non-compliance with criteria the leading cause for non-enrollment. Communication campaigns were critical to providing confidence in the system.

The main challenge was reaching individuals on time. A large and motivated team of interviewers trained in the research study to provide information and support was critical.

Telephonic enrollment and home visits represented additional challenges (i.e. mistrust or fear of participants and safety concerns in some neighborhoods). The ability to introduce team members via social media enhanced trust and confidence.

Conclusions/Next steps: Innovation and adaptation is critical for ensuring enrollment during pandemics.

EPC474

COVID-19 vaccination intention among people who use drugs in France in 2021: results of the international community-based research program EPIC

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Background: Covid-19 vaccination is one of the key ways to fight the pandemic. People who use drugs (PWUD), often experiencing barriers to healthcare access, are a priority population for vaccination in France, due to their precarious living conditions and potential comorbidities (co-infection HIV-HCV). However, data on Covid-19 vaccination intention among this group is limited. This study aims to identify factors associated with Covid-19 vaccination intention among PWUD.

Methods: The survey was carried out as part of the international community-based research program EPIC, coordinated by Coalition PLUS. This program aims to document the impact of Covid-19 health crisis among key populations and community health workers. In France, it was rolled out among PWUD from May to October 2021. A paper questionnaire was available in the 28 low-threshold drug user centers of the French AIDES organization. A multivariate logistic regression was conducted to identify factors associated with a moderate/low intention to get vaccinated ("Yes, probably"; "Maybe"; "Probably not"; "Not at all" vs. "Yes, absolutely").

Results: Among the 211 PWUD respondents, 166 were unvaccinated (79%). The majority of them were men (n=138, 83%) with a median age of 40 [34-47]. Around 80% had a lower education level (high school education or less) and 26% were in unstable housing. When asked about their intention to be vaccinated against Covid-19, 32 (19%) answered "Yes, absolutely" and 134 (81%) answered "Yes, probably" (n=9), "Maybe" (n=41), "Probably not" (n=25) or "Not at all" (n=59).

Main reported barriers to vaccination were lack of confidence (46%) and fear of risks and side effects (34%). Being younger (aOR=1.11 [1.05.-1.17]), having a lower education level (2.71 [0.97-7.61]) and unstable housing (5.47 [1.35-37.77]) were independently associated with a moderate/low vaccination intention.

Conclusions: These results show that few PWUD have a high intention to get vaccinated against Covid-19. Younger PWUD and those who have precarious living conditions are most likely to have moderate/low intention.

Strategies that target PWUD through reinforcing their confidence, giving information about collective and individual benefits of vaccination and offering vaccinations in low-threshold drug user centers seem important to implement to increase vaccine uptake.

EPC475

Medical and demographic factors associated with COVID-19 vaccination among people living with HIV (PLWH) in an urban United Kingdom clinic

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Background: The December 2021 UK COVID-19 vaccine guidance for people living with HIV (PLWH) is 2-vaccine schedule plus booster, or 3-vaccine schedule plus booster in those with CD4+ T-cells <200cells/mm^3. COVID-19 vaccine hesitancy has been described among PLWH in the UK and other countries. We aimed to describe the COVID-19 vaccinated and unvaccinated population of PLWH in an HIV-specialist clinic in London.

Methods: Data was extracted in November 2021 from electronic health records of all PLWH who had attended our service since December 2020, when COVID-19 vaccination began in the UK. Demographics and clinical characteristics were compared based on vaccination status using chi-squared tests.

Multivariate logistic regression models were used to calculate adjusted odds ratios of the association between vaccination, and age, gender and ethnicity; with *p*-values calculated using likelihood ratio tests.

Results: Of 4,594 PLWH included, 58.0% were White and 81.8% were male, with a median age of 50 (IQR 41-57). 67.4% had received ≥1 COVID-19 vaccines but coverage was significantly lower amongst people of Black and Mixed ethnicities, adjusted for age and gender (Table). Male gender and increasing age were associated with higher vaccination coverage in the multivariate model. No asso-

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ciation was found between vaccination status and CD4+ T-cell count <200cells/mm^3[vaccinated 2.7% vs unvaccinated 3.7%, χ^2p=0.097], diabetes mellitus (HbA1c>48mmol/mol)[4.5% vs 4.8%, χ^2p=0.595] or chronic kidney diseases (eGFR<60ml/min/1.73m^2)[7.6% vs 7.2%, χ^2p=0.682], however these three factors were all more prevalent in people of Black ethnicity (χ^2p=<0.001).

Demographic Factors	Total number of PLWH (%)	Number vaccinated with 1 or more COVID-19 vaccines (%)	Number unvaccinated for COVID-19 (%)	Adjusted Odds Ratio	95% Confidence Interval	P -value
Ethnicity						
White	2666 (58.0)	1960 (73.5)	706 (26.5)	1	1	<0.001
Black	1033 (22.5)	601 (58.2)	432 (41.8)	0.60	0.50 – 0.72	
Asian	146 (3.2)	99 (67.3)	47 (32.7)	0.91	0.63 – 1.31	
Mixed	204 (4.4)	118 (57.8)	86 (42.2)	0.63	0.47 – 0.85	
Other	145 (3.2)	99 (68.3)	46 (31.7)	0.83	0.58 – 1.21	
Not Stated	400 (8.7)	218 (54.5)	182 (45.5)	0.55	0.44 – 0.69	
Gender						
Male	3756 (81.8)	2617 (69.7)	1139 (30.3)	1.26	1.06 – 1.53	0.011
Female	838 (18.2)	478 (57.0)	360 (43.0)	1	1	
Age						
18-29	239 (5.2)	104 (43.5)	135 (56.5)	1	1	<0.001
30-39	735 (16.0)	435 (59.2)	300 (40.8)	1.59	1.18 – 2.15	
40-49	1234 (26.9)	809 (65.6)	425 (34.4)	2.02	1.51 – 2.70	
50-59	1578 (34.4)	1138 (72.1)	440 (27.9)	2.73	2.05 – 3.64	
60-69	658 (14.3)	484 (73.6)	174 (26.4)	2.84	2.07 – 3.91	
70 +	150 (3.2)	125 (83.3)	25 (16.7)	4.60	2.77 – 7.66	

Table: COVID-19 vaccination coverage and adjusted odds ratios from multivariate logistic regression model for association between demographic factors and vaccination (n=4,594)

Conclusions: COVID-19 vaccine uptake in this clinic in London, despite freely available vaccines throughout 2021, varied significantly by ethnicity and age. Co-morbidities were not associated with vaccination status, however Black ethnicity patients had higher rates of co-morbidities which would place them at risk of more severe COVID-19 disease. Strategies to overcome barriers to COVID-19 vaccine uptake in PLWH remains an urgent health priority.

EPC476

Randomized clinical trial of nitazoxanide or sofosbuvir/daclatasvir for the prevention of SAS CoV-2 infection

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Background: The COVER trial was set up in April 2020, to evaluate whether nitazoxanide or sofosbuvir/daclatasvir could lower the risk of SARS-CoV-2 infection in healthcare workers and others at high risk of infection. Nitazoxanide was selected given favourable pharmacokinetics and in vitro antiviral effects against SARS-CoV-2. Sofosbuvir/daclatasvir, normally used to treat Hepatitis C infection, had shown favourable results in early clinical trials.

Methods: In this clinical trial in Johannesburg, South Africa, healthcare workers and others at high risk infection were randomized to 24 weeks of either nitazoxanide, sofosbuvir/daclatasvir or standard of care as prevention. Subjects were evaluated every 4 weeks, with symptom evaluation, antibody testing and PCR.

The primary endpoint was confirmed SARS-CoV-2 infection, defined as either positive PCR or serology after baseline, regardless of symptoms. A Poisson regression model was used to estimate the incidence-rate ratios (IRR) of the incidence of confirmed SARS-CoV-2 between each experimental arm and control.

	Arm A: no pharmacological intervention	Arm B: NTZ	Arm C: SOF/DCV
Primary analysis			
n/N (%)	96/261 (37)	88/235 (37)	77/213 (36)
Person-years (person-days)	56.0 (20,455)	41.7 (15,219)	37.4 (13,670)
Incidence rate per 1,000 Person-years (95%CI)	1714 (1403-2094)	2112 (1714-2603)	2057 (1646-2572)
Comparison against control			
Incidence rate ratio (95%CI)*	[reference]	1.23 (0.92-1.65)	1.20 (0.89-1.62)
p-value		0.157	0.233
Relative risk ratio (95%CI)*	[reference]	1.02 (0.81-1.28)	0.98 (0.77-1.25)
p-value		0.878	0.887

Table. COVER trial, Primary efficacy analysis

Results: Between April 2020 and December 2021, confirmed infections were detected for 88/235 for nitazoxanide (37%), 77/213 for sofosbuvir (36%) and 96/261 for standard of care (37%).

There was no significant difference in the primary endpoint between the treatment arms and the results met the criteria for futility. In the safety analysis, 59 patients discontinued nitazoxanide for adverse events, and 56 discontinued sofosbuvir/daclatasvir.

Conclusions: In this randomised trial, nitazoxanide and sofosbuvir/daclatasvir had no significant preventative effect on infection with SARS-CoV-2, among healthcare workers and others at high risk of infection.

EPC477

COVID-19 vaccination rates and correlates associated with nonvaccination among the LGBTQ+ population in New York City

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Background: LGBTQ+ populations disproportionately have higher prevalences of health conditions associated with severe COVID-19 illness. Additionally, this population has historically experienced challenges trusting health care providers and is not routinely captured in SARS-CoV-2 vaccination data.

We examined the prevalence of vaccination among New York City's LGBTQ+ population and the association of nonvaccination to sociodemographic and behavioral correlates.

Methods: LGBTQ+ adults living in New York City were recruited for an online survey using social media and direct marketing from June to December 2021. The survey included questions on sociodemographic characteristics, including sexual orientation and gender identity, history of testing for and diagnosis of COVID-19, receipt of at least one dose of a COVID-19 vaccine, and vaccine intentions. Logistic regression analysis was conducted to determine correlates of being unvaccinated.

Results: Of the 1038 recruited participants, 61% were assigned male at birth, and 89% were under 40 (mean age 29 years). Most identified as gay or lesbian (56%), cisgender (64%), and being non-Hispanic White (49%).

Most participants (81%) had received at least one dose of a COVID-19 vaccine. Vaccination uptake was highest among Asian participants (97%) and lowest among non-Hispanic Black participants (73%).

In multivariable analysis, factors associated with being unvaccinated were being 30-39 years of age (adjusted odds ratio (aOR) 1.55, 95% CI 1.06-2.28), being bisexual (aOR 2.15, 95% CI 1.45-3.18), having a lower household income (<$50,000 per year, aOR 1.92, 95% CI 1.24-2.95), not having a college degree (aOR 1.49, 95% CI 1.00-2.23), and not being anxious (aOR 1.94, 95% CI 1.36-2.78).

The strongest predictor of nonvaccination was not having health insurance, with a more than 3-fold increase in the odds of being unvaccinated (aOR 3.07, 95% 2.11-4.48). The reasons selected for not wanting to ever get vaccinated (n=85) were that COVID-19 vaccines weren't safe (45%), they might have long-term side effects (40%), they don't work (27%), or that they were developed too quickly (16%).

Conclusions: These findings indicate high vaccination uptake by LGBTQ+ population. However, certain sociodemographic characteristics, mental health issues and insurance status were associated with nonvaccination. The findings highlight a need for continued targeted efforts to enhance vaccination uptake.

EPC478

Mistrust and COVID-19 vaccine acceptability among sexual and gender minority youth

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Background: Youth have the highest COVID-19 incidence rates in the United States, yet have low vaccination rates. Prior research with adolescents suggests that vaccine concerns about safety, educational level and migrant status were associated with lower vaccine uptake. Mistrust has been associated with vaccine hesitancy among adult Americans living with HIV.

There have been few studies that examined vaccine acceptability in Young Black and Latinx Sexual Minority Men (YBLSMM) and Transgender Women (TGW). This study aims to examine factors, including HIV status, associated with being vaccinated in a sample of YBLSMM/TGW.

Methods: YBLSMM/TGW (n=84), aged 15-24, were recruited June 2021 - November 2021 across four major metropolitan areas (Baltimore, MD; Washington D.C.; Philadelphia, PA; St Petersburg/Tampa, FL) to complete an online COVID-19 survey. Chi-squared and Fisher's exact tests were used for bivariate associations and multivariate Poisson regression was used to assess factors associated with COVID-19 vaccination.

Results: The mean age was 21.3 (SD 2.38). Most (57%) identified as gay and 22.3% identified as transgender/gender diverse. Over half (56%) of youth reported being vaccinated. Reasons for vaccination included: protecting themselves (83%), protecting family (79%), protecting community (72%), feeling safe around others (60%), not wanting to get sick from COVID-19 (57%), believing that the pandemic will not end until most people are vaccinated (57%), being recommended by a doctor (21%) and reporting a chronic health condition (15%). Individuals with a bisexual or "other" sexual orientation were 12% more likely to report vaccine receipt (p=0.012), while youth with vaccine mistrust were 37% less likely (p<0.001). HIV status was not associated with vaccination. In the adjusted model,

controlling for history of COVID-19, sexual orientation, and HIV status, participants with vaccine mistrust were 39% less likely to receive a COVID-19 vaccine (p<0.001).
Conclusions: Vaccine mistrust is still a challenge. To address vaccine acceptability in YBLSMM/TGW, programs should focus on linking vaccinations to personal values of protecting oneself and their families.

EPC479

Factors associated with COVID-19 vaccine receipt among adults in Malawi

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Background: Malawi implemented a COVID-19 vaccine campaign for adults, 18 years+ in March 2021. We assessed factors associated with planned receipt of COVID-19 vaccine in Malawi as part of a telephone-based syndromic surveillance survey.
Methods: We conducted telephone-based syndromic surveillance surveys among adults (≥18 years old) with verbal consent to be interviewed from March to December 2021; random digit dialing was used to randomly select mobile phone numbers, and electronic data collection forms using secure tablets were used.
Survey questions included whether the respondent had received at least one dose of COVID-19 vaccine. We used multivariable analysis to identify factors associated with intention to receive COVID-19 vaccine.
Results: A total of 7,740 respondents reported they had received the vaccine; 67.5% were male. Females were more likely to receive vaccination compared to males [Adjusted Odds Ratio (AOR) 1.17 95% confidence interval (CI) 1.1-1.24].
Compared to the Northern region, respondents who resided in the Central or Southern regions were less likely to vaccinate: (AOR 0.84 CI 0.77-0.92, and AOR 0.58 CI 0.53-0.63), respectively. Older age was associated with increased vaccine receipt compared to those age 18-24 years: 35-44 years (AOR1.9 CI 1.69-2.07), 45-54 years (AOR 3.0 95% CI 2.67-3.35), 55-64 years (AOR 3.7 95% CI 3.19-4.28) and 65 years+ (AOR 4.31 95% CI 3.55-5.22).
Respondents with no formal education were less likely to receive vaccination compared to those with primary (AOR 1.45 95% CI 1.17 – 1.81), secondary (AOR 2.35 95% CI 1.89 – 2.93) and tertiary (AOR 5.25 95% CI 4.19– 6.59) education.
Respondents who received vaccine information from health workers or through social media were more likely to vaccinate: (AOR: 1.39 CI 1.30-1.48, and 1.58 CI 1.07-1.26), respectively. Those who were a little or not at all concerned about getting COVID-19 disease had reduced odds of receiving the vaccine: AORs 0.7 (95% CI 0.61 – 0.8) and 0.92 (95% CI 0.84- 1.01), respectively, compared to those who were very concerned.
Conclusions: COVID-19 vaccination is associated with residence, age, education and source of information. Targeted vaccination messages by these factors will be critical for the success of the vaccination programme.

EPC480

HIV viral load and CD4+ count are not associated with experiencing COVID-19 vaccine adverse events: case-control study

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Background: COVID-19 vaccines under development or approved by regulators are believed to be safe for most people, including people living with HIV (PLH). CD4+ cells count lower than 200 cells per µL has been associated with more vaccine adverse events (VAE). The aim of this study was to evaluate the safety of COVID-19 vaccine in PLH in Mexico.
Methods: We conducted a case-control study in PLH attending at an HIV clinic in Mexico City who had received the COVID-19 vaccine up to 31 December 2021. Cases were defined as those who reported at least one VAE, whereas controls did not experience any VAE. Descriptive quantitative results are presented as mean with standard deviation (SD) or median with interquartile range (IQR). Qualitative results, as frequency and percentage. Factors associated with VAE was evaluated with a Chi-squared test. A logistic regression model was applied and adjusted for age and comorbidities to determine the association of experiencing any VAE according to latest HIV-1 RNA and $CD4^+$ cells count.
Results: We included 253 patients living with HIV, with a mean age of 37.2 years (±SD: 10.8). Most of them were men 244 (96.4%) and had HIV RNA-1 <40 copies/mL [228 (90.1%)] and median CD4+ cells count of 609 (IQR:414-840.5). Comorbidities of PLH were overweight (30.4%) dyslipidemia (24.5%), obesity (14.2%), polypharmacy (11.9%), hypertension (7.5%), psychiatric disorders (7.5%), type 2 diabetes (4.3%), chronic kidney disease (1.6%), and heart disease (0.4%). A total of 61 (24.1%) had been diagnosed with COVID-19 before vaccination. The frequency of VAE was in 135 (53%), all of them mild. There were no associations with VAE according to an undetectable HIV-1 RNA (1.34, 95%CI:0.57-3.13, p=0.5) or CD4+ cells count (OR=0.99, 95%CI:0.97-1.01, p=0.4).
Conclusions: VAE occurred in 53% of patients living with HIV, all of which were mild. The latest viral load and CD4+ count were not associated with VAE.

EPC482

Attitudes of PLHIV in Greece towards COVID-19 vaccination

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Background: People living with HIV (PLHIV) are considered a high-risk group for severe COVID-19 infection. Therefore, according to the Greek vaccination program, they were included in the vulnerable groups and given priority for COVID-19 vaccination. Nevertheless, a portion of the population appears to hesitate to receive the vaccine. The aim of this study was to investigate the acceptance of COVID-19 vaccine among greek PLHIV.

Methods: Single-center, cross-sectional study conducted in October 2021. Patients followed in the HIV-outpatient clinic were asked to fill-in an anonymous questionnaire that included epidemiological data, data on HIV infection as well as data related to vaccination against COVID-19.

Results: 327 PLHIV were included in the analysis (male: 90%, mean age: 44.1 years, working: 64%, tertiary education: 55%). 278 (85%) were vaccinated at the time of the survey and 82% of those, completed the two-dose vaccination schedule between May and August 2021.

Compared to non-vaccinated PLHIV, those vaccinated were more likely to be employed (67% vs 47%, p=0.02) and have tertiary education (60% vs 26%, p<0.001), while no differences were found regarding mean age, gender and place of residency. Both employment (OR: 2.0, 95% CI: 1.007-4.17) and tertiary education (OR: 3.80, 95% CI: 1.82-7.92) remained statistically significant after adjustment for age and gender.

The main reasons for vaccination were self-protection (91%), protection of vulnerable family members (50%), social responsibility against the pandemic (50%) and to avoid obstacles with their work or daily activities (35%). 25% reported adverse events after vaccination, with fever (35%), fatigue (19%) and pain at the site of injection (16%) being the most frequently reported.

Among the 49 (15%) non-vaccinated PLHIV, the main reasons for hesitancy were that vaccines "are not enough tested" (39%), fear of side effects (49%), the perception that they were "not at risk" (12%) and an overall attitude against vaccines (10%).

Conclusions: The majority of PLHIV monitored in our clinic were fully vaccinated against COVID-19. Vaccine awareness strategies could lead to even higher vaccine coverage through the targeting of those populations more reluctant to receive vaccination.

EPC483

Uptake and barriers to COVID-19 vaccination in Thane, India: findings from a Community-Based Survey

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Background: Vaccine hesitancy continues to hamper global COVID-19 vaccination efforts. Yet, limited community-based data on vaccine uptake and barriers especially from low and middle-income countries (LMICs) exist. We examined COVID-19 vaccination uptake, hesitancy, and associated factors in a community-based sample of residents in Thane district, Maharashtra – an Indian district with one of the highest reported COVID-19 burden during the Delta wave in India.

Methods: An at-home COVID-19 rapid antigen testing program was implemented in Thane district (mean income: USD 2300/year) from August 2021 - present.

Field workers went door-to-door in high COVID burden areas identified by the Thane Municipal corporation offering Rapid SARS-CoV-2 antigen testing and administered a survey collecting demographic and socioeconomic information, COVID-19 symptoms/exposure history, vaccine uptake, barriers, and preferences.

COVID-19 vaccines (non-mRNA) became available free-of-charge to in India January 2021; at the time of this survey, all adults (18 years of age and older) were eligible for vaccine. Logistic regression was used to identify correlates of vaccine uptake.

Results: The median age of the 11,568 residents sampled was 31.2 years; about half (48.7%) were female. Overall, 4415 (38.0%) respondents self-reported receiving at least one dose of a COVID-19 vaccine: CoviShield (Serum Institute India) = 92.3%; Covaxin (Bharat Biotech) = 6.0% and Sputnik V = 1.7%.

Of vaccinated individuals, less than a third (32.1%) had received their second dose. Factors independently associated with being fully or partially vaccinated included older age (OR:1.05 per year of age), going to work in-person (OR:1.48), and education completed (OR: 3.88 for bachelor's degree vs. ≤8 years of schooling; p<0.05 for all).

Of those who had not received a vaccine, 64%reported interest in receiving the vaccine if offered and 36% were hesitant. The primary reason for deferring vaccination was wanting to wait until a better vaccine was available (36%) followed by concerns about vaccine efficacy (20%).

Conclusions: Despite high interest in COVID-19 vaccination, over two-thirds of this community-based sample was not fully vaccinated. It is critical that vaccine programs integrate vaccine literacy and demand generation programs with mass vaccination programs to ensure optimal timely uptake.

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Track D - Social and behavioural science

Community engagement in research and research dissemination

EPD001

Visual access to create greater comprehension: Incorporating the visual arts into a representational analysis of HIV community dialogue on living with HIV and a quality of life

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Background: Over the course of 2021, the National Association of People Living with HIV Australia (NAPWHA) set out to discover what constitutes a quality of life (QoL) for people living with HIV (PLHIV) in Australia.

As part of this project, they engaged an artist living with HIV to sit in on the webinars, debates, discussions and briefings with the explicit intention of capturing the key messages that came out of the project.

Five unique pieces of art have been created to compliment a narrative position describing what a QoL means to PLHIV in Australia.

Description: With the support of ViiV Healthcare and utilising the ViiV Positive Perspectives 2 Manifesto as the catalyst for discussions, NAPWHA held a number of events (n=8) over 12 months which interrogated issues such as polypharmacy, intersectionality, healthcare and patient relationships, health literacy and quality of life through a variety of online formats.

NAPWHA recruited an artist living with HIV to sit in and take part in these sessions with the explicit instruction to capture essence and key aspects of these sessions. In the end five pieces of artwork have been developed which have reflected the issues and discussions.

Lessons learned: Examples of the co-creation of art within the HIV academic, research and service provision spheres are rare. Co-creative activities are an integral part of artistic experiences, as participants in collaborative learning engage and are engaged in cognitive, emotional, and imaginal practices to appropriate and make sense of lived experiences. A visual response creates a wider engagementthan words may do by themselves.

Conclusions/Next steps: The artworks created through this project will be integrated as visual elements of a final report on the activities. They will speak to the discussions that were had and draw attention to the elements that were seen at the different activities for those who could not be present.

EPD002

Using a three-layered approach to understand the needs for effective community engagement in HIV biomedical research in India – Perspectives from community representatives, implementing researchers and domain experts

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Background: The success of any HIV biomedical research is primarily pillared on end-user communities' acceptance and support. However, the contours of community-research intersections are predominantly shaped by understanding and willingness of researchers and sponsors. Creating a paradigm shift requires recognition of the perspectives of key stakeholders (community, researchers, others including policymakers, bioethicists, regulators, product experts) to understand the challenges and identify opportunities. Thus, IAVI facilitated diverse discussions with an aim to capture the dynamic relationship and triangulate all views for the most impactful insights on community engagement.

Description: Between January and October 2021, fourteen virtual consultations were conducted in India with community representatives (N= 53); HIV researchers

(N=10); national HIV domain experts and advisors (N=10) to understand the current practices and identify needs to make community engagement robust, equitable, ethical and effective. Data were analyzed using constant comparison method to identify themes. Source triangulation strengthened the validity of findings.

Lessons learned: *Understanding common grounds*

All the groups highlighted the need for:

a. Increased and innovative efforts to strengthen science communication and augment research literacy to enable community ownership;

b. Understanding the role of connectors (who are closely knitted with the communities like community-based organisations) in bolstering trust and becoming advocates for research;

c. Leveraging digital media to facilitate better outreach, awareness and retention.

Highlighting gaps through unique lenses

- Community representatives highlighted:

a. Engagement of communities are primarily at the time of recruitment; there is a need for their early and sustained engagement throughout the research

b. Lack of sensitivity towards community cultures, lived experiences, power dynamics, gender norms and not enough transparent communication.

- Researchers stated:

a. Limited funding for community engagement

b. Low priority for people-centered engagement skills among researchers as other aspects of instrumental goals have precedence.

- Domain Experts opined on

a. Limited researcher capacities in simplifying science communication and sustaining engagement beyond study period

b. Limited focus on accountability mapping and need for competency assessment frameworks for both researchers and communities.

Conclusions/Next steps: The insights highlight the criticality of meaningfully engaging diverse stakeholders to co-design multi-dimensional engagement strategies and operational tool-kit to address these needs for most effective community engagement in HIV research.

EPD003

Community dialogue: lessons learnt from results dissemination to the community about adolescent sexual activity. Experience from CHAPS Study

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Background: CHAPS, a cross-sectional mixed methodology study, explored perceptions of event-driven oral PrEP in young people aged 13-24 years in South Africa, Uganda and Zimbabwe and collected data on sexual activity. We report proceedings of the facilitated discussion which followed results dissemination with the Youth Community Advisory Board (YCAB) in Zimbabwe.

Description: YCAB members are aged 16-25 years and drawn from research clinic catchment areas to represent young people in their community. During dissemination of study results, the YCAB discuss study findings with researchers to offer insight and contribute to results interpretation.

We used the ORID framework (Objective, Reflective, Interpretive, Decisional) to explore CHAPS results, focusing on sexual activity, to find out what findings they considered most striking, the emotions elicited, their insights into the causes of the behaviors, and suggested activities in response.

Lessons learned: CHAPS data aligned with YCAB's personal experiences and knowledge. The YCAB were disturbed by the early age of sexual debut. They feared that, when adolescents engage in unprotected sex, they might threaten their futures by taking risks. YCAB interpreted the reasons driving adolescents to engage in sexual activities to be peer pressure, experimentation, naivety, substance/ alcohol use and transactional sex. They suggested interventions to transform current Sexual Reproductive Health (SRH) programs:

1. Include both adolescents and their parents/guardians;
2. Youth experts should lead SRH programs in educational settings;
3. Provide free WIFI zones to access trusted online SRH information;
4. Use social media influencers to educate adolescents on SRH; and
5. Health facilities need non-judgmental youth zones for adolescents to access PrEP without fear.

At the societal level, YCAB proposed focusing on vocational training to reduce poverty in school leavers. They encouraged multi-generational dialogue on how to sup-

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port adolescents develop self-discipline and a healthy attitude towards sex, while preserving traditional values and respect for elders. YCAB highlighted how parents also need help navigating the shifting dynamics of the modern-day family.

Conclusions/Next steps: YCAB involvement in results dissemination is not only good participatory practice, but it also brings important insights to data interpretation and generates ideas for implementing study findings.

EPD004
Utilizing standardized metrics to track recruitment strategies in a global preventive HIV vaccine study during the COVID-19 pandemic

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Background: Though Good Participatory Practice (GPP) are implemented globally, there are no standardized metrics to evaluate or refine its application. Utilizing an approach developed by the HIV Vaccine Trials(HVTN)and HIV Prevention Trials Networks (HPTN), we sought to describe, monitor, and evaluate the recruitment practices of the Mosaico study (HVTN706/HPX3002), a phase 3 HIV vaccine clinical trial conducted among cisgender men and transgender people who have sex with cisgender men and/or transgender people from communities in the United States, Latin America and Europe. Recruitment and enrollment for Mosaico occurred during evolving local and national COVID-19 mitigation efforts, which varied by country.

Methods: Recruitment strategy descriptors were used in the study based on knowledge of site practices to characterize responses to "How did you hear about the Mosaico Study?" These descriptors were vetted and edited by Community Working.

Groups of prior HIV prevention trials of the HVTN and HPTN and were not modified in the Mosaico study. Definitions were established and timepoints selected to allow comparisons across sites. Clinical Research Sites (CRSs) were required to develop recruitment plans and reports in REDCap, a web-based application to capture data for clinical research, using specific measurable objectives. Data were collected by48 global CRSs from June 2020 – August 2021.

Results: All 47 sites utilized multiple recruitment strategies successfully. Globally, internet use resulted in the most screens (5059 of 8121, 62%) and enrollments (2404 of 3806, 63%) while in-person outreach was most efficient (screening: enrollment ratio of1.5:1in Europe and South America and 5.6:1 in the United States). In the United States, referrals were most efficient (4.8:1). In Europe and South America, referrals were also efficient (3.3:1 and 2:1respectively) whereas print materials were the least efficient recruitment strategy (24.8:1 and 5.3:1respectively).

Conclusions: While CRSs had to adapt their recruitment plans due to COVID-19, the recruitment practices were broad enough that they did not require changes. Implementing a system to monitor screening-to-enrollment ratios reveals effective use of outreach staff time and available resources. Although Internet use, such as social media advertising, was predominant due to the COVID-19 global pandemic, in person outreach was still the most efficient strategy to achieve enrollment goals.

EPD005
Engaging youth to conduct research among peers: lessons from a PrEP study in Siaya County, Kenya

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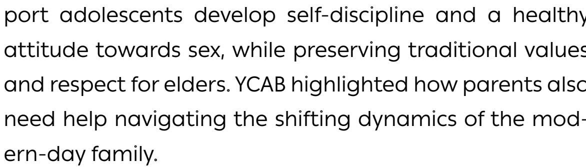
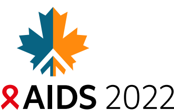
Background: In Kenya, adolescent girls and young women (AGYW) make up 30% of 53,000 HIV infections annually. Pre- exposure prophylaxis (PrEP) is effective in preventing HIV, but use among AGYW is sub-optimal. Youth engagement in the design and implementation of research is critical to address complex issues that affect their health, like PrEP use, in the context of stigma.

Description: We identified an eight-member youth research team (YRT) through competitive recruitment through Ministry of Health facilities and DREAMS safe spaces. Those eligible (age 18-24 years, knowledge of PrEP, completed secondary school, computer literate, proficient in English and the local language) were trained on the study protocol, PrEP stigma, human subject protection, research methods. YRT initially conducted study activities with mentorship from experienced research assistants. Once YRT were confirmed competent, they performed tasks independently. YRT participated in: i) co-facilitating focus group discussion (FGD) and transcribing audio-recordings; ii) concept mapping of debriefing reports; iii) translating cognitive interview tool and surveys; iv) reviewing participants' suggestions on question relevance and comprehension during cognitive interview process; v) administering consent and surveys; vii) coding and analysing qualitative data.

Lessons learned: YRT engagement improved the research conduct in multiple ways. In the concept mapping activity, they brought youth perspectives to identify drivers, facilitators, manifestations, outcomes, intersecting stigmas, health and social impacts of PrEP stigma, which contributed to the development of a quantitative scale





to measure PrEP stigma among AGYW who use PrEP. The YRT's involvement in translations led to better understanding of questions by study participants who are YRT peers. YRT participation in cognitive interview reviews allowed modification of the cognitive interview guide. Survey quality reviews found minimal error rate (per question 0.0002%, per page 0.18%) and high-quality data from FGDs, which were similar between YRT and experienced research assistants.

Conclusions/Next steps: Engagement of the YRT resulted in high quality data, insightful interpretation of findings, and identification of pertinent themes to research questions throughout the study. Our results confirm that youth with basic education can be mentored to successfully perform important research roles. Researchers should consider engaging youth throughout the research process to achieve study objectives.

EPD006

Maintaining long term and meaningful community and research partnerships by responding to and leveraging system-level enablers, barriers and benefits

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Background: The greater and meaningful involvement of people with HIV/AIDS (GIPA), communities affected by HIV, and their peer organisations are a foundation of the global HIV response. However, peer involvement in research is often limited to consultation for individual projects, rather than long term priority setting and conduct of research. The depth and value of peer organizations' insights for the entire research process are often underutilised. Strategies for meaningful participation are often focused on methodology rather than recognising system level factors and how to overcome them.

Description: For 10 years, and through the COVID19 pandemic, the What Works and Why (W3) Project has sustained a partnership across Australia of 12 peer led organisations and research. The W3 Project partnership co-designed, trialled, refined, and applied a systems framework and tools to demonstrate the role and impact of peer organisations within an overall HIV response, and built a consensus model of practical evaluation indicators. W3 Project required peer staff and researchers to undertake the simultaneous role of drivers, participants, and analysts in the research. To identify learnings for maintaining long term meaningful partnership with peer organisations in research, we drew together the documented insights and experiences of peer staff and researchers throughout the study.

Lessons learned: Research and peer organisations capacity to maintain meaningful participation can be restricted or enhanced by the systems in which they are embedded. While a strength of peer organisations is their relationships within their communities, this relationship means peer staff are also navigating pressure from marginalization, discrimination, criminalization, and more recently COVID19.

We identified strategies that reduced the influence of these system-level barriers and strengthened enablers to maintain meaningful participation and leadership from peer organisations.

Adapting research methodology to maintain active partnership ensured the research rigour was combined with practical and conceptual considerations, and high community engagement.

Example enablers to overcome systemic barriers included strengthening and demonstrating two-way trust and commitment; sustaining flexibility in research resources and management; and demonstrating the impact of peer leadership to counter system-level stigma.

Conclusions/Next steps: Maintaining meaningful collaboration with peer organisations requires looking beyond good practice methods to responding to and leveraging system-level enablers, barriers, and benefits.

EPD007

Leveraging technology to assess pharmacy professionals' knowledge, attitudes, and practices related to HIV/STIs and potential to improve coverage of key populations in Southeast Asia

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Background: Innovative approaches to improve coverage for key populations are needed to support goals to eliminate HIV by 2030 in Southeast Asia. In Vietnam and Thailand, pharmacies are preferred sources of care for key populations, however, data regarding pharmacy professionals' knowledge, attitudes and practices related to HIV and other sexually transmitted infections (HIV/STIs) is time consuming and costly to collect at scale given fragmentation of the pharmacy channel.

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Methods: With support from USAID-funded Linkages and SHIFT programs, researchers leveraged the SwipeRx mobile app to conduct cross-sectional, digital surveys among pharmacy professionals in Vietnam and Thailand in 2020, to understand their HIV/STI knowledge, attitudes, and practices. Using convenience sampling, digital methods were used to recruit 268 pharmacy professionals using SwipeRx in Thailand between June-July and 282 respondents from Vietnam between August-September. Descriptive analysis was conducted to assess survey data.
Results: Across both samples, the median age of respondents was 30 years. Most respondents identified as women (59% Vietnam, 69% Thailand). Sampled pharmacy professionals in Vietnam reported serving 19 clients who purchase condoms, 13 clients who purchase STI medication, and 10 clients perceived to identify as men who have sex with men, gay, or transgender (out of 139 total clients on average, each day). Only 18% in Thailand and 32% in Vietnam were aware of saliva-based HIV rapid testing and roughly half could identify benefits of pre-exposure prophylaxis (PrEP) (56% Vietnam, 49% Thailand). Twenty-nine percent in Vietnam and 12% in Thailand agreed or strongly agreed that "people with HIV brought it on themselves", indicating the influence of HIV-related stigma on attitudes. Roughly 8 in 10 reported willingness to provide HIV rapid-tests (83% Vietnam, 80% Thailand) and PrEP (85% Vietnam) at their pharmacies. Eighty-one percent in Vietnam reported interest in digitally referring clients to HIV/STI diagnostic and treatment services.
Conclusions: Digital surveys through SwipeRx have potential to efficiently generate insights from pharmacies relevant to HIV program goals. Results indicate knowledge and attitudinal gaps as well as strong interest in offering HIV rapid tests and pharmacy-referrals to improve coverage and access to the full cascade of care for key populations in Southeast Asia.

EPD008
Trust, respect and reciprocity underlie the preferred ways of community engagement in HIV biomedical research: findings from a qualitative investigation in India

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Background: Meaningful community engagement (CE) in HIV prevention research is crucial for the study's success and is an ethical obligation. We used data from a qualitative study to identify expressed and implicit reasons behind community representatives' preferred ways of CE in HIV biomedical research/trials.
Methods: This exploratory qualitative study was conducted in partnerships with seven NGOs and communtiy advocates. NGOs helped in recruiting a purposive sample (maximum variation sampling) of diverse participants from key populations such as men who have sex with men, transgender women, people who inject drugs and female sex workers, and general populations (adults, adolescents/youths). We conducted eleven virtual focus groups between July and October 2021. Data were explored from a critical realist perspective, using framing analysis (examining how the participants framed the narratives). The analytical focus was on 'why' the participants wanted particular kinds of CE.
Results: Participants' narratives unfolded both explicit and implicit reasons for the preferred types of CE. Trust was a central theme: trust on the sponsors based on their reputation/credibility, trust on the study as it was endorsed by trusted NGOs, and trust based on how the communities were engaged (as community advisory board/CAB members, and/or as field research staff). Trust seemed higher with diverse CAB (e.g., diversity in gender, socioeconomic status) as diversity was seen to allow/encourage diverse opinions. Participants' expectations regarding capacity building of CAB members (improving decision-making skills) and field research staff (community members co-producing knowledge) reflect actions that could increase trust. Other preferred CE activities seemed to symbolize respect and dignity: e.g., providing appropriate monetary compensation, constituting formal community review/monitoring mechanisms. Reciprocity was inferred by the importance placed on exploring communities' needs, sharing the findings with communities, and using the findings to inform policies/programs, in collaboration with communities. Transparent communication with communities was explicitly stated as critical for gaining and maintaining trust.
Conclusions: Trust, dignity, respect, and reciprocity underlie community representatives' preferred ways of CE. For researchers and sponsors, this means that CE is not to be seen as a checklist of activities to be done, but whether those activities convey dignity and respect, demonstrate reciprocity, and gain and maintain trust.

EPD009
Community consultation in designing a virtual HIV intervention for MSM in Mumbai, India: lessons from a series of workshops

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Background: In designing community-based interventions, best practices include holding community consultations to obtain insights for guiding programs and research design. However, little research is accessible on how best to integrate and center, especially in LMIC such as India. As part of *Project Chalo! 2.0* – our virtual multi-level intervention to increase HIV testing and status-neutral linkage to care among men who have sex with

men (MSM)– we conducted workshops with community stakeholders to guide intervention development and implementation.

Description: A series of four workshops were conducted at an LGBTQ+ community-based organization in Mumbai, India in February- May 2021to design a multi-level WhatsApp-based intervention incorporating messaging aimed to improve HIV testing uptake among MSM. Around14 MSM with varying field experiences – including community healthcare workers and HIV intervention beneficiaries– participated in the workshops.

We relied on user-centered design and open space technology processes to conduct these workshops. We applied the socio-ecological and information-motivation-behavior (IMB) frameworks to guide the selection of intervention components. The feedback related to study processes was sought online via video conferencing as India was experiencing the second wave of COVID-19. We used breakout rooms online to create two groups of participants and also used the polling option to reach a consensus.

Lessons learned: Through conducting these workshops, we found that a user-centered design and an open space technology process allowed for impactful discussion and dialogue between the community members and the intervention team. Stakeholders triangulated research findings and prioritized optimal targets for behavior change, informed recruitment, enrolment, retention, and incentive processes. Workshop participants also helped finalize the selection of digital content formats and the specific contents (e.g., word choice, design, and graphics).

Conclusions/Next steps: Integrating community- and front-line staff inputs into all aspects of intervention and research processes may help ensure successful participant engagement in virtual behavioral interventions. Using inclusive processes alongside rigorous theoretical models, we were able to successfully develop a community-centered, multi-level, multi-component virtual intervention. Our participatory intervention development approach can serve as a model for developing theoretically grounded and community-centered virtual behavioral interventions.

EPD010

Community-Based Participatory Research (CBPR): Lesson learned from a survey examining the impact of COVID-19 on access to STBBI-related health services among African, Caribbean and Black (ACB) people in Canada

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Background: COVID-19, public health measures, and social determinants of health (SDOH) inequities have created unprecedented challenges in delivering and accessing sexually transmitted and blood-borne infections (STBBI), mental health, and harm reduction services for African, Caribbean, and Black (ACB) people.

The Public Health Agency of Canada (PHAC), in partnership with ACB researchers and community stakeholders, conducted a national anonymous online cross-sectional survey to understand the impact of the pandemic and SDOH on access to STBBI-related health services by ACB people. We describe the process and lessons learned.

Description: This Community Based Participatory Research (CBPR) initiative began in May 2020 to July 2021. In preparation for the survey, a partnership was established between PHAC and ACB researchers. An ACB-National Expert Working Group (ACB-NEWG) was created to ensure questionnaire development and survey implementation including promotion and recruitment and knowledge translation was culturally relevant, appropriate, and responsive. NEWG comprise of seven regional hubs made of researchers, service providers, community members, and leaders from the ACB community. Project team and the NEWG developed and validated survey questionnaire through several community consultations.

They also developed targeted recruitment and promotional strategies: use of existing networks of community-based organizations; Peer Research Assistants (PRAs); and social media. NEWG recruited and trained PRAs to promote the survey within their communities and among hard-to-reach populations, including youths, seniors, and the elderly.

Lessons learned: In total 1,556 participants completed the survey. Barriers to meaningful community engagement and successful CBPR that emerged and were addressed

through regular dialogues included limited funding; government policies; administrative procedures around data collection, analysis, ownership and sharing; and translation. Establishing and supporting a working group comprising of diverse and knowledgeable stakeholders and the authentic commitment of PHAC, project team and NEWG to the CBPR process throughout the various phases of the project design and implementation made the survey a major success.

Conclusions/Next steps: The ACB-NEWG has been a mechanism for generating creative ideas throughout the project design, and implementation of the survey on the impact of COVID-19. Authentic government and community collaboration is a promising approach for action-oriented CBPR that should be adapted to address equity data gaps and eliminate STBBI within marginalized communities.

Knowledge translation and dissemination of research and programme outcomes

EPD011

Knowledge translation of research findings: community interpretation of the results of the Positive Perspectives 2 survey of unmet treatment needs among people living with HIV in Australia

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Background: By partnering community reviewers with the authors of a published manuscript from the Positive Perspectives 2 (PP2) survey of people living with HIV (PLHIV), we were able to demonstrate best practice in the co-creation of knowledge, create partnerships across professional domains, and promote greater access and equity to published peer reviewed journal articles.

Using aknowledgetranslationprocess, the product of a single plain English community accessible summary of an academic published manuscript brings published findings to a much larger audience and adds value to the process of publication while building community capacity in understanding the nuances of methodology, data and analysis.

Description: This project sought to bring community and research partners together to co-create a community accessible summary of the Australian cohort in the larger PP2 data set. The interpretation and analysis of this data set has been published in a peer reviewed journal which focuses upon a professional and academic audience in its tone and construction. By utilising community reviewers who each had their own interpretation of the manuscript, we were able to produce a short video which captured the key take home points of the journal article. The reviewers felt that a short video complimented by a written summary (for more information) would attend to those with lower literacy and ensure greater access to the findings.

Lessons learned: Far too often we forget that adult literacy is a barrier to knowledge development (Australia has on average a year 8 reading level across the adult population). By establishing a partnership between a journal author and a community member we were able to create a new relationship across professional boundaries, build capacity in the understanding of academic published research.

Conclusions/Next steps: This activity highlights the importance of making the research underpinning the academic publication more accessible to the community that it is intended to serve. It's also most important that the PLHIV that participate in such surveys can access the results of their participation and commitment.

EPD012

Barriers and facilitators to HIV Pre-Exposure Prophylaxis (PrEP) in the United Kingdom: a systematic review using the COM-B model

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Background: Early findings from British HIV Pre-Exposure Prophylaxis (PrEP) programmes in Wales, Scotland, and England have highlighted the inequitable delivery of PrEP in the United Kingdom (UK); while <50% new HIV diagnoses were in Men who have Sex with Men (MSM), they accounted for >95% PrEP users. We conducted a systematic review to identify barriers and facilitators (B&F) to PrEP access to facilitate equitable delivery of PrEP in the UK.

Methods: We searched conference/bibliographic databases using key words "HIV", "PrEP", "barriers", "facilitators", "underserved populations", and "UK". B&F were mapped along the PrEP Care Continuum (PCC) and domains of the Capability, Opportunity, Motivation and Behaviour (COM-B) model of behaviour change.

Results: Thirty studies were identified including 19 quantitative, 9 qualitative and 2 mixed-methods studies. Twenty studies exclusively recruited MSM, five recruited mixed populations (all included MSM as sub-population), and five were in other underserved populations (mostly ethnic minorities).

Of the twelve B&F identified (see tables), most related to the PrEP contemplation (n=6) and PrEParation (n=3) PCC steps, including some of the most commonly reported B&F: Lack of PrEP awareness, PrEP knowledge, and PrEP willingness and HIV testing history. Although B&F on those steps were mapped across COM-B domains, they were all at patient level

	Population studied (n=studies)	PrEP Care Continuum step	COM-B category	COM-B structural level
Lack of PrEP awareness	MSM (n=9), ethnic minorities (n=2), mixed populations (n=2), transgender women (n=1)	Step 2: PrEP contemplation	Psychological capability	Patient level
Lack of PrEP knowledge	MSM (n=8), ethnic minorities (n=2), mixed populations (n=4), transgender women (n=1)	Step 2: PrEP contemplation	Psychological capability	Patient level
Lack of PrEP willingness	MSM (n=9), ethnic minorities (n=1), mixed populations (n=2), transgender women (n=1)	Step 2: PrEP contemplation	Reflective motivation	Patient level
Lack of self-perception of HIV risk	MSM (n=4), ethnic minorities (n=1), mixed populations (n=2)	Step 2: PrEP contemplation	Reflective motivation	Patient level
Societal stigma of HIV	MSM (n=1), ethnic minorities (n=1), mixed populations (n=1)	Step 3: PrEParation	Societal opportunity	Patient level
Societal stigma of PrEP	MSM (n=5), ethnic minorities (n=1), mixed populations (n=2)	Step 3: PrEParation	Societal opportunity	Patient level
PrEP eligibility & guidelines	MSM (n=2), mixed populations (n=1)	Step 4: PrEP action and initiation	Physical opportunity	System level
Access to SSHS	MSM (n=10), ethnic minorities (n=1), mixed populations (n=2)	Step 4: PrEP action and initiation	Physical opportunity	System level
Adherence to PrEP	MSM (n=4), mixed populations (n=2)	Step 5: PrEP maintenance	Physical capability	Patient level

Table 1. PrEP access barriers in the UK

	Population studied (n=studies)	PrEP Care Continuum step	COM-B category	COM-B structural level
HIV testing history	MSM (n=9), transgender women (n=1)	Step 2: PrEP contemplation	Psychological capability & physical opportunity	Patient level & provider level
Good HIV knowledge	MSM (n=2), ethnic minorities (n=2), mixed populations (n=1)	Step 2: PrEP contemplation	Psychological capability	Patient level
Agency and self-care	MSM (n=5), ethnic minorities (n=2), mixed populations (n=1)	Step 3: PrEParation	Reflective motivation	Patient level

Table 2. PrEP access facilitators in the UK

Conclusions: While these findings offer insights on factors which prevent and facilitate PrEP access, the bulk of evidence focusses on MSM, and on patient-level attributes rather than structural/contextual factors. Future research should study other underserved communities (women, injecting drug users, transgender, and minority ethnicity individuals) and structural factors such as service availability to improve PrEP equity in the UK.

EPD013

Role of Female health workers during HIV/AIDS EPIDEMICS in Sindh Pakistan

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Background: Pakistan is among the nations reporting the highest growth in HIV infections globally. Particularly in Sindh province, HIV has reached an alarming stage among vulnerable groups of society. The primary purpose of this study was to investigate female health professionals' HIV-related knowledge, attitudes, and behaviors in rural Pakistan. A general practitioner (GP) started seeing an unusually rise of cases in young children with HIV (AIDS) infection earlier this year.

There is a fault in the health care system because the women who are hired as female health workers have insufficient knowledge, awareness, and handling of HIV. Their poor attitudes, inappropriate practices related to HIV, are the key variables affecting the proper control of HIV/AIDS spread.

Methods: This current quantitative cross-sectional study was conducted on Female health workers age range between 18 to 60 years after taking proper training and at least three months of field experience to assess their KAPs on HIV/AIDS. Total 316 LHWs were selected who meet the inclusion criteria.

Results: It was found half of the LHWs were Matric passed with 50.9% of them being aware of HIV/AIDS as a viral disease. Interestingly 84.8% of LHWs had knowledge that HIV could be transferred by un-protective sexual intercourse, 73.7% of LHWs were aware that unchecked blood transfusion could result in HIV/AIDS.

57% of LHWs knew that needle stick injury might result in acquiring HIV/AIDS, while 37.3 % of LHWs had knowledge that it could be transmitted vertically from mother to baby. 69% of the LHWs had a positive attitude toward HIV/AIDS patients. Nearly half of the LHWs had an opinion of patients can work at their working place and the other half have an opinion of isolation and hospitalization.

The majority of the LHWs were agreed that every hospitalized patient and pregnant lady should be screened for HIV/AIDS. Regarding practices of the LHWs for HIV/AIDS, 75.3% had poor practice.

Conclusions: keeping in view of the above finding it can be seen that these are the main hindrances in limiting the HIV/AIDS spread. Although LHWs had average knowledge and attitude related to HIV/AIDS and observed poor practice with some misconceptions regarding HIV/AIDS.

EPD014

Top-down approach: using community adult educators to disseminate HIV/AIDS information

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Background: An assessment of the level of willingness of adult and community educators to sensitize sexual minorities, with specific reference to LGBT people, about HIV/AIDS in Wakiso district of central Uganda.

Methods: A cross-sectional survey was carried out among (n-300) adult and community educators who had just graduated. Questionnaires with knowledge and attitude questions concerning sexual minorities particularly LGBT people and sexual workers were distributed to the participants during a week-long participatory workshop organized under the theme; Top down approach: Breaking the chain of HIV infection and drug use in sexual minorities, a community and adult educator's approach.

Results: Of the (n=300) more than 70% completed and returned the survey. 50% of the respondents acknowledged that they would not facilitate any HIV-health-related information session to LGBT people in the community compared to 20.0% that would pass the information to sex workers (χ^2= 24.06 p = 0.001). Respondents that had not attended any training session on stopping the stigma about HIV/AIDS and its spread in communities were less motivated to include sexual education activities addressing sexual minorities in the community (χ^2= 8.06;p = 0.06). Educators that had been affected by HIV/AIDS pandemic were more likely to facilitate information sessions to an exclusively sexual minority audience if the need arises.

Conclusions: The training knowledge about HIV/AIDS in relation to LGBT and sex workers was hugely influenced by attitudes and perceptions attached to these groups.

All those that didn't want to do anything with educating LGBT people and sex workers, blamed it on how the conservative community would perceive them. There is little or no training in this area on the curriculum for community and adult educators.

Therefore, there is a need for a more broader and liberal curriculum in the areas of HIV/AIDS and sexual minorities especially the hugely marginalized LGBT group in Uganda.

EPD016

Communicating truths: promoting HIV and stigma awareness through storytelling and devised performances inspired by the #MayStigmaBa? Project qualitative research

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Background: Stigma against HIV/AIDS and key populations are well-investigated in the social sciences. However, the endpoint of research is often publication in scientific journals, to which the public may have limited access. This project explored how art can translate scientific research into a widely accessible format.

Description: The project translated insights from the #MayStigmaBa qualitative research into performances. Using the Devising Method (Oddey, 1994; Heddon & Milling 2006), four performer-collaborators and the devising director performed the following in 11 days: dramatistic-thematic analysis; improvisation, storytelling, and scene studies exploration; live scriptwriting; output refinement; and filming. Five films (3 to 5 minutes each) were produced, each representing and communicating the following insights from the research: layers of stigma on LGBT persons; psychological distress experienced when considering an HIV test; difficulty of sex conversations; challenges of starting sex conversations; and media viewing as an aid for beginning challenging conversations. The videos were launched through a public Livestream and released on YouTube.

Lessons learned: The project demonstrated that devising can translate qualitative research data into a widely communicable medium within a short timeframe. The collaborative-reflective process enabled artists to reflect upon their own stigma experiences and deepen their understanding of stigma as a social issue.

Conclusions/Next steps: By translating research into a widely communicable medium, the arts may aid in disseminating scientific knowledge to audiences beyond the scientific community, which may be important for con-

sensus building for stigmatized communities and their allies. Devising may be a technique for deepening the commitment of individuals to combat stigma in their communities. Next steps entail formal evaluation on the reach and effectiveness of the stigma reduction campaign.
This will be used in HIV program development towards achieving the UNAIDS Global Strategy of having less than 10% of key populations experiencing stigma and discrimination.
Following the recommendations of the Human Rights Baseline Report Philippines (PA 1.4: Expansion of outreach activities to include specific attention to stigma and discrimination as barriers to access to services), the devising methodology, as well as the outputs, can be used to create information, education, and communication materials and outreach activities.

EPD017

Adolescents living with HIV from multiple countries being lead-partners in the co-production of research information and findings across global clinical trials

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Background: As HIV community information is predominantly created by adults in formats decided by adults, children and young people living with HIV (C&YPLHIV) cannot meaningfully engage and 'follow the science'. Since 2017, Fondazione Penta ONLUS has developed a model of youth participation - Youth Trials Boards (YTBs) - to train and support C&YPLHIV (aged 15 -19) from RSA, Zimbabwe, Uganda, UK and Russia, supporting active participation participate in global paediatric studies (ODYSSEY, BREATHER+, D3, LATA, REACH).
Description: A key role of YTBs is translating and disseminating research for their peers. Using youth participation models, YTBs have produced:
- Patient Information Sheets in infographics/images (Breather+)
- DTG/NTD information through infographics (ODYSSEY)
- Additional information explaining trials through posters and videos (LATA, D3)
- Research findings through social media videos (ODYSSEY)
- Instagram carousel posts for bitesize findings in multiple languages (REACH)
- Instagram video interviews with lead paediatric and maternal health scientists

Lessons learned: A child rights/youth participation framework is essential in information production, which requires input from experienced workers.
Importantly, C&YPLHIV know how and where their peers consume information, and research dissemination should be led by them.
The process takes time building knowledge/understanding with researchers and C&YPLHIV.
Expectations and understanding of the process and outcomes of 'co-production' is paramount for all involved.
There is a lack of understanding and consistency within REC/IRBs. The same co-produced materials have been both accepted and rejected by different REC/IRBs, with no consistency in their feedback. Trials have had to revert to using information deemed 'inaccessible, too long and not ethical' by the C&YPLHIV who reviewed it.
Conclusions/Next steps: Involving C&YPLHIV in sharing research findings will increase knowledge and improve self-care in this cohort, as well as instilling hope for their future.
Co-production models ensure scientific findings are in the correct language and format for C&YPLHIV.
REC/IRBs need to engage to understand youth participation and how their decisions impact on the informed understanding and decision-making of C&YPLHIV.
Penta has produced Quality Standards for the ethical and meaningful participation of children and young people in clinical trials and research to support rolling-out of this practice.

EPD018

Could social media facilitate HIV services promotion among key populations in LMICs? Lessons from a crowdsourced randomized controlled trial

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Background: HIVservices like self-testing, pre-exposure prophylaxis, post-exposure prophylaxis and antiretroviral therapy are essential to global HIV prevention and control. They are however underutilized among key populations (KPs) in many lower/middle-income countries (LMICs) due to lack of awareness about services availability. Digital tools like social media are an inexpensive means of disseminating information to a broader audience and could facilitate publicizing HIV services availability in LMICs.
Description: We evaluated the capacity of four crowdsourced materials to encourage hepatitis B (HBV) and hepatitis C (HCV) testingamong primary care users in

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a randomized controlled trialfrom November 2019 until June 2021 (clinical trial reference: ChiCTR1900025771). Intervention materials were sent to participants using WeChat,the most popular mobile phone-based social media messaging app in China. Participants received one video or infographic weekly for four weeks and were encouraged to suggest improvements to the materials.

Lessons learned: A total of 376/750(50.1%) study participants were randomized to the intervention arm, and 310/376 (82.4%) were retained at follow-up. Overall, 230/310 (74.2%) participants saw all four materials which increased the odds of HBV (aOR=1.75, 95%CI:1.07-2.93) and HCV (aOR=1.89, 95%CI:1.25-2.88) testing compared to not seeing any (35/310;11.3%). Online dissemination was cheaper than printing and distributing, enabled easy sharing and participants retained unhindered access to the materials for one week.

Thus, this strategy could be an effective way to create HIV services awareness among KPs in LMICs with smartphone technologies accessibility.The platform enabled interactive particpant feedback and could facilitate anonymous engagement of KPs in tailoring HIV programmes without sexual orientation disclosure. Technological problems included limited phone memory, limited internet access, and unviewed materials could not be re-accessed after a week unless re-sent.

Also, participants deemed receiving the same materials more than twice per week a nuisance and successful dissemination did not necessarily translate to receipt, viewing, and application although we anticipated some participants may not see the materials.

Conclusions/Next steps: Social media could be an efficient means of publicizingHIV services and promoting service uptake among KPs in LMICs that value traditional gender norms.

Our future research will anticipate technological challenges and the lesson that successful dissemination of materials may not necessarily translate to application among target populations.

EPD019

The utility of the Continuous Quality Improvement (CQI) methodology in identifying and addressing gaps in the HIV Care Continuum: the case of USAID strengthening the Care Continuum

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Background: In low prevalence and generalized epidemic contexts such as Ghana, effective and efficient case identification is critical in meeting the first 95% of the global 95-95-95 targets. However, structural and policy level challenges often inhibit utilization of all entry points for effective case identification. This abstract illuminates the power of the continuous quality improvement (CQI) methodology to test a change idea and convince reluctant policy actors to use blood banks as a feasible entry point for HIV testing and linkage to care in Ghana.

Description: As part of its CQI process in 2019, the USAID Strengthening the Care Continuum (Care Continuum) project implemented by JSI Research & Training Institute, Inc. collected retrospective baseline data from eight hospitals on blood donors in the Western Region (WR) of Ghana.

The analysis revealed that about one percent (40 out of 3,152) voluntary donors and over two percent (299 of 11,743) replacement donors were reactive to HIV. This prevalence was close to the national average of two percent.

However, due to stigma and fears of discouraging potential blood donors, these reactive donors missed the opportunity to know their HIV status and receive timely treatment. The Care Continuum project therefore used the largest hospital in WR, the Effia Nkwanta Regional Hospital (ENRH), to test an innovation by offering HIV testing services to blood donors as a test case. Two nurses from the blood bank received additional training on counseling to offer HIV tests to donors at the point of sample taking.

Additional key stakeholder engagement included convincing hospital authorities that with effective counseling, HIV positive donor results could be disclosed without negative consequences.

Lessons learned: The change idea was successful and offering HIV testing services to donors did not lead to a reduction in persons donating blood. From April 2020 to June 2021, 3,634 donors were offered HIV testing services and eleven positive cases were identified and linked to care.

Conclusions/Next steps:

- Harness the findings of this intervention for high-level policy engagement.
- Conduct more rigorous research studies in this area to inform policy and practice.
- Scale-up to other blood banks.

EPD020

Young people center design: implementation of a HIV Projet in Cameroon

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Background: Among young people aged 15 to 24 in Cameroon, only 11% use a condom during sexual intercourse and 12.3% have attitudes of tolerance towards people living with HIV (PLHIV).

Description: To meet the needs of the young population (15 to 24 years old), women (15 to 49 years old) and the vulnerable population in Cameroon, the HIV/AIDS Prevention Project in Central Africa aims both to fight against stigma of PLHIV and to promote the use of condoms through several channels. This concerns the promotion and distribution of condoms, the 100% Jeunes magazine, multimedia campaigns (TV and Web broadcasts, displays, 100% Jeunes Facebook live & radio broadcasts, green line) and non-media (capacity building, sensitization, empowerment, screening). Routine data is collected, entered, verified and analyzed in DHIS2, and qualitative and quantitative studies are conducted periodically during project implementation. This project is funded by KfW through OCEAC, and implemented in Cameroon by ACMS.

Lessons learned: On the basis of ten (10) Focus Group Discussions carried out with young people aged 15-24, the project's communication team readjusted the content of the messages of the "Shoes like never before" campaign, as well as the radio spots and TV according to the needs and orientations of the target.

The immediate effect of this campaign, which was broadcast during quarters 3 and 4 of 2021, was a renewed interest among young people in calls on the condom theme. DHIS2 data reveals that the number of calls on the Green Line increased from 222 to 471 between semester 1 and semester 2 2021, including 2 and 12 calls respectively for the condom theme.

Conclusions/Next steps: A rigorous process of intervention or implementation of activities aimed at young people that takes into account their opinions and perceptions through qualitative and quantitative studies can improve the performance of the project.

By including the voices of young people to refine our messages, we have enabled our target group to access information much more frequently via the Green Line.

EPD021

A Nurse-Led HIV Prevention Model of Care

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Background: To discuss implementation successes of a nurse-led HIV prevention model of care (NLHPMC) in alignment with the Centers for Disease Control Clinical Practice Guidelines and detail the more recent interventions employed to reduce barriers to access and care. Our aim is that other nursing teams may model similar nurse-led PrEP programs in a primary-care setting, regardless of funding.

Description: Country Doctor Community Health Centers (CDCHC) are a network of community-based health clinics located in Seattle, Washington, Country Doctor Community Clinic (CDCC) is located in Capitol Hill, the LGBTQ+ district of Seattle, and our other primary care site, Carolyn Downs Family Medical Center (CDFMC), is located in the heart of the Central District which is known to be one of the most racially and ethnically diverse communities in Seattle.

In 2014, CDCHC developed an NLHPMC program to increase access to preexposure prophylaxis (PrEP) for patients who may be vulnerable to HIV/STIs. This model of care centers the nurse as a clinician to screen, educate, initiate, and follow-up with patients who may benefit from PrEP. The program has streamlined PrEP guidelines into a structured clinical workflow, created conversion visits to provide a safety net for patients with primary care concerns, and received the Ending the HIV Epidemic-Primacy Care HIV Prevention (PCHP) grant to expand our efforts to deliver HIV prevention services. To date the program services nearly 300 patients, 82% male, 20% non-white, and 18% Hispanic.

Lessons learned: We continue to appreciate an increase in patients on PrEP at CDFMC; this may directly reflect our efforts to expand service access to the After-Hours Clinic (AHC), an urgent care clinic on the CDFMC campus with a drop-in format to ensure low barrier care for individuals who may not typically access primary care services.

Conclusions/Next steps: We have developed a successful NLHPMC to deliver HIV prevention services. As part of our program expansion, we now have evening and weekend coverage which has been a tremendous support to expand service hours and advance sexual health access. Many of the new PrEP initiations have occurred on the weekend, a potential missed opportunity if not for the PCHP funding.

EPD022

Predicators of uptake of high impact HIV services by adolescents and young women. Findings from Eswatini

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Background: Pact implements the DREAMS (Determined, Resilient, Empowered, AIDS-free, Mentored and Safe) program in Eswatini to reduce HIV vulnerability and new infections among Adolescent Girls and Young Women (AGYW). Once assessed and enrolled in the program, AGYW have access to interventions across health, education, protection and livelihoods based on needs and mentorship plans. The uptake of services (HTS, FP, PrEP, Condoms), however, has not been consistent among participants. To increase coverage, the program conducted analysis of programmatic data to understand predictors of these service uptake.

Methods: A cross-sectional analysis was conducted using Stata for the April 2018 – September 2021 implementation period. Researchers analyzed data from vulnerability as-

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sessments and access to service. Bivariate analysis was conducted using Logistic Regression to predict the uptake of HTS, FP, PrEP, and Condoms (dependent variables), against age-groups, education, duration in DREAMS program, vulnerability criteria (independent variables).

Multicollinearity was tested using spearman command with less than 0.7 result. Postestimations of margins were also plotted at sample means with age-groups and duration in DREAMS as covariates.

Results: The Logistic Regression model revealed that duration in DREAMS program predicts uptake of PrEP, FP, and condoms but not HTS. Education predicted HTS and condoms while vulnerability criteria (pregnancy) was a predictor for HTS uptake. Age group predicted PrEP and condoms but not HTS and FP Commodities.

HIV Service	Predictors	Odds ratio	95% Confidence Interval	p- value
HTS	Pregnancy	.669	.510- .878	0.004
	Education (Primary)	.800	.67 - .94	0.010
	Education (College)	1.90	1.05– 3.93	0.032
	HIV status (undisclosed)	.732	.610- .87	0.001
	HIV status (Positive)	.269	.217- .334	0.000
PrEP	Age (20 – 24 years)	5.85	2.3 – 14.64	0.000
	Duration in DREAMS (0 -6 months)	1.12	1.02– 1.22	0.011
	Duration in DREAMS (13-24 months)	1.12	1.04– 1.20	0.002
FP commodities	Duration in DREAMS (0 -6 months)	1.16	1.08– 1.24	0.000
	Duration in DREAMS (7-12 months)	1.14	1.06– 1.21	0.000
	Duration in DREAMS (13-24 months)	1.14	1.06– 1.21	0.000
Condoms	Age (15 – 19 years)	1.41	1.11– 1.79	0.004
	Duration in DREAMS (13 -24 months)	8.79	3.86– 20.03	0.000
	Duration in DREAMS (25+ months)	2.90	1.17- 7.16	0.021
	Education (Primary)	.631	.553- .721	0.000
	Education (out of school)	1.19	1.02– 1.39	0.019

Table.

Conclusions: The results suggest that service delivery should be sensitive to increased chances of uptake or attrition based on socio demographic characteristics of participants. This means designing interventions to ensure increased access to PrEP and FP commodities at the first six months of enrolment.

The design should also consider HTS validation to eliminate confirmatory retests of known positives. Flexible approaches that consider needs and constraints of participants to incentivize retention.

EPD023

Knowledge syntheses of stigma: a needed umbrella review

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Background: Despite strong global commitments to eliminate HIV-related stigma and discrimination, mitigation efforts need to improve further. To facilitate learning across global and local strategies, we conducted an umbrella review of systematic reviews on stigma in HIV to provide context as part of *Getting to the Heart of Stigma*, an IAS-funded initiative.

Methods: We searched PubMed, PsycINFO, and Web of Science from 2008 to May 2021 without language restriction. Two independent reviewers included reviews if people living with or disproportionally affected by HIV were a target population, and stigma and/or discrimination were part of the search, eligibility criteria, prespecified analyses, or key results. Reviews were categorized according to main content themes.

Results: In total, 194 reviews met inclusion criteria. Bibliometric analysis shows increasing interest in HIV-related stigma and discrimination. Included reviews varied in scope, with some focused exclusively on stigma while others combined multiple factors.

Reviews addressed: Associations and effects of stigma/discrimination (n=28), Access to care (n=26), HIV testing (n=26), Country-specific exploration of stigma/discrimination (n=18), Treatment adherence (n=20), HIV experiences (n=14), Stigma/discrimination reduction in the community (n=13), HIV disclosure (n=9), Stigma/discrimination in healthcare (n=9), Rights and regulations (n=7), Intersectionality (n=6), Measuring stigma (n=6), HIV prevention (n=4), Stigma reduction in low income countries (n=4), Self-stigma (n=2), Other (n=2). The umbrella review shows the range of HIV stigma research components that have been targeted, highlighting the continued emphasis on exploring the effects of stigma, systemic issues with access to care, and slow progress in HIV testing. The evidence map visualizes the research volume and content of the included systematic reviews.

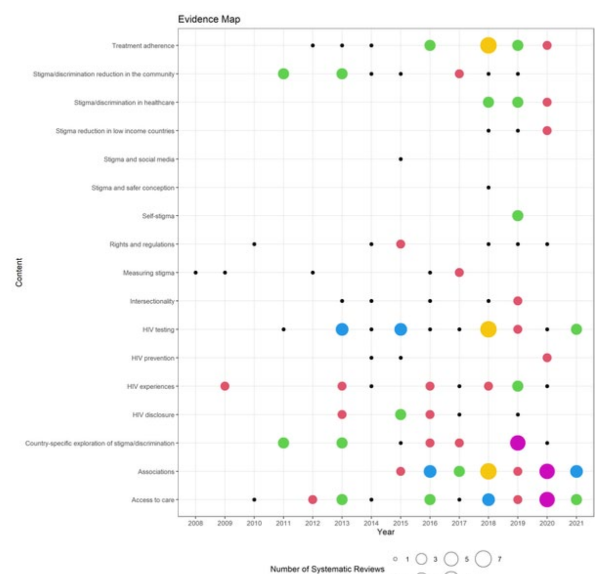

Figure.

Conclusions: This umbrella review provides a comprehensive overview of the existing evidence base on HIV stigma and discrimination and points out existing research gaps. It provides context for future knowledge generation needed to better support people living with HIV or disproportionally affected by HIV.

EPD024

The Cedar Project: Evaluation of a culturally safe case management approach in supporting hepatitis C treatment among Indigenous people who use(d) drugs in B.C

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Background: Direct-acting antiviral therapies work to improve the health and wellbeing of people living with hepatitis C (HCV). Yet, for Indigenous peoples in Canada, systemic racism continually imposes barriers to this life saving treatment. The Blanket Program, conceptualized by Cedar Project's Indigenous governance, was developed to mitigate barriers by providing culturally safe case management support before, during, and after treatment.

In this study, we examined program's impact on HCV treatment, reinfection, and contextual factors disrupting adherence.

Methods: Blanket Program is a two-site pilot study nested in an Indigenous governed cohort in Vancouver and Prince George, BC. Main outcomes were sustained virologic response (SVR) at 12 weeks post-treatment and HCV RNA within 9 months post-treatment.

Adherence was measured through self-report scale. *A priori* non-inferiority margins, based on HCV specialists' recommendations, were set at: >80% SVR12 and <20% HCV RNA. Logistic regression was used to assess factors associated with imperfect adherence (>5% missed doses). Results were adjusted for location, age, and sex.

Results: Between 2017-2019, 60 participants enrolled in the program. Fifty-three percent were female, 32% HIV coinfected, and 78% recently used injection drugs. Intention to treat proportion reaching SVR12 was 92% (55/60) remaining above non-inferiority margin of 80% (*p*=0.012, 95%CI: 0.833, 1.000). HCV RNA post-treatment was 9% (5/55) remaining below non-inferiority margin of 20% (*p*=0.025; 95%CI: 0.000, 0.116). Forty-two percent (25/60) demonstrated imperfect adherence.

In adjusted regression analysis, housing instability (aOR: 11.01; 95%CI: 2.22, 54.57; *p*= 0.003) and living in Vancouver (aOR: 5.30; 95%CI: 1.39, 20.25; *p*= 0.015) were associated with imperfect adherence.

Recent overdose (aOR: 4.04; 95%CI: 0.91, 17.99; *p*= 0.067) was marginally associated with imperfect adherence. Older age (aOR: 0.90; 95%CI: 0.83, 0.99; *p* = 0.025) was associated with strong adherence and recent access to traditional food (aOR: 0.32; 95%CI: 0.09, 1.10; *p*=0.070) was marginally associated with adherence.

Conclusions: Findings demonstrate a culturally safe case management approach supports high HCV cure rate and mitigates reinfection risk among Indigenous people who use(d) drugs.

EPD025

Research gaps in a sample of studies on people with HIV and key populations, with a view to proposing the sustainability of services in Latin America

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Background: Within the framework of the grant Promoting better living conditions and human rights of people with HIV and other key populations, financed by the Global Fund to fight HIV/AIDS, tuberculosis and malaria. Grant that is led by the Positive Leadership Alliance and Key Populations (ALEPPC) launched the Diagnosis of identification of existing gaps on research in People with HIV and key population based on the sustainability of services

Methods: The research had a regional scope and focused on 11 Latin American countries: Bolivia, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Paraguay and Peru.

A methodology composed of five work phases described below

1. Definition of the central axis of the investigation and review of input information,
2. In-depth documentary review of 383 documents in the last 10 years,
3. Participatory Consultation Process,
4. Identification of research gaps or knowledge gaps and
5. Design of the regional plan and national advocacy plans.

Results: Based on the implemented research process, 5 types of gaps were established, described below:

A: Critical information gaps for the sustainability of HIV-AIDS services from a focused and selective approach

B: Deficits in the modes of collaborative production of knowledge between the entities involved in the scientific-academic world, civil servants from the public sector, international cooperation and People w/ HIV/key populations.

C: Factors that affect the appropriation and use of available knowledge on HIV-AIDS by decision-makers and People w/ HIV/key populations.

D: Knowledge deficits that affect the monitoring and evaluation of public policies and programs on HIV-AIDS

E: Gaps in knowledge about the ecosystem of international and national financing to provide sustainability of services.

Conclusions: There are gaps in strategic information related to HIV, especially regarding the social determinants of HIV and community aspects, including the evaluation of the impact of community interventions. These gaps are opportunities to address strategic information to promote the sustainability of the response to HIV.

Mixed methods, integrated approaches and synergies in HIV research and intervention

EPD026

Understanding user engagement with an mHealth intervention supporting adolescents with HIV in South Africa

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Background: Understanding and supporting user engagement with HIV-related mHealth interventions is needed to maximize intervention effectiveness. Paradata (back-end system data automatically collected as users interact with mHealth interventions) can provide detailed metrics of user engagement, but they remain underexplored, particularly in formative phases of research where user feedback is sought to make enhancements.

Our team has developed *MASI*(*MAsakhane Siphucule Impilo Yethu*) Xhosa for „Let's empower each other and improve our health")), an mHealth intervention to improve treatment adherence among adolescents with perinatally-acquired HIV in Cape Town, South Africa.

We conducted this study to quantify and contextualize initial levels of participant engagement across*MASI*features.

Methods: This convergent mixed methods study was conducted between August – December 2021. Enrolled participants (n=12) received access to*MASI*for 3 weeks. Semi-structured in-depth interviews were conducted prior to app installation and after 1-2 weeks of app testing. Engagement with*MASI*was quantified through analysis of paradata and in-depth interview guides were tailored to each participant based on their app use.

Results: Participants (6 males, 6 females; ages 16-19 years) spent an average of 22 minutes (range: 1-51 minutes) using *MASI*. Varied patterns of engagement across features were observed. Participants who prioritized resources and activities explained that the features helped keep their minds busy. Those who used the health tracker to track adherence often also tracked meals and mood, noting that they sometimes forgot to eat and appreciated being asked about their feelings.

Participants had high expectations for the forum, though active engagement (e.g., posting) was limited due to participants feeling shy. Those active in the forum appreciated the warm response from peer mentors, highlighting their important role.

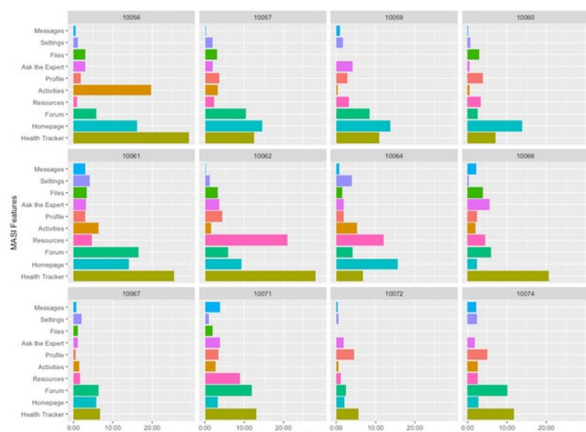

Figure. Total time spent in MASI features for each participant

Conclusions: Systematically analyzing paradata and using the findings to qualitatively explore participant experiences allowed us to gain richer insights into patterns of participant engagement, enabling our team to further enhance MASI.

EPD027

Rapid or immediate ART, HIV stigma, medical mistrust, and retention in care: an exploratory mixed methods pilot study in New York City

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Background: Rapid or immediate antiretroviral therapy (iART) after HIV diagnosis, which improves linkage to care and shortens time to viral suppression, has become standard of care globally. The United States HIV epidemic is marked by racial, ethnic, gender and sexual minority disparities partly due to HIV stigma and medical mistrust. This mixed methods pilot study examines iART's psychosocial costs/benefits for a diverse, newly diagnosed patient population and explores associations between iART, HIV stigma, medical mistrust and visit adherence (VA).

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Methods: Participants (n=30) were recruited from an HIV clinic in New York City (October 2020 - June 2021). A convergent parallel design combined
1. Quantitative data comprising electronic records, demographic survey, the HIV Stigma Survey (HIVSS) and Medical Mistrust Index (MMI), and
2. Qualitative data from a semi-structured in-depth interview six months post-diagnosis.
We divided the sample into three groups by time to iART initiation based on New York's iART goal (within 3 days of diagnosis).
Survey and chart review data were triangulated/analyzed using descriptive statistics. HIVSS and MMI were scored using Likert scale. For qualitative data, we used a priori and emergent codes, calculated inter-coder agreement (Kappa 0.91), and conducted thematic analysis. We integrated quantitative and qualitative findings.
Results: The 0-3 day group (mean age 34.8, SD 8.7) was mostly English-speaking, Black and gay-identified, with more substance use diagnoses. The 4-30 day group (mean 34.5, SD 9.3) had more mental health diagnoses, and lower CD4 at presentation. The >30 day group (mean 39.4, SD 22.1) was mostly Spanish-speaking, male, and less educated. HIVSS, MMI, VA and themes were integrated (Table 1).

Demographics	Themes	Representative Quotes	Mean HIVSS Score*	Mean Medical Mistrust Index Score**	Visit Adherence
0-3 Days (n=8)					
Mean age (SD) = 34.8 (8.7) 75% Male 63% Gay 50% Black/African American 63% Hispanic	iART as stigma prevention	My cousin and his wife were heroin addicts. They were a beautiful couple…They found out they had HIV, it was the early 80s. Everybody had that stigma. And they didn't live long…I was offered [ART] when I went to speak to my doctor, she sent me straight to the ER. And an HIV specialist told me what was available, I think I took two pills. I felt hopeful. It was promising, to know that I was able to get my viral load under control - Participant 3	96.4	43.38	0.86
4-30 Days (n=17)					
Mean age (SD) = 34.5 (9.3) 76% Male 53% Gay 53% Other Race 59% Hispanic	Alleviation of Internalized Stigma	You know people who got HIV have a really difficult life. Not because of the sickness itself, but around their lives, everything changes. Their career, their future, their relationship with their families. They become, isolated. They don't have a chance to succeed. Maybe that's the image I got when I was young. And, then, when they told me that I was HIV positive, of course, your mind goes to all those memories. I said, okay, I'm gonna take the pill. I'm gonna do whatever it takes in order to be as normal as possible. - Participant 4	92.1	44.06	0.91
30+ Days (n=5)					
Mean age (SD) = 39.4 (22.1) 100% Male 60% Straight 60% Other Race 60% Hispanic	Exacerbation of perceived or anticipated stigma	At the pharmacy, at first, I was ashamed when I had to go to get the medicines. Everybody looks at you when you go to the pharmacy if there are new employees... I thought that in this country it was different because it is such a developed country, but even here they still look at that.Even at my job, that hasn't happened to me. - Participant 24	95.4	44.8	0.85
Total			93.7	44.0	0.89

Table 1.

Conclusions: iART was protective against stigmatizing experiences and alleviated internalized feelings of stigma for those who started iART within 30 days, while it exacerbated anticipated stigma for those who started beyond 30 days. iART universally established trust in providers. iART implementation requires equitable strategies that address HIV-stigma and mistrust.

EPD028
Mobility and HIV transmission across three urban communities in Zambia: using qualitative data to interpret phylogenetics in a mixed methods analysis of HPTN 071 (PopART) data

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Background: Population mobility (permanent resettling, transient and circular movements) between neighbourhoods contributes to HIV transmission. This analysis uses qualitative research describing mobility factors to understand phylogenetics data estimates of HIV transmission patterns within and across three of nine HPTN 071-02 (PopART Phylogenetics) study sites in southern Zambia, selected based on socio-economic linkages between communities located in adjacent districts and with high HIV incidence.
Methods: Qualitative data originated from formative research (2013), study and intervention uptake documentation (2014–2018) and a qualitative cohort of 13 individuals in one community (2017-2018). Data were analysed using thematic and narrative approaches describing factors influencing mobility. Blood samples were collected from HIV-positive individuals at health facilities and in the community between 2016-2018. HIV sequences were identified by whole-genome viral sequencing. Phylogenetic analysis identified likely transmission pairs in which at least one partner was enrolled in one of the three study communities.

Results: Qualitative findings showed that cross-border trading, tourism and labour migration contributed to mobility in all three communities. Two communities are in a tourist area near international borders, promoting cross-border trading and in-migration from tourists and transient groups, including female sex workers and cross-border traders. Labour migration (both temporary and permanent) between two adjacent districts increased in 2012 when the provincial capital was relocated. Temporary migration linked to trading in farm products and seasonal migration linked to fish and charcoal trading was common across the three communities.

HIV sequences were obtained from 1,340 women and 773 men, aged 18-79 (709, 569 and 835 sequences from respective communities). Phylogenetic analysis identified 108 transmission pairs, in which at least one individual in the pair was from one of the three communities. Of these, 87 (80.6%) occurred within the same communities, while 21 (19.4%) occurred between different communities.

Conclusions: Mobility centred on livelihood options may contribute to HIV transmission across these three study communities. HIV prevention efforts with mobile populations are critical to manage HIV-infections locally. Future mixed methods research could have a stronger focus on mobility and socio-economic characteristics of individuals in sexual relationships to provide insights on HIV transmission.

EPD029

Effects of HIV-integrated TB interventions on care continuum outcomes for active TB: a systematic review and meta-analysis

G. Marley[1,2], J. Nie[3], X. Zou[4], J.D. Tucker[1,5,2], D. Wu[5], R. Chou[6], J. Ong[5], W. Tang[1,7,2]

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Background: Programmatic interventions have been extensively applied in enhancing TB care continuumoutcomes (testing, diagnosis, linkage-to-care, treatment completion, cure, and treatment success). This systematic review examined the impact of non-pharmaceutical interventions on care continuum outcomes for active TB among persons living with HIV (PLWH).

Methods: Studies published in English that evaluated TB interventions till April 2021 were retrieved from Pubmed, Embase, CINAHL, and Cochrane Controlled Trials Registry. In a sub-analysis focused on PLHIV and HIV-TB integration, we evaluated the impact of integrated interventions and non-integrated TB interventions on care continuum outcomes compared to standard-of-care. Studies with similar interventions and comparator arms were pooled using random-effects model, and the quality of evidence was assessed using GRADE.

Results were reported as odds ratio with 95% confidence intervals (CI), number of studies (k) and heterogenity (I^2).

The study was registered on PROSPERO (CRD42018103331).

Results: Of 14,922 citations, 149 eligible studies were included. Most studies (123/149) were from low-and middle-income countries, 28 had HIV-TB integration of which 13 were randomized controlled trials (RCTs) and 66 were not integrated.

Among HIV-TB integrated interventions, active case finding was associated with testing (5.92, 95%CI:4.12-8.51;k=2,I^2=93.9%), and diagnosis (1.37, 95%CI:0.77-2.43; k=2,I^2=48.3%); and counseling and education was also associated with testing (10.06, 95%CI=1.69-59.78; k=4,I^2=98.9%), and diagnosis (1.25, 95%CI:1.09-1.44; k=2,I^2=0%).

Among non-integrated interventions, counseling and education was associated with all defined care continuum outcomes. Implementing multiple interventions concurrently and using incentives (financial and non-financial) were each associated with four care continuum outcomes, and digital intervention was associated with TB cure (3.01, 95%CI:0.88–10.29; k=6,I^2=96.7%) and treatment success (3.08, 95%CI:0.82-11.56; k=4,I^2=75.3%).

These findings remained salient when studies were limited to RCTs.

Conclusions: Several non-HIV integrated TB interventions were associated with more TB care continuum outcomes than HIV-integrated interventions. However, most HIV-TB integrated studies solely evaluating and reporting on TB interventions' capacity in improving single TB outcomes among PLWH (like testing) may have accounted for this finding.

Therefore, more research is needed to evaluate HIV-TB integrated intervention effects on other continuum outcomes. Researchers should also consider incorporating more strategies that span the entire care continuum in HIV-TB integrated interventions to facilitate holistic TB care for co-infected PLWH.

EPD030

Development and usability testing of *iTransition:* an mHealth intervention to support patients' movement from pediatric- to adult-oriented HIV care

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Background: In the United States (US),health care transition (HCT) from pediatric to adult-oriented HIV care is associated with disruptions to care retention, medication adherence, and viral suppression for youth living with HIV. However, no evidence-based interventions exist to improve HIV-related HCT outcomes.

Accordingly, the purpose of this project was to develop *iTransition* – a mobile health (mHealth) intervention for youth living with HIV with a corresponding web console for their providers to support HCT outcomes in the US.

Description: *iTransition* development included an iterative process with our Design Team comprised of diverse stakeholders: nine youth living with HIV, eight health care providers/staff representing US-based pediatric and adult-oriented clinical sites in Atlanta, Georgia and Philadelphia, Pennsylvania.

The Design Team met regularly with study investigators and our technology development partner to provide feedback on *iTransition's*content, aesthetics, and functionality.

The resultant *iTransition* intervention included:

1. A youth-facing native mobile phone app with educational tools, medication reminders, and readiness assessments and;
2. A provider/staff-facing web console with educational content, opportunities to track youth progress, and a private chat option.

Lessons learned: We conducted usability testing and an ongoing process evaluation before implementation of *iTransition* in the clinical sites. Usability testing demonstrated that the app was appealing and easy to navigate. Process evaluation data demonstrated high levels of acceptability and perceived need for *iTransition* among youth and clinical providers/staff.

Additionally, frequent reminders (e.g., push notifications of in-app activities and/or direct reminders from staff) are being used to sustain engagement. To date, there has been varying levels of *iTransition* usage among the youth and provider/staff intervention participants.

Conclusions/Next steps: The collaborative design process of *iTransition* resulted in an mHealth tool to support HCT that is relevant to both youth and providers. In the ongoing pilot implementation trial, the historical control group (N=20) has been recruited and enrolled and active recruitment of the intervention group (goal N=50) of transition-eligible youth across the two sites are underway.

The development and pilot implementation trial of *iTransition* fills an important need for interventions to support HCT outcomes for youth living with HIV in the United States.

EPD031

Strategies to recruit and retain a cohort of MSM and transgender women living with HIV: experiences from virtual implementation of a three-wave longitudinal cohort study

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Background: Implementing community-based longitudinal studies can be challenging due to significant participant burden, time requirements, and costs associated with both recruitment and repeated in-person assessments. However, there is a dearth of accessible knowledge about effective strategies for recruiting and retaining people living with HIV into prospective virtual studies, particularly in low resource settings.

Description: We conducted a longitudinal cohort study (assessments at baseline, 3, and 6-months) in 2020-2021–entirely during the ongoing COVID-19 pandemic. Trained Peer-interviewers telephonically screened 727 individuals and enrolled N=367 (227 MSM- and 140 transgender women [TGW] newly diagnosed with HIV). Peers entered telephone survey data directly into a secure web-based database. Community stakeholders and Peer-interviewers provided inputs throughout the study inception and implementation, which resulted in use of several different strategies to support recruitment/retention.

Lessons learned: It was feasible to remotely train Peer-interviewers, and for them to telephonically recruit/retain MSM/TGW participants. Retention was high: 96.5% at 3-months and 92.4% at 6-months. Certain strategiesincludingcoaching and refresher trainings for Peer-interviewers focusing on recruitment/retention, developing customized recruitment and retention strategies with each peer interviewer, and regular engagement of local community organizations and leaders supported recruitment.

Timely incentive remuneration to participants through e-cash/mobile payments, sending regular reminders to participants, scaling-down demands of study requirements (e.g. breakdown the interview duration, flexible scheduling*)* among others proved to be helpful in virtually retaining participants.

Retention approaches were also tailored to participant risk-levels for attrition, which was based on participant concern that their circumstances could interfere with fulfilling study requirements, reluctance to schedule follow-up appointments, concerns about their treatment in the study, canceling appointments frequently without rescheduling, and unresponsiveness to contacts. These helped us anticipate participants' potential risk of dropping out and take appropriate measures to address concerns.

Conclusions/Next steps: We found that participant-centered and mobile-phone based strategies were feasible to implement and supported recruitment and retention of marginalized populations into a longitudinal cohort study, despite the challenges posed by COVID-19. These strategies could be used by agencies conducting community based research to efficiently implement studies. Process used and results from implementing this study will be manualized for dissemination to other organizations.

EPD032

Innovation for improved viral load suppression among children with a virological failure in Uganda: a pair-matched randomized intervention trial

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Background: Whereas the current evidence base provides a portfolio of effective HIV care interventions, a significant proportion of persons with HIV do not consistently receive required services often due to poor engagement in long-term clinical care. For patients who interrupt Antiretroviral-Therapy (ART) or miss essential services, the effects of ART are rapidly reversed, and additional harms can accrue through the emergence of drug resistance mutations, which limits future drug options and increase mortality. This trial examined the effects of innovation on viral-load suppression (VL) involving HIV-service audit-tool to track at the frontline if the client is receiving all eligible services.

Methods: This was a one-year pair-matched randomized trial conducted at ART clinics. We assessed the VL outcomes for the active children in care aged 0-19 years, who had non-suppressed VL at baseline to determine the added effect of using HIV-service audit-tool on HIV-services and VL-outcomes. Our intervention was implemented against the standards of HIV care. Multivariate tests using MANOVA estimated the mean differences in HIV-care variables in the intervention and control arms simultaneously and examined any variability in VL outcome in the control and intervention arms.

Results: There is variability in the control and intervention arms in VL-suppression in the multivariate analysis of variance derived estimate ($p<0.05$). Provision of eligible HIV-services improved significantly in intervention ($p<0.05$) than control arms ($p>0.05$) due to the added effect of the HIV-care audit tool. Significant differences existed between baseline and endline for optimization of ARV regimen, Tuberculosis preventive therapy and screening for Orphans and Vulnerable Children (OVC) services in intervention arm ($p<0.05$).

Results show that that 86% ($\eta 2=0.862$) of the variability in the control and intervention arms across variables in the multivariate analysis of variance derived estimate is due to the use of HIV-service audit-tool.

Conclusions: The results provide a strong rationale to apply innovations to achieve improvements in virologic-suppression and demonstrate the benefits of using the HIV-service audit-tool as an effective strategy for improving service delivery to children. Strategies such as this one, if adopted more widely, will contribute to the larger efforts for sustaining the third 95 and combat child-related mortality and morbidity due to AIDS.

EPD033

Integration of chlamydia/gonorrhea testing with HIV services among female sex workers in China: a cluster randomized controlled trial and cost analysis

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Background: Integration of chlamydia/gonorrhea testing with HIV services is critical for key populations, especially female sex workers (FSWs). However, most HIV services are vertical, siloed programs. One way to facilitate integration is pay-it-forward where an individual receives a gift (free chlamydia/gonorrhea testing) and then asks whether they would like to give a gift to another person. This cluster randomized controlled trial examined the effectiveness and cost of pay-it-forward chlamydia/gonorrhea testing compared to the standard of care among FSWs in China.

Methods: This pragmatic trial examined how a pay-it-forward approach could be integrated into HIV outreach services. FSWs aged 18 or above were invited by an out-

reach team for free HIV testing. The four clusters were randomized into the two study arms in a 1:1 ratio: a pay-it-forward arm (offered gonorrhea/chlamydia testing as gifts); and a standard of care arm (out-of-pocket for testing). The primary outcome was gonorrhea/chlamydia test uptake ascertained by administrative records. The trial was registered(ChiCTR2000037653).

Results: Overall, 480 FSWs recruited from four cities (120/city) were included in the analysis. Most FSWs were ≥30 years old (65.2%, 313/480), married (59.0%, 283/480), and had a middle school or below education level (82.3%, 395/480). The majority of women had an annual income <$9,000 USD (62.7%, 301/480). Three-fifth (290/480) of women had never been tested for HIV. Gonorrhea and chlamydia test uptake in the pay-it-forward and standard of care arms was 82% (197/240) and 4% (10/240), respectively.

The main finding was robust when adjusting for marital status, income, condom use, and HIV testing experience. Among 197 women who received gonorrhea and chlamydia tests in the pay-it-forward arm, 99 (50.3%) donated money for others to test.

The total donation amount was $326, the median donation amount per donor was about $1.54 (IQR:0.77-1.54). The financial cost required to gain an additional person being tested for gonorrhea and chlamydia was 14.60 USD and 75.84 USD to identify an additional positive gonorrhea or chlamydia case.

Conclusions: Pay-it-forward strategy can increase gonorrhea and chlamydia testing among Chinese FSWs and may be a useful tool for scaling up preventive services. Pay-it-forward can enhance the integration of chlamydia/gonorrhea testing within HIV outreach services.

Qualitative and ethnographic methods in HIV research

EPD034

Can a "positive living" framework in HIV care programs perpetuate stigma in tumultuous contexts? Ethnographic lessons from post-conflict Uganda

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Background: HIV care interventions that employ the "positive living" (PL) framework have shown to address stigma as a barrier to testing and treatment adherence. Yet, impacts of this framework in tumultuous contexts remains poorly understood.

This paper fills this gap by exploring the limits of the adaptation of PL for addressing HIV-related stigma in the post-conflict setting of northern Uganda.

Methods: Data are derived from 18 months of ethnographic fieldwork between 2017 and 2019 in the Acholi subregion of northern Uganda. In addition to extensive participant observation within community groups, HIV support meetings, and NGO programs, methods included 67 semi-structured interviews in English and Luo with NGO employees, clinicians, people living with HIV, aid beneficiaries, and community leaders. Analyses were guided by the iterative process of grounded theory.

Results: Research revealed heterogeneous understandings of PL and associated expectations of individual behaviour change across actors involved in these interventions in a post-conflict setting. Clinicians emphasized ARV adherence, disclosure, a marked positive change in attitude, and HIV-related empowerment.

For people living with HIV and others, many of whom were beneficiaries of post-conflict development aid interventions, additional meanings of PL included economic self-sufficiency, productivity, and a disposition towards hard work.

Across findings, living in a post-conflict setting uniquely expanded the meaning of PL to encompass both original notions of HIV self-care and newer notions of self-responsibility/financial independence in a context where achieving such aspirations were difficult. Participants with HIV reported experiencing stigmatization when they failed to meet these expectations, what they described as "failing to live positively".

Conclusions: Findings highlight the changing meaning of PL in post-conflict environments, whereby values associated with post-conflict economic recovery become intertwined with long-standing guidelines for HIV self-care. Ethnographic engagement reveals that PL guidelines are not fixed, instead assuming additional meaning depending on the context in which they exist.

This research calls on policy makers to consider context when building HIV care programs that use individual behaviour change efforts such as PL. It also demonstrates the potential stigmatizing effects of PL in the transitional period between war and peace, characterized by the oversaturation of development aid projects targeting economic and social recovery.

EPD035

Dynamic considerations for acceptability and likely use of an MPT vaginal ring: a grounded theory model

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Background: Multipurpose prevention technologies (MPTs) are being developed to simultaneously protect women from unwanted pregnancy, STIs and HIV. Although intravaginal ring (IVR) MPTs may appeal to some women, data on acceptability and potential are limited.

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Using multiple qualitative methods and grounded theory methodology, we elaborated on existing models of microbicide acceptability and adherence to develop a conceptual model of acceptability and IVR MPT use, which we call The Dynamic Considerations Model (Figure 1).

Methods: Participants included 18-45 year old women in the United States, sampled from 30 subjects enrolled in a Phase 1 trial of an antiretroviral-only (ARV) IVR, worn continuously for 14 days. Women in this sub-study (N=23) participated in in-depth interviews (N=18 at 2 timepoints), focus groups (N=3, 18 women, 13 of whom were interviewed) and individual card sorts (N=17, all were interviewed).

The goal was to explore acceptability and use experiences of an ARV IVR with hypothetical contraceptive properties.

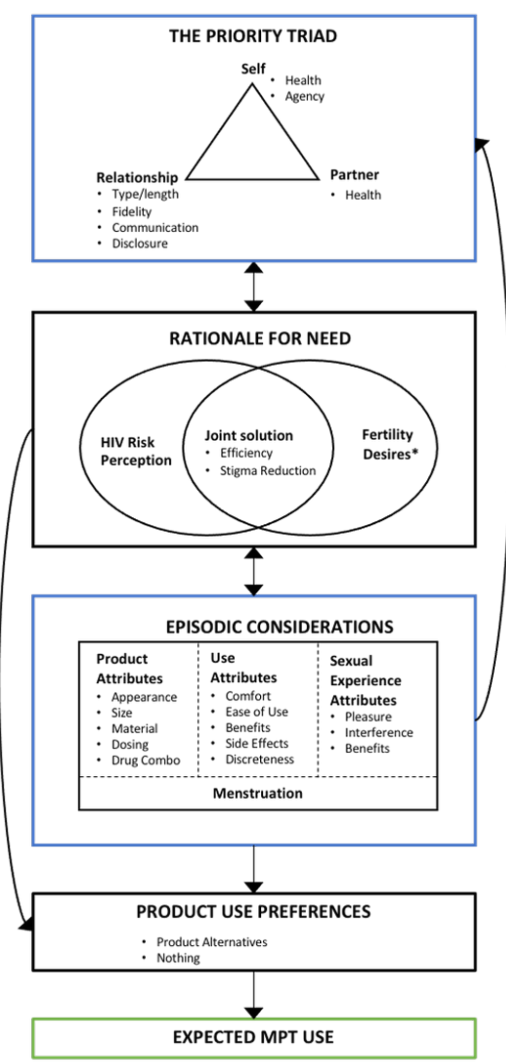

Figure 1. Dynamic considerations for acceptability & expected use of an MPT Ring: A grounded theory model.

Results: Women described multiple acceptability factors impacting likely use, including product and use attributes (e.g., dosing and side effects), effect on sexual experiences and menstruation. These episodic considerations were both dictated and reinforced by an emergent construct, "The Priority Triad", which identified how women prioritized relationship, partner and individual factors.These priorities changed over time and required active rebalancing efforts.

Within this dynamic context, women assessed their rationale for MPT need, based on combinations of HIV risk perception and/or fertility desires, generally identifying an MPT as a contraceptive with "bonus" HIV prevention.

Conclusions: The Dynamic Considerations Model elucidates IVR MPT acceptability and use factors, expanding considerably on the importance of risk perception.These findings underscore the need to develop a suite of sexual and reproductive health products to accommodate women in different contexts with changing needs.

This model provides a preliminary theoretical underpinning to guide future product development, user experience and implementation research efforts.

EPD036

Characterizing the "HIV care and treatment adherence journey" for persons living with HIV in the Philippines: empirical foundation for intervention design

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Background: As one of the world's fastest growing HIV epidemics, the Philippines experienced rapid growth in HIV cases and AIDS-related deaths between 2010 and 2020. Current national reports show suboptimal levels of adherence to care and treatment among Filipinos living with HIV. No culturally informed interventions to promote HIV care and treatment adherence in the Philippines have yet been designed.

Given the cultural context, HIV care and treatment adherence programs for persons living with HIV (PLHIV) in the Philippines must consider the multifaceted "journey" related to the patient's experiences, rather than isolate pill-taking as the sole focus.

Methods: Using a qualitative method, we conducted individual online interviews with PLHIV to characterize patient experiences and develop a culturally informed model of the multiple domains contributing to HIV care and treatment adherence. Maximum variation sampling was implemented to recruit and select 15 participants including PLHIV who were:

1. Filipinos aged at least 18 years,
2. currently on ART for at least six months,
3. able to read and understand Filipino and English,
4. able to complete online audio-recorded interviews, and
5. competent to provide consent, as well as care providers working with PLHIV.

Thematic analysis was used to identify themes and subthemes.

Results: We developed a model of the "HIV Care and Treatment Adherence Journey" characterizing the events, situations, challenges, and achievements that influence care and treatment for PLHIV in the Philippines. The

model describes how PLHIV integrate and manage their care and treatment into their daily lives. Components include care access and delivery, client management, care provider competence, psychological concerns, stigma, support system, and adherence outcomes. Adherence journey changes continuously in line with PLHIV's state of health and their community, healthcare, and support system.

Conclusions: Further evaluation of this model can help support PLHIV who are at risk of disengaging in care and require further types of support. Conceptualizing the dynamic and multifaceted patient journey can impact how PLHIV initiate, engage, and retain in care and treatment compared to models that focus on discrete actions such as pill taking or appointment attendance.

EPD037

Photovoice with key populations and people living with HIV: acceptability and feasibility of online, asynchronous data collection

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Background: Photovoice is a qualitative research method that empowers individuals to represent their communities through photographs and stories. Photovoice is increasing in popularity because it can be leveraged for research, intervention, and advocacy.

Photovoice is typically conducted in person and synchronously: Participants attend a photography workshop and then take photographs. Yet, this format may not be acceptable by stigmatised populations due to confidentiality concerns and/or may not be feasible due to participant locations and the COVID-19 pandemic.

The current study evaluates the acceptability and feasibility of online, asynchronous photovoice, a promising alternative to in person photovoice.

Methods: Thirty-four members of key populations and people living with HIV completed a photovoice study in Malaysia from October-November 2021.

The project was facilitated by a website where participants were introduced to the project, learned photography and visual literacy skills, and uploaded photovoice data. The website was available in Malay and English, and included a series of videos featuring Malaysian clinicians and a photographer.

Participants responded to validated scales and open-ended questions regarding acceptability and feasibility of the project. Data were analyzed using descriptive statistics and rapid qualitative analysis.

Results: Participants rated the acceptability and feasibility of the project very highly [respective scores on 5-point scales: M(SD)=4.65(0.46) and M(SD)=4.56(0.56)]. Ratings of video and website quality were strongly correlated with project acceptability and feasibility ratings.

Participants enjoyed expressing themselves through photography ("I love it because it gives me the opportunity to convey my heart and words through pictures, in a unique way") and anonymously (appreciating "expressing who we are without revealing ourself"). There was a high level of engagement: All participants responded to all photovoice prompts, resulting in 204 unique submissions.

Conclusions: Results suggest that online, asynchronous photovoice is both acceptable and feasible for communities affected by HIV. Conducting photovoice online has the potential to substantially enhance the scale of this unique and powerful form of participatory action research, ultimately better contributing to qualitative research, interventions, and advocacy, particularly in communities where people living with HIV and key populations are highly stigmatised.

EPD038

Developing a virtual reality serious game for prevention-oriented qualitative HIV social research

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Background: A major methodological challenge of prevention-oriented HIV social research lies in addressing the interactive nature of sexual encounters and protection. This research project explores how men having sex with men (MSM) negotiate their protection against HIV with non-steady partners. In the ongoing methodological discussion, the use of digital technologies was proposed in order to increase participants' engagement and overcome the flaws of retrospective self-reports.

We developed a Virtual Reality Serious Game (VR-SG) to immerse participants in situations similar to those they might encounter and explored its use in qualitative in-person interviews.

Description: We conducted problem-centred interviews with five MSM and expert interviews with five sexual health advisors exploring how MSM negotiate HIV protection. Using qualitative content analysis, we identified exemplary courses of negotiations. Drawing on these insights, the VR-SG immersed participants in a dating platform chat and subsequently a date in the virtual partner's (VP) apartment. We designed ten Petri nets for all possible interactions with the VP, leading to nine different plots with 34 authentic dialogues. We filmed using a 360-degree camera mimicking the participants' perspec-

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tive in conversation with the VP (played by an actor) and loaded it onto a custom-built game engine. As the story unfolded, the VP asked a question, and the participant had to chose the most suitable answer from a list of options. The response led to the next scene and ultimately to a pre-determined ending. We conducted a usability experiment with five MSM and pre-released the VR-SG on the Oculus Rift headset used for the research project.

Lessons learned: The Virtual Reality Serious Game took centre stage in the qualitative interviews and led the participants to share their lived experiences more extensively and in-depth. They recalled episodes they had not mentioned before the game, complemented their pre-game narratives and introduced new topics.

Conclusions/Next steps: The use of this Virtual Reality Serious Game was productive and led to the desired engagement and more in-depth insights into participants' interactions. Our reserach supports the use of VR-SG features in exploring interactive processes.

EPD039

HIV oral history – why do it?

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Background: Oral histories of HIV have been carried out in a range of countries, with people living with HIV, their families, politicians, religious leaders and health/social care workers, particularly doctors. From South Africa to the UK, from the Sahel to New York, mainstream and grassroots HIV oral history projects across the globe capture the experiences of those most hidden from history and deepen understanding.

Description: This paper comprehensively reviews the range and depth of recorded oral histories of HIV across the world, mining reports of those who ran projects for ideas to inform future generations about what HIV oral history achieves. It considers parallel oral history work around Ebola and SARS, seeking lessons from these contemporary concerns. It draws on earlier recorded histories of viruses, such as the 1918 Influenza pandemic, to understand oral history's role in HIV, how we can best shape advances in what we know about our HIV past and what we still need to collect.

Lessons learned: Oral history has a radical purpose to disrupt historical narratives and expose hidden voices. It helps to remember individuals experiences, to understand change over time and to clearly locate HIV within a life span. We bear witness to evolving national HIV stories, when government documents showing how policy decisions were made and changed in our recent history remain secret. We can transmit lived experience to younger generations, bring marginal voices to historical attention, increase the diversity of people with HIV who have a voice and use oral history as an inter-generational development tool. Oral history can also increase the resilience of HIV organisations, binding people through collective purpose. Ethical challenges are many and gaps in our HIV oral historical knowledge are shown.

Conclusions/Next steps: Covid-19 has shone new light on how we record and utilise the history of viruses to understand our past, present and future. The longer-term impacts of the recording, archival and analytical oral historical processes around HIV are profound, but also fraught with ethical dilemmas. Urgent additional grass roots HIV oral history projects are needed before those whose memories are longest pass away.

EPD040

Lessons learnt from using asynchronous online focus group discussions to garner Malaysian clinicians' perspectives on a tele mentoring stigma reduction intervention

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Background: Virtually mediated synchronous and asynchronous focus groups are crucial developments in qualitative research methods, both of which have been designed, and implemented as a sustainable and alternative option to mainstream face-to-face (FTF) focus group discussions (FGD). The overall objective of this paper is to document the step-by-step process of conducting asynchronous online FGDs which were conducted to comprehend clinician's perception towards implementation of evidence-based stigma reduction tools via a popular tele-training platform. We specifically

1. Describe the rationale behind selecting an asynchronous online methodology to examine Malaysian clinician's perspectives on a tele-mentoring program

2. Identify the facilitators of virtual focus group method and examine the acceptability

3. Document the lessons learnt from conducting virtual FGDs among Malaysian clinicians practicing in different states of Malaysia.

Description: Our paper draws on a collaborative project by University of Delaware, Newark, US; Yale University, New Haven, CT, and University of Malaya, Kuala Lumpur Malaysia. We conducted 4 asynchronous online FGDs, each lasting for 3 days with 8-10 general practitioners and family medicine clinicians. We used FocusGroupIt; an easy, quick and free software to generate multiple online group discussions moderated by a facilitator. 'Who could give us the best information' – was our guiding principle to enroll clinicians to the digital discussion.

Each of the group discussions consisted of clinicians experienced and knowledgeable on a specific key population group at risk of HIV. Our moderator followed the bulletin board method and posted brief sets of questions every morning and evening.

Lessons learned: Our experience of using FocusGroupIt interface demonstrates its promise as an effective qualitative data collection method, particularly during a pandemic. When the family health physicians and general practitioners were overwhelmed with their clinical responsibilities, asynchronous techniques enabled us to bring-in clinicians from a diversified geographical distance of Malaysia. The remote nature of the FGDs provided respondents a relaxing environment to share, discuss and exchange views on all of the questions posted on the bulletin board.
Conclusions/Next steps: Although in our FGDs, we missed the non-verbal signals, the design of our internet-mediated online data collection technique was acceptable among physicians in Malaysia.

EPD041
Using qualitative feedback from end-users in mhealth application development: differentiated HIV service delivery for anti-retro viral drug refills in Uganda

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Background: Mobile health (mHealth) innovations have potential of accelerating achievement of the UNAIDS 95-95-95 goals**.** Using the WHO strategy of differentiated HIV service delivery models, people living with HIV (PLHIV) and stable on treatment at government health facilities in Kampala are accessing medication refills at community (private) pharmacies. We developed a web-based application (*ARTAccess*) to determine eligibility and facilitate efficient ART delivery without additional staff needs in these pharmacies.
Methods: From October – December 2018, we conducted a qualitative study to document the development process of *ARTAccess*. Using participatory action research and human-centered design theoretical frameworks, we undertook structured and unstructured observations of application development review meetings. Three observers attended each meeting and independently drafted reflective transcript narratives including analyses. Areas explored included: user requirements, impressions, and interaction between developers and end-users.
Results: We conducted observations at 12 development meetings with health facility staff, community pharmacy staff and application developers. The application was iteratively upgraded five times (version 5.0) against the two originally anticipated. Perceived usefulness improved with upgrades.
Three main themes emerged on the interactions between study team and end users.
1. The importance of gaining trust and rapport building; inconsistency in building rapport resulted in some end users' hesitation to participate in the App discussions. End users provided constructive feedback for creating rapport, which led to subsequent improvement in stakeholder interaction.
2. Understanding views of different categories of stakeholders.
3. Live demonstrations of *ARTAccess* highlighted gaps and needs for improvement.
Overall, the end users had mixed reactions to the tool. Most appreciated its importance in saving time, "*....it is an improvement to the refill program", but*few expressed job insecurity fears while others perceived it as additional work .
Conclusions: The study provided evidence that participatory action research in a human-centered design approach can enhance the development process for an mhealth tool. Multiple interactions after each iteration of design are required to improve perception.
Job insecurity fears and perceived workload can create barriers to end user engagement in design; detailed explanation of the application's intended role reduced this concern and led to increased engagement.

Role of social and behavioural science in biomedical responses

EPD042
Factors associated with viral non-suppression among HIV positive children and adolescents enrolled to the orphans and vulnerable program in Uganda

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Background: The orphans and vulnerable children (OVC) program is an intervention supported by the U.S. President's Emergency Plan for AIDS Relief to prevent and mitigate the impact of HIV among children and adolescents C/ALHIV aged 0-19 years. Mildmay Uganda has been implementing the OVC program in Mubende region of rural Uganda since April 2017 to address the social factors that hinder adherence among C/ALHIV. However, the viral load (VL) suppression rate of these C/ALHIV is 85%, which is below the expected 95%. The aim of this assessment was to determine the factors associated with viral non-suppression among C/ALHIV on the OVC program.

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Methods: We conducted a cross sectional review of data for C/ALHIV on the OVC program in the supported districts. We included C/ALHIV with VL results within 6 months. We collected data on VL status, patient ART regimen and demographic characteristics, VL non-suppression was defined as any VL> 1000 copies/ml. We performed logistic regression analysis for association of VL non-suppression. Data analysis was carried out using STATA version 15.0.

Results: Of the 2048 C/ALHIV in the program, 1627 (79%) had a VL result within 6 months. Of these, 877 (53.9%) were female, 1106 (68%) were aged 5 – 14 years and 692 (42.5%) received care from a low-level health facility (HC III). The mean duration on ART was 5.7 years (s.d. 2.9 years, range 0.5 to 18 years) and mean duration in the OVC program was 1.5 years (s.d. 1 year, range 0.2 - 4.5 years).

A total of 248 (15.2%) individuals were virally non-suppressed. Factors associated with VL non suppression included living in Kiboga district (OR (Odds ratio) =1.97; 95% CI (Confidence Interval): 1.22,3.19), receiving care from a lower-level health facility (HC III) (OR=1.65; 95% CI: 1.15,2.36), being male (OR=1.5; 95% CI: 1.12,1.99) and taking ART regimen containing a protease inhibitor (OR= 3.05; 95% CI: 2.15,4.33).

Conclusions: The assessment recommends strengthening of the capacity of lower health facilities-to provide ART to children and adolescents, use of a more effective ART regimen containing dolutegravir and finding innovative interventions to support VL suppression for the male child.

EPD043

Three-year follow-up of PositiveLinks: higher use of mHealth platform associated with sustained viral suppression

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Background: PositiveLinks (PL) is a mHealth platform to support care engagement by people with HIV (PWH). It is offered as usual care at our academic clinic. Among other features, self-monitoring is a key activity on PL. Daily reminders prompt the user to report mood and stress levels as well as medication adherence. Response rate to check-ins on PL has been associated with better suppression of viral load over 6-18 months. We present an analysis of all PL users over three.

Methods: We conducted a retrospective chart review between the time period of July 1, 2017 and June 30, 2021 and collected any available data for a minimum of 6 months and a maximum of 36 months after enrollment date. We collected demographic information and all viral loads obtained in usual patient care. We performed time-to-event survival analysis until first unsuppressed viral load stratified by high PL usage (≥48% check-in completion) and low usage with a Kaplan-Meier curve and multivariate Cox Proportional Hazards Model.

Results: There were 485 participants, predominately male (77.4%). About half (48.7%) were white, and 43.3% were black/African-American with a median FPL (federal poverty level) of 104.0 (IQR 0.0-243.5). A Kaplan-Meier curve showed that high PL use was associated with better viral load suppression (VLS) over time (p<0.0001((aHR) of 0.437 (95% CI 0.290-0.658, p<0.001)) after adjusting for age and FPL. Age (aHR of 0.969 (95% CI 0.953-0.984)) and FPL (aHR of 0.9966 (0.9949-0.9983, p <0.001) were also independently associated with VLS.

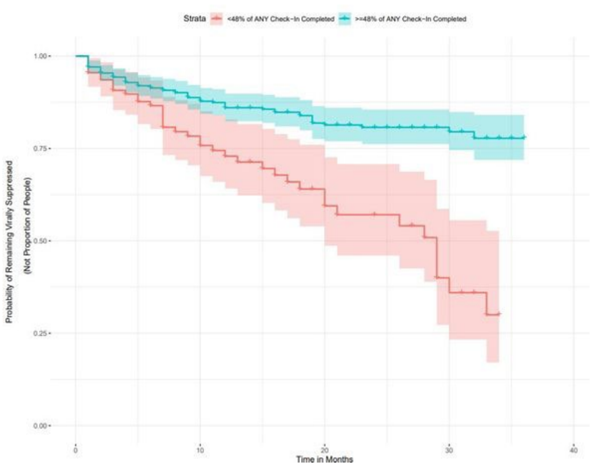

Figure.

Conclusions: High check-in response rate on the PL app, older age, and higher income are associated with sustained viral load suppression over time. mHealth-supported self-monitoring of mood, stress, and medication adherence may be an important tool to promote long-term viral suppression. Lack of response to check-ins may signal an early need for additional support.

Social and behavioural concepts and theories

EPD044

Conceptualising engagement with HIV care for people on treatment: the Indicators of HIV Care for AntiRetroviral Engagement (InCARE) framework

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Background: As the crisis-based approach to HIV care evolves to lifelong chronic disease management, engagement is increasingly critical to achieve long-term treatment success. However, 'engagement' is a complex concept, and ambiguous definitions limit its evaluation. The proposed framework aimed to identify critical, measurable dimensions of engagement with HIV care for people on treatment, from a health service-delivery perspective, to guide evaluation and interventions to improve outcomes.

Methods: We used a pragmatic, iterative approach, combining insights gained from:
1. Researcher experience,
2. Narrative literature review and framework mapping,
3. Expert stakeholder input and
4. Formal scoping review of measures of engagement.

These inputs contributed to refining the inclusion and definition of critical elements of engagement behaviour that could be evaluated by the health system.

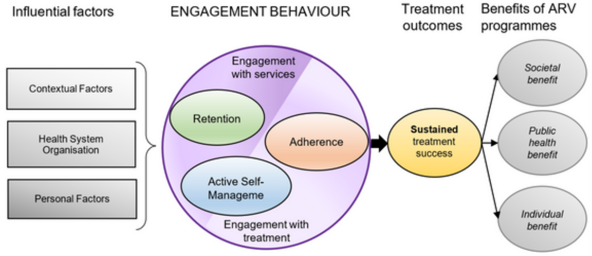

Figure 1. Indicators of HIV care for antiretroviral engagement (InCARE) framework.

Results: The final framework describes 'engagement' (Figure 1) as a dynamic behaviour: people can practice full engagement or not over their treatment journey. It posits that engagement is the product of wider contextual, health system and personal factors. Maintenance of engagement with HIV care is reflected by three measurable dimensions: 'retention' (interaction with services), 'adherence' (pill-taking behaviour), and 'active self-management' (ownership and self-management of care). While retention and adherence may lead to treatment success at a particular time-point, this framework suggests active self-management sustains treatment success, and thus is critical to evaluate to realise the full benefits of antiretroviral treatment programmes.

Conclusions: This framework distils a complex concept into three core, measurable dimensions critical for the maintenance of engagement, and presents them for use in practice. It characterises elements that the system might assess to evaluate engagement more comprehensively at individual and programmatic levels, and suggests that active self-management is an important consideration to support lifelong optimal engagement. This could guide the development of more nuanced interventions that improve long-term treatment success and help maintain momentum in controlling a changing epidemic.

EPD045

Behavioral Economic Incentives to Support HIV Treatment Adherence (BEST): one-year results of a randomized controlled trial in Uganda

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Background: A growing number of people who have been on ART for several years experience treatment fatigue contributing to incomplete treatment adherence, a major cause of HIV disease progression and death.

This study tests whether small incentives based on insights from behavioral economics are effective at improving adherence and increasing the likelihood of viral suppression, and compares two ways of implementing incentives: one linked to daily behaviors (medication adherence) and one linked to clinic indicators (timely clinic visits and viral suppression) as a less costly approach to incentivization.

Methods: We enrolled 329 clients at Mildmay Hospital who had been on ART for at least two years and showed recent signs of adherence problems. Participants were randomized into three groups: participants in the first intervention group (MEMS-linked incentives; n=111) were eligible for prize drawings based on electronically measured adherence; those in the second group (EHR-linked incentives; n=109) were eligible based on timely clinic visits and showing viral suppression after 12 months and after 24 months. The control group (n=109) received the usual standard of care. Small prize drawings occur at every clinic visit (every 2-3 months) and large prize drawings occur once per year. Prizes consist of small in-kind gifts worth roughly $1.50 (small prizes) and $10 (large prizes).

Results: The intervention did not significantly effect adherence on average but improved adherence for participants with baseline adherence of less than the 25th per-

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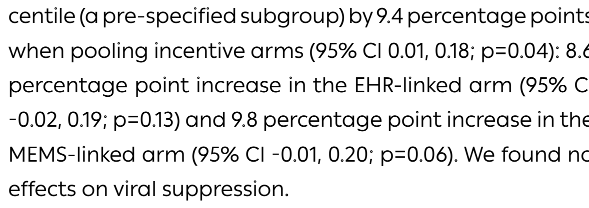
centile (a pre-specified subgroup) by 9.4 percentage points when pooling incentive arms (95% CI 0.01, 0.18; p=0.04): 8.6 percentage point increase in the EHR-linked arm (95% CI -0.02, 0.19; p=0.13) and 9.8 percentage point increase in the MEMS-linked arm (95% CI -0.01, 0.20; p=0.06). We found no effects on viral suppression.

Conclusions: Small in-kind incentives based on insights from behavioral economics improved ART adherence during the first year, but only for clients with adherence problems at baseline. The EHR-based version of this intervention could be scaled-up to clients with adherence problems using existing data sources.



EPD046
Comparison of STI risk perception and condom use: a global MIT survey finds behavioral gaps

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Background: Condom use is low globally (4%-52.4%), while >1 million Sexually Transmitted Infections (STI) are transmitted daily. We hypothesize that there is a behavioral gap between the perceived personal risk of STIs and the actual use of condoms during sex.

Methods: Massachusetts Institute of technology (MIT) and The United Nations Population Fund (UNFPA) distributed a global 31-question electronic survey between July-November 2021 to better understand the barriers to condom use and to test interest, and guide development of a novel condom design. Data was analyzed via cluster analysis and compared to similarly-scoped surveys for consistency.

Results: 560 respondents in 79 countries completed the survey. The median age was 30-39 years; 49.5% men, 47.3% women, 1.3% nonbinary/gender fluid; 75.5% Heterosexual, 5.4% Homosexual/Gay, 8.1% Bisexual; 22.5% Non-Hispanic White, 42% Black/Afro-Caribbean/African American, 11% Asian/Pacific Islander, 10% Latinx, 10.8% other.

73% of respondents indicate STI prevention is a concern. Out of that group, 55% use condoms ≤50% of the time during sex. Conversely, most respondents (62%) indicate they use condoms in ≤50% of sexual encounters, yet 64% cited STI prevention as a concern for themself or their partner(s).

90% of respondents predict they would likely use a condom when having sex with a new partner, yet 48% of respondents who are not monogamous report to use condoms ≤50% of the time during sex.

Of respondents who are not monogomous, who predict they would likely use a condom when having sex with a new partner, and who report that STI prevention is a concern, 39% still use condoms ≤50% of the time during sex. Of this group, one in five report that negotiating condom use feels easy ≤50% of the time.

Conclusions: Despite the majority (73%) of respondent's STI concern, respondents predict they will use condoms with new sexual partners more frequently than practiced in reality. Discordance between perceived risk and behavior persists even for non-monogamous individuals, for whom STI risk may be highest.

These findings suggest that STI risk awareness alone does not motivate condom use, and other important factors such as negotiation prior to sex, impact condom use.

Strengthening social and behavioural data collection and analysis

EPD047
Insights from implementing an innovative data infrastructure to empower integrated care and program planning, community engagement, program evaluation, research and public advocacy

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Background: In Canada, at highest risk for HIV diagnosis/treatment failure are those facing intersecting, systemic barriers to healthcare. As Canada's HIV-speciality hospital, Casey House utilizes a care-model based on the social determinants of health (SDOH) to help clients mitigate these barriers. Challenges to SDOH-based responses include the lack of data related to systemic barriers impacting clients' lives and the perception that data-collection is burdensome.

To overcome these challenges, the hospital's measurement and evaluation (M&E) team collaborated with its interdisciplinary care-team to create the *Multipurpose Resilience Assessment* (MRA).

Description: Utilizing the principles of *Transformative*, *Empowerment*and *Actionable* evaluation approaches, the MRA is an integrated client engagement guide, data-collection tool and data-infrastructure. As co-owners of the MRA, the care-team conducts SDOH-informed care-conversations at multiple points in time, capturing these conversations as data.

By integrating data-collection into care-conversations, the burdens of collecting data using conventional patient questionnaires is mitigated. Insights from the data are made available across interdisciplinary teams in almost real time using dashboards, making it available for multiple purposes, including care-planning, programming,

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engagement, and, to evaluate improvements/deteriorations in clients' health *within* each and holistically *across*SDOHs, between any given points in time.

Lessons learned: In under a year, the tool has influenced change—the hospital's health-equity data completion rate improved from 19% to 92%, and there are comprehensive SDOH baselines for 80% of clients. Given the tool's health-equity focus, it is improving the care-team's ability to effectively work with an increasingly diverse roster of clients presenting complex health needs during a global pandemic. At the aggregate level, the use of the dashboard is improving the ability to offer relevant, needs-driven programming, to target engagement with at-risk communities and to identify emerging trends in the data for further evaluation.

Conclusions/Next steps: Despite the myth that data-collection is burdensome, the MRA demonstrates the value of interdisciplinary, data-driven decision-making for addressing the needs of people facing systemic barriers to care and are at higher risk of HIV diagnosis/treatment failure. Validating the tool for broader utilization and exploring its use to inform research and advocacy priorities are imminent next steps.

EPD048

Responding to high prevalence of sexualised drug use among MSM in East and South East Asia requires consistency in construct definition and measurement: results from systematic review and meta-analysis

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Background: Concerns regarding sexualised drug use (SDU) among men who have sex with men (MSM) in Asia have emerged in the context of ongoing high rates of HIV diagnoses, emphasising a need for targeted interventions to addresses the intersection of drug use and sex. In light of the distinctive nature of SDU in Asia, we conducted a systematic review of studies measuring the regional prevalence and patterns of SDU to assist programme resourcing, advocacy, and planning and identify priorities for further research.

Methods: We conducted a systematic review, searching six databases for publications that measured SDU among MSM in East and South Asian countries (E-SEAC), published from 1990 to 2020. Narrative synthesis and random pooled effects estimated SDU prevalence and its association with condomless sex (CS) and HIV status among MSM. Subgroup meta-analyses, sensitivity analysis, and publication bias examined potential sources of heterogeneity in pooled SDU prevalence estimates.

Results: Thirty-seven out of 2680 publications retrieved met the selection criteria and fourteen studies were able to be included in meta-analyses. The pooled prevalence of recent SDU was 14% (95%CI= 10%-17%;I^2=97.6), but was higher in studies that asked participants about specific drug types (17%, 95%CI= 14%-20%, p=.05). SDU was associated with greater odds of CS (pooled odds ratio (OR)= 3.21; 95%CI= 1.82–5.66) and positive HIV status (OR= 4.73; 95%CI= 2.27–8.21). SDU definitions and drug types used in E-SEAC differed from other regions (e.g., European Chemsex discourse), and our findings highlight a need to greater consistency in SDU construct definition and measurement within the region.

Conclusions: Studies inE-SEAC show high rates of SDU among MSM and narrative synthesis and meta-analyses indicate an association between SDU and sexual risk. While distinct drug markets and patterns of use demand a bespoke approach to measuring SDU inE-SEAC, the ability to develop a coherent body of evidence on SDU to inform programmes is hampered by definitional and methodological inconsistencies.

EPD049

Digital chat-based focus groups discussions among Chinese MSM: lessons learned and implications for qualitative research

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Background: COVID-19 has made offline engagement activities challenging in HIV/STI research and have forced many focus groups discussions (FGDs) online. However, few studies have explored the acceptability and feasibility of digital chat-based platforms as a means of engaging Chinese MSM for research, and the implications of such technology for data generation.

Description: We organized six digital chat-based (n=48) FGDs with Chinese MSM from November to December 2021. Each FGD included asynchronous text chat through an instant messaging application known as WeChat. Participants could provide anonymous comments through instant messaging in a facilitated group chat on topics that changed daily across four days.

We generated field notes and sought feedback on participants' experience of the digital FGDs through an exit survey. Data were analyzed through content analysis and descriptive statistics.

Lessons learned: A total of 46 participants completed the survey, of whom 33 (71.7%) used their mobile phones (71.7%) to participate, 3 (6.5%) used desktop, and 10 (21.7%) used both. A total of 26 (61.9%) participants had never participated in in-person LGBTQ+ activities before. On a five-point Likert scale, 36 (78.3%) and 6 (13.0%) rated their experience as 'very good' and 'good', respectively, while

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42 (91.3%) felt that the instant messaging application was a 'very suitable' platform for the focus group. When asked about positive aspects, participants described chat-based FGDs as being convenient, was less socially awkward, and allowed them to speak more freely due to greater anonymity compared to in-person qualitative research.

On the other hand, negative aspects included a lack of in-depth exploration for certain topics and a lack of perceived enthusiasm due to the online nature of discussions compared to in-person methods.

While the totally anonymous nature of the discussion allowed for unfettered sharing of viewpoints, this may have also led to lower barriers in sharing differing opinions that resulted in interpersonal tension in several situations, which were resolved swiftly by facilitators.

Conclusions/Next steps: The anonymous nature of these FGDs could be especially useful for obtaining opinions among online key populations who may be unable to, or hesitant to join in-person studies. Digital FGDs may be especially useful for designing digital interventions.

EPD050

Male partners' influence on adolescent girls and young women's use of combination HIV prevention: insights from analysis of HIV-prevention cascade data collected in a general-population survey in Manicaland, Zimbabwe

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Background: Adolescent girls and young women (AGYW) are a priority population for HIV prevention. Their capacity to effectively use prevention methods is influenced by their male partners' attitudes towards prevention.

We used a novel HIV prevention cascade (HPC) approach to investigate the contributions of male attitudes to gaps in AGYWs' prevention utilisation.

Methods: Data from a general-population survey (2018-19; N=9803) in Manicaland, Zimbabwe were used to measure sexual risk-behaviours and construct HPCs for male condom, PrEP, VMMC (men only) and combination prevention use among HIV-negative sexually-active AGYW (15-24-years) and potential male partners (15-29-years). Logistic regression was used to estimate odds ratios (OR) for male partners' lack of support as a barrier to AGYW's prevention method use. HPCs for potential male partners were analysed to understand factors contributing to men's motivation to use combination prevention.

Results: 51.7% (95%CI:46.0%-57.4%) of AGYW and 42.5% (37.0%-48.2%) of potential male partners who had started sex reported any partner in the last 12 months; 13.7% (11.8%-15.8%) and 32.0% (29.1%-34.9%) reported at least one non-regular partner, respectively. Lack of capacity to use prevention methods—due to partner resistance, low self-efficacy and/or limited negotiation skills—was a large gap in the HPC for AGYW (Figure 1A).

Perceived male partner resistance was associated with reduced odds of PrEP (OR=0.06, 95%CI: 0.03-0.11) and male condom use for women in regular partnerships (OR=0.55, 0.35-0.87). 35.2% (95%CI: 27.3%-44.0%) of male partners (Figure 1B) reported lack of motivation, with perceived consequences (including reduced sexual pleasure), and lack of risk perception being common barriers to motivation for male condoms, VMMC and PrEP.

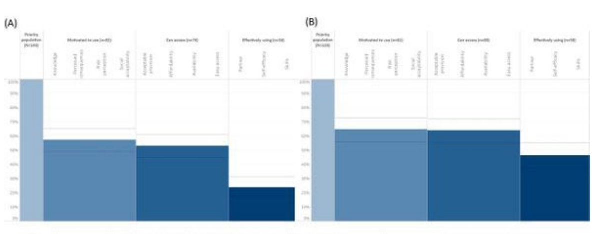

Figure 1 - HIV prevention cascade for use of at least one of VMMC, PrEP or male condoms in HIV negative (A) women aged 15-24 years and (B) men aged 15-29 years, reporting at least one sexual partner in the last 12 months. Barriers to each cascade step were assessed in cascades for individual prevention method use.

Figures 1A and 1B.

Conclusions: Even if AGYW are motivated and have access to prevention, barriers in their capacity to use methods remain including resistance from their male partners. The HPC framework indicates targets for interventions in male partners including increasing motivation to use prevention methods.

EPD051

HIV stigma among people living with HIV in Uganda: a psychometric evaluation and a framework test of the HIV Stigma Mechanism Scale

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Background: Despite the local efforts to fight HIV, it is estimated that 1.4 million people were living with HIV (PLHIV) in Uganda (2021). HIV stigma is a critical barrier to HIV prevention and care. The HIV Stigma framework describes the HIV stigma association with health outcomes and proposes a scale to measure HIV stigma among PLHIV.

This study aims to evaluate the psychometric properties of the HIV Stigma Mechanism Measure (HIV-SMM) in central Uganda and test the proposed framework.

Methods: The PATH (Providing Access To HIV Care)/Ekkubo Study, a cluster-randomized controlled trial designed to enhance the linkage to HIV care, enrolled participants from November/2015 to July/2021. PATH interviewed 804 Ugandan PLHIV, asking about demographics, health, and stigma due to their HIV status. The analyses of the psychometric properties of the HIV-SMM assessed:

i. Face and content validity,

ii. Reliability,

iii. Construct validity (factor analysis, item response theory), and

iv. Convergent validity (CES-D10).

Multiple regressions tested the HIV Stigma framework considering a set of health outcomes covering the affective, behavioral, and physical consequences of HIV.

Results: Our findings pointed to a more specific stigma structure than the original model, where the Anticipated and Enacted Stigma should decouple into two sub-constructs each: Family and Healthcare workers.

All sub-scales suggested by the 5-factor model have correlations ranging from 0.19-0.47 (p-value<0.01), reinforcing their independent nature. The reliability of the (new) 5-factor model of HIV stigma amongst PLHIV was high (Cronbach's Alpha=0.92-0.98).

The correlations of each HIV stigma mechanism and depressive symptoms (CES-D-10) supported the convergent validity (r=0.12-0.42). The expected relationship between HIV stigma mechanisms and health outcomes was particularly strong for the Internalized stigma. Anticipated and Enacted-Family mechanisms showed a partial agreement with the hypothesized health outcomes. Anticipated and Enacted-Healthcare Workers showed no significant association with health outcomes.

Conclusions: The HIV-SMM efficiently measured HIV stigma amongst PLHIV in Uganda. The face, content, and convergent validity, as well as the reliability, indicated a proper measurement of HIV stigma. The hypothesized associations between HIV-SMM and health outcomes were similar to the seminal study (based in the USA). Challenges to testing the HIV Stigma framework suggest the need for longitudinal data.

Gay men and other men who have sex with men

EPD052

Geographic disparities in availability of Spanish-language PrEP services among Latino sexual minority men in South Florida

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Background: Despite pre-exposure prophylaxis (PrEP) being available in the US for 10 years, Latino sexual minority men (LSMM) continue to experience barriers in accessing PrEP, such as lack of proximate and accessible, culturally-sensitive navigation services. Little is known about disparities in the availability of PrEP navigation services in Spanish-language in the US HIV epicenter of South Florida's Miami-Dade County, where 83% of new HIV diagnoses among Latinos are among foreign-born Latinos.

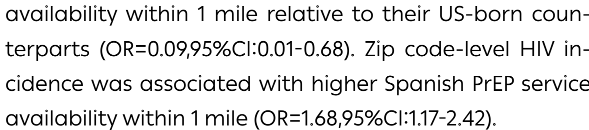
This study examined the relationship between LSMM's immigration and zip code-related characteristics and the availability of Spanish-language PrEP navigation services.

Methods: From October 2018–August 2019, our community partner, an LSMM-centric HIV prevention organization, recruited 11 sociocentric networks of 13 LSMM, ages 20-39 years and clinically indicated for PrEP, in South Florida using respondent-driven sampling (n=143).

Participants completed an interviewer-administered survey focused on demographic/address and immigration-related characteristics. PrEP services were identified using the CDC PrEP Provider Directory and stored in a geographic information system (GIS). We used bivariate analyses to assess the associations between demographic characteristics and immigration and discrimination stress using bivariate analyses.

Hierarchical logistic modeling was used to examine associations of individual-level characteristics nested within zip codes, and the availability of PrEP navigation services in Spanish within 1, 2, and 5 miles from participants' home addresses. GIS was used to create maps of PrEP service availability.

Results: A total of 130 participants were grouped into 60 zip codes (ICC=0.969). Of participants, 51% reported birth in the US and 49% in Latin America. Immigration and discrimination stress were significantly higher among LSMM born in Latin America. Latin American-born LSMM were 91% less likely to have Spanish PrEP navigation service



availability within 1 mile relative to their US-born counterparts (OR=0.09,95%CI:0.01-0.68). Zip code-level HIV incidence was associated with higher Spanish PrEP service availability within 1 mile (OR=1.68,95%CI:1.17-2.42).

Conclusions: Spanish-language PrEP navigation services were in high HIV incidence zip codes where LSMM reside, signifying a geographically matched service need, particularly along Miami-Dade's eastern seaboard municipalities.

However, LSMM may experience barriers preventing access, possibly related to immigration and discrimination stress. Opportunities to increase access to culturally-sensitive PrEP navigation services are discussed.

EPD053

Factors associated with PrEP use among men who have sex with men in Guangdong, China: results from a PrEP demonstration project

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Background: Men who have sex with men (MSM) in China are disproportionately affected by HIV, with prevalence rising from 1.5% in 2005 to 7.0% in 2018. Pre-exposure prophylaxis (PrEP) is highly effective for HIV prevention, but the number of PrEP users in China remains extremely low.

This study summarizes baseline characteristics of an ongoing PrEP demonstration project in China and examines factors associated with previous PrEP use.

Methods: Since September 24, 2021, people 18 years or older who meet the US CDC guidelines for PrEP eligibility and are HBV negative may access PrEP for free at a local infectious disease hospital in Guangzhou, China. Before counseling and prescription, interested participants fill out an online baseline survey that collects data including socio-demographics, sexual behaviors, PrEP and PEP experiences, and PrEP stigma (characterized by individual attitudes toward using PrEP and perceived social network evaluation of PrEP).

Multivariable logistic regression adjusting for age, income, PEP use, substance use and PrEP stigma is used to identify factors associated with previous PrEP use. Odds ratio is reported with 95% confidence intervals.

Results: As of January 23, 2022, 197 participants were screened, among whom 194 completed the baseline survey (age mean=28, SD=7). Among the 194 participants, all are assigned male at birth, 185 (95.4%) self-identify as cismen, 143 (73.7%) self-identify as gay, 130 (67.0%) have an annual income higher than 9445USD, 57 (29.4%) ever used PEP, and 67 (34.5%) used PrEP. In the multivariable model adjusted for age, income, PEP use, substance use, and PrEP stigma, being older (aOR 1.07, 95%CI 1.01-1.14) and PEP use (aOR 4.62, 95%CI 2.27-9.73) are associated with higher likelihoods of ever using PrEP. Not using any illicit substance (aOR 0.47, 95%CI 0.24-0.92) and higher level of PrEP stigma (aOR 0.90, 95%CI 0.82-0.98) are associated with lower likelihoods of ever using PrEP.

Conclusions: PrEP uptake is associated with older age, PEP use, not using any illicit substances, and a lower level of PrEP stigma among this sample of MSM in southern China. Targeted approaches to younger MSM as well as those who use illicit substances will be critical to PrEP scale-up in China.

EPD054

Adaptation of a theory-based clinic-affiliated smartphone app to improve HIV testing and pre-exposure prophylaxis uptake among gay, bisexual, and other men who have sex with men in Malaysia

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Background: HIV disproportionately affects gay, bisexual, and other men who have sex with men (GBMSM). Recent estimates report a high incidence and prevalence of HIV among Malaysian GBMSM. Both homosexuality and substance use are criminalized in Malaysia, making GBMSM bear multilevels of social stigma and discrimination, including in healthcare. mHealth, particularly smartphone applications, are a promising and cost-effective strategy to reach stigmatized and hard-to-reach populations, like GBMSM, and link them to HIV prevention services (e.g., HIV testing, pre-exposure prophylaxis; PrEP). Therefore, this study aimed to adapt the HealthMindr app, developed with GBMSM in the United States to improve HIV testing and PrEP uptake for GBMSM in Malaysia.

Methods: We conducted online focus group discussions (FGDs) between August and September 2021 with 23 GBMSM and 16 community stakeholders (e.g., doctors, nurses, pharmacists, NGO staff). Using in-depth semi-structured interviews, participants were asked questions to assess their preferences for functions and features in mHealth apps among GBMSM, and how to best adapt the HealthMindr app to the Malaysian context. Each session was digitally recorded and transcribed. Transcripts were inductively coded using Dedoose software and analyzed to identify and interpret emerging themes.

Results: Overall, the interviews with GBMSM stated preferences for interfacing with apps to access HIV testing, PrEP, and counseling services. Clinical stakeholders showed strong interest in using the app-based platform to deliver integrated care (e.g., HIV, mental health).
Key themes mostly focused on adaptation and refinement for the Malaysian context and were related to cultural and stylistic preferences (e.g., design, user interface), engagement strategies (e.g., reward systems, marketing campaigns, reminders), recommendation for new functions (e.g., enhanced communication options via chat, discussion forum), a one-stop-hub for all HIV prevention needs (e.g., HIV self-testing, PrEP, post-exposure prophylaxis), and minimizing privacy and confidentiality risks.
Conclusions: Our data suggest that a tailored HIV-prevention app would be acceptable for GBMSM in Malaysia. The findings further provided detailed recommendations for successful adaptation and refinement of the existing platform for optimal use in the Malaysian context.

EPD055

Temporal changes in attitudes towards adopting new biomedical HIV-prevention strategies: an attitude network analysis

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Background: The uptake of biomedical HIV-prevention strategies (BmPS) is slowly increasing among men having sex with men (MSM). Using a temporal attitude network analysis, we investigated which beliefs are related to uptake of pre-exposure prophylaxis (PrEP) and viral load sorting (VLS; i.e. Treatment as Prevention).
We examined this at different time points to investigate the temporal dynamics of the network of interrelated variables.
Methods: HIV-negative MSM reporting anal sex during the previous six months were drawn from four six-monthly data waves of the Amsterdam Cohort Study during 2017 to 2019. We estimated weighted, undirected networks for each time point, where we included pairwise interactions of PrEP and VLS uptake and related beliefs.
Results: From T1 to T4, PrEP use significantly increased from 10% to 31% (p<0.001), while VLS uptake remained stable over time and was reported by 7-10%. At each time point, the uptake of both BmPS was directly related to the perceived impact of the strategy on one's quality of sex life and perceived supportive social norms (Figure 1).
The overall network structure changed over time, specifically regarding PrEP uptake. At earlier time-points, perceptions of efficacy and affordability were closely related to PrEP uptake, while at later time-points recently social (e.g. gay friends using PrEP) and health-related (e.g. less expected side-effects) concerns were more important.

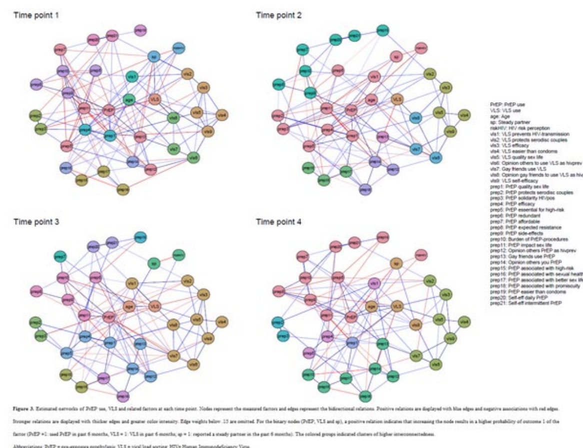

Figure 1.

Conclusions: Our findings suggest that emphasizing the perceived positive impact on one's quality of sex life, and not only increased perceived safety, may improve BmPS uptake. Addressing specific health-related considerations and supportive social norms can also improve PrEP uptake at later stages of implementation.

EPD056

Predictors of drug type and sexualized use in men who have sex with men (MSM) and transgender people in France

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Background: The use of psychoactive drugs in a sexual context, also known as *chemsex*, has gained mediatic attention in recent months, especially in France where quantitative data is lacking. What types of drugs are involved and whether the phenomenon is truly increasing in popularity depends largely on the country studied.
We sought to investigate predictors of a sexualized use of uncommon drugs by comparing three groups, in a sample of men who have sex with men (MSM) and trans people.
Methods: Data was collected through an online questionnaire completed by 10,853 French participants (Net Gay Barometer, 2018). Amongst 3,563 drug users (32.8%), 1,796 (50.4%) were users of common drugs (cannabis, poppers, or Viagra) exclusively [Group 1]. The remainder of drug users, thus having used at least one uncommon drug (cocaine, amphetamines, MDMA, methamphetamines, cathinones, GHB, opioids, etc.) in the past year, were separated in two groups: those that used drugs in a sexual context at least once (N=880) [Group 3] and those that did not (N=887) [Group 2]. Group 1 was the reference group in univariate and multivariate logistic regressions.

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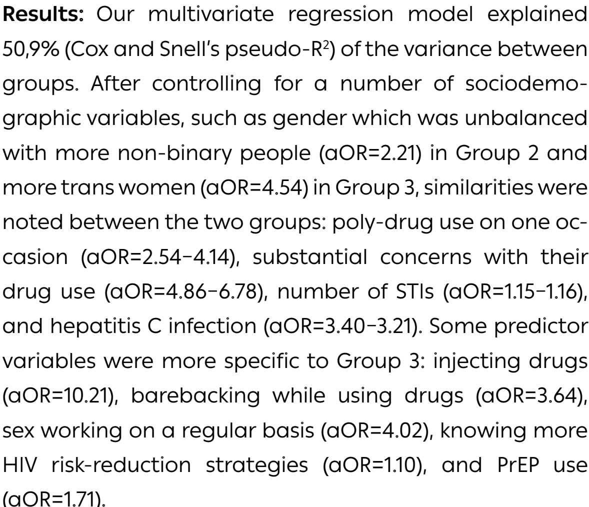

Results: Our multivariate regression model explained 50,9% (Cox and Snell's pseudo-R^2) of the variance between groups. After controlling for a number of sociodemographic variables, such as gender which was unbalanced with more non-binary people (aOR=2.21) in Group 2 and more trans women (aOR=4.54) in Group 3, similarities were noted between the two groups: poly-drug use on one occasion (aOR=2.54-4.14), substantial concerns with their drug use (aOR=4.86-6.78), number of STIs (aOR=1.15-1.16), and hepatitis C infection (aOR=3.40-3.21). Some predictor variables were more specific to Group 3: injecting drugs (aOR=10.21), barebacking while using drugs (aOR=3.64), sex working on a regular basis (aOR=4.02), knowing more HIV risk-reduction strategies (aOR=1.10), and PrEP use (aOR=1.71).

Conclusions: While there is a gradient of risk-taking behaviors between users of less common drugs, those who use them in a sexual context tend to be more aware and concerned by those same behaviors. This in turn can lead to safer-sex practices, which must be promoted amongst other drug users that also engage in risk-taking behaviors nonetheless.

EPD057

Risk assessment tool enables targeted testing for sustained HIV case finding among men who have sex with men in Lesotho

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Background: As HIV programs mature, implementers increase their efforts to find undiagnosed individuals living with HIV. A recent shift from universal to targeted testing challenges implementers to improve risk identification and segmentation in programs for men who have sex with men (MSM) and increase the use of data to differentiate and prioritize individuals for HIV testing and other prevention services.

Description: The USAID/PEPFAR-supported EpiC Lesotho project developed a risk assessment screening tool (RAST) to identify risks using several variables: time since last HIV test, incorrect condom use/ condom unavailable during sex, insertive/receptive sex with incorrect condom use, pre-exposure prophylaxis use, sexually transmitted infection symptoms, medical circumcision status, and intergenerational sex.

For each variable, response values were set for high, medium, or low risk. High, medium, and low values were totaled to determine an individual's risk category and testing priority. The RAST was piloted in three districts from February to March 2020 to validate the segmented risk. The RAST was then rolled out for routine programmatic use in April 2020 to further assess the validity of risk segmentation among MSM. We present results of the first 10 months of RAST implementation (April 2020-January 2021).

Lessons learned: The RAST was used to screen and categorize for HIV risk 2,780 MSM eligible for testing, with 52% (1,434) categorized as high risk, 42% (1,165) as medium, and 6% (181) as low. The HIV case-finding rate was 5.2% (75/1,434) in the high-risk category, 0.4% (5/1,165) in the medium, and 1.7% (3/181) in the low ($p<0.001$). The odds of testing positive were 3.3 times higher among MSM segmented as high risk than in the low-risk category ($p=0.045$).

Conclusions/Next steps: Using the RAST enhances the client-centered approach and allows programs to successfully segment and intensify targeted HIV testing for those at elevated risk of exposure, facilitating more efficient use of peer outreach workers' time and efforts. Lesotho will intensify work to reach and prioritize high-risk MSM for testing, allow medium- and low-risk individuals to opt out of testing, and institute a yearly HIV testing screening algorithm to test every man who has sex with men.

EPD058

Enhanced linkage to voluntary medical male circumcision: an essential prevention tool in programs serving men who have sex with men

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Background: Programs serving men who have sex with men (MSM) present an opportunity to reach men at risk of HIV infection with prevention services such as pre-exposure prophylaxis (PrEP) and voluntary medical male circumcision (VMMC). The goal of the Lesotho VMMC program funded by USAID is to reach 80% coverage among 10- to 29-year-old males by 2021, but there are no data to show representation of MSM in accessing VMMC services. There are likely missed opportunities for circumcision among MSM. However, in Lesotho specifically, MSM who also have sex with women represent a very high proportion of the cohort.

Description: We analyzed routine program data from the risk assessment of MSM as part of service provision from April 2020 to January 2021 to determine the proportion of MSM circumcised. Data were cleaned, and circumcision was analyzed as a factor associated with HIV diagnosis among MSM. The analysis adjusted for age, other sexually transmitted infection (STI) symptoms, number of sexual partners, and identity of partners.

Lessons learned: Records from 2,780 MSM were analyzed. Of these individuals, 2,480 (89.2%) were circumcised, 119 (4.3%) reported not being circumcised, and 181 (6.5%) did

not respond. Of the men tested for HIV, 78% (2,181) reported having sex with women. The HIV case-finding rate was 10% (10/101) among MSM who have sex with women and are not circumcised and 3% (63/1,967) among MSM who have sex with women and were reported to be circumcised (p<0.001). MSM who had sex with men only had lower HIV positivity rates, and the result did not differ by circumcision status.

Conclusions/Next steps: The MSM program is strengthening linkages with VMMC providers, referring men identified as not circumcised, and following up on the referral outcome and documentation. Information is needed about why uncircumcised MSM who also have sex with women had not accessed VMMC services, and whether there was perceived stigma in accessing VMMC services.

EPD059
Community perspectives on strategies to support equitable HIV care in the Southern United States

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Background: Despite national and local efforts, inequities in HIV outcomes persist in key populations, particularly among Black men who have sex with men (MSM) in the South. In partnership with THRIVE Support Services (THRIVE SS), we gathered insights from the community to inform patient-centered strategies for improving HIV prevention and treatment.

Methods: In May 2021, web-based surveys were administered by THRIVE SS to people in their network. The survey evaluated the experiences/perspectives of community members regarding strategies for improving sexual health counseling and access/adherence to HIV care.

Results: Surveys were completed by 110 participants, the majority of whom were cisgender male (76%); gay/lesbian/bisexual/pansexual/sexually fluid (73%); Black (73%); residing in Southern US states (81%), and living with HIV (55%) (Table 1).

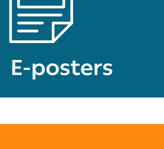
Top identified barriers to HIV care included stigma, concerns about privacy or side effects, and socioeconomic challenges. To improve sexual health dialogue with healthcare teams, participants endorsed the importance of sex-positive, gender-affirming, LGBTQ-friendly clinics (60%) and initiation of sexual health conversations by the clinician (44%).

To support initiation and adherence to HIV medications, including PrEP, participants indicated that clinician knowledge about PrEP (50%), not being judged by clinic staff (33%), and home delivery of medications (23%) were helpful. Home delivery was particularly favored by participants who identified as Black, gay/lesbian/bisexual/pansexual/sexually fluid, living with HIV, resided in the Southern US, or were uninsured. Favored strategies to improve access to and retention in HIV-related services included integrating HIV with other care services (59%), peer navigation (44%), and assistance with health insurance (43%). Care integration was more strongly favored by participants who identified as Black, gay/lesbian/bisexual/pansexual/sexually fluid, living with HIV, or residing in the Southern US.

Average age	Average: 38 years; median: 35 years; range: 24-74 years
Gender	
•Cisgender male	76%
•Cisgender female	14%
•Gender-nonconforming	5%
•Gender-fluid	2%
•Transgender (female-to-male)	1%
•Transgender (male-to-female)	1%
•Nonbinary	1%
Sexual orientation	
•Gay or lesbian	59%
•Heterosexual/straight	27%
•Bisexual	6%
•Sexually fluid	5%
•Pansexual	3%
Race/ethnicity	
•Black	73%
•White	26%
•Latinx	3%
•Asian/Pacific Islander	3%
•Native American/Alaska Native	3%
Region	
•Northeast	NY (3%); NJ (1%); MA (1%); PA (1%)
•Midwest	IL (4%); MI (2%)
•West	CA (5%); CO (1%); OR (1%)
•South	GA (61%); FL (5%); TX (5%); LA (4%); MS (2%); VA (2%); DC (1%); MD (1%)
HIV status	
•Living with HIV	55%
•Not living with HIV	40%
•Do not know	2%
•Prefer not to answer	3%
Health insurance status	
•Medicaid, Medicare, or Affordable Care Plan	44%
•Commercial or private plan	36%
•No insurance	17%
•On parents' insurance plan	2%
•Not sure	1%

Table 1. Survey participant characteristics

Conclusions: These real-world findings were shared with providers nationwide through an educational webinar and webcast, and can be used to inform future initiatives customized to the unique needs/perspectives of key communities to reduce inequities in HIV outcomes.



EPD060

Factors associated with HIV transmission risk from men who have sex with men to women in West Africa (CohMSM ANRS 12324-Expertise France)

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Background: The HIV epidemic in West Africa is highly prevalent in men who have sex with men (MSM). Accordingly, MSM who also have sex with women (MSMW), that is frequent in this region, are a potential bridge subpopulation for HIV transmission to women. We aimed to evaluate the proportions and characteristics of MSMW at 'high behavioral risk of acquiring HIV from male partner(s) and transmitting it to female partner(s)' (HBRMF).

Methods: The community-based prospective cohort study CohMSM included 630 HIV-negative MSM in Burkina Faso, Cote d'Ivoire, Mali, and Togo. Among MSMW (*ie.*≥1 female partner), HBRMF was defined using trajectory models based on seven at-risk sexual practices with male and with female partners, involving inconsistent condom use, multiple partnerships and receptive same-sex anal sex. To assess the relevance of trajectory models, we compared the proportion of HIV-seroconverted participants according to HBRMF. Factors associated with HBRMF were identified using a generalized estimation equation logistic regression model accounting for longitudinal data.

Results: 45% of the 304 MSMW (22% of all CohMSM participants) were at HBRMF. This group accounted for 72% of the 28 HIV-seroconversions observed during the follow-up (p=0.001). HBRMF was positively associated with being aged 18-24 years (adjusted odds-ratio [95% confidence interval] 1.67[1.23-2.27], compared to ≥25 years), being sexually attracted to men only (1.94[1.38-2.75]), feelings of loneliness (1.92 [1.39-2.67]), experience of homonegative violence (1.22[1.05-1.41] per unit score). HRMW was negatively associated with having had both steady and occasional female partners (0.34[0.19-0.57], compared to a steady female partner only), and tended to be associated (0.05<p<0.1) with ≥4 sexual intercourses with female partner(s) in the previous four weeks (0.55[0.28-1.07], compared to 0-3 intercourses).

Conclusions: Establishing official relationships with women might be a strategy for young and/or stigmatized MSMW to comply with social pressure to display a heterosexual lifestyle; this increases at-risk sexual behaviors with both male and female partners.
Although associated with little sexual activity with female partner(s), HBRMF concerned almost half of MSMW (one fifth of MSM included in CohMSM). This result stresses the need to adapt HIV research and prevention to MSMW and their female partners.

EPD061

'Discreet Life': An innovative HIV testing campaign targeting heterosexual men who have sex with men (MSM) in New South Wales (NSW), Australia

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Background: Sustained investment in HIV prevention strategies among MSM has contributed to a recent decline in HIV notifications in NSW. However, the decline has been most significant in inner metropolitan Sydney, which have the largest populations of gay community attached MSM. Market research with heterosexual MSM identified that this population has limited engagement with the gay community and little exposure to HIV health promotion delivered by gay organisations. In 2018, 62% of MSM diagnosed with HIV had not tested in the past 12 months and 36% were late diagnoses. Discreet Life was developed to address these gaps and increase testing in heterosexual MSM.

Description: The campaign strategy centred delivery of key messages at the 'trigger moment' when heterosexual MSM are seeking sex with other men and are most receptive to related messaging. It included three pillars: digital advertisements on hook-up apps, posters in cruising areas where men meet for sex, and innovative use of geo-targeting to display digital advertisements to men who had recently visited an identified cruising location.
Campaign creative was informed by market research and focus testing with heterosexual MSM and consultation with sexual health promotion specialists.

Lessons learned: Although a hidden population, when given the opportunity to participate in market research anonymously, heterosexual MSM saw their contributions as meaningful and important. The use of language used by the target audience to identify themselves in online MSM spaces was positively received. The juxtaposition of heterosexually-coded imagery with communications channels used for MSM hook-ups achieved considerable cut through for heterosexual MSM. Discreet Life achieved high levels of engagement, significantly exceeding indus-

try benchmarks for click through rate (CTR) on digital advertisements and delivering a sixfold increase in visits to the NSW Health HIV testing website.

Conclusions/Next steps: A second Discreet Life campaign has been funded and will be in market at the time of the conference. This unique testing campaign was informed by new insights identified in market research with this 'hard to reach' population and demonstrates that HIV health promotion can be targeted effectively at MSM outside the gay community when members of the target audience are meaningfully engaged.

EPD062

"Sex without fear": exploring the psychosocial impact of HIV pre-exposure prophylaxis on gay, bisexual, and other men who have sex with men in England

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Background: Gay, bisexual, and other men who have sex with men (GBMSM) experience a higher prevalence of psychosocial health problems, such as substance misuse and depression, compared to heterosexuals. Previous research suggests HIV Pre-Exposure Prophylaxis (PrEP) has psychosocial effects beyond its intended purpose of reducing HIV infection. This study explores the psychosocial impact of PrEP use on GBMSM in England reporting regular condomless anal sex (CAS) using qualitative data from the PROUD trial.

Methods: From February 2014 to January 2016, semi-structured in-depth interviews were conducted with 40 GBMSM and one trans woman. Participants were purposively recruited based on trial arm allocation, adherence, and sexual risk behaviours. Participants were asked about their attitudes towards PrEP and its influence on their self-image and sex life. The interviews were conducted in English, audio-recorded, transcribed, coded, and analysed using reflexive thematic analysis.

Results: Our analysis generated eight themes which can be categorised as having either an emotional or behavioural impact. The emotional impact of PrEP was largely positive, with participants reporting reduced HIV-related anxiety, improved HIV prevention self-efficacy, reduced internalised stigma, and increased sexual pleasure and intimacy. These changes were attributed to PrEP eliminating the risk of HIV acquisition, thereby making CAS 'permissible'. However, for some participants, PrEP's disruption of social norms around condom use created internal conflict and feelings of reduced condom use self-efficacy. This led to increased CAS, which they perceived as a negative outcome. In contrast, most participants felt the impact of PrEP on their behaviour was positive, reporting greater sexual freedom, reduced recreational drug use during CAS, and more protective sexual health behaviours.

Conclusions: Our findings support calls to consider the psychosocial impact of PrEP in prescribing guidelines. It also highlights the need to offer psychosocial support alongside PrEP due to the potential for some users to experience internal conflict and reduced self-efficacy around condom use.

These findings provide a baseline of PrEP's psychosocial impact amongst some of the first PrEP users in England and could potentially inform current and future PrEP provision and research in a range of populations and settings.

EPD063

Social network strategy approach improves identification of HIV-infected individuals among men having sex with men in Nairobi urban slums Kenya

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Background: Kenya's attainment of the 95-95-95 HIV epidemic control is affected by the first 95, the cascade being 79.4%-95.7%-88.4% (Kenya Population-based HIV Impact Assessment (*KENPHIA*) 2018). There remain significant barriers to HIV testing among MSM, due largely to complex issues of layered stigma that deter MSM from accessing traditional peer-led, clinic-based testing. Only 65% of MSM are receiving HIV services in Kenya (Kenya AIDS Response Progress Report, 2018). Studies have shown testing and counselling of social networks of individual members of a key population has been used successfully to reach more MSM who are at risk of HIV infection and identify more HIV-infected individuals (Campbell, C.K. et. al., 2018). Since MSMs are at a heightened risk of being infected with HIV, increasing HIV testing rates and status awareness among them will be key to improving their quality of life and slowing down HIV transmissions.

Methods: To measure service uptake through SNS we analyzed the data from January 2020 to September 2020. 33 MSM aged 18 years and above (called "seeds") were recruited for HTS services. This included 7 known positives and 26 high-risk negative MSM clients.

Results: The 33 recruiters received a total of 88 coupons of which 83 network members returned coupons--94% return rate. All of the 83 new members were referred for HTS services, 5 of whom had a known HIV-positive status. Among the remaining 78, 6 clients tested positive to HIV—yielding 8% positivity. All the 6 were linked for care and treatment services. During the same period 349 MSMs were enrolled through peer education out of whom 3 (0.9%) tested positive to HIV.

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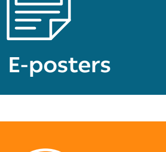

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	SNS strategy	Peer Outreach Strategy	OR (95% C.I)	p-value
HIV-Positive	6 (8%)	3	9.611 (2.349-39.322)	p = 0.0016
HIV-Negative	72 (0.9%)	346		
	78	349		

Table.

Conclusions: In this study, we found that Social Network Strategy is associated with improving enrolment of MSM into HIV-prevention program and identification of new HIV-infected MSM. We recommend the use of this strategy as complementary approach to the peer outreach model in offering service to MSMs. Projects should ensure strict adherence to the laid down protocols for ethical programming and recruiter training.

EPD064

Formative evaluation of artificial intelligence chatbots among gay, bisexual, and other men who have sex with men to promote HIV testing and prevention in Malaysia: a qualitative analysis

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Background: Malaysia has one of the fastest growing HIV epidemics among gay, bisexual, and other men who have sex with men (GBMSM) in Southeast Asia. Artificial intelligence (AI) chatbots, defined as computer programs embedded with machine learning algorithms to simulate conversation with human users, are a promising strategy for promoting HIV testing and prevention. This study aimed to identify the facilitators of and barriers to GBMSM's acceptance of AI-chatbots and their preferred features.

Methods: We conducted five semi-structured focus-group interviews between July and September 2021. A total of 31 GBMSM were recruited in Malaysia using convenience sampling and community outreach. Inclusion criteria were:

1. Cis-gender male;
2. 18+ years;
3. Condomless sex with another man in the past 6 months; and;
4. HIV negative or status unknown.

All interviews were recorded, transcribed verbatim, coded using NVIVO 9. Thematic analysis was first conducted to inductively analyze the interview transcripts. Later, emerged themes were mapped onto the four constructs of the Unified Theory of Acceptance and Use of Technology (UTATU), namely *performance expectancy, effort expectancy, facilitating conditions, and social influence.*

Results: Overall, most participants had a positive attitude towards the use of AI-chatbots for improving HIV testing and prevention. Significant factors influencing the chatbot's performance expectancy (perceived usefulness) included privacy concerns, chatbot's ability to provide emotional support, and efficacy of information dissemination and problem solving.

Convenience, cost, and technical errors were the primary factors affecting the chatbot's effort expectancy (perceived ease of use). Efficient linkage to healthcare professionals and knowledge about HIV self-testing presented as facilitating conditions for chatbot acceptance. Lastly, LGBTQ stigmatization and legal concerns were identified as important socio-cultural factors for HIV-related technology acceptance. Accentuating the importance of a private and secure virtual environment, most GBMSM preferred the AI-chatbot to be embedded in GBMSM-friendly NGOs' or clinics' websites.

Conclusions: This study illuminates the importance of socio-cultural considerations beyond the characteristics of the technology itself in HIV-related technology acceptance. It provides valuable insights for the future development of HIV-preventing chatbots for GBMSM in Southeast Asia and prompts further quantitative studies to validate the correlation between disease-specific stigma and health technology acceptance.

EPD065

Characteristics of chemsexers in France during the COVID-19 pandemic: results from the ERAS 2021 national online survey

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Background: Chemsex - the use of psychoactive substances in a sexual context - is a common at-risk practice in men who have sex with men (MSM). Several studies have identified specificities associated with chemsexer MSM as well as vulnerabilities. Although the current COVID-19 pandemic seems to have affected this sub-population more than non-chemsexer MSM, a lack of information prevents us from being able to characterize them in order that their needs can be better met by harm-reduction stakeholders. This analysis aimed to study the factors associated with the practice of chemsex.

Methods: Enquête Rapport au Sexe (ERAS) is an anonymous, online, self-administered repeated cross-sectional survey conducted from 26 February to 11 April 2021 in 18,478 MSM. The survey questionnaire collected socio-demographic, behavioural and health (HIV, STI and mental health) data.

The Generalized Anxiety Score (GAD) scale was used to measure anxiety. We used a classic logistic regression to understand the factors associated ($p<0.05$) with practicing chemsex, adjusting for known factors.

Results: Of the 12,494 MSM selected for the analysis, 1,512 (12%), reported practicing chemsex in the previous six months. The logistic regression results show that these chemsexers were more likely to be older, to live in large cities (>100,000 inhabitants) and to report a more difficult financial situation than non-chemsexer MSM. Chemsexers used websites and apps more frequently, had more sexual partners, but also got tested more frequently for STI.
Collected health data suggest that chemsexers were more likely to be HIV positive (aOR [95% CI]): 3.12 [2.64,3.70]), to have a high anxiety GAD score (aOR [95% CI]): 1.21 [1.06,1.38]), and to have attempted suicide in the previous 12 months (aOR [95% CI]: 2.33 [1.59,3.41]).
Conclusions: These results confirm that while chemsexer MSM are more exposed to HIV risks, they use prevention services (STI screening) more often than non-chemsexer MSM. Our results also shed new light on the mental health and socio-professional difficulties of chemsexer MSM. In addition, they suggest a link between HIV seropositivity and chemsex. This possible link deserves exploration through qualitative and longitudinal studies. In conclusion, prevention services must adapt to HIV+ chemsexers' needs and to their psychosocial fragilities.

EPD066

HIV PrEP provider communication preferences among Black sexual minority men

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Background: Black sexual minority men (BSMM) are substantially less likely than white SMM to accept a clinician's recommendation to initiate HIV pre-exposure prophylaxis (PrEP). Barriers to accepting clinical recommendations include concerns about side effects and stigma as well as discomfort discussing sexual health issues with clinicians. Communication strategies to increase PrEP initiation among SMM are largely unknown. The purpose of this study is to identify PrEP messaging preferences among BSMM.
Methods: Data were obtained from 12 focus groups and one in-depth interview among BSMM in Baltimore, MD between October 2019 and May 2020 (N=39). Focus groups were stratified into three age groups, (18-24, 25-34, and 35 and older) and facilitators probed on ways clinicians could discuss PrEP with BSMM. An adapted pile sorting approach was used to identify themes.
Results: Most participants identified as homosexual, gay, or same gender-loving (68%), were employed (69%), and single (66%). Thematic analysis revealed that BSMM wanted clinicians to explain PrEP efficacy and side effects, tailor messaging according to individuals' lifestyles, provide prevention messaging with care, and disclose their own PrEP use.
Conclusions: Clinicians could increase uptake and adherence among BSMM by implementing PrEP communication preferences. Clinicians working with BSMM should learn their key characteristics and individual lifestyles. Learning individual risk behaviors will also enable clinicians to tailor prevention messaging. Discussing PrEP efficacy and safety is also necessary. When possible, clinicians should disclose PrEP use history to build trust, share vulnerability, and increase acceptability.

EPD067

HIV risk behaviors and psychosocial factors among men who have sex with men (MSM) in Kuala Lumpur Malaysia

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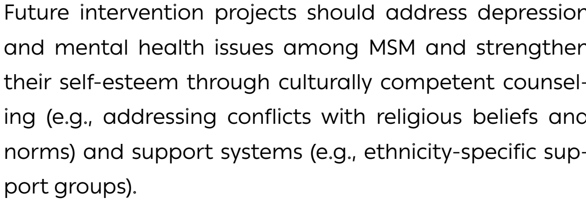
Background: The major mode of HIV transmission in Malaysia has shifted from injection drug use to sexual transmission. Despite the high prevalence of HIV among men who have sex with men (MSM), few studies have investigated psychosocial factors among MSM. This study aimed to describe HIV risk behaviors and psychosocial correlates among MSM in Malaysia.
Methods: Based on stratified sampling, 140 MSM in Kuala Lumpur were recruited and administered a survey questionnaire (72.1% Chinese Malaysian and 27.9% ethnic Malay; mean age = 34.1 years; 41.4% living with HIV). Bivariate and multivariate analyses were used to describe HIV risk behaviors and psychosocial correlates (homophobia, self-esteem, identity with MSM community, and need for social support).
Results: Those identifying as homosexual were more likely to be living with HIV than those identified as bisexual ($p < .05$). Fifty-four participants had casual male partners in the past 30 days; 53.7% had engaged in receptive anal sex, and 10.3% had not always used a condom; 44.4% had engaged in insertive anal sex, and 20.8% of these had not always used a condom. Overall, 30.0% of the participants were depressed (CES-D). Malay participants had higher levels of depression ($p < .05$), homophobia ($p < .01$), and need for social support ($p < .01$) than Chinese. Malay participants showed lower levels of identity with the MSM community than Chinese ($p < .05$).
Overall, 43.9% reported having thought about committing suicide and only 39.3% had talked to someone or sought professional help. More Chinese reported having thought about committing suicide than Malay ($p < .05$). A multivariate analysis revealed that participants identifying as homosexual or who had lower levels of self-esteem showed significantly higher levels of depressive symptoms.
Conclusions: Because many participants were recruited from a CBO providing HIV care and support, this sampling bias must be considered.



Future intervention projects should address depression and mental health issues among MSM and strengthen their self-esteem through culturally competent counseling (e.g., addressing conflicts with religious beliefs and norms) and support systems (e.g., ethnicity-specific support groups).
Structural changes must be made to reduce homophobia against MSM in Malaysia while advocating to protect their human rights.

EPD068

Injectable PrEP for HIV prevention: perspectives from men who have sex with men and health system stakeholders in Ontario, Canada

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Background: In Canada, gay, bisexual, and other men who have sex with men (GBM) continue to make up over half of new HIV diagnoses, and oral PrEP uptake has plateaued among HIV-negative GBM. Approval of injectable PrEP is imminent, but a paucity of research exists to inform health promotion and delivery implementation. We explored GBM's awareness and interest in injectable PrEP compared to oral PrEP, as well as the perspectives of health system stakeholders.
Methods: In 2021, we conducted 22 in-depth interviews with GBM who were PrEP users (n=14) and non-PrEP users (n=8) living in Ontario, Canada. We also interviewed 20 key stakeholders (e.g., healthcare providers, public health officials, community-based organization staff). Interviews were audio-recorded, transcribed verbatim, and analyzed in NVivo using thematic analysis.
Results: Only a third (n=7) of GBM interviewed had heard about injectable PrEP. Among GBM, the general reaction toward it was favourable. Many PrEP users also expressed interest in trying it; they described greater perceived convenience of injectable PrEP and that it would improve adherence. However, none of the current PrEP users reported significant struggles with oral PrEP adherence.
Some GBM described that an injection may also help keep PrEP confidential. Some current PrEP users were curious about injectable PrEP, but did not think that they would switch because of a fear or discomfort of needles. A few PrEP users discussed preferring to still take oral PrEP to feel 'in control'. No non-PrEP users said that injectable PrEP would make them interested in being on PrEP.
The most frequently discussed barrier to using PrEP was cost. Stakeholders, however, noted that injectable PrEP can improve access, help adherence, and may help marginalized groups who experience precarious living conditions. Some clinicians also expressed concerns about the time and personnel needed for injectable PrEP to be made available.
Conclusions: For many GBM, injectable PrEP might offer additional convenience. However, it did not appear to affect PrEP decision-making in any significant way for this group of GBM. System-level challenges to implementing injectable PrEP must be addressed. Furthermore, significant systemic barriers remain for accessing oral PrEP in Ontario that injectable PrEP will not resolve.

EPD069

Acceptability of sexual orientation disclosure interventions in primary care survey

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Background: Coming out is difficult for some gay, bisexual, and other men who have sex with men (gbMSM). Our objective was to quantify the acceptability of interventions that could support sexual orientation disclosure to primary care providers (PCPs) among Ontario gbMSM, and to explore their association with demographics, HIV-risk, and minority-stressors.
Methods: We conducted a cross-sectional survey for gbMSM via sexual networking applications (Scruff, Jack'd, Grindr) and community-based organizations in Ontario. A community-advisory-board assisted in conceiving ten potential interventions, and participants were asked to rate the acceptability of each on a 4-point Likert scale. Other measures included the HIRI-MSM risk index, Nebraska-Outness-Scale, Everyday-Discrimination-Scale, Internalized-Homophobia-Scale, and the Community-Connectedness-within-LGBT-Community-Scale.
We used logistic regression to identify characteristics associated with acceptability of the two least popular interventions, with not being "out" to their PCPs as the primary predictor.
Results: Of 404 participants, age ranged from 19-80 years (Mean=39, SD=12.2), with most identifying as cis-male (91.3%), gay (81.6%), and White (60.8%). All interventions were generally acceptable (≥50%; Figure 1).
The most acceptable intervention was a resource directory of LGBTQ2S+ friendly providers. The two least acceptable interventions were a performance-based incentive program and in-take process intervention. Acceptance of

these two interventions was associated with being non-Canadian born, PrEP-eligible, and generally "out"; as well as reporting household-income below $90,000, high levels of discriminatory experiences, and high levels of LGBT community connectedness (Table 1).

Figure 1. Levels of acceptability of specific sexual orientation disclosure interventions.

	Performance-based Incentive Intervention (n=281)				In-take Process Intervention (n=294)			
Variable	Univariable Models **OR (95% CI)**	***p***	Multivariable Model[a] **aOR (95% CI)**	***p***	Univariable Models **OR (95% CI)**	***p***	Multivariable Model[a] **aOR (95% CI)**	***p***
Not "Out" to Primary Care Provider	1.01 (0.60-1.71)	0.97	1.55 (0.77-3.14)	0.22	0.60 (0.36-1.00)	0.051	0.84 (0.44-1.59)	0.58
Not Born in Canada	1.76 (1.08-2.89)	0.025	2.36 (1.13-4.94)	0.022	1.06 (0.65-1.72)	0.83	0.97 (0.48-1.97)	0.94
Household income ≤$90,000	1.79 (1.11-2.87)	0.017	1.81 (1.04-3.17)	0.037	1.18 (0.74-1.88)	0.50	1.02 (0.60-1.74)	0.95
Eligible for PrEP	1.57 (1.003-2.45)	0.049	1.30 (0.75-2.25)	0.35	0.79 (0.51-1.23)	0.30	0.75 (0.44-1.29)	0.30
Outness score	0.96 (0.87-1.07)	0.47	1.00 (0.88-1.14)	0.98	1.14 (1.03-1.27)	0.011	1.18 (1.04-1.34)	0.013
High level of experiences of discrimination	2.64 (1.46-4.78)	0.001	3.25 (1.53-6.92)	0.002	1.00 (0.59-1.72)	0.99	1.33 (0.68-2.61)	0.40
High level of LGBT community connectedness	1.95 (1.15-3.30)	0.013	1.99 (1.05-3.76)	0.035	1.81 (1.08-3.04)	0.025	1.58 (0.87-2.88)	0.13
[a]Multivariable model adjusted for age, racialized identities, gender identity, sexual orientation, employment, and levels of internalized homonegativity								

Table 1.

Conclusions: Most interventions were acceptable and should be prioritized for implementation. The least acceptable interventions may be deprioritized but could still support gbMSM experiencing minority-stressors.

EPD070

Exploring the perceived risks that come with being a man who have sex with men while seeking HIV services in COVID-19 era, a qualitative study done in Nairobi-Kenya

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Background: In Kenya, Men who have sex with men (MSM) continue to live in fear of their lives because of the risks surrounding their sexual orientation. They are marginalized, criminalized, and face discrimination from the public, yet they carry an HIV burden of 18.2% compared to the general population, which has a prevalence of 4.9%. COVID-19 saw a decline in numbers of MSM seeking HIV services. This study explored the risks of seeking HIV services among MSM in the COVID-19 Era.

Methods: A qualitative descriptive study was conducted among MSM seeking HIV services within the Sex Workers Organization Project (SWOP) -a HIV/STI NGO serving 1400 MSM within Nairobi, Kenya. This study was conducted in October 2021 during COVID-19 era. Participants were recruited through purposeful sampling that utilized an outreach, peer-led model.Two focused group discussions were conducted, a total of 17 respondents participated.

An FGD guide was used to ascertain the risks encountered by MSM before/during COVID-19 era and how this affected their HIV services seeking behavior. The discussion was recorded, data were transcribed and coded for analysis through NVIVO.

Results: Most MSM respondents said their lives have always been miserable, but the COVID-19 pandemic worsened their situation. Some MSM reported that before the pandemic, they were afraid of; disclosing their orientation to health providers due to lack of trust, harassment, discrimination, and stigmatization especially in government health facilities. As a result, they risked unnecessary beating from the public and human rights violations to the extent of permanent disabilities/death.

Despite all these, they were still financially stable due to working from hidden, organized hot spots where they met their sex clients safely. The movement restrictions and hot spot closure that come with COVID-19 saw MSM experience the above and again lose sex clients, which affected their financial status.

Some MSM had to move to estates and "hunt" for potential clients, which earned them a beating from the "potential clients." This financial crisis saw them lack bus fare to access health facilities.

Conclusions: Ways to reach the MSM community optimally during COVID-19 era with HIV services should be devised.

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EPD071

Navigating the gaps between initiation and treatment of MSM clients through the use of case managers

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Background: Initiation of positive clients on antiretroviral therapy (ART) is one of the key challenges faced by KP programs especially among MSM. In Ghana, most KP access HIV testing services (HTS) mainly through community outreach programs in collaboration with the Public Health Sector. HIV testing is mostly conducted in KP communities; however, confirmation of reactive results and subsequent initiation could only be done in health facilities. These nurses who conduct the test are stationed in health facilities and therefore could not devote enough time to follow-up on reactive cases, do defaulter tracing, and ensure treatment adherence. This leaves a gap in linking and retaining positive KP on treatment.

Description: Ghana West-Africa Program to combat AIDS & STI (WAPCAS), a Principal Recipient under the Global Fund KP Grant in Ghana project introduced the case management strategy in partnership with sub-recipients including CEPEHRG, MARITIME and WAAF.

This strategy brought on board a pool of Case Managers comprising KP friendly community health providers, experienced KP volunteers, and other social workers to perform certain case management functions. This team was trained in case management strategies in a KP intervention and further integrated into the mainstream HTS team with clear roles and responsibilities. Their roles included; ensure same day linkage of positive clients on ART, do defaulter tracing, drug pick-up, provide adherence support, psychosocial counselling, facilitate viral load testing and serve as treatment monitors.

Lessons learned: Results on clients initiated on treatment from 2018 till 2021 were as follows;

MSM – 78% (2018), 82% (2019), 85% (2020) and 95% (2021).

Case Managers are the gatekeepers who ensure that all positive clients are linked on ART soon after confirmation.

Conclusions/Next steps: Assess the effectiveness of the various categories of case managers in enhancing treatment initiation among KP**.** Pilot this strategy in the public health system to assess its effectiveness in increasing enrolment on treatment.

EPD072

Evidence of considerable HIV prevention and care need among a large sample of bisexual men: findings from the 5-country Asia-Pacific MSM internet survey

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Background: Men who have sex with men (MSM) bear a disproportionately high burden of HIV in South-East Asia, however there is significant variation in risk practices and HIV prevention and care need among sub-sections of this population. Smaller scale studies indicate bisexual men may be especially exposed to HIV risk and to social harm.

Methods: From May 2020 to-January 2021, we conducted an online cross-sectional survey (promoted via social media) of 15,938 MSM across Thailand, Malaysia, Indonesia, Japan and Vietnam. Chi-square tests were used to establish differences in HIV prevention and care need between those identifying as bisexual versus homosexual/gay.

Results: In total, 22.3% (n=3,342) of participants identified as bisexual (Thailand=18.0%; Malaysia 19.2%; Indonesia 51.2%; Japan 21.0%; Vietnam 18.1%). Compared to gay men, bisexual men were significantly less likely to have ever taken an HIV test (61.1% gay Vs. 48.1% bisexual, $p<0.01$), less likely to be living with diagnosed HIV (13.6% Vs. 6.5%, $p<0.001$), less likely to have heard of PrEP (65.6% Vs. 48.1%, $p<0.01$) or have used it (12.8% Vs. 9.0%, $p<0.001$).

There were no differences regarding condom use with either casual or regular partners, nor with the number of such partners in the preceding 12 months. Compared to gay men, bisexual men were more likely to have avoided healthcare services because of a fear that people will learn they have sex with men (12.2% Vs. 17.8%, $p<0.001$) and were more likely to have been blackmailed because they have sex with men. Bisexual men were considerably less likely than gay men to have disclosed their attraction to men to family (out to all/almost all family: 17.6% Vs. 5.6%, $p<0.001$) or friends (out to all/almost all friends: 23.5% Vs. bisexual 5.5%, $p<0.001$).

Conclusions: Despite a similar profile of HIV risk-related activity, bisexual men were found to have considerably elevated HIV prevention and care needs, with lower levels of HIV testing and of PrEP awareness and use.

Interventions to reduce stigma directed towards all MSM, including those identifying as bisexual, need to be resourced, developed and sustained in community and clinical contexts to improve access to HIV education and biomedical interventions.

EPD073

Associations between HIV and sexual stigmas, and mental health and alcohol use among MSM newly diagnosed with HIV in India: a longitudinal observational cohort study

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Background: Little is known about the associations between HIV- and sexuality-related stigmas, and mental health and alcohol use among MSM living with HIV in India. The minority stress theory postulates that minorities experience stress stemming from experiences of stigma, placing them at risk of negative psychosocial outcomes. We investigated the association between stigmas related to HIV and same-sex sexuality, and depression, anxiety, and alcohol use among MSM newly diagnosed with HIV (MSMLH) in India.

Methods: We used three-wave data (baseline, 3- and 6-month follow-up) from a longitudinal observational study conducted among 227 MSMLH in 2020-21, across 11 states with high/moderate HIV prevalence. The outcomes were depression (PHQ-9), anxiety (GAD-2), and alcohol use (AUDIT-C) scores. Predictors included enacted HIV stigma, internalised HIV stigma, enacted sexual stigma, and internalised sexual stigma. To obtain robust population-averaged estimates and to handle repeated measures, generalized estimating equations (GEE) was used. All multivariable GEE analyses were conducted in Stata-16.

Results: Participants' mean±SD age was 33.3±9.9 years. The mean±SD scores of predictor variables are provided in Table-1. The mean±SD scores of outcome variables were: depression 4.76±7.32, anxiety 2.53±2.31, and alcohol use .32±.88. Enacted stigmas significantly predicted depression, anxiety, and alcohol use (Table-1).

Predictors (scores)		Outcomes (scores)		
Stigmas	Mean (SD)	Depression	Anxiety	Alcohol
		Estimate (95% CI); p-value		
Enacted HIV stigma	.58 (.57)	7.32 (5.28, 9.36)***	2.75 (2.27, 3.23)***	.35 (.07, .64)*
Internalised HIV stigma	1.16 (.57)	-2.07 (-4.57, .43)	.15 (-.44, .74)	-.05 (-.29, .18)
Enacted sexual stigma	2.09 (1.38)	1.24 (.56, 1.93)***	.34 (.19 .50)***	.09 (.01, .17)*
Internalised sexual stigma	1.80 (.63)	-1.39 (-3.03, .25)	.31 (-.18, .80)	.17 (-.05, .39)

Note. *p<.05, ***p<.001

Table 1. Predictors of mental health and alcohol use among men who have sex with men (MSM) newly diagnosed with HIV (N=227)

An increase in enacted HIV and sexual stigma scores increased outcome scores. That is, for every unit increase in enacted HIV stigma, depression, anxiety, and alcohol scores increased by 7.32, 2.75, and .35 units, respectively. Similarly, for every unit increase in enacted sexual stigma, depression, anxiety, and alcohol scores increased by 1.24, .34, and .09 units, respectively.

Conclusions: Enacted HIV and sexual stigmas contributed to poor psychosocial outcomes among MSM newly diagnosed with HIV. Findings call for stigma reduction campaigns to reduce stigma and discrimination faced by MSMLH, and to screen for and address mental health challenges faced by them due to those stigmas.

EPD074

The determinants of HIV test seeking behaviour among sexual and gender minorities: findings from a large-scale global survey from more than 160 countries

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Background: Sexual and gender minorities (SGM) continue to endure multiple forms of stigma and discrimination, which affect mental health and erode health. A disregard for human rights and multi-level barriers to health care among SGM are among the failures that have allowed HIV to remain a global health crisis.

We examine the role of intersectional stigma, mental health, and HIV sexual risk behaviours, as determinants of HIV test seeking in SGM.

Methods: This study is based on a cross-sectional internet survey of over 115,000 LGBT+ adult individuals from more than 160 countries. We developed a two-part model within a multilevel design where the individual effects and the socioecological effects at country level are disentangled to capture the determinants of two distinct decision process: ever getting tested for HIV and, for those getting tested, the recency of their last HIV test.

Results: A quarter of respondents (24.01%) had never tested previously for HIV, 17.40% had their last HIV test more than 12 months ago, 14.44% between 6 and 12 months and 44.14% in the last 6 months. The study showed that for most participants, HIV risk behaviours are consistently and strongly associated with higher odds of having a recent HIV test, suggesting a demand for HIV testing in proportion to individual's needs, with one single exception: those paying for sex whose HIV riskier behaviour is negatively associated with HIV testing (AOR 0.75, 95%CI 0.60-0.94.

The study also showed that homophobia negatively affect HIV test seeking, particularly among bisexual (AOR 0.96, 95%CI 0.94-0.99) and questioning individuals (AOR 0.92, 95%CI 0.89-0.96) compared to gay men. The model demonstrated the negative effect of depression and anx-

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iety on HIV test seeking. Finally, the inclusion of psycho-economic variables, such as time preference and willingness to take risk, contributes to identifying fundamental parameters of the decision-making process of individuals in terms of HIV testing.

Conclusions: To meet the global AIDS targets among SGM, greater importance should be dedicated to mental health and homophobia. Efforts to increase HIV testing among SGM should intensify with greater emphasis put on bisexuals, questioning and clients of sex workers.

EPD075
Longitudinal impact of stressful life events on HIV risk and psychosocialproblems among MSM in Chennai and Mumbai, India

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Background: HIV disproportionately burdens men who have sex with men (MSM) in India. Research has shown that stressful life events can lead to psychosocial problems and exacerbate sexual risk behavior among Western MSM, but studies examining this relationship among MSM in India are lacking, and none have examined this longitudinally with data from multiple cities.

Methods: Between 2015 and 2018, 608 MSM from Chennai and Mumbai, India, completed behavioral surveys at baseline, 4, 8, 12 months as part of an HIV-prevention intervention. We used longitudinal generalized estimating equations (GEE) modeling to examine the relationship between stressful life events/severity (i.e., total number of stressful life events and perceived positive or negative impact, with higher scores being more unpleasant/alarming; ranging from 0 to 156) and subsequent psychosocial problems (e.g., depression, heavy alcohol use), as well as HIV risk (e.g., condomless anal sex, STI incidence). All models are adjusted for age, sexual identity, intervention arm, HIV status, and recruitment city.

Results: Participants' mean age = 26.3 (SD=6.29); mean number of stressful life events = 9.26 (SD=4.35), with a mean impact score = 55.12 (SD=27.94). The top stressful life events was "attraction towards a man whose sexuality is not known." The number of stressful life events and their corresponding perceived impact score remained consistent at each time point.

In multivariable GEE models, the number of stressful life events was predictive of condomless anal sex (aOR=1.07, 95% CI [1.05,1.10]), depression (aOR=1.23, 95% CI [1.19, 1.26]), and harmful drinking (aOR=1.11, 95% CI [1.08,1.14]). Similarly, the impact of stressful life events was predictive of condomless anal sex (aOR=1.01, 95% CI [1.01,1.02]), depression (aOR=1.04, 95% CI [1.03, 1.04]), harmful drinking (aOR=1.01, 95% CI [1.01, 1.02]) and incident STI diagnosis (aOR=1.01, 95% CI [1.00, 1.01]).

Conclusions: These findings provide evidence of the predictive relationship between stressful life events/severity and subsequent psychosocial problems, as well as HIV risk among MSM in India. Future research should seek a greater understanding of the impact of stressful life events among Indian MSM and their relationship in potentiating psychosocial problems and HIV risk, which will inform interventions that can teach self-acceptance, coping skills, and other forms of resiliency.

EPD076
Location-based dating platform intervention (LBDPi) is an effective model in reaching high-risk MSM

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Background: With the burgeoning of dating apps, a large number of MSM population are accessing these dating apps and are likely to engage in high-risk behavior (unprotected anal intercourse) exposing them to the risk of STI and HIV. Effective models of virtual interventions will be helpful to reach out to these populations and offer or facilitate access to HIV services. LBDPi has been demonstrated as an effective model in Vietnam, identifying a high proportion of HIV positives people (19%).

To increase HIV testing services to clients in the virtual space, we implemented LBDPi in four districts of Andhra Pradesh (AP).

Description: The model involves an outreach worker (ORW) working from a convenient place such as home or outreach office and connecting online with clients within the radius of 0.5 to 10 kms. The ORW identifies themselves as a public health worker and counsels the client for HIV services, shifting the conversation from online to offline. The ORW educates and provides HIV services such as condoms, HIV screening and linkages to PrEP and treatment.

Lessons learned: During October to December 2021, 4,987 MSMs were reached through online chat, 60% (2,984) agreed for further interaction and were provided HIV education. The project achieved an offline conversion in 17% (872). Out of these, 196 were tested and 8% tested positive and initiated on ART.

To take this to scale, the project will train MSM and transgender NGOs in the government sector across all districts of AP for implementing the LBDPi.

Conclusions/Next steps: A critical lesson that the project has observed through the LBDPi model is that the high-risk MSM opt for offline meeting and seek HIV services. LBDPi reached high risk MSM who are not engaged in GOI programmatic prevention activities, who opted for an offline meeting to seek HIV services. Among those who were offered HIV testing services, 8% returned as positive during a three-month period, while HIV negative clients were also offered a package of services for prevention.

EPD077
HIV Pre-exposure Prophylaxis use and subsequent bacterial Sexually Transmitted Infections among gay, bisexual and other men who have sex with men

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Background: PrEP-using GBM may be more likely to engage in sexual behaviors associated with bacterial STI transmission. We assessed the associations between PrEP use, condomless anal sex (CAS), number of sex partners (NSP), oral sex (OS), and odds of acquiring a subsequent bacterial STI among GBM living in Canada.

Methods: Among HIV-negative/unknown-status GBM from the baseline visit of the Engage Cohort Study, we fit a structural mediation model to estimate pathways between PrEP use at baseline, and sexual behaviors and bacterial STI diagnoses (gonorrhea, chlamydia and syphilis) at the 1-year follow-up visit.

Results: Among 2,008 HIV-negative GBM at baseline, recruited from 2/2017 to 8/2019,341 (17.0%) used PrEP within the last 6 months and 136 (6.8%) were diagnosed with an STI at their 1-year follow-up visit.In the mediated model, the direct association between PrEP use at baseline and STIs at 1-year follow-up was non-significant; however, PrEP use was significantly associated with increased number of sex partners (β=.25; 95%CI,.18-.33;p<.001)andCAS (β=.18; 95%CI,.09-.28;p<.001), but not with oral sex (β=.02; 95%CI,-.10-.16;p=.76) at one-year follow-up.

Two indirect paths were statistically significant:

1. PrEP→CAS→STI (β=.09; 95%CI,.03-.17: p=.02) and;
2. PrEP→NSP→CAS→STI (β=.08; 95%CI,.03-.13: p=.001).

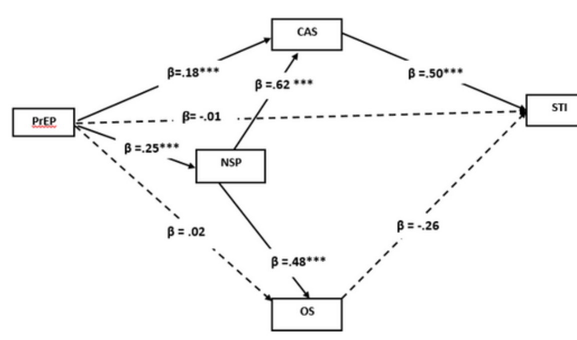

Figure 1. This structural equation model presents associations between pre-exposure prophylaxis (PrEP) use at baseline and bacterial STIs at one-year follow-up, with intermediary associations of condomless anal sex (CAS), number of male sex partners (NSP), oral sex (OS) at one-year follow-up. Dotted lines represent nonsignificant associations; bold lines represent significant associations. B = Standardized coefficient.
**p < 0.005; **p < 0.001*

Conclusions: In mediation models, PrEP use at baseline was indirectly associated with future bacterial STIs among GBM. Findings suggest that PrEP use may lead to bacterial STIs via both an increased number of sex partners and increased engagement in CAS. Behavioural and biomedical interventions, including increased screening as per PrEP care and potential bacterial STI prophylaxis and vaccines, are needed to reduce PrEP-using GBM's risk of bacterial STIs.

EPD078
How different social norms guide and constrain the use of pre-exposure prophylaxis among men who have sex with men

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Background: It is well documented that social norms influence preventive sexual practices. The advent of Pre-Exposure Prophylaxis (PrEP) as a promising HIV prevention strategy has raised concerns that negative social norms could hamper PrEP uptake in high risk groups such as Men who have Sex with Men (MSM). It is therefore important to assess which social norm categories affect willingness to take PrEP, and actual PrEP-use, among MSM.

Methods: We collected a cross-sectional convenience sample of 415 MSM not living with HIV and residing in Flanders, through an online survey that ran October to November 2021. Linear regression, log-linear regression and structural equation modelling were performed.

Results: One in four MSM takes PrEP and 16% of those not currently using it are willing to start. Stratified by age: 13% of MSM aged 18-25 uses PrEP, 28% aged 26-40, and 27% over 40, while 20% of MSM aged 18-25 are willing to start, as are 15% aged 26-40 and 16% over 40. Descriptive norms (how many peers you believe act in a certain way) are di-

rectly related to PrEP-use. Self-efficacy mediates the effect of injunctive norms (what you belief about other's beliefs), role belief (if you see something as appropriate for the role you fulfill) and affect (individual feelings towards the behavior) on PrEP-use.

PrEP-use among the youngest age group (18-25) is significantly lower compared to MSM aged 26-40 when modelling the impact of affect mediated by self-efficacy on PrEP-use. Descriptive norms, role belief, social influence (how favorably you compare yourself to others), and personal normative belief (the stigma you attach to a type of behavior) were directly related to willingness to use PrEP. Self-efficacy mediated the effect of injunctive norms and affect on willingness to use PrEP.

Conclusions: Several social norm categories had a direct or indirect impact on willingness to use PrEP and PrEP-use. Results are similar to social norm research on alcohol use and condom use.

These findings show the importance of taking social norms into account when observing lower than expected uptake of PrEP among those at risk, and when designing interventions aimed at increasing PrEP uptake.

EPD079

COVID-19-related changes in sexual activity, condomless anal intercourse, HIV/STI testing and PrEP use among men who have sex with men (MSM) in the Netherlands: two-year trends and programmatic challenges

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Background: The impact of COVID-19 restrictions on MSM's sexual behaviour and access to HIV/STI services has been documented in a range of countries. It remains, however, unclear how successive lockdowns and relaxation periods affect sexual behaviours and HIV/STI risk.

We assessed changes in sexual activity, condomless anal intercourse (CAI), HIV/STI testing and PrEP use among MSM in the Netherlands from January 2020 to October 2021, a timeframe that includes two lockdown/relaxation cycles.

Methods: We conducted three cross-sectional online surveys in summer 2020, spring and autumn 2021. Respondents were recruited via social media. Across surveys, a total of 4241 MSM provided data on their sexual behaviour, HIV/STI testing and PrEP use at seven periods: in January-February 2020 (pre-COVID-19); during the first lockdown (starting mid-March 2020); in the first period of easing of restrictions; during the first normalisation attempt; during the second lockdown (starting mid-October 2020); in the second easing period; and during the second normalisation.

Results: Compared to the pre-COVID-19 baseline, the proportion of sexually active respondents was 21% lower during the first lockdown and 6% lower during the second. Sexual activity partially rebounded in the first normalisation period and entirely in the second. Rates of CAI showed similar patterns, although variations were more pronounced for CAI with fuckbuddies or casual partners than steady partners. COVID-19 disruptions in testing and PrEP use were noted across surveys.

In the Autumn 2021 survey, 34% of respondents had experienced times since March 2020 when they could not test for HIV/STI because of COVID-19, and 59% of these respondents could test later. 51% of the respondents who used PrEP pre-COVID-19 interrupted PrEP at some point because of COVID-19, and 73% of them had resumed PrEP.

Conclusions: MSM's sexual activity and CAI were moderately reduced during the first lockdown and slightly reduced during the second. During the second normalisation period, sexual activity and HIV/STI risk rebounded to levels similar to pre-COVID-19. COVID-19 disruptions in testing and PrEP use were substantial and more often resolved for PrEP than testing. Addressing COVID-19-related gaps in testing is needed to limit the transmission of STIs and HIV among MSM in the Netherlands.

EPD080

Assessing the performance of HIV testing self-efficacy and relevant theoretical constructs in predicting HIV testing intention among young men who have sex with men in two US urban areas

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Background: Bandura's Self-Efficacy Theory (SET) has been used to guide the development of various HIV prevention interventions among men who have sex with men (MSM). However, observational evidence is lacking regarding how SET and related constructs may influence HIV testing-related indicators.

We conducted a study to assess the associations between HIV testing-specific self-efficacy (HTSE), relevant theoretical constructs, and frequent (e.g., every six months) HIV testing intention among MSM in two US cities.

Methods: A cross-sectional survey was conducted among 347 HIV-negative MSM from Nashville, TN, and Buffalo, NY.

We used questionnaires to assess:
1. The intention of seeking regular HIV testing (moderate/high vs. no/low intention);
2. HTSE (using the adapted General Self-Efficacy Scale); and;
3. Relevant SET constructs, including mastery performance (i.e., frequency of previous HIV testing), vicarious experience (i.e., how often do their peers/partners test for HIV), verbal persuasion (i.e., how often have they been encouraged to test for HIV by peers/healthcare professionals), and physiological state (i.e., psychological function from a validated Quality-of-Life scale).

Multivariable causal mediation analyses were used to assess the associations between HTSE, relevant SET constructs, and HIV testing intention.

Results: Overall, we found that all SET constructs were directly associated with HIV testing intention and indirectly associated with HIV testing intention through HTSE. Specifically, we found that higher HTSE scores were associated with a higher likelihood of showing moderate/high intention of frequent HIV testing (AOR:1.07; 95% CI:1.04-1.10).

Multivariable analyses showed that increased mastery performance (one unit increase in previous HIV testing frequency; AOR: 1.12; 95% CI: 1.06-1.20), verbal persuasion ('sometimes/frequently' vs. 'never/rarely been persuaded to test for HIV; AOR:1.60; 95% CI: 1.23-2.09), vicarious experience ('many/most' vs. 'a few/none' tested for HIV every six months; AOR:1.28; 95% CI: 1.05-1.56), and physiological state (i.e., one unit increase in psychological function scores; AOR: 1.02; 95% CI: 1.01-1.03) were associated with a higher HIV testing intention among the study participants.

Conclusions: Screening for HIV testing self-efficacy and the performance of relevant theoretical constructs can be used to identify where additional support to improve frequent HIV testing is needed and inform the development of targeted interventions for MSM in the US.

EPD081

Tracking condom use trends among sexual minority men in the U.S. since 1988: a systematic review of pride event surveys and nationally representative data

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Background: Eighty-two percent of new HIV diagnoses among men in the United States (U.S.) are from male-to-male sexual contact, and record-high rates of sexually transmitted infections (STIs) contribute. As uptake in biomedical advances including Pre-exposure Prophylaxis (PrEP), Treatment as Prevention (TasP), and the U=U campaign have increased, condom use has decreased, but must not be neglected for prevention against HIV and STIs. This systematic review assessed surveys conducted at gay pride events in the U.S. to track trends in condom use during anal intercourse among sexual minority men (SMM), and compare those to national surveillance condom use data.

Methods: PubMed, PsycInfo, and CINAHL databases were searched in November 2021 using terms related to SMM and gay pride events. Included studies were from a pride event in the U.S., surveyed SMM, and reported the percentage of condom use during anal intercourse. Condom use trends and determinants were extracted with a coding form. Available data on condom use among SMM from the Centers for Disease Control and Prevention (CDC) and National Survey of Sexual Health and Behavior (NSSHB) were collected for comparison.

Results: Twenty-six studies were fit for inclusion in the review, with data from 69 surveys from 1988-2018. Most surveys were conducted at general pride events (55.1%), the remaining from Black or Latino prides. Across studies, 18,288 participants were surveyed; 61.4% White, 24.3% Black, and 9.7% Hispanic. The mean age was 33 (SD=1.6), and 7.1% were HIV-positive. Data suggest that declining condom use pre-dates the onset of TasP, U=U, and PrEP.

Common correlates of condom use were race, age, education, HIV-status, intercourse position, substance use, and PrEP. Compared to the CDC and NSSHB data, pride event data on condom use was lower than among the nationally representative samples.

Conclusions: Our results suggest that perhaps with growing popularity of TasP, U=U, and PrEP; risk perception of HIV is diminishing over time, resulting in less condom use during anal intercourse.

However, these methods do not prevent against STIs and it is crucial for providers and others working with SMM to place a renewed emphasis on regular STI testing and other HIV prevention methods.

EPD082

Mixed-methods investigation of intersectional HIV, same-sex behavior, and gender non-conformity stigma experienced and internalized by MSM at health facilities

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Background: Men who have sex with men (MSM) across Africa face social and structural barriers that increase HIV risk. In 2019, HIV prevalence among MSM in Ghana was 18.1%, 11 times higher than the general population. Stigma is an established barrier to healthcare engagement for MSM, yet scant research has documented stigma experienced by MSM in healthcare facilities in Africa.

We aimed to understand experiences of stigma among MSM and the role of stigma in shaping HIV prevention and care engagement among MSM in Ghana.

Methods: Mixed-methods study: 10 in-depth interviews, 8 focus group discussions, and a baseline survey (N=237) with MSM (September 2020-April 2021) in Ashanti and Greater Accra regions, Ghana. Rapid analysis of qualitative data was followed by thematic coding. Frequencies from survey data triangulated themes from qualitative data.

Results: Baseline data indicate that many MSM experienced stigma at health facilities which aligns with their internalized stigma. Interviews with MSM corroborated quantitative data. MSM expressed that past stigmatizing experiences contribute to anticipating stigma at health facilities, causing MSM to internalize the need to change their behavior in order to receive quality treatment: *"I used to walk feminine but because I am in a straight space I have to conform so that I will not be noticed so that I can get the optimal health care that I need".*

Additionally, HIV-related stigma intersected with sexual identity stigma MSM to exacerbate enacted stigma at health facilities. Many MSM with HIV faced blame and guilt at HCF: *"Once they get to know your sexuality, they go like, because of what you did, that's why you had HIV".*

Interviews indicate experiences with stigma deterred MSM from HIV testing and treatment at certain HCF.

Stigma	Question	Ever
Experienced	Have you had to pretend that you do not sleep with men in order to be accepted in an HCF?	46.0% (n=109)
	Have you heard HCF workers say that MSM are not normal?	73.8% (n=175)
	How often has an HCF worker refused to serve you because you sleep with men?	13.9% (n=33)
		At All
Internalized	How much do you feel guilty that you are MSM?	41.5% (n=47)
	How much do you feel that you deserve to get HIV if you are MSM?	22.3% (n=25)

Table 1. Experienced and Internalized HCF Stigma among MSM in the past 6 months (N=237)

Conclusions: Insight on MSM's experiences of stigma in HCF can inform structural healthcare intervention strategies to improve HIV prevention and care cascade engagement.

EPD083

Attitudes, knowledge and worry about HIV in HIV-negative men who have sex with men in the era of Undetectable=Untransmittable

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Background: Men who have sex with men (MSM) make up 32% of people living with HIV (PLHIV) in Sweden, with >95% of PLHIV on antiretroviral treatment (ART) and undetectable viral load. Despite high awareness of Undetectable=Untransmittable (U=U), negative attitudes remain toward MSM living with HIV, including in social, sexual and romantic relationships. Among self-reported HIV-negative MSM, we studied negative attitudes towards MSM living with HIV and determinants in terms of sociodemographics, openness about one's sexuality, and knowledge or worry about HIV.

In addition, we studied the impact on negative HIV attitudes of a 2020-2021 anti-stigma campaign seeking to challenge traditional prejudices against MSM and inform about U=U.

Methods: An online survey was administered in 2021 to MSM living in Sweden, recruiting participants through convenience sampling on popular gay dating and social media sites. Among respondents, 1,142 (89% of 1287) reported being HIV-negative, for which indices were created of negative attitudes towards MSM living with HIV, and knowledge or worry about HIV. Potential determinants of negative attitudes were entered into a multivariable logistic regression model.

Results: Among HIV-negative MSM participating in the 2021 survey, negative attitudes about HIV were associated with lower knowledge of HIV [OR=2.5, 95%CI:2.0-3.3] and more worry [OR=1.8, 95%CI:1.4-2.3] after adjusting for confounders, including: age, university education, and city of residence.

Openness about one's sexuality was independently associated with less negative attitudes towards MSM living with HIV [OR=0.4, 95%CI:0.3-0.5]. Exposure to the 2020-2021 anti-stigma campaign was associated with significantly less negative attitudes [OR=0.7, 95%CI:0.6-0.9].

Conclusions: Negative attitudes towards MSM living with HIV were associated with lower knowledge and increased worry about HIV. Findings around openness about one's sexuality indicate an intersectional effect of anti-LGBTQ-stigma and HIV-stigma.

The association between the anti-stigma campaign and less negative attitudes suggest that targeted campaigns are effective and necessary, even in the era of U=U and among well-informed MSM.

EPD084

Making meaning of methamphetamine use among sexual minority men living with HIV

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Background: Although the relationship between methamphetamine and the health of sexual minority men (SMM) has been well document in the context of HIV research, attention to the meaning behind this substance and its use is sparse. Methamphetamine is a particularly deleterious substance for SMM because its use is framed within social and sexual contexts that are intimately associated with the causes and coping strategies related to social and structural stressors.

Despite sex and sexuality being at the center of HIV research around methamphetamine, the primary mechanism assessed is that of a pathway towards HIV infection and transmission, rather than inviting more nuanced understandings of how methamphetamine informs sociosexual meaning-making that impact these men's lives across several life domains. Informed by syndemics theory, intersectionality frameworks, and revised stress and coping theory, the purpose of this qualitative study is to provide a deeper understanding of SMM's relationship with methamphetamine in order to inform more effective substance interventions.

Methods: Data were collected from 2016-2018 as part of a randomized controlled trial testing a positive affect intervention for methamphetamine-using SMM living with HIV in San Francisco, CA. Participants were purposively sampled for a qualitative sub-study based on ethnicity (i.e., White, Black, and Latino) and study condition (i.e., intervention or control). Data were collected via in-depth, one-on-one semi-structured interviews.

Results: The mean age was 47 and 54% self-identified as non-White. The constructivist grounded theory analysis surfaced a core theme around *Relationships on/with Methamphetamine*. Five sub-themes elaborated on the ways in which SMM related through and with methamphetamine: *Coping Through Methamphetamine and Sex, Methamphetamine and Euphoria, Methamphetamine and Isolation, Relationships with Methamphetamine*, and *Methamphetamine Forging Synthetic Relationships.*

Conclusions: Findings highlight the embodied and intimate associations between SMM, methamphetamine, sex, and relationships. Data underscore the relevance of the somatic experiences of methamphetamine use that contribute not only to reconfiguring sexual experiences and developing various impairments, but also hindering recovery efforts.

Additionally, findings suggest that peer-based approaches are imperative to reframe the ways in which SMM form and sustain relationships, thus effective substance use interventions for SMM should address multi-level psychosocial factors in a holistic manner.

EPD085

Use of alternative treatments for HIV and ART defaulting among MSM living with HIV in Accra, Ghana

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Background: In Ghana, men who have sex with men (MSM) bear a disproportionate HIV burden, with prevalence at 18%, yet only 3.5% are linked to antiretroviral treatment (ART). To understand what factors shape adherence to ART, we examined types of treatment alternatives HIV-positive MSM use and how these alternatives affect ART use.

Methods: Between March-July 2019, we conducted in-depth interviews with 35 HIV-positive MSM in the Accra, Ghana about their HIV treatment needs. Participants were purposefully sampled from HIV clinics/organizations. Eligibility criteria were: assigned male at birth, has sex with men, HIV-positive, and ≥18 years.

Participants were asked about whether they have used non-clinical treatments for their HIV diagnosis, such as traditional/herbal/religious treatments, and their experiences using these alternatives. Interview transcripts were analyzed using thematic analysis.

Results: Participant mean age was 29.7 years. About one-third of participants reported using traditional/herbal/religious treatments. Those who used alternative treatments defaulted from ART or had not yet initiated ART. Participants learned of treatment alternatives through other people living with HIV who were taking it, including friends; family members seeking to help them; religious figures like pastors; radio advertisements; and/or personal research.

A commonly used alternative treatment was by the Center of Awareness (COA), which sells a liquid formula across Africa that claims to cure HIV. Other alternative treatments included oregano, cardamom, and Black seed; homemade herbal concoctions; unknown formulas, including some that taste like "bleach"; holy oils/water; and prayers/camps.

Reasons given for alternative medication use included wanting to cure or suppress HIV and wanting to alleviate ART side effects. Side effects of using alternative treatments included weight loss, ulcers, and hospitalization.

Some reported benefits such as viral suppression, increased appetite, and weight gain. Reasons for not taking alternative treatments were: service providers advised against alternative medications; not believing in herbal/religious treatments; and not liking the taste of herbal medication.

Conclusions: Alternative treatments to ART are commonplace among HIV-positive MSM in Ghana and associated with defaulting from ART. Service providers and stakeholders must better educate HIV-positive clients about the effects of alternative treatments and the government should better regulate sale of these treatments.

Sex workers

EPD086

Awareness and acceptability of HIV pre-exposure prophylaxis (PrEP) among female sex workers in: a cross-sectional survey conducted in Horizons Femmes Yaounde, Cameroon

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Background: In Cameroon, HIV prevalence remains high among female sex workers (FSW) with an estimated rate of 24.3% (IBBS, 2016). HIV pre-exposure prophylaxis (PrEP) has been adopted by the Ministry of Public Health as an additional innovative strategy of HIV prevention among key population in the 2018-2022 National Strategic Plan for HIV/AIDS. The implementation of this new strategy started on June 2019.

To explore awareness and acceptability of PrEP, a cross-sectional survey was conducted among female sex workers aged of at least 21 years.

Methods: From July 08th to December 23rd 2019, we conducted a cross-sectional survey in which 17 itemS questionnaires were administrated to 210 FSW with an age range between 25-30 years. These Questionnaire items specifically addressed female sex workers on awareness and acceptability of PrEp. Statistical analysis were conducted using CSPRO 6.2,and SPSS 22 software.

Results: A total of 210 FSW from range age of 21- 50 were surveyed . Overall,86.2% (181/210) of respondents were aware of PrEP against 13.8% (29/210) who heard about PrEP for the first time. The main source of information on PrEP was the outreach activities conducted by peer leaders and the counselling conducted by psychosocial counselors.

Regarding acceptability, 143 respondents (15 on PrEP) stated their intention to adopt PrEP as additional HIV prevention strategy whereas 62, who are still reflecting, perceive PrEP as a secondary barrier to protection for HIV infection. 22% (46/210) respondents were not in favor of PrEP with the mindset that it can lead to a decrease in condom use with their clients.

A study also shown a strong significant association between the level of knowledge and acceptability of HIV-PrEP, i.e. 4.3 times the chance of acceptability of PrEP, with a P value = 0.001.

Also, there was a significant association between a high risk of contracting HIV and the acceptability of PrEP, i.e. a P value = 0.021. The most common reasons for PrEP non-acceptance were related to side-effects, police harassment and daily taking of PrEP.

Conclusions: To Conclude, we can assert that FSW who perceived themselves to be at risk for HIV acquisition find daily oral PrEP as an acceptable prevention strategy.

EPD087

Increasing safe sexual decision making and access to youth friendly HIV and SRH services through service linking up intervention in Southern Burundi

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Background: Baseline study conducted from May-July 2009 demonstrated practice of unsafe sex among adolescent Female Sex Workers (FSWs) and their clients who where in lack of access to youth friendly HIV, Sexual and Reproductive Health (SRH) care services in 5 fishing centers. The intervention purpose was to improve the health outcome of this key population while promoting Behavior Change (BC).

Description: This is a continued interventional study which targeted 143(28,3%) mobile FSWs and their clients 362(71,7%) who were mobile fisher men aged 14-24 y.o operating in 5 fishing centers of Southern Burundi. Link up to comprehensive health care services involved working with youth peers selected among our target population;

the Community health workers and local administration officers in collaboration and support from the local health care providers. Approach involved peer education and service referral via the existing health care stream where the target population was linked to youth friendly health care services which included: HIV counselling and testing, ART, Management of Reproductive and sexually transmitted Infections and family planning coupled with BCC through health education, counselling, and peer to peer education. Changes were measured prospectively at baseline to end line(March 2016-April 2019)

Lessons learned: At baseline, study showed 52% of youth engaged in unprotected sex while 85% reflected on their high risk activity and reported lack of access to comprehensive health care services. New findings upon initiation of this intervention showed a significant decrease in HIV and STIs incidence and prevalence as well as unwanted pregnancies which we correlated to the increase in condom use, safe sex negotiation and practice. 33/35 (94,2%) of FSWs who became pregnant followed Antenatal care; of them 8/35 (22,8%) were HIV+ and all had undergone PMTCT. Referral system was strengthened to benefit this key population as >95% accessed HIV tests which demonstrated a prevalence of 11% (49) among 454 (FSWs and their clients) who were tested. FSWs were the most affected than their male clients.

Conclusions/Next steps: Data showed that this intervention helped young FSWs and their clients to make safe sexual decision while helping them access a comprehensive HIV and SRH services and could make more positive impact if continued similar intervention was implemented.

EPD088

Young Female sex workers lived experience of selling sex and accessing HIV services in Tanzania: implications for sexual health

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Background: Adolescent girls and young women who engage in sex work are at a heightened risk of HIV compared to those who don't. Access to Sexual and Reproductive Health (SRH) services is also limited. This study explored the context of sex work for young female sex workers (YFSWs) and how they accessed SRH services including HIV services.

Methods: This study utilized an ethnographic research design involving 38 in-depth interviews (IDIs) and photovoice with 10 Young Female Sex Workers (YFSWs) aged 18-24 years. Thematic analysis was conducted with the aid of NVIVO qualitative analysis software.

Results: Five themes emerged:
1. "Selling sex in a setting where it is illegal";
2. Nature of HIV services available to YFSWs;
3. Stigma as a barrier to accessing services;
4. Preference for differentiated type of HIV services; and
5. Peer influencers in creating demand for SRH services.

Participants reported that sex work was illegal in Tanzania and highly stigmatized and thus YFSWs were in constant fear ofpolice arrest forcing them to operate discreetly. Although general SRH services were available in the communities, there were no specific services for YFSWs. Stigma hindered YFSWs accessing services in crowded health facilities that opened only during certain hours of the day. YFSWs demand for SRH services was not uniform but depended on many factors in their lives. While the older ones with children expressed a need for family planning services, the younger ones did not seem to have the same priority as most of them did not have children. Peers were important in influencing other YFSWs' decision on SRH services to use and where and how to access the services. Older YFSWs shared their supply of condoms and contraception with peers and advised them on what services to use and where to find it.

Conclusions: YFSWs operate under stressful conditions that limiting access HIV services. Peers of YFSWs play a key role in their access to, and use of HIV services and could be utilized to promote access among YFSWs network. There is need for differentiated type of SRH services for YFSWs and building an enabling environmentto motivate YFSW to access services.

EPD089

Barriers and Enablers to Young Female Sex Workers accessing HIV services in Tanzania: perspectives of health providers and Young Female Sex workers

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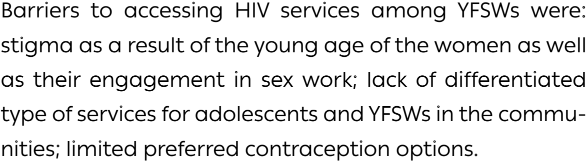
Background: Despite being at an increased risk of violence and HIV infection, young women who sell sex, may not easily access HIV services. The objective of the study is to explore views of health providers and young female sex workers (YFSWs) themselves on barriers and enablers to accessing HIV services in Tanzania and to offer insights to enhance access.

Methods: This study utilized an ethnographic research design involving six SRH programme implementers and photovoice with 10 Young Female Sex Workers (YFSWs) aged 18-24 years. Thematic analysis was conducted with the aid of NVIVO qualitative analysis software.

Results: Health providers reported common SRH services available in their communities as HIV testing and treatment, contraception, and STIs treatment.



Barriers to accessing HIV services among YFSWs were: stigma as a result of the young age of the women as well as their engagement in sex work; lack of differentiated type of services for adolescents and YFSWs in the communities; limited preferred contraception options.

Enabling factors were reported as: Service providers supporting girls to access SRH services through peer groups; respect and trust built between health providers and YFSWs; prompt service provision to YFSWs when they come to facilities; localization of services to where YFSWs operate and making these services available for 24 hours.

Conclusions: There is need to address health provider-related barriers to YFSWs accessing HIV services while emphasizing the promotion of the factors that promoted uptake such as localization of services and 24-hour access.

EPD090
Substance use and depression impede optimal ART adherence among female sex workers living with HIV in the Dominican Republic

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Background: Female sex workers (FSW) are disproportionately affected by HIV and have worse HIV outcomes compared to women not involved in sex work, attributed in part by lower anti-retroviral therapy (ART) adherence. Substance use and depression are important barriers to ART adherence among people living with HIV, yet few studies have assessed the relationships between substance use, depression, and ART adherence in FSW, with limited longitudinal studies.

Thus, this study assessed temporal relationships among illicit drug use and ART adherence among FSW and explored the moderating effect of depression.

Methods: A sample of 240 FSW living with HIV in the Dominican Republic were assessed in at least one of 3 annual time points (T1-T3) from 2018-2021. We used a validated 5-item measure to assess ART adherence (e.g., doses missed in the last 4 days), yielding a summary score (range: 0-5; higher scores reflect lower ART adherence).

The 9-item Patient Health Questionnaire (PHQ-9) assessed depressive symptoms (range: 0-27; ≥5 considered mild-severe). Past 6-month illicit drug use was assessed for marijuana, crack, cocaine, heroin, ecstasy and other illicit drugs), yielding a summary score of the number of drugs used. Cross-Lagged Panel Model (CLPM) analyses assessed the reciprocal relationship between drug use and ART adherence. Multiple group CLPM assessed variation in the relationship between drug use and ART adherence by depression, accounting for age, income, education, and relationship status.

Results: At T1-T3, mean scores were 1.7, 1.7, and 1.6 out of the 5 potential indicators of suboptimal ART adherence, while the prevalence of illicit drug use prevalence was 25%, 23%, and 19%. The majority of participants (70%) had mild-severe depressive symptoms at T1. Use of one more illicit drugs increased later levels of suboptimal ART adherence scores by 0.35 (SE=0.14, p=0.013).

The relationship between illicit drug use and ART adherence was significant among FSW with mild-severe depressive symptoms (B=0.37, SE=0.16, p=0.023), and not significant among FSW without depressive symptoms.

Conclusions: Findings highlight the importance of addressing the syndemic nature of HIV and associated co-morbidities (e.g., substance use, mental health) in order to improve ART adherence and subsequently viral suppression in FSW, and to curb ongoing HIV transmission.

EPD091
Prevention strategies against HIV transmission and detection among MSM

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Background: With the ever increased prevalence of human immunodeficiency virus (HIV) among men who have sex with men (MSM) remains high in Nigeria and has shown an upward trend . However, the status of HIV-infected MSM in the underdeveloped southwest of Nigeria is unknown.

The study aimed to evaluate the real-world status of HIV-infected MSM and to compare the characteristics between HIV-infected 'men who have sex with men only' (MSMO) and 'men who have sex with men and women' (MSMW).

Methods: The study was conducted with HIV-infected MSM patients in Heartland alliance LTG/GTE Lagos Zone A branch in Agege in 2022. A questionnaire addressing socio-demographic characteristics, sexual behaviors, condom use, clinical signs and symptoms, and HIV detection and transmission routes was used.

Results: A total of 150 HIV-infected MSM were enrolled. More than 70% of MSM had experienced their first sexual intercourse before 20 years old. More than 55.8% of the patients had a high income. Compared with MSMW, more MSMO went to college (60.2% vs. 48.7%), and more often (20.9% vs. 8.7%) use condom during anal sex. Weight loss was the most common sign (15.1%). The numbers of male partners and high-risk sexual behaviors among HIV-infected MSM remained high (30.6%), and few patients (4.6%) agreed to voluntary counseling and testing (VCT).

Routine health examination was the most frequently (72.7%) used detection method. Homosexual behavior may be the most frequent transmission route (87.9%) among HIV-infected MSMO and MSMW.

Conclusions: The findings indicate that the government should promote more prevention strategies against HIV transmission and detection among MSM.

EPD092

Individual and collective forms of resistance: direct and mediated pathways between HIV and sex work stigma and viral suppression among female sex workers in the Dominican Republic

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Background: HIV stigma is a known barrier to optimal HIV outcomes, yet the interplay between HIV and intersecting stigmas among cisgender female sex workers (FSW) is less understood. Interventions that facilitate social cohesion among FSW, as a means of resisting stigma and addressing other structural constraints, have been successful in reducing HIV risk. Limited work has focused on multi-level stigma resistance to improve HIV treatment outcomes among FSW.

Methods: We assessed direct and indirect effects of multiple pathways between HIV stigma, sex work stigma and viral suppression using survey and biologic data collected from a cohort study of 210 FSW living with HIV in the Dominican Republic in 2019. We employed structural equation modeling to explore the role of anticipated HIV stigma and the mediating and moderating effects of individual and collective forms of stigma resistance, including dignity related to sex work as an occupation and social cohesion among FSW, on ART interruption (stopping ART one or more times in last 6 months) and viral suppression (<400 copies/mL).

Results: 76.2% of FSW were virally suppressed and 28.1% had interrupted ART in the last 6 months. ART interruptions had a negative direct effect on viral suppression (OR = 0.26, p<0.001), while cohesion had a positive direct effect on viral suppression (OR=2.07, p=0.046). Anticipated HIV stigma had a significant total unmediated negative effect on viral suppression (OR=0.34, p=0.055). This effect was mediated by the combined effects of cohesion and dignity whereas the impact of HIV stigma on viral suppression was no longer significant.

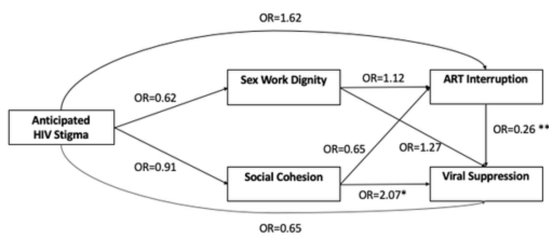

Figure. Structural equation model for pathways between HIV stigma and viral suppression: multi-level forms of stigma resistance.

Conclusions: Individual and collective forms of sex work stigma resistance reduced the negative impact of HIV stigma on ART interruptions and viral suppression. Findings reinforce the importance of expanding community-driven, multi-level interventions among FSW to improve HIV treatment outcomes and to curb ongoing transmission dynamics at a population level.

EPD093

Intragroup social support, social participation, & consistent condom use among women who exchange sex in Baltimore, Maryland

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Background: Consistent condom use (CCU) remains critical to HIV prevention among women who exchange sex (WES). WES-led community empowerment programs have been effective in addressing factors that contribute to HIV risk. Collective power is key to empowerment; both within-group and intergroup social connection have been associated with CCU, and theory posits synergistic relationships between them. However, research is limited, particularly in the United States and other high-income settings.

Methods: WES recruited at street locations throughout Baltimore, Maryland, United States responded to detailed questions about relationships with other WES and past-week sexual acts and condom use with paying clients. Using latent class analysis, we identified subgroups of WES based on the co-occurrence of indicators of intragroup social support, estimated subgroup-specific prevalence of past-week CCU with clients, tested for overall and pairwise significant differences, assessed associations between participation in non-sex work-related groups and CCU overall and within each latent class, and tested for interactions between intragroup and intergroup social connection.

Results: Fifty-four percent of participants reported past-week CCU with clients. Using a three-class model for intragroup social support (*broad support*, *low support*, and "*looking out*;" Figure 1), adjusted estimated prevalence of CCU was 48.9% in the *low support* class, 54.5% in the *looking out* class, and 61.3% in the *broad support* class. Preva-

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lence was significantly lower in the *low support* class than the *broad support* class (*p*=0.028). Among the *low support* class only, any non-WES-specific social participation was associated with 27% increased odds of CCU (*p*=0.028).

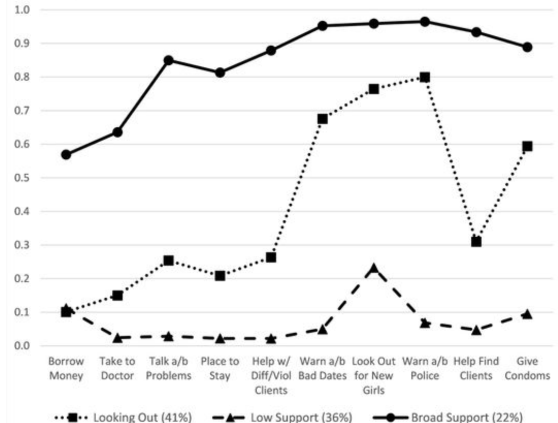

Figure 1. Conditional probability of each intragroup social support indicator given membership in each class.

Conclusions: Findings highlight the importance of broad instrumental and emotional support for CCU among WES, in addition to informal sex work-related informational support, such as bad-client warnings. In the absence of intragroup social support, participation in outside groups may offer some sexual risk protection. Thus, interventions seeking to increase CCU among WES should promote intragroup relationship-building and broader social participation.

EPD094

Social influences on PrEP initiation, adherence, and persistence among female sex workers in Durban, South Africa: a longitudinal qualitative analysis

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Background: South African national guidelines recommend pre-exposure prophylaxis (PrEP) for all individuals at high risk of HIV acquisition, but coverage, adherence, and persistence remain suboptimal among female sex workers (FSW). Social influence has been identified as both a facilitator and a barrier to PrEP use in numerous settings. This analysis investigates the social actors and mechanisms influencing PrEP initiation, adherence, and persistence over time among FSW in eThekwini (Durban).

Methods: Semi-structured, serial in-depth interviews were conducted from October 2020-June 2021 with 30 HIV-negative FSW initiating PrEP and a case management intervention through TB HIV Care's FSW HIV-prevention program in eThekwini. Interviews and case manager notes were analyzed within a social support framework using thematic coding in Atlas.ti 9, narrative summaries, and matrices.

Results: FSW PrEP use was influenced primarily by family, partners, friends, and work colleagues, and occasionally by clients and venue managers. Informational influence motivated PrEP initiation among FSW through sharing of knowledge and experience among peers *(Figure 1)*.

Instrumental influence and emotional influence supported or inhibited PrEP adherence and persistence, and negative forms of influence were often driven by stigma. Instrumental and emotional support were most likely to have a positive impact on PrEP adherence and persistence when consistent over time, while one instance of negative influence could be sufficient for discontinuation. Social environments were dynamic and FSW relied on social support less over time as pill-taking became routinized behavior.

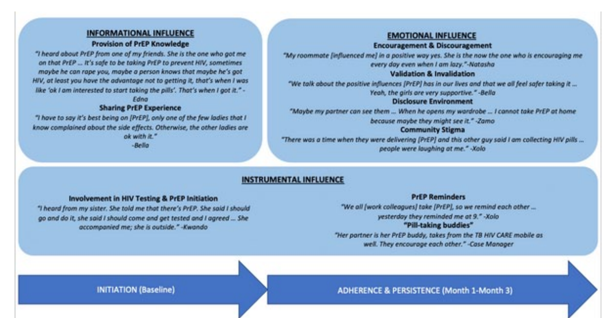

Figure 1. Social influences on PrEP use among FSW over time in eThekwini, South Africa during the first 3-months of PrEP use. Results are from serial in-depth interviews among 30 FSW initiating PrEP. Key themes at initiation and follow-up are described and complemented by illustrative quotes. Pseudonyms are used throughout.

Conclusions: Initiatives seeking to increase PrEP initiation, adherence, and persistence among FSW may want to consider leveraging PrEP peer ambassadors and social support in early stages of PrEP use to promote impactful positive social influence. Changing social norms around PrEP could prevent PrEP discontinuation by reducing negative forms of instrumental and emotional influence. Programs can additionally lessen the impact of social influences by teaching PrEP users self-management strategies.

EPD095

FSWS' situation assessment in Lahore Pakistan: a study by BAHAM Foundation on HIV&AIDS related vulnerabilities and life realities of 300 female sex workers in Pakistani culture

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Background: Sex work in Islamic Republic of Pakistan is criminalized under sections 377, 371A and 371B of Pakistan Penal Code. Gaps in pro women laws in relation to female sex workers make this marginalized group of population vulnerable to face extreme levels of stigma & discrimination along with physical and social risks. Sex workers' vulnerabilities pertinent to HIV&AIDS and other epidemics in Pakistan are still poorly documented and assessed as sex work operates mainly as secret in undergrounds because of illegal nature. This particular study aims to formulate evidence based advocacy, services delivery, information/education and empowerment programs for FSWs in Pakistan.

Methods: Using a cross-sectional survey design, during 15th-30th April 2021, non-probability sampling technique and snow-ball strategy was used to recruite a sample of 300 FSWs.

Questinnare consisted of 54 items divided into 4 sections namely yourself and family, Sex trade and other sexual relationship, sex trade and drug/alcohol use last one is sexual and reproductive health.

Data analysis was done SPSS version 22. Descriptive statistical method was used for statistical analysis.

Results:

- 89% FSWs are from age group 20-40 years, minimum age of initiation of sex work reported is below 15 years. 61.4% are illiterate, 65.5% are responsible for completely running house, 72.4% earn less than 250 $ per month.
- Partners vary in number, paying capacity and types age raning 10-70 years exposing FSWs to violence, low wages and increased drug-use.
- 78.6% FSWs are married with average 3 children. Negative effects of sex-work include stigma (89.5%), social boycott (44.2%), domestic violence (40%), disputes (68.8%), relationship problems (78.6%), malnutrition (55.1%) and child abuse (19.3%).
- 77% use drugs/alcohol during sex-work while upto 94.6% report poor health status. 72.6% FSWs experievced arrested and abused by police 87.1%'s work is affected by COVID-19.

Conclusions: Study highlights importance of involving young FSWs with focus on empowerment, HIV, SRH, pictorial communication. Invoving LEAs and urgent response to COVID-19 situation is needed.

Drugs/alcohol harms reduction and treatment can improve FSWs' quality of life. Reducing GBV and stigma, life-skills programs can ensure FSWs' social well-being. Focussed advocacy for improvement in laws leading to recognition of FSWs' rights is essential.

EPD096

Bringing PrEP closer to clients in Ghana: supporting pre-exposure prophylaxis (PrEP) initiation and adherence in the community

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Background: In August 2020, thePEPFAR- and USAID-funded Meeting Targets and Maintaining Epidemic Control (EpiC) project began implementing Pre-Exposure prophylaxis (PrEP) in two regions (Greater Accra, Ashanti) in Ghana to prevent HIV acquisition among key populations (KPs) at high risk, including men who have sex with men (MSM) and female sex workers (FSWs).

After six months of implementation, demand for PrEP was decreasing and discontinuation was high. In response, EpiC adapted a differentiated service delivery (DSD) approach consisting of community-based PrEP services.

Description: EpiC implemented the community-based PrEP initiation and refill program using a private service mobile clinic and lay counselors, in the Greater Accra region. The mobile clinic began operation in October 2020, and lay counselor provision of community refills commenced in February 2021. Peer educators, lay counselors, and PrEP champions shared the mobile clinic's schedule and location with potential and current clients. With clients' permission, clinical staff informed lay counselors of who was due for refills so that lay counselors could follow up with those clients. Lay counselors also provided HIV testing, as appropriate, to avoid any lapse in PrEP services. They engaged with clients to establish a convenient meeting place for refills.

Lessons learned: Demand for community initiation and refills of PrEP was higher among FSWs than MSM. Of the 142 FSWs who initiated PrEP, 140 (98%) initiated PrEP through the mobile clinic. More than half (n=77 [55%]) of these individuals received their refills in the community versus the facility. The majority of MSM preferred to initiate PrEP and obtain refills at the facility over the community.

Of the 157 MSM who initiated PrEP, 119 (76%) did so in the facility and 38 (24%) through the mobile clinic. For the 89 MSM who sought PrEP refills, 76 (85%) received them at the facility and 13 (15%) from lay counselors in the community.

Conclusions/Next steps: Community initiation and refills of PrEP supported uptake and continuity of services among high-risk KP individuals in Ghana, but especially among the FSW. DSD options should be based on the unique needs and preferences of each population at risk of HIV.

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Female sex workers' preferences for Multi-Purpose Technologies to prevent HIV, other Sexually Transmitted Infections and unintended pregnancies in Kampala, Uganda

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Background: Female sex workers (FSWs) in sub-Saharan Africa are at high risk of HIV infection, unintended pregnancies and other STIs. The development of innovative Multi-Purpose Technologies (MPT's) has the potential to address this dual risk. This study explored FSWs preferences for future HIV prevention MPTs in Kampala, Uganda.

Methods: We conducted 15 in-depth interviews with FSWs aged15-45 years in Kampala from October-December 2021. We explored women's perceived and lived experiences of existing family planning and HIV prevention products and preferences for future MPTs. Interviews were audio recorded, transcribed, translated and analyzed thematically.

Results: Most women used injectable contraceptives, which were acceptable except when they disrupted menstruation. Oral pills were considered unreliable due to the need for constant adherence; implants were considered too expensive and painful to insert and may move and be lost in the arm. Most of the women reported using HIV testing of clients and condoms for HIV prevention, with only a few women using oral PrEP.

Younger and older FSWs were interested in future long-acting LA MPTs. Their priority was for protection against HIV and unintended pregnancy, but less interest in additional protection against other sexually transmitted infections.Most women liked the idea of injectable MPTs although expressed different preferences for the period of protection (1 month to 5 years). Some interest was shown in MPT implants or pills because of favorable experiences using specific family planning and HIV prevention products.

Participants reported that vaginally inserted products were not suitable for women who have multiple partners due to an increased risk of vaginal infection. They reported misconceptions about vaginally inserted products, fearing that they may move and be lost inside the body. Misconceptions were shaped by participants' limited knowledge of, and experience with vaginal products as well as rumors' among peers.

Conclusions: Women in our study were interested in LA MPTs. In preparation for the implementation of LA HIV prevention products (i.e. vaginal ring) and potential future MPTs, appropriate interventions to improve sexual and reproductive health literacy are crucial to increase uptake of available products (such as oral PrEP) and new HIV prevention products and MPTs in the future.

EPD098

Youth as Actors of change against AIDS in Benin

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Background: In Benin, adolescents and young people make up 33.33% of the global population. Among 10-24 year old girls, 85% of them have no knowledge of HIV AIDS compared to 79% of boys. 62% of young women and 80% of young boys have never been tested for HIV. This situation has led to technical and financial support from UNAIDS Benin to increase the rate of HIV testing among young people through community testing.

Description: Having taken place in five districts, the young volunteers joined forces with the decentralized state services to facilitate the service offer. The young volunteers first carry out a scouting followed by awareness raising about the targets. Then the decent mobile clinic on the spot to screen adolescents and young people previously sensitized in the " ghetto "; prostitution area; markets; college and grounds. Once the screening sessions are over, the young volunteers record the data of the people screened (WITHOUT SEROROLOGY STATUS) in software called DHIS2.

Lessons learned: The implementation of this project required several strategies such as community screening: young volunteers are trained and equipped followed by support from state services. After 6 months of activity 1,600 adolescents and young people are made aware of HIV / AIDS and the advantages of Family Planning. 1,440 adolescents and young people are screened for HIV / AIDS but also for breast and cervical cancer and know their serological status. 90% of the people sensitized and screened are adolescents and young people aged 10-24. The remaining 10% have recently been tested for HIV and therefore already know their HIV status. 216 or 15% of people are detected positive and refer for antiretroviral treatment.

Conclusions/Next steps: The results are easily achievable when young volunteers are empowered for community screening as this accelerates the goal of the first 90 of UNAIDS. The sensitizations are open doors to generate the demand for screening. The current challenge remains to instill the habit of screening in young populations.

EPD099

Using participatory approaches to support empowerment and encourage HIV service use among sex workers: findings from five cities in Indonesia

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Background: Sex worker (SW) empowerment programs in Indonesia have several focus areas from health intervention, human rights and legal issues, economic empowerment, and violence management. However, studies on the exact empowerment mechanism that can increase SWs' access and their utilization of sexual and reproductive health and rights (SRHR) or HIV service are very limited.
This study aims to assess enabling factors and barriers of community empowerment on meaningful participation of SW communities in policies, programming, and services and on access and utilization of SRHR and HIV in Indonesia.
Description: Using a community empowerment conceptual framework, a mixed method study consisting of a literature review, survey, qualitative assessment, and policy modeling (DELPHI) was used to collect and analyze data in five cities. As participatory community-based research, this study actively engaged SWs as researchers or enumerators. Two SWs contributed as researchers and 25 SWs participated as survey data enumerators. Key elements of community empowerment used in this study were based on the Sex Worker Implementation Tool (SWIT).
Lessons learned: A total of 500 SWs and 50 experts from various background participated in the survey, qualitative assessment, and policy modeling. The majority (65%) survey respondents were female sex workers, and the average age was32 years old ranging from 18 to 62 years. Enabling factors to successful empowerment program for SWs were awareness and motivation to be involved in program, accurate information, social support, good relationships, coordination and collaboration between program implementer and sex workers.
Barriers in implementing empowerment program include stigma, regulations in entertainment venues, time availability, a mismatch between programs and SWs' needs, distrust, and indifference among SWs, and funding. Empowerment programs for SWs in Indonesia have been implemented by community-based organizations, NGOs and government agencies.
Conclusions/Next steps: Community empowerment has shown positive association with SWs' participation in decision making of policy and program development and access and utilization of SRHR services.
In order to address some barriers in term of coverage, access, and quality of empowerment program for SWs in Indonesia, this study recommends a model of empowerment program, including capacity strengthening, social, health, and economic empowerment at national or local level.

EPD100

Scaling up HIV service coverage among high class FSW through virtual interventions

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Background: The traditional peer education approach leaves out high class or corporate female sex workers (FSW) since they do not avail themselves for community-based HIV programs. This group of FSW are difficult to reach due to their clandestine nature of operations. Most civil society organizations implementing FSW programs are currently capitalizing on social media as an intervention tool for reaching hard- to- reach FSW.
Under the Key Population Program being led by West-Africa Program to Combat AIDS & STI with funding from The Global Fund, social media has been integrated as a mainstream strategy for reaching hard-to-reach FSW in Ghana.
Description: WAPCAS in collaboration with PROLINK, a sub-recipient under the FSW intervention introduced social media to expand service coverage among hard-to-reach FSW. The program adopted the use of social media apps including Badoo, Tiktok, SnapChat, Meet24, Locanto, Evamax, M2U, Facebook, WhatsApp, etc.
A dedicated desk was set up comprising Peer Educators who are active on these platforms to reach FSW online and link them to services. Clients reached through social media were referred to KP-friendly trained nurses from Ghana Health Service to access services including HIV testing services, STI services, and Pre-Exposure Prophylaxis (PrEP) through an appointment-based system.
These clients engaged healthcare providers for services without physical contacts with Peer Educators who fostered the linkage. This strategy was used to keep clients unanimous and avoid issues of mistrust.
Lessons learned: In 2021, this implementation approach reached 204 FSW with comprehensive HIV education and referred same for HIV testing services (HTS), STI screening and PrEP. A total of 50 FSW received HIV testing services, 8 diagnosed positive and same initiated on ART whilst 26 clients received Oral PrEP.
Conclusions/Next steps: Develop program tailored online apps for hard-to-reach FSW to allow real-time interaction with healthcare providers and promote access to services. Publish useful resources on HIV and related topics on this portal to serve as an information hub for FSW who operate online.

EPD101

Barriers and facilitators of HIV testing among women who exchange sex and use drugs in Kazakhstan: a mixed methods study

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Background: Women who both exchange sex and use drugs (WESUD) experience many impediments to HIV testing and service utilization, including violence perpetrated by partners and clients and self-, community- and provider-level stigma. Poverty, unemployment, and substance use decrease their ability to negotiate condom use and substantially increase their risk for HIV acquisition and transmission. Little research has examined the behavioral, social, and environmental factors that influence HIV testing and/or HIV self-testing (HST) among this population. This study uses mixed methods (quantitative/qualitative) to characterize barriers to and facilitators of HST among WESUD.

Methods: We conducted a computerized survey (N= 48) and online in-depth interviews (n=30) or focus groups (n=18) with WESUD in two Kazakhstani cities, Almaty and Taldykorgan (March-July 2021). We recruited participants through snowball sampling via two local non-profit organizations "Amelia" and "Sau Bolashak".

The survey collected data on sociodemographics, testing and HST experiences, stigma, substance use, and violence experiences. The qualitative interviews explored these areas and sought feedback on potential program features. The survey data were analyzed descriptively and the qualitative interviews were recorded, transcribed, coded and analyzed using a pragmatic analytic approach.

Results: The majority of participants (89.4%) reported sex work as their primary income. Participants reported multiple vulnerabilities to HIV: 16.7% used condoms at every sexual intercourse; 75.0% used alcohol/drugs before sex with paying partners. Under half (44.7%) were tested for HIV in past three months, and over one-third (36.2%) tested 6+ months ago.

In qualitative interviews, participants described fear as a barrier to HIV testing including potential outcomes of testing positive (public identification due to a breach of confidentiality, loss of job/income/livelihood) and high levels of community stigma and experienced stigma (from family/friends, health care providers, etc.). Participants expressed high interest in HST, identifying it as more confidential, accessible, secure, friendly, and user-controlled. Some reported that if provided instruction and test kits, they would teach their peers how to self-test.

Conclusions: We identified multiple and familiar barriers to HIV testing among FSWUD in Kazakhstan. WESUD need accessible and tailored interventions to address these barriers, particularly those promoting HIV self-testing.

EPD102

Crises response and reduction of human rights abuses against Key Populations (KP) in Ghana – a case of Peer Paralegal under the WAPCAS/Global Fund Human Rights Intervention

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Background: Key Populations (KPs) including Female Sex Workers and Men who have sex with men encounter crises in their daily lives and operations. These crises include stigma and discrimination, assault, unlawful Police arrest, sexual harassment, and blackmail. These crises result in barriers to HIV, STI and TB Services thereby limiting the uptake of these health services.

The Ghana-West Africa Program to Combat AIDS and STI (WAPCAS) with funding from the Global Fund implemented a Human Rights intervention (2018-2020) using KPs as Peer Paralegals to mitigate crisis response within the KP communities.

Description: The human rights intervention implemented by WAPCAS identified the need to strengthen legal literacy among KP to improve crises response within the KP communities. Experienced peer educators were selected and trained as Peer Paralegals to provide support to KPs in crises. The Peer Paralegals identify and follow up on human rights abuse cases, resolve cases within their capacity, refer cases beyond them to the program Pro-Bono lawyers, and link KPs in crises to available legal services.

The Peer Paralegals also help promote the rights of KPs and persons affected by TB and PLHIV, provide behaviour change messages, reduce stigma and discrimination, and provide easy linkages to services.

Lessons learned: The Peer Paralegal approach has strengthened and improved confidence in the KP community crises response system. This is because KPs have an easier point of reference whenever there is crisis. The behaviour change education offered by the Peer Paralegals have improved knowledge and therefore contribute to the prevention of crises within the communities.

Strong networks have been established between the Peer Paralegals and the various government institution. This is important for sustaining the outcomes of the intervention.

Further, barriers experienced by KPs in accessing services including health have been reduced. Peer paralegals reported 141 cases after three years of implementation and were able to settle 7 cases by themselves.

Conclusions/Next steps: The Peer Paralegal program for KPs should be strengthened across all the districts of implementation. There is the need for greater collaboration among the KP Peer Paralegals and the PLHIV & TB Peer Paralegals.

EPD103

Acceptability of injectable cabotegravir versus daily oral TDF/FTC for PrEP: lesson from HPTN 084

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Background: HPTN 084, a multisite, double-blind, randomized Phase 3 trial, compared the safety and efficacy of a long-acting cabotegravir (CAB LA) injectable to daily oral TDF/FTC for prevention of HIV-1 in uninfected African women. Like a similar trial in MSM/TGW (HPTN 083), the trial was stopped early for demonstrating superiority of CAB LA over TDF/FTC in preventing HIV. The shortened timeline of these two trials has expedited the need to consider introduction strategies for different populations.

We examine qualitative data from a four-country substudy nested within HPTN 084 to better understand acceptability of these two PrEP methods and considerations for CAB LA access among African women at risk of HIV.

Methods: Qualitative research teams in Malawi, South Africa, Uganda and Zimbabwe conducted repeated, in-depth interviews with 68 women to understand beliefs about and experiences with trial products across individual, partner, community and clinical trial contexts.

The research teams followed a four-step process to read transcripts, develop a codebook and apply codes in NVivo to transcripts with intermittent interrater reliability checks. We developed memos describing Sexual History, Product-related Acceptability, Adherence, Pregnancy, PrEP Use, and Clinical Trial Experiences.

We classified participants as: self-declared sex work, transactional sex, non-transactional partners, and monogamy; summarizing information in Excel matrices to explore differences across risk categories related to product acceptability and other themes.

Results: Participants overwhelmingly preferred IM injections to daily pills. Regardless of risk category, women liked the injectable's privacy from husbands, boyfriends, sexual clients or just "nosey people".

At least half of participants worried about forgetting to take pills, describing previous mishaps with oral contraception or challenges with study pills. Late night work, unexpected travel or heavy drinking impeded pill adherence for some women. Descriptions of pain - the most common injectable concern – were variable; other side effects were rarely mentioned. Women in high-risk categories were more likely to mention "effectiveness" as a reason to prefer the injection, to have disclosed about study participation, and to know where they might access PrEP beyond the trial.

Conclusions: Women's desire for privacy and ease of use outweighed other injectable concerns, resulting in a strong preference for CAB LA.

EPD104

Self-reported adherence to antiretroviral therapy (ART) among women engaged in commercial sex work in Southern Uganda

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Background: Women engaged in sex work (WESW) are at a higher risk of acquiring and transmitting HIV. In sub-Saharan Africa, the HIV prevalence among WESW is estimated at 37%. In Uganda, WESW account for 18% of all new HIV infections. Even with the expansion in ART, WESW face access and treatment-related challenges, exacerbated by poverty, stigma, criminalization of sex work, and physical and sexual violence.

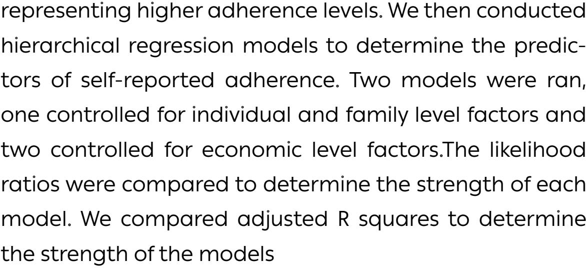
This study examined individual, family and economic level factors associated with self-reported adherence to ART among WESW in southern Uganda.

Methods: Baseline data from a longitudinal cluster randomized study involving 542 WESW (18-55 years), recruited from 19 HIV hotspots were analyzed.

Self-reported adherence to ART was measured using three items:

1. Number of days missed taking at least one dose of medication;
2. How often they take their medication as prescribed; and;
3. How good a job they did at taking their medication as prescribed in the past 30 days.

Item responses were linearly transformed to a scale of 0-100. Summary scores were created, with higher scores



representing higher adherence levels. We then conducted hierarchical regression models to determine the predictors of self-reported adherence. Two models were ran, one controlled for individual and family level factors and two controlled for economic level factors.The likelihood ratios were compared to determine the strength of each model. We compared adjusted R squares to determine the strength of the models

Results: Of the total sample, 42% (n=220) of participants tested HIV positive. Out of these, 89% (n=195) were enrolled on ART, 10% (n=19) were initiated on ART following study enrollment. Preliminary analyses indicate that financial distress (b=-0.62, 95% CI= -1.15, -0.09, p=0.02), depressive symptoms (b=-0.70, 95% CI= -1.23, -0.15, p=0.01), and age (b=-5.91, 95% CI= -10.45, -1.37, p=0.01) were associated with lower levels of adherence to ART.

Conclusions: Preliminary results show that poverty and mental health-related challenges undermine treatment adherence among WESW.

These results point to the need to integrate economic strengthening and mental health components in the HIV treatment cascade targeting WESW, especially in low resource settings.

EPD105

Increasing access and uptake of pre exposure prophylaxis (PrEP) among the sex workers in Uganda

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Background: HIV prevalence is over 5 times higher among Sex Workers (35-37%) compared to the general population in Uganda. Despite the efforts made by the government of Uganda, implementing partners and CSOs to curb down the HIV prevalence through use of PrEP and other interventions, the infections have continued to raise especially among the Key populations, thus calling for urgent interventions that primary targets the most affected populations.

However, much as PrEP seems to be a promising intervention /programme to reduce new infections among sex workers, but its enrolment/implementation still faces challenges among which is information gap on PrEP by both the users and implementer/health providers thus necessitating the need to address the changing and complex challenges of PrEP implementation in Uganda.

Description: Uganda network of sex worker led organizations (UNESO) partnered with Ministry of Health in Uganda to implement a project titled' Strengthening capacity of health workers and sex workers to improve PrEP uptake in Uganda aimed at Improving PrEP uptake and retention among sex workers for HIV response.

The project Strengthened partnership with ministry of health leading to meaning full involvement of sex workers at national decision making level.

For example recently sex workers/UNESO was invited by the MOH to input in the development of PrEp guidelines. Improved recognition of sex workers' contribution in the HIV prevention responses. 200 health workers were trained on how to provide friendly and quality HIV services to sex workers. 415 sex workers were trained as champions to go and sensitize fellow sex workers on PrEP use.

Lessons learned: We have learnt that ,sex workers as one of the HIV and AIDS directly affected communities are very key in programming, planning, implementing and monitoring of programs that direct addresses the issues that affects them.

Use of health and human rights approach can effectively influence partnership between sex workers and Government entities like MOH, police and other key stakeholders.

Conclusions/Next steps: Need to continue engaging key stakeholders in sex worker activities so as to effectively lobby *and advocate for meaningful participation of sex workers in national decisions making processes for issues that affects sex workers.*

EPD106

Understanding the uptake of HIV care and prevention and the risk of acquiring and transmitting HIV amongst young women who sell sex in rural KwaZulu-Natal, South Africa

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Background: Young women who sell sex (YWSS) are at very high risk of acquiring HIV in South Africa (SA). We leveraged the roll-out of DREAMS combination HIV-prevention program to adolescent girls and young women (AGYW) in a rural sub-district in KwaZulu-Natal (KZN), SA to understand YWSS's risk of transmitting and acquiring HIV in a representative sample of AGYW.

Methods: Between 2017-2019 we interviewed a random-sample of AGYW (13-30 years) annually in rural KZN and collected dried blood spot (DBS) samples for HIV serology and viral load. YWSS were defined as those answering

'yes' to the following questions in any of the 3-year follow-up: *"having sex with anyone because you needed (or your partner provided) a material item that was important to you"* and/or *"having sex with other people for a living"*.
Transmissible HIV was defined as being HIV positive with a detectable HIV viral load (>50copies/ml) and being at risk of acquiring HIV was defined as condom-less sex when not on PrEP. We used multivariable logistic-regression analyses to identify determinants of YWSS and their HIV-outcomes, adjusting for age, education and socio-economic status.
Results: 2758 (96.2%) of those eligible participated and 2404 (87.2%) provided data for at least one follow-up time-point. Overall, 469 (19.5%) AGYW self-identified as YWSS. 100(32.2%) YWSS were HIV-positive compared to 18.3% all AGYW. Of which 60 (60%) were on ART. Transmissible HIV n=43 (43%) and risk of acquiring HIV n=113/191 (59.2%) was high among YWSS. 132 (42.4%) YWSS reported consistent condom use compared to 20.8% of all AGYW, and only six HIV-negative YWSS had ever used PrEP. YWSS was associated with food insecurity (adjusted OR=1.62 95%CI 1.16-2.26), a higher number of lifetime sexual partners (aOR=2.08, 95%CI 1.34-3.24), and positive HIV status (aOR=2.04, 95%CI 1.18-3.53). After adjustment, there was no association between risk of acquiring or transmitting HIV and selling sex.
Conclusions: Prevalence of selling sex is high amongst young women in this poor rural setting and associated with poverty and HIV status. Despite a high burden of HIV and interventions targeting AGYW, uptake of HIV services including PrEP and ART is sub-optimal among YWSS.

EPD107
Applying human-centered design approaches to identify barriers to continuous engagement in HIV/ART services among female sex workers and develop service prototypes to promote service uptake in Myanmar

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Background: Since 2018, HIV/ART drop-in centers under the Targeted Outreach Program (TOP) which provides HIV related health services in Myanmar have experienced low repeated HIV testing rates, delays in ART initiation and high loss-to-follow-up after initiation among female sex workers (FSWs).
This study aimed to identify FSWs' barriers to engagement in care and continuous engagement in HIV testing and treatment and design interventions to improve their service utilization in Yangon, Mandalay and Myitkyina.
Methods: Human-centered design (HCD) methodology was applied to gather insights from TOP clients who did not come for repeated HIV testing, delayed ART initiation and loss-to-follow-up. Because of COVID-19 pandemic, semi-structured qualitative interviews were conducted via telephone in September 2020 with 23 respondents. Inspiration and ideation phases were completed.
Findings were used to design service prototypes which addressed barriers to access regular HIV/ART services. 13 FSWs were interviewed again to obtain opinions on the prototypes.
Results: Frequent workplace migration, prioritizing jobs, inability to go outside freely without brothel managers' permission, fixed clinic opening hours and worrying about breach of confidentiality prevented FSWs from receiving regular testing and treatment. Transportation reimbursement failing to cover actual transportation charges deterred them from visiting the centers regularly. Difficulties in disclosing HIV status, low risk perception of disease, lack of comprehensive information on treatment resources and fear of consequences of positive HIV results such as being discriminated by colleagues and owners made FSWs delay initiating ART and lost to follow-up.
Based on these findings, three prototypes were developed:
1. Making services more FSW friendly with facilities such as transportation arrangement, flexible opening hours and teleconsultation with doctors and counsellors;
2. Advocating brothel managers and authorities through information sessions to reduce FSW's social and occupational challenges;
3. Establishing a communication channel which provides health education, treatment sources, regular reminders for HIV/ART services and psychological support to help them manage consequences of positive HIV results.
FSWs welcomed the idea of getting more FSW friendly services.
Conclusions: Despite COVID-19 pandemic, applying HCD approach enabled us gain insights into FSW daily lives and barriers in receiving HIV/ART services through interactive discussions and design customized prototypes.

EPD108
Children of female sex workers: a way forward to counter risk and vulnerabilities

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Background: Intergenerational risk of involvement in sex work among children of Female Sex Workers (FSWs) is a neglected area in HIV intervention programme. Studies have shown the risk and vulnerability among children of FSW especially those of the girl child. This paper draws from the experiences shared by FSWs, their fears of protecting their children and the welfare provisions they seek to protect the interests of their children.
Description: The Humsafar Trust, a community-based organization which implements a virtual HIV intervention programme to reach out to key, vulnerable and hidden

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populations who have not been part of the HIV intervention ambit thus far. A series of consultations were held with the FSW populations to understand their needs to appropriately target and reach out to at risk-populations under project NETREACH.

Lessons learned: Stigma and discrimination are still rife against FSWs and their children. Children undergo everyday discrimination at school and therefore are prone to dropout early. FSWs have to leave their children unattended when they have to leave for sex work; children are at high risk of abuse at such times. Most children are raised without a father/partner and therefore FSWs are the sole income providers. The mothers cannot speak to their child about their profession for fear of being judged by their own children. The ability to find a client and sustain her profession diminishes with growing age and hence the older FSWs are at higher risk of losing their livelihood. Increasingly, these are the pathways for a female child to join the same profession as her mother.

Conclusions/Next steps: There is a need to design, implement and enhance intervention strategies to reach these isolated sex workers and their children. Mental health needs of the community and children need to be addressed. A shelter home or drop-in center for children of FSWs can provide support groups to overcome mental health challenges and educational needs. It's important to work with the communities to explore additional employment opportunities.

EPD109

Confronting barriers to PrEP adherence and persistence: How a case management intervention supported female sex workers in eThekwini (Durban), South Africa

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Background: 60% of female sex workers (FSW) are living with HIV in South Africa, indicating critical unmet HIV prevention needs. Studies have shown a precipitous decline in persistence on and adherence to pre-exposure prophylaxis (PrEP) following initiation among FSW. We examined how an individualized case management intervention (ICM) supported FSW in contending with barriers to PrEP adherence and persistence during the first three months post-initiation.

Methods: We analyzed serial in-depth interviews (IDIs), case manager (CM) notes, and PrEP refill records from a peer-led ICM pilot study to promote sustained PrEP use among FSW in eThekwini, South Africa (n=30). Cisgender, HIV-negative FSW initiating PrEP through TB HIV Care's program were enrolled October 2020-February 2021 and received in-person and telephonic ICM counseling sessions. IDIs at baseline, month-1, and month-3 explored participants' experiences with PrEP, their CM, and life context. We analyzed textual data using thematic coding, narrative summaries, and matrices to examine themes longitudinally and compare experiences between those FSW continuing and discontinuing PrEP at 4-months.

Results: By study end, 18/30 (60%) participants were continuing PrEP. The CM helped strategize ways to maintain PrEP despite anticipated stigma from partners and emotionally cope with stigma-rooted isolation and shame, which motivated PrEP continuation. Extensive mobility commonly led to pill shortages, to which the CM responded by liaising with the program to arrange longer PrEP refills and strategizing about keeping pills in places they visited. The CM helped address disruptions due to economic stressors, such as housing insecurity, through arranging replacements for stolen pills and social services referrals, and provided information that enabled perseverance through distressing side effects.

Participants discontinuing PrEP predominantly received informational and/or practical support, whereas many participants continuing PrEP developed intimate relationships with the CM, additionally receiving emotional support. Contextual factors hampering PrEP use, namely stigma, economic strain, and mobility, also impeded participants' engagement with the CM.

Conclusions: The CM's support was critical for many FSW to overcoming PrEP use barriers during the early post-initiation period, including stigma, mobility, economic strain, and side effects. Complementary interventions addressing contextual barriers, which also constrained participants' engagement with the CM, could enhance impact of the ICM intervention.

EPD110

Decoding HIV and AIDS in addressing myth and misconception for children

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Background: Child prostitution is one of the most common sex trades in the Central Region of Ghana. Girls between the ages of 10 to 15 years are mostly paid less than a dollar for this trade. These girls are the usually the breadwinners in their families. Statistics from the Ghana AIDS Commission indicates that about 25,955 children (0-14 years) are living with HIV. This creates a platform to enhance education on HIV and AIDS, addressing its myths and misconceptions at the basic level.

Description: Community Drama Initiative was introduced in collaboration with partners. Information on HIV was dramatized in the communities, schools and churches in the local languages to enhance education on HIV. After the drama session, trained students nurses had a one on

one discussion with the children on their understanding of the subject, and addressing the myth and misconceptions these children have inherited on HIV. This initiative was done strategically such that, whiles a section of the team were in a particular area doing the advocacy, another section (tiger team) were moving from house to house to educate persons below 15 years on HIV. A third section (the butterfly team) mostly did the general observation on the ground and in the community and reported same.

Lessons learned: Through the initiative, we raised public discourse on the alarming rate at which girls below 16years were engaging in child prostitution thereby galvanizing public support in engaging with the children. The engagement also brought to light some significant misconceptions about HIV which includes the mode of transmission, the strong immune system of children which is expected to fight against HIV (as in the case of Covid 19) among others. These misconceptions among those we engaged were dealt with.

Conclusions/Next steps: Children should not be left out of the education on HIV. Language on HIV should be decoded to the understanding of the average child thereby empowering the child to make significant choices. Using basic animations and graphics on HIV and AIDS is a sure way and my next phase as an animator and an audio visuals editor in enhancing the education on HIV among children.

People who inject drugs

EPD111

"From an HCV and HIV point of view, it's been remarkable" – Examining "safer opioid supply" (SOS) from the perspective of healthcare providers and clients in Ontario, Canada

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Background: Opioid assisted treatment (OAT) is associated with improved HIV and HCV related health outcomes. In response to the devastating opioid overdose crisis, Canada is piloting innovative "safer opioid supply" (SOS) programs. SOS programs provide individuals who use illicit opioids and have not benefited from traditional OAT with an 'off label' prescription for pharmaceutical-grade alternatives. We examined the perspectives of SOS stakeholders with a focus on HIV/HCV prevention, treatment, and care.

Methods: We conducted semi-structured interviews with purposively sampled healthcare providers and clients across 4 SOS programs in Ontario, Canada from February to October 2021. Interviews examined SOS implementation and adaptation, with HIV and HCV-specific questions (e.g., testing and treatment). Participants filled out a questionnaire with demographic, employment and health information. Thematic analysis was conducted in MAXQDA and descriptive statistics in SPSSv28.

Results: We interviewed *n=80* participants across all sites, comprised of *n=27 providers* [physicians, nurses, community health workers, pharmacists; cis woman 62%/cis man 29%/gender diverse 9%; white 71%, with 29% racial diversity] and *n=53 clients* [cis man 57%/cis woman 43%; white 77%, Indigenous 19%, Black 2%, Latino 2%; HIV+ (13%); HCV+ (77%); 89% had ever injected drugs, 87% had ever tried methadone, mean age 47 (SD 9.5; range 29-62)]. SOS programs prioritized clients living with HIV and/or HCV at intake.

Clients typically received daily observed oral slow-release morphine and hydromorphone tablets to take with them (i.e., to crush and inject later). Providers described SOS as a mechanism to engage clients in HIV/HCV testing and treatment, and shared examples of clients who were homeless/virally unsuppressed at intake becoming housed/virally suppressed through these programs.

Clients reported that SOS reduced overdoses, increased access to HIV/HCV care (e.g., by providing daily dispensed opioids with HIV medications), and reduced their need to engage in criminalized activities (e.g., sex work). While SOS programs permit injection use, many clients switched to primarily oral use.

Conclusions: In this study, respondents described SOS as a life-saving intervention for individuals living with HIV/HCV who have not benefited from traditional OAT.

Future quantitative research is needed to explore the integration and adaptation of SOS into the HIV/HCV continuum of care beyond these pilot programs.

EPD112

Oral or injectable: who's to choose? A novel decision-making context for antiretroviral therapy modalities among persons who inject drugs and clinicians in Vietnam

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Background: HIV patients have historically had no choice in treatment modality, as daily oral antiretroviral therapy (ART) has been the only effective option available. Long-acting injectable (LAI) ART represents a compelling and effective alternative that may be especially suitable for

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those struggling with adherence, including people who inject drugs (PWID). LAI implementation introduces novel decision-making considerations for HIV care, as providers and patients may choose between two equally effective treatment modalities with differing benefits and drawbacks.

We evaluated perceptions of treatment choice among HIV-infected PWID and ART clinicians in Vietnam, a healthcare context that has traditionally emphasized hierarchical authority above provider-patient partnership.

Methods: We conducted key-informant interviews with HIV-infected PWID (n=19) and ART clinicians (n=14) in Hanoi, Vietnam. Patients and clinicians were enrolled from public HIV/ART clinics. Participants were briefed on LAI administration, effectiveness, side effects, and dosing frequency, and were asked about their perceptions of LAI compared to oral ART. Interviews were de-identified, transcribed verbatim, and thematically coded.

Results: PWID and clinicians were enthusiastic about LAI as an alternative to daily oral ART, underscoring convenience and privacy afforded by a once-monthly injection compared with a daily pill. Contingent on presumed access to and evidence demonstrating effectiveness of LAI, clinicians noted PWID as a population for which LAI would be particularly beneficial.

When asked about how they would approach prescribing LAI, many clinicians expressed excitement about the possibility of offering multiple treatment options, highlighting a new context for patient autonomy and choice. Conversely, though nearly all PWID expressed preference for LAI, anticipating easier adherence, many expressed deference to clinicians in making treatment-related decisions.

Conclusions: Though LAI represents an acceptable alternative to daily oral ART in Vietnam, its introduction may create decisional interactions that are unfamiliar to ART patients and clinicians. Our sample was mixed in their perspectives on patient choice versus provider deference regarding ART modality.

Thus, implementation of LAI in Vietnam must include guidance around treatment selection in the clinical encounter and consider patient and provider expectations and preferences surrounding shared decision-making; such guidance would aid clinicians in identifying the most appropriate LAI recipients during pilot and scale-up phases of implementation.

EPD113

Behavioral patterns of people who use synthetic psychostimulants and HIV infection risks: results of a qualitative study in St. Petersburg, Russia

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Background: At present, Russia, like many other places, is experiencing an active proliferation of new psychoactive substances (NPS), many of which are psychostimulants. In St. Petersburg, these appear to be mostly congeners of cathinone. Researchers from the St. Petersburg State University and charitable fund "Humanitarian Action" sought to obtain qualitative data to better understand the impact of these substances on the health of people who use drugs (PWUD).

Methods: Individuals provided data on their current drug use and its' effects through interviews and two focus groups. Secondary data from online drug purchase websites were obtained from a source that accesses and analyzes dark web purchases. The interviews and focus groups also provided data on the social contexts of drug use including sexual behaviors and associated medical issues.

	Interview participants (n=30)	Focus groups participants (n=10)
Male	18	5
Female	12	5
Age, years	33.66 / 35.50	24.2 / 24
Years of using drugs	12.26 / 10	4.7 / 4
Months of using synthetic cathinones	20,10 / 24	23,2 / 11
The main synthetic cathinone used at the time of research:		
Alpha-PVP	20	0
Mephedrone	10	10
Injecting drug use at the time of research	29	7

Table.

Results: Distinct differences in behavior patterns between older, more experienced PWUD and a "new generation" of younger PWUD were identified. Both groups reported high levels of unsafe injection and sexual behaviors. The older males using alpha-PVP expose themselves and their injecting and sexual partners to higher risk through unprotected sex and sharing unsterile injecting equipment.

Among novice users of mephedrone, the risk in the field of sexual behavior initially prevails. As severe drug dependence develops, there is a tendency to switch to injecting the psychoactive substances, as well as a decrease in the frequency of using mephedrone specifically for sex. It can

be assumed that an increase in the proportion of injectable use of synthetic cathinones in this group will pose an increased risk of infection and transmission of HIV.

Conclusions: The emergence of NPS presents new threats to the health of drug users and new opportunities to intervene to reduce those risks. The information obtained may assist HIV prevention specialists in their efforts to decrease unsafe drug use and sexual behaviors.

EPD114

HIV and HCV serosorting upon completion of HCV treatment in people with the history of injecting drug use in Ukraine

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Background: People who inject drugs (PWID) are at the highest risk of HCV infection with very high rates of HIV/HCV reinfection. In Ukraine, the prevalence of HIV and HCV reaches 20.5 and 63.9% respectively among about 300,000 PWID. In 2016-2019 about 2,000 PWID underwent HCV treatment using direct-active antivirals (DAAs).

The objective of this study was to assess the levels of HIV and HCV treatment in PWID upon completion of HCV treatment.

Methods: 500 PWID who underwent 12-week HCV treatment using DAAs in 2016-2019 from 5 HCV treatment sites representing 13 regions of Ukraine randomly sampled from a larger cohort of almost 2,000 patients were interviewed by phone in November-December 2020. HIV/HCV serosorting was defined as (a) no injection/ inject but not sharing syringes – serosorting, and (b) injecting and sharing syringes with HCV+ and/or HIV+ /unknown and bought pre-filled syringes – no serosorting.

Results: The rate of HCV/HIV serosorting become lower in more population dense areas. Older participants (>45 y/o) generally have significantly lower odds of not participate in HCV serosorting (aOR: 0.39 CI: 0.16, 0.96). Women have significantly lower odds of not participate in HIV serosorting (aOR: 0.54 CI: 0.32, 0.89) compared to men. Marriage relationship potentially serve as a protective factor for engaging in HCV/HIV serosorting. Not known the HIV status of the sexual partner can significantly amplify the odds of not doing HCV serosorting (aOR: 4.13 CI: 1.58, 10.79).

Conclusions: Active PWID either stopped injecting, continued to inject but did not share syringes, or continued to inject and shared syringes with other PWID who they either knew to have HCV or did not know their HCV status upon completion of HCV treatment.

There was no HCV serosorting. HIV serosorting was observed – 35% of the sample continued to inject and share syringes with other PWID who they either knew to be HIV serodiscordant or did not know their HIV status. A small proportion of patients only shared syringes with partners they knew to have seroconcordant HIV status. Case management through the HCV treatment course plays a crucial role in terms of HCV/HCV transmission harm reduction messages.

EPD115

COVID-19 disruptions and the adaptation and implementation of a dyad-based intervention to improve antiretroviral therapy adherence among HIV-positive people who inject drugs in Kazakhstan: strategies and lessons learned

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Background: Kazakhstan had a 73% increase in new HIV cases from 2010-2020, the highest in the Eastern Europe/Central Asian region. HIV prevalence among people who inject drugs (PWID) is 8.3%, higher than any other key population. Of all estimated HIV-positive PWID in Kazakhstan, only 38% are virally suppressed. We adapted a dyad-based social support intervention for PWID to increase ART adherence. Originally designed to be delivered in-person, we transitioned to remote training and intervention delivery due to COVID-19.

Description: The intervention is delivered to HIV-positive PWID and their treatment support partners and aims to increase ART adherence. The intervention is being tested in an ongoing randomized controlled trial (RCT) in Almaty, Kazakhstan. Participants in both arms are given electronic monitoring devices (EMDs) to monitor their adherence through a mobile app, and they provide biological samples (dried blood spots and hair) to pharmacologically test adherence levels.

Originally scheduled to launch in-person in March 2020, we adapted the intervention for remote delivery for safety and to meet COVID-19 restrictions.

Lessons learned: Out of 66 dyads targeted for enrollment, we have enrolled 43 and 19 have completed the study. (Updated information will be presented at the conference.) Intervention facilitators are clinical psychologists at the Almaty City AIDS Center and local social workers, who were trained to use Zoom and deliver the three-session intervention online. All HIV-positive participants are mailed kits containing a study smartphone, EMD device, and hair sample collection kit. A quarter (25%) of participants learned how to use the EMD device and mobile app through a video call; 75% required additional training sessions. 53 participants have self-collected hair samples and mailed them to research staff.

Challenges include unstable internet connection, partners from separate homes, heavy substance use, and lost/sold phones. Benefits include partner accompani-

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ment to AIDS Center visits (even post-intervention), improved communication and social support within dyads, and easy incorporation of the intervention into standard clinical practice.

Conclusions/Next steps: Remote delivery of a dyad-based ART adherence intervention among PWID in Kazakhstan is feasible and acceptable. It could help to improve retention in HIV care and health outcomes, especially in resource-constrained settings where in-person delivery has become limited.

EPD116

The perceived impact of social support on HIV-treatment engagement in women who use drugs in Dar es Salaam, Tanzania

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Background: Although control of the HIV epidemic has increased dramatically with improved antiretroviral therapy, HIV treatment uptake and adherence remains a challenge for women who use drugs (WWUD) and living with HIV. Social support interventions have shown promise for increasing access and adherence to HIV treatment.

This study examined the types of social support WWUD, specifically those who use heroin, receive from the perspective of the women and their social supporters, and investigates the role of social support in motivating WWUD and living with HIV to seek out and engage in HIV treatment.

Methods: We conducted 30 in-depth interviews with WWUDHIV about their experiences with HIV treatment, drug use, and their social networks. We also interviewed nineteen social supporters identified by participating WWUD interviewed about their experiences providing social support to WWUDHIV. All interviews were analyzed using both deductive and inductive coding and matrices to identify key themes about social support and their engagement to HIV treatment.

Results: Social support facilitated both HIV treatment initiation and adherence, and helped to mitigate the effects of layered stigma. Some women reported isolation, judgment, or harassment from relatives after disclosing their HIV status that was combatted by positive encouragement from social supporters.

Participants commonly reported informational support in the form of HIV education and advice to initiate or continue HIV treatment. Emotional support inspired hope and buffered the impact of drug use and HIV-related stigma. Instrumental support facilitated HIV treatment progress and antiretroviral adherence. Appraisal support encouraged behavior change, specifically to seek out HIV treatment.

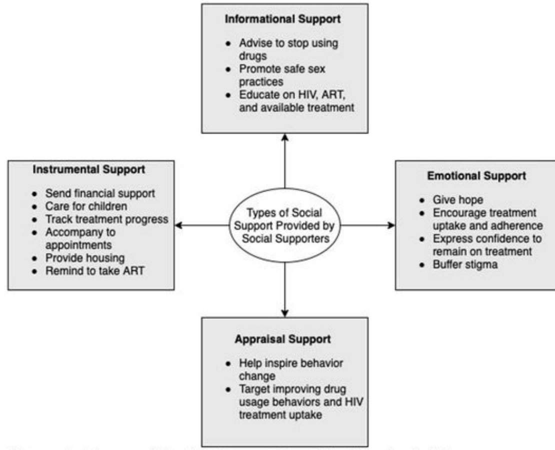

Figure 1. Types of social support provided by social support

Conclusions: Findings from this study highlight that involving social supporters can positively influence engagement to HIV care and treatment among WWUD. Social network interventions that enhance existing social support or expand the network of support of WWUDHIV may help to improve HIV treatment initiation and adherence.

EPD117

Social support as a buffer of negative mental health symptoms during the COVID-19 pandemic among current and former people who inject drugs

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Background: In the U.S., mental wellbeing worsened early in the COVID-19 pandemic. Among people who inject drugs (PWID), poor mental wellbeing is associated with relapse in injection drug use and reduced engagement in HIV prevention and care. There are limited data on which pre-pandemic factors may have buffered the negative mental health consequences of the pandemic among PWID. We examined the association of pre-pandemic perceived social support with psychological resilience and distress during the pandemic among current and former PWID with and without HIV.

Methods: Between June and September 2020, we conducted a telephone survey among participants in the AIDS Linked to the IntraVenous Experience (ALIVE) study—a community-based cohort of current and former PWID in Baltimore, Maryland. Perceived social support was measured using the Medical Outcomes Study-Social Support Survey during pre-pandemic semi-annual study visits (Jan. 2018-Feb. 2020). Outcomes included mean psychological resilience scores (range=1-5), anxiety symptoms, increased loneliness, and perceived stress from social

isolation. Multivariable linear and logistic regression were used to assess associations between social support and each outcome adjusting for pre-pandemic factors. We also assessed whether associations were modified by HIV status.

Results: Of the 545 participants, the median age was 58 years, 38% were female, 83% were Black, and 30% were living with HIV. During the pandemic, the mean resilience score was 3.63, 36% experienced anxiety symptoms, 36% reported increased loneliness, and 47% reported feeling stressed from social isolation.

Compared to participants in the lowest tertile of pre-pandemic social support levels, participants in the highest tertile had higher mean resilience scores (adjusted β=0.24 [95%CI=0.09, 0.39]) and half the odds of anxiety symptoms (adjusted odds ratio=0.50 [95%CI=0.29, 0.88]) and increased loneliness (adjusted odds ratio=0.48 [95%CI=0.29, 0.81]) during the COVID-19 pandemic. No associations were modified by HIV status.

Pre-pandemic perceived social support	Brief Resilience Scale, continuous score	Generalized Anxiety Disorder-7, score >5	Increased loneliness	Perceived stress from social isolation
	Adjusted β (95% CI)*	Adjusted Odds Ratio (95% CI)*	Adjusted Odds Ratio (95% CI)*	Adjusted Odds Ratio (95% CI)*
Tertile 1 *(low)*	0.00 [Reference]	1.00 [Reference]	1.00 [Reference]	1.00 [Reference]
Tertile 2 *(moderate)*	0.11 (-0.03, 0.25)	0.73 (0.43, 1.24)	0.67 (0.42, 1.08)	0.90 (0.57, 1.42)
Tertile 3 *(high)*	0.24 (0.09, 0.39)	0.50 (0.29, 0.88)	0.48 (0.29, 0.81)	0.72 (0.45, 1.17)

*Adjusted for pre-pandemic factors including sociodemographic factors (i.e., age, sex, education, income, housing, etc.), behavioral and psychosocial factors (ie., high-risk alcohol use [AUDIT], injection drug use in the past 6 months, use of medication for opioid use disorder in the past 6 months, depressive symptoms [CES-D], history of depression treatment, and history of anxiety treatment), and HIV status.

Table.

Conclusions: Pre-pandemic social support was positively associated with psychological resilience and generally better mental wellbeing during the pandemic. Interventions to increase social support may improve mental wellbeing among PWID with and without HIV.

EPD118

Changes in survival of HIV-positive heroin use disorder patients admitted to treatment in Barcelona, Spain: a 30-year multicenter observational study

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Background: Survival of Heroin Use Disorder (HUD) has changed due to the generalization of opiate agonist treatment, risk reduction interventions and the effectiveness of antivirals for HIV and HCV infections among other diseases. We aimed to analyze the evolving characteristics and survival of HUD in a multicenter cohort study where patients were admitted for 30 years to 3 hospital-based, addiction units in Barcelona, Spain.

Methods: Longitudinal study in patients admitted between 1989-and-2018. Drug use characteristics and blood samples were obtained during admission. Three periods of 10-years-each were defined. Vital status was ascertained from clinical charts and the mortality register until June 30, 2019. The primary outcome was the elapsed time from first admission to either death or end of follow-up.

Using the period analysis approach, individuals contributed as many records to the analyses as periods in which they were observed at risk. Survival time was treated as late entry if the admission occurred in a previous period and it was right-censored if individuals were alive at the end of period. Kaplan-Meier methods and log rank tests were used.

Results: 3.100 patients (80% men) were admitted. Median age was 28 years [IQR: 24-33 yrs], 87% were injecting drug users-(IDUs) and 31% had co-occurring alcohol misuse. Prevalence of HIV infection was 51%, 27%, and 24%, for the 1989-1998, 1999-2008 and 2009-2018 periods, respectively. HIV-positive patients had higher prevalence of IDU, HCV-infection and imprisonment than HIV-negatives at each period ($p<0.001$).

Total follow-up was 52.114 person-years and 1.254 (24%) patients died at the-end-of-study. Mortality rate of HIV-positive patients decreased from 6.1/100 p-y in first period to 1.06/100 p-y in the last. Among the HIV-negative, mortality rate decreased from 2.2/100 p-y in 1989-1999 to 0.6/100p-y in the last period.

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During the periods analyzed, survival of HIV-positive patients was worse than observed in the HIV-negative (P<0.001 for all periods).

Conclusions: Characteristics of HUD patients have changed in Spain. Survival of HIV-positive patients has improved substantially but continues to be shorter than observed in those without infection irrespective of the period. In the near future, a similar survival should be obtained by ensuring access to treatment for HUD and its complications.

EPD119

A roadmap for implementing injectable opioid agonist therapy: learnings from a three-year pilot project

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Background: Since the onset of COVID19, Canada has experienced an unprecedented number of accidental drug toxicity deaths. Injectable opioid agonist therapy (iOAT) is a promising treatment option for people who use drugs (PWUD) that provides prescription grade opioids as a replacement to an increasingly toxic street supply.

iOAT is also linked to increased anti-retroviral (ART) initiation and adherence, and decreased HIV viral loads among people living with HIV (PLHIV). Scaling up iOAT services may help to circumvent the devastating impact that dual public health emergencies have had on PWUD and PLHIV.

Description: The Dr. Peter Centre (DPC) is the first community agency in North America to implement iOAT services. DPC has been tracking lessons learned and mobilizing knowledge gained to expedite the efforts of organizations in the early stages of iOAT implementation.

There are particular considerations for community agencies implementing iOAT services that include establishing strategic partnerships and developing policies and practices that meet regulatory requirements.

Lessons learned: To mobilize the spread of iOAT services across Canada, this presentation will share findings from a process evaluation of the implementation of iOAT within a community agency setting. It will discuss key learnings for community agencies seeking guidance on the implementation of iOAT services, including opportunities for funding, sourcing medications, addressing iOAT prescriber shortages, establishing partnerships with local pharmacy teams, and navigating complex regulatory requirements.

Conclusions/Next steps: iOAT is an effective treatment option that reduces the risk of overdose and HIV transmission for PWUD and improves treatment outcomes among PLHIV. With the unprecedented and relentless rise in overdose deaths exacerbated by COVID19, there is a need for the rapid implementation of iOAT services in diverse community settings. By sharing key learnings, this presentation aims to expedite the start-up and roll out of iOAT services for community agencies across Canada, contributing to a decrease in overdose deaths and HIV transmission.

EPD120

Exploring the relationship between syringe services programs and law enforcement in rural counties in Kentucky (USA)

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Background: Implementing syringe services programs (SSPs) is one evidence-based strategy communities may employ to reduce community-level risks for injection drug use-associated HIV outbreaks among people who inject drugs (PWID). However, SSP implementation may be obstructed by law enforcement practices. Many studies conducted in urban areas have documented associations between policing practices (e.g., syringe confiscation) and a range of adverse health behaviors and consequences among PWID, including increased risks for HIV acquisition. Enhanced understanding of how law enforcement may affect SSP implementation in rural contexts and, by extension, risks for HIV infection among PWID, is vital to SSP operations in non-urban areas.

This study explores the influence of law enforcement during processes to approve SSP implementation and subsequent program operations in rural Kentucky (USA) counties.

Methods: In-depth, semi-structured interviews with persons (n=18) who were involved with SSP implementation in rural Kentucky counties were conducted from August-October 2020. During the interviews, persons were asked to describe SSP implementation processes, including the role of law enforcement. Interviews were professionally transcribed verbatim. For the present analysis, we focused on examining coded text pertaining to law enforcement.

Results: Participants described scenarios in which law enforcement advocated for SSP implementation; however, they also reported police opposing SSP implementation and engaging in adverse behaviors (e.g., targeting SSP clients) that may jeopardize the public health of PWID and increase risks for HIV acquisition. Participants said that law enforcement advocating for SSP implementation carried significant weight at the local level during processes to acquire approvals for implementation. Participants reported that efforts to educate law enforcement about SSPs were particularly impactful when they discussed how SSP implementation could prevent needlestick injuries.

Conclusions: This research demonstrates that law enforcement may play a prominent role during SSP implementation processes in rural counties, ranging from vocal support to engaging in policing behaviors that may increase HIV risks among PWID. Engaging law enforcement officials in discussions about SSP implementation may be particularly impactful via incorporating messaging about how SSPs may decrease risks for needlestick injuries. Future work is needed to explore how to expeditiously educate law enforcement about SSPs and their role in preventing HIV transmission.

EPD122

Influence of descriptive network norms on injection behaviors among people who inject drugs during the COVID-19 pandemic: a latent profile analysis

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Background: Descriptive norms within networks influence HIV risk (i.e., sharing injection equipment vs using a new syringe). People who inject drugs (PWID) along the U.S.-Mexico border are at high risk of HIV. The closure of the U.S.-Mexican border during the COVID-19 pandemic posed structural HIV risk, as it disrupted cross-border mobility, harm reduction services, and established networks. We assessed the impact of descriptive network norms on HIV risk and harm reduction behaviors during the COVID-19 pandemic.

Methods: Participants were PWID aged ≥18 from 3 groups: PWID who engage in "drug tourism" in Tijuana but live in San Diego (drug tourists (DT)), PWID who have never used illicit drugs across the border and live in San Diego (SD NDT) or Tijuana (TJ NDT). From 10/2020-10/2021, participants were administered a behavioral and egocentric social network questionnaire. We used Latent Profile Analysis (LPA) to categorize PWID into network risk profiles based on proportions of their network members who used injection and non-injection drugs, were DT, lived in Mexico, shared a syringe with the participant, offered the participant drugs, and either doubled daily use or mixed drugs. Multinomial logistic regression was used to assess the influence of network descriptive norms on individual-level HIV risk and harm reduction behaviors in the last 6 months.

Results: Of 399 PWID (n=150 DT, n=90 SD NDT, n=159 TJ NDT), mean age was 43 years and 26% were female. Fit indices indicated a 4-latent profile solution.

Network risk groups were classified as:

1. Very low risk,(n=128),
2. Low risk (n=94),
3. High risk (n=34), and;
4. Very high risk (n=93).

In the past 6 months, relative to participants in the very low risk group, participants in other groups had higher odds of giving/lending a syringe they used (p<0.001), using a used syringe (p<0.001), using a cooker/cotton after someone else used it (p<0.001); and lower odds of consistently using sterile syringes (p<0.01).

Conclusions: PWID's gradient of HIV risk behaviors mirrored that of their networks', suggesting that intervening on high risk networks rather than individuals is warranted when services are limited and networks are PWID's main source of influence.

Transgender people

EPD123

Antecipated stigma and socio barriers to communication between transgender women living with HIV and healthcare providers: a mediation analysis

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Background: In Brazil, as in many parts of the world, transgender women living with HIV (TWH) face several barriers to healthcare access, including discrimination from healthcare providers. Using a mediation analysis, we assess whether the fear of experiencing discrimination due to their gender identity (antecipated stigma) impacts communication with healthcare providers.

Methods: We conducted a secondary analysis of baseline data from the TransAmigas study, an intervention study, conducted in São Paulo, Brazil. Survey data were collected between May and November of 2018 with 113 TWH participants who were 18 years or older and residing in the São Paulo metropolitan area. We performed multivariate logistic regression to assess both the relation of anticipated stigma with communication in the healthcare context and the relation of social variables with anticipated stigma; alpha was set at 0.05. Mediation analysis, which was based on a counterfactual approach, was conducted to determine the existence of an indirect effect of the social variables on the communication with healthcare providers, mediated by anticipated stigma. Estimates were bootstrapped.

Results: Fear of being mistreated due to their gender identity increased 9.26 times the risk of having difficulty telling their healthcare provider about new symptoms (p=0.002). The social variables associated with fear of being mistreated were unemployment (OR=6.94; p=0.004),

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sex work (OR=4.01; p=0.014) and wishing to change their name in documentation (OR=3.13; p=0.02). All of these variables had relevant indirect effect on the difficulty to tell their healthcare provider about new symptoms, mediated by the fear of being mistreated: unemployment (OR=1.70; CI: 1.17 - 2.63); sex work (OR=1.60; CI: 1.03 - 2.92); and wishing to change their name in documentation (OR=1.54; CI: 0.89 - 2.72).

Conclusions: Anticipated stigma was associated with difficulties in communication between TWH and healthcare providers. Factors associated with anticipated stigma were identified, and our data suggests their having an indirect effect on communication barriers.

These findings can help us predict which healthcare seekers will be more predisposed to anticipate stigma from their providers, and may have more difficulty communicating with them.

EPD124

Avoidance of health services by transgender people in Benin in 2020: a cross-sectional study

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Background: In Benin, transgender people represent less than 0.01% of the population. The sociocultural environment obstructs their integration and deprives them of benefiting from some of their rights, mainly the right to health in a self-supported healthcare fees country.

This study aims to measure the extent to which transgender people in Benin avoid using health care services in general and the factors associated with this behavior.

Methods: This was a cross-sectional study involving transgender people, aged 15 years and above in 2020 and recruited by respondent-driven sampling in six cities of Benin. Interviewers were selected among transgender people and trained. Sociodemographic information, data related to health facilities' frequentation and stigmatization were collected. All analyses were weighted and associations were measured using simple logistic regression with STATA.

Results: The study included 290 transgender people, primarily between the ages of 19 and 24 years old (56%). One respondent out of seven (14%) was non-binary and respectively 70% and 16% identified themselves as female and male. In presence of a social worker or health worker, one participant out of two reported being uncomfortable with sharing their gender identity.

One participant out of three reported the same discomfort in a gathering of transgender people. Out of 285 respondents, 58 (13%) reported having avoided health services because of fear of being identified as transgender. Discomfort to assert one's gender identity in a transgender gathering (OR =2.23; CI95%: 1.03 - 4.84; p=0.04) and in presence of a social worker or health worker (OR =2.41; CI95%: 1.09 - 5.31; p=0.03) doubled each the risk of avoiding the use health services.

In addition, participants with a monthly income of less than 50,000 FCFA were three times more likely to avoid using health services (OR =3.13; 95% CI: 1.02 - 9.48; p=0.04).

Conclusions: The avoidance of health services by transgender persons in Benin is associated with their monthly income and the confidence to assert their identity.

To address this issue, strategies aiming to prevent stigma and discrimination in the health sector and to promote gender identity affirmation and universal health coverage should be implemented.

EPD125

Human-centered design to understand the needs of transgender women and design the first transgender women's clinic in Yangon, Myanmar

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Background: With significant advancements in the national response to HIV in Myanmar, the National Strategic Plan aims to provide a comprehensive prevention package for 95% of transgender women (TGW), including testing and treatment. Population Services International Myanmar (PSI/Myanmar) conducted a needs assessment to explore TGW's experiences, needs for and barriers to services at the individual, community, and societal level, to support the national plan.

This study is part of a U.S. Agency for International Development (USAID) project funded by the U.S. President's Emergency Plan for AIDS Relief (PEPFAR).

Methods: A qualitative study using a human-centered design (HCD) approach was conducted with 16 TGWs in Yangon. Participants were identified and recruited through social networks in December 2020 and semi-structure individual in-depth interviews were done. Due to COVID-19 restrictions, data were collected through telephone interviews. Results were generated through consumer journey mapping using public health focused market research approach together with HCD tools.

Results: According to the TGW participants,there is insufficient knowledge about TG health among healthcare workers, particularly hormone therapy, drug interaction between hormones and ART, mental health and cancers common among TGW. Providers' mistreatment and lack of training on trans-competent health services are major barriers for TGW to seek services at public hospitals.

Services in the non-profit sector are favored by these women. TGWs use unqualified providers for hormonal counseling and therapy due to the lack of these services in the formal health sector.

They reported service gaps for mental and psychosocial support and no established referral mechanism or networking for gender-based violence. Anal cancer screening is not routinely done and treatment is often sought at advanced cancer stages. Those residing outside major cities and in rural areas have limited access to services in urban areas. Trans-competent facilities with trained staff are strongly desired by TGWs.

Conclusions: The study highlighted that the new clinic should employ staff who are either TGW or TGW friendly, provide HIV and ART services as well as TGW-specific services such as, mental health, gender-based violence, cancers, and hormonal therapy for TGW to meet their needs and reduce barriers to care.

EPD126

The effects of HIV-related structural discrimination on mental health outcomes for trans women, San Francisco

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Background: Trans women are disproportionately affected by HIV; psychological distress is a known risk factor. Due to marginalization, trans women face tremendous levels of structural discrimination, particularly as it relates to access to healthy food, housing, and employment.

In this study, we examined the relationship between HIV-related structural discrimination and mental health outcomes among trans women in San Francisco, California.

Methods: This is a secondary analysis of data from the TEACH 4 study, a cross-sectional survey of trans women over the age of 18, recruited in San Francisco through respondent-driven sampling from July 2019 to February 2020. Logistic regression analysis identified structural discrimination factors significantly associated with psychological distress and suicidality. All odds ratios reported had significant p-values <0.01 or more, except having been fired due to anti-trans discrimination (p=0.034).

Results: Among 201 trans women recruited, 68.6% experienced psychological distress and 31.34% experienced suicidal thoughts. Psychological distress was significantly associated with cutting meals (OR 3.6; 95%CI 1.8-7.3), not eating for a day (OR 3.6; 95%CI 1.9-6.7), homelessness in the last 12 months (OR 2.6; 95%CI: 1.35-5), housing denial due to anti-trans discrimination (OR 4.4; 95%CI: 1.9-10.10), being fired due to anti-trans discrimination (OR 3.3; 95%CI 1.1-9.95), and trouble finding a job because they are trans or gender non-conforming (OR 5.5; 95%CI: 2.7-11.2). Cutting meals was significantly associated with suicidal thoughts (OR 4.9, 95%CI 1.82-13.37) as was not eating for an entire day (OR 4.4, 95%CI 2.0-2.64).

Conclusions: Structural inequities are associated with psychological distress and suicidality among trans women, which may increase their risk for HIV. HIV prevention coupled with providing access to food, employment and housing is needed to best serve trans women at risk of and living with HIV.

We found alarmingly high levels of psychological distress and suicidality among trans women in San Francisco. Exposure to structural discrimination (food, housing, and job insecurity) were associated with both psychological distress and suicidality.

There is an urgent need to develop HIV prevention interventions that address HIV-related structural discrimination if we are to meet UNAIDS' goal of ending HIV by 2030.

EPD127

Perceived susceptibility to HIV among key populations in Nigeria: implication for prevention interventions

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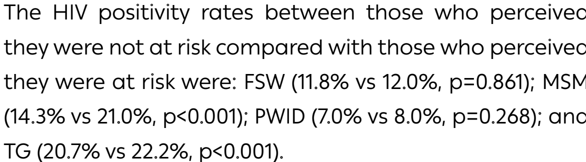
Background: High-risk behaviours and other social factors increase the vulnerability of key populations (KPs) to HIV. However, perceived susceptibility to HIV may affect their uptake of prevention interventions such as condom use, pre-exposure prophylaxis, or HIV testing.

In this study, we assessed the HIV risk perception among KPs in Nigeria and concurrence with HIV status.

Methods: Data from the 2020 Integrated Biological & Behavioural Surveillance Survey (IBBSS) were analyzed. The IBBSS was conducted in 12 states across the six geopolitical zones in Nigeria. Serological tests were performed and behavioral information was collected from 17,975 KPs, including female sex workers (FSW), men who have sex with men (MSM), people who inject drugs (PWID), and transgender people (TG). The respondents were asked: "Do you feel that you are at risk for infection with HIV?"

The responses were: Yes/No/Don't know. We limited our analysis to 14,649 respondents after excluding those who self-identified as HIV-infected or responded "don't know" or "no response" to the risk perception question. We performed weighted descriptive statistics and bivariate analysis using the chi-square test.

Results: Overall, 62.8% reported that they were not at risk of HIV. It varied among the KP groups in the following order of magnitude: MSM (57.6%), FSW (58.7%), PWID (63.8%), and TG (73.1%), p<0.001. About 13.5% of those who perceived themselves not to be at risk tested positive for HIV, while 15.9% of those who felt they were at risk of HIV tested positive (p<0.001).



The HIV positivity rates between those who perceived they were not at risk compared with those who perceived they were at risk were: FSW (11.8% vs 12.0%, p=0.861); MSM (14.3% vs 21.0%, p<0.001); PWID (7.0% vs 8.0%, p=0.268); and TG (20.7% vs 22.2%, p<0.001).

Conclusions: The majority of KPs in Nigeria perceived they were not susceptible to HIV, with significant variation by KP group. However, HIV infection was high among them, occurring at comparable rates with those who perceived that they were at risk of HIV in some KP groups. This study highlights the need to improve HIV risk communication among KPs in Nigeria.

EPD128

Social network characteristics and HIV prevention and care engagement among transgender women in Tijuana, Mexico

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Background: Social network interventions may build resilience against socio-structural factors that limit engagement in the HIV prevention and care continuums (HIV-PCC) among transgender women (TW) globally. We examined the effect of social network mechanisms hypothesized to support HIV-related behavior change (i.e., social support, behavioral norms, attitudes) on engagement in the HIV-PCC among TW in Tijuana, Mexico.

Methods: From 2020-2021, we recruited 148 TW from physical and virtual venues frequented by TW in Tijuana. Participants completed interviewer-administered surveys that collected their HIV status, engagement in the HIV prevention (i.e., HIV testing in the past 3 months, consistent with WHO guidelines) and care (i.e., currently taking antiretroviral therapy [ART]) continuums, as well as data on up to 20 members of their social networks with whom they interacted in the past 3 months.

Multivariable Poisson regression models with robust error variance were used to examine the effect of social network mechanisms hypothesized to support HIV-related behavior change on engagement in the HIV-PCC.

Results: Participants reported a mean age of 32.6 years (standard deviation [SD]=9.1) and a mean social network size of 6.7 persons (SD=4.4); 44% reported at least a high school education; 38% identified as a sex worker; and 18% reported living with HIV.

While 43% of participants reported engagement in the HIV-PCC, engagement was higher for those who reported living with HIV (85% [23/27] currently taking ART) than those who reported being HIV-negative (33% [40/121] tested for HIV in the past 3 months) (p<0.001). HIV-PCC engagement was also associated with a greater proportion of participants' networks providing emotional (adjusted prevalence ratio [aPR]=2.13; 95% confidence interval [CI]: 1.08-4.23), informational (aPR=2.10; 95% CI: 1.17-3.78), and material/financial (aPR=1.67; 95% CI: 0.94-2.96) support, living with HIV (aPR=3.86; 95% CI: 1.95-7.62), engaging in sex work (aPR=1.97; 95% CI: 0.90-4.32), ever expressing opinions encouraging HIV testing (aPR=2.03; 95% CI: 1.10-3.75), and offering support for HIV testing or care (aPR=2.03; 95% CI: 1.14-3.61).

Conclusions: Our findings suggest interventions designed to foster social support, establish HIV as normative, and promote communication around HIV prevention and care within TW's social networks may help build network-level support that bolsters engagement in the HIV-PCC.

EPD129

HIV-related stigma and mental health outcomes among transwomen living with HIV: TransCitar study

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Background: TransCitar is a cohort study that seeks to assess and follow physical and mental health outcomes of transgender and non-binary (TNBP) individuals from Buenos Aires, Argentina. A subanalysis of baseline data is presented, exploring associations between HIV-related stigma and mental health indicators among transwomen participants living with HIV.

Methods: Participants were recruited by peer navigators and currently receive healthcare in a trans-affirmative clinic. From September/2019 to December/2021, 396 transwomen completed baseline psychosocial interviews, mostly conducted in person, and during COVID-19 pandemic, by telephone.

Questionnaires included: socio-demographics variables, Berger HIV Stigma Scale, SCL-27, CES-D, Suicidal Ideation Screener, SF-36 Health Survey, DAST-10, AUDIT. Spearman correlations were conducted to explore associations between HIV-related stigma and mental health indicators among the 150 transwomen who self-reported HIV diagnosis.

Results: Median age was 31 years (IQR: 27-37), 62% reported incomplete high school or lower, 49.3% unstable housing, 52% received financial aid, 36.7% foreign-born, 56% current sex work.

Regarding mental health indicators, 32% exhibit significant depressive, 10.7% risk of mental disorders, 22.4% problems related to alcohol and 4.1% substance use. A quarter reported lifetime self-harm behavior (25.3%) and suicide attempts (26.7%).

HIV-related stigma positively correlated with all negative indicators of mental health: depressive symptoms (r=.44 , p<.001); suicidal ideation (r=.33, p<.001); psychological distress (r=.44, p<.001); dysthimic symptoms (r=.40, p<.001), vegetative symptoms (r=.36, p<.001), agoraphobic symptoms (r=.49, p<.001), social phobia symptoms (r=.56, p<.001), and mistrust symptoms (r=.45, p<.001); alcohol (r=.23, p<.001) and substance use (r=.21, p<.001).

However, HIV-related stigma was negatively associated with both dimensions of quality of life: physical health (r=-.42 , p<.001) and mental health (r=-.34, p<.001).

Conclusions: This preliminary analysis describes the mental health situation of transwomen with HIV in Buenos Aires, Argentina. Negative mental health indicators were highly prevalent and negatively associated with HIV-related stigma, highlighting the need to continue working on reducing HIV stigma, and to develop a comprehensive/interdisciplinary approach to improve health outcomes.

EPD130

Addressing risk for HIV through shaping landscape of Inclusion for marginalized and Vulnerable Trans-Communities in Corporate India

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Background: Most HIV interventions for Trans-communities in India highlight only safer sex behaviors and do not address the systemic causes behind HIV-risk like socio-economic exclusion. NALSA judgement by the Apex court of India, legally recognized Trans-communities and gave directives for socio-economic inclusion. Reading down of Section 377, which criminalized homosexual behaviors further encouraged conversations on inclusion of LGBTQ+ in workplaces.

Description: The Humsafar Trust (HST) has been implementing a targeted recruitment facilitation program under TRANScend, an initiative to promote socio-economic inclusion of transgender persons, supported by Publicis Sapient. This is a one-of-its-kind program which is community-owned and aims to shape Diversity and Inclusion landscape in India by advocating for communities that are face exclusion at multiple levels like caste, gender identity and expression, religion that increases their vulnerability to HIV coupled with lack of formal education and employment opportunities puts them on the path of high-risk behavior. A national level community consultation was organized to document aspirations of LGBTQ+ and this consultation helped shape an exhaustive process followed by HST, including community-led policy reviews and sensitizations.

Lessons learned: In the past 5 years, over 200 employers have been engaged with, over 2500 employees sensitized through various workshops and events and over 1500 transgender persons supported with skilling and recruitment facilitation. Community-led interventions for workplace inclusion result in lasting changes in workplace culture and better retention of transgender persons.

Conclusions/Next steps: Our experience has been that there are multiple knowledge gaps which are observed in corporates understanding and community needs. This leads to loss of economic productivity while communities continue to face marginalization in the society.

The employers need to acknowledge this on immediate basis and start working in tandem with communities, the more effective inclusion initiatives will be, creating a systemic shift in reduction of risk for HIV.

EPD131

Healthcare workers perspectives of peer delivery of HIV prevention services among trans women in Uganda: a qualitative study

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Background: Peer delivery is a person-centered approach that could maximize the coverage and impact of HIV services for transgender women (TGW). Peer delivery is recommended by the World Health Organization for delivery of HIV testing and pre-exposure prophylaxis (PrEP). Healthcare workers can elucidate best practices for HIV self-test (HIVST) and PrEP distribution and provide insight into barriers and facilitators of peer delivered HIV services for transgender women.

Methods: From October 2019 to April 2020, we conducted in-depth interviews with purposively sampled healthcare workers who were experienced in providing HIV testing and PrEP to TGW in Kampala, Uganda.

Qualitative interviews explored:

1. Effective ways of distributing self-test kits and PrEP refills to TGW;
2. Barriers and facilitators of peer-delivered HIV self-test kits and PrEP refills;
3. Effective methods for ensuring linkage to care after HIV self-testing;
4. Considerations for providing HIV care to the transgender community.

Interviews were conducted in English at the interviewee's workplace, audio recorded and transcribed verbatim. We used an inductive content analytic approach centering on descriptive category development to analyse the data.

Results: Ten HCW interviews were conducted; five with private sector providers and five with public sector providers. Respondents included HIV nurse counselors, clinic manager, program coordinator and doctor. Median age was 35 years. HCW considered peer delivery "the best method to reach TGW" but noted that peers needed training and close supervision to perform effectively.
Training was perceived to address the lack of adequate counseling skills by peers. HCW felt that peers would help bridge the "information gap to the end users" and follow up TGW who received HIVST and PrEP.
However, they cautioned that gossip and breaches of confidentiality through disclosure of personal health information by peers would hinder TGW engagement in care. They also noted the lack of gender-sensitivity training for providers at health facilities.
Conclusions: HCW supported implementation of peer delivered HIV services as a best practice for increasing coverage of HIV prevention services among TGW in Uganda, especially when peers were trained and supervised.

EPD132

We decide for ourselves! Community feedback on transgender persons (protection of rights) rules 2020: implications for social determinants of health and HIV

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Background: In the year 2019 Union Government of India passed Transgender Persons Act 2019 in the Parliament. In March 2020 considering the Pandemic outbreak Government of India announced country wide lockdown led to total loss of livelihoods of transgender persons. During this period the Ministry of Social Justice and Empowerment released Transgender Persons (Protection of Rights) Rules 2020 for community inputs. The pandemic hit transgender community were unware about these rules which required them to give feedback on rules that had ramifications on their health and rights. The Humsafar Trust organized a series of community consultations to give feedback into these rules.
Description: Led by a Trangender woman employee, we formed a forum of 10 transgender women, 2 community and HIV experts collaborated with 2 experienced legal experts from organization laywer's collective. This team of 12 persons deliberated during long 5 virtual sessions over a period of two months. The lawyers first explained each rule, held a discussion and sought the opinion of TG community members and experts. We deliberated onprocedure of issuing trangender identity certificate clause 'Requirement proof of continuous residence for one year' and recommended this be replaced with 'current residence'; 'the report of a psychologist of a hospital of appropriate', we recommendedthat identity document be provided without any medical examination. We recommended flexibility of the proof of residence and accountability of district magistrate to provide reasons on non-granting of application. In view of HIV and social determinants of health we suggested the creation of state level welfare boards to bring accountability at ground level for implementation of these rules. We recommended total 7 deletions and 8 modifications to the rules.These changes and recommendations were systematically added and submitted via an online portal.
Lessons learned: These on-line deliberations were highly productive as in the final rules document of MoSJE, 80 percent of our recommendations were accepted by the authorities.
Conclusions/Next steps: Community feedback counts and brings changes at field level. Transgender person's identity papers are crucial in securing their rights. This changes their social determinants of health, vulnerability to HIV. We need rights related awareness via virtual and physical spaces.

EPD133

Trans women´s perception toward stigma, discrimination, gender confirmation surgery and HIV in Iran; a qualitative study

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Background: HIV prevalence among trans women is estimated at 1.9 % in Iran, however, little is known about HIV risk factors. Unmet gender health needs are a known risk factor for HIV risk among trans women. Gender confirmation surgery (GCS) is universally available in Iran. Stigma and it's sequelae are HIV risk factors among trans women around the globe. We conducted a qualitative study to examine HIV risk factors for trans women in Iran.
Methods: Semi-structured interviews and focus group discussions were conducted with 12 trans women from August, 2020 to July 2021 in Tehran. We assessed GCS and other gender-related procedures, stigma and discrimination, and HIV risk perception. Participants were 18 years and older, assigned male sex at birth, and identified as women. Content analysis was done on transcribed interviews.
Results: Participants had a mean age of 29 years and 25% had GCS. Most (58.3%) participants lived openly as women and 25% self-reported living with HIV. Participants who identified as "transexual" were more interested in having GCS than those who identified as transgender. All believed that regret after GCS was common in their community. Most believed that regret was due

to low quality surgeries and the quality of life after GCS. HIV awareness was low, and most were not concerned about HIV or STI risk (except for human papilloma virus) and did not connect HIV risk to GCS access. Discrimination emerged as the most important HIV risk for trans women. Most, reported rejection, physical violence, verbal abuse, and suppression of their gender by family throughout their lives.

Conclusions: Iranian trans women in this study faced societal discrimination and family rejection, which may be a driver of HIV risk. Unmet gender related needs did not present as a risk factor for HIV as GCS was not universally utilized, sometimes regretted, and of varying interest by gender identity.

We also found a low-level of awareness and concern regarding HIV risk. More research is needed on HIV risk factors among trans women in Iran, HIV awareness, discrimination, and how access to gender affirming care intersects with HIV risk.

EPD134

Cisnormativity is a structural barrier to HIV and STI testing for transgender men who have sex with men in Ontario, Canada: a community-based qualitative study

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Background: Transgender, non-binary, and Two-Spirit people who identify as gay, bisexual, queer or men who have sex with men (trans GBM) are historically undertested for HIV, despite being a population that is considered at elevated risk. However, limited qualitative work has addressed reasons for this undertesting.

This analysis draws on the findings from trans GBM participants' experiences with HIV/STI in-person testing and will examine the hypothesis that these populations face trans-specific barriers that reduce their access to testing.

Methods: Between June 2020 to December 2021, peer researchers conducted focus groups and interviews with 39 cis and trans GBM residing in Ontario, Canada to understand the HIV/STI testing landscape. Of the 39 participants, 13 identified as trans GBM. Focus groups and interviews were conducted virtually and analyzed by cis and trans GBM peer researchers. Data were analyzed using thematic analysis techniques in NVivo 12 software following grounded theory.

Results: We identified three overarching themes concerning HIV/STI testing barriers among the trans GBM population. First, participants noted that cisnormative clinic environments, such as gender-segregated clinic hours, are inaccessible to navigate. Second, cisnormative practitioners and lack of provider knowledge surrounding trans GBM bodies and sex practices resulted in participants feeling stigmatized and that they were not being sufficiently tested for HIV and other STIs.

Finally, cisnormative assumptions that all service users seeking testing had documentation with correct gender markers and names made trans GBM with incongruent documentation reluctant to attending testing clinics.

Our findings illustrate that while trans GBM may have similar HIV risk to cisgender GBM, trans-specific testing barriers have led this population to avoid necessary testing and may contribute to underdiagnoses of HIV in trans GBM.

Conclusions: Trans GBM are not being appropriately tested for HIV and other STIs due to cisnormativity in the current testing systems, leading to a paucity of HIV data that can help implement population-level interventions to increase HIV testing and diagnosis in trans GBM.

Our findings suggest that the development of interventions such as hosting all-gender testing hours, opening more LGBTQ+ clinics, and offering training in transgender health and inclusivity to providers would increase testing uptake for trans GBM.

EPD135

Innovating for equitable, integrated and comprehensive care for transgender people: the transgender health and wellness centre in Manipur, India

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Background: In 2020, HIV prevalence amongtransgender (TG) people in India was estimated at 7.5%.In Manipur, 700 TG people were identified through mapping exercises, although this number may underestimate the true population size due to misclassification with other groups like men who have sex with men (MSM). I-TECH India, supported by CDC India under the President's Emergency Fund for AIDS Relief (PEPFAR), in collaboration with Manipur State AIDS Control Society and Maruploi Foundation (a community-based organization), launched the first "Transgender Health and Wellness Centre" (TGHWC) in North-eastern India, to strengthen a comprehensive, integrated HIV and health response for TG people in March 2021.

Description: The objective of the TGHWC is to provide overall health, wellness, and gender affirmation services (GAS), along with capacity and skill-building to empow-

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er TG communities using a community-led model. The TGHWC has a wellness community-based clinic and a community-led health desk situated in the public hospital setting.

Lessons learned: Over 750 TG people have registered in the first six months of operation, which is higher than previous TG size estimates. Thirty-seven percent (n= 277) received HIV testing and 8% (n =22) were HIV positive and linked to ART through the community-led health desk. Additionally, 35% (n=262) agreed for first-time syphilis screening and 10% (n= 26) were diagnosed and linked to treatment services.

Community system strengthening was especially critical during the COVID-19 pandemic and included young TG leadership opportunities through webinars, gender-based violence support groups, skill-building, and income generation through an on-site beauty parlour.

Conclusions/Next steps: The TGHWC, a community-led model for comprehensive health for TG people, provided point-of-care diagnostic and treatment services to TG people while offering a wider spectrum of services for integrated care including gender-affirmation services and economic empowerment options.

Key lessons for the early success of the centre included strong political will, public sector engagement, and community-led response to fully stand up the health service integration.

This community-led model is a sustainable model due to its integration into the public sector and is being recognized as a 'game-changing model' in the HIV response for TG people in India.

EPD136

Limited access to PrEP by female transgender people in Mauritius: a qualitative study

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Background: In Mauritius, HIV prevalence among Female Transgender People (FTGP) is 28% according to the Integrated Biological and Behavioral Survey of 2017. PrEP exists in the public sector of the island since 2018 but the uptake among this population remains very limited.

The main objective of this study is to assess awareness and perceptions of PrEP as a method of HIV prevention and identify enabling factors for its uptake among FTGP in Mauritius.

Methods: A qualitative study was conducted between March and May 2021 whereby transgender women aged 18 and over were recruited via snowball sampling. Semi-directed, in-depth qualitative interviews were conducted via phone calls, by trained research assistants using an interview guide, in Mauritian Kreol.

The themes included percerption and knowledge on PREP, its acceptability, challenges to its use and components of a desired PrEP package. Data collected were transcribed and analyzed thematically using NVIVO 14 software.

Results: 19 FTGP aged between 23 to 52 years, with mostly with secondary education and informal jobs participated in the study. The majority of the participants were aware of PrEP and its availability free of charge in the public healthcare sector. They had a positive attitude towards PrEP and found it was a pertinent prevention tool for FTGP who were from cross populations.

However, some were worried about its side-effects as they were on hormone therapy. It has been highlighted that FTGP are affected by social determinant of health and environmental factors such as unemployment, difficulty to find housing, stigma and discrimination including difficulties with the legal system. Many wished that the dispensation of PrEP services is given as a comprehensive package and is extended to community-based NGOs where they feel welcomed and can have more privacy. The presence of transgender peers has been voiced as a key enabling factor A strong need for psychological support has also been expressed.

Conclusions: The findings demonstrate that there is a demand for community-based PrEP services in Mauritius among FTGP. Comprehensive prevention packages, which take into account human rights, health and social needs may facilitate access to PrEP among this group.

EPD137

Strategies to implement HIV testing in transgender people, sex workers in the workplace

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Background: In Argentina, transgender people who are sex workers are a key population in terms of HIV/AIDS. AHF Argentina and its partners are offering rapid TESTS for HIV at their working sites.

Description: In the first months of this year, we observed that these people asked about the possibility of taking the syphilis test but did not accept the HIV test. Starting in May 2021 we started offering combined HIV and syphilis tests (Bioline™ HIV/SYPHILIS DUO). All people who tested positive for HIV, syphilis or both were linked to the free public health service.

Since January 2021, a sex work area in the Buenos Aires suburbs where mainly transgender women offer their work was visited. The visits were made by volunteers allied to AHF Argentina during sex work hours, from 22:00

to 24:00 hs, on Tuesdays and Thursdays. At these visits, information, condoms and the rapid HIV test were offered.

Lessons learned: Until May, only 10% of the people who had been offered the HIV test accepted to take it. When adding the syphilis test, the percentage increased to 80%. The prevalence of syphilis was 22% and HIV was 14%.

Most trans gender women with a positive HIV test already knew their diagnosis, although most of them were not on treatment. Through this process, 95% of them were linked to treatment.

Conclusions/Next steps: We see that it is important to assess the needs of the key populations with whom you decide to work with. By sharing their vision on the different problems, they face, we can achieve the proposed objectives.

Prisoners and other incarcerated people

EPD138
Retention strategies in the first Pre-Exposure Prophylaxis (PrEP) observational cohort among those on community supervision in the South: lessons learned during the SARS-COV-2 pandemic

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Background: Cohort studies must implement effective strategies to retain study participants because the participants that are retention challenges are likely to be the ones to most benefit from the research findings. Study retention is more challenging among vulnerable populations that experience poverty, have inconsistent contact information, and are engaged in substance use.

We implemented various retention strategies to maintain high participation among people under criminal-legal (CL) supervision and who were clinically indicated for Pre-exposure prophylaxis (PrEP)—an effective biomedical HIV prevention strategy that remains underutilized among people under CL supervision.

We report our retention strategies to address the challenges of retention during the SARS-COV-2 pandemic.

Methods: Southern Pre-Exposure Prophylaxis Study (SPECS) is an 18-month observational cohort of individuals with CL involvement and a clinical indication for PrEP in North Carolina, Florida, and Kentucky. Recruitment began July 2019 and was paused on March 13, 2020 due SARS-COV-2. The SARS-COV-2 pause reduced our retention efforts to phone calls and mailings, removing in-person "field days"—used when a participant's contact information was no longer working.

Pivoting to a virtual format, we implemented new strategies to obtain more locator information: we paid participants for locator updates ($5) and for completing visits on-time ($5), we paid $15 incentive to a participant's contact if the contact successfully connected study staff to the participant, and significantly increased our mailings to participants, including more study-branded materials.

Results: As of March 2020, when recruitment paused due to the SARS-COV-2 pandemic, SPECS had enrolled 227 individuals across its three sites (N=46 NC; N=99 KY; N=82 FL). Of these, 180 completed follow-up through the 18-month visit. Three participants have revoked consent, seven are now deceased, and 21 have been re-incarcerated for the remainder of the study. This results in 196 individuals eligible for the 18-month visit and 92% retention. SPECS retained 84% of its participants in NC, 89% in KY, and 100% in FL.

Conclusions: Our findings highlight the importance of incentivizing retention strategies particularly when shifting to a virtual retention format is required.

Additionally, it is important for retention strategies to be flexible and to consider retention opportunities beyond the study participant.

EPD139
HIV-related peer-to-peer counseling by prisoners – an innovative model in Ukraine

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Background: COVID-19 significantly limited the possibility to provide HIV-related counseling in prisons. In some prisons access of social workers from outside is also limited due to the administrations' decision. At the same time HIV-related counseling is a needed services among prisoners – the HIV prevalence level among prisoners is 7,4%.

Description: Free Zone Ukraine has implemented an innovative model of involving prisoners as peer-to-peer counselors in provision of HIV-related counseling. The key goal of such counselors is to motivate their inmates for HIV testing and provide accurate information about HIV to them.

To prepare prisoners for being counselors the Methodical guidelines has been developed and includes guidelines on HIV, TB, HCV. Based on them prisoners who are willing to work as counselors pass a 8-module training, which covers ethical norms of counseling, basic counseling skills, principles of index testing, HIV/TB/HCV prevention and treatment, ART adherence. Such peer-to-peer approach

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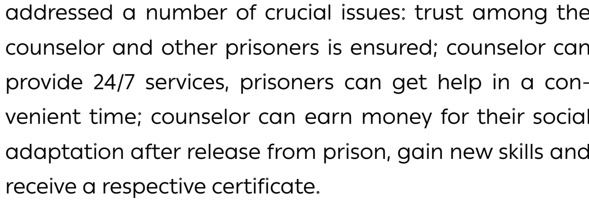

addressed a number of crucial issues: trust among the counselor and other prisoners is ensured; counselor can provide 24/7 services, prisoners can get help in a convenient time; counselor can earn money for their social adaptation after release from prison, gain new skills and receive a respective certificate.

Lessons learned: In 2020 52 prisoners have been trained as counselors, in 2021 – 350, out of them 11 people have received jobs as counselors at NGOs after release, 8 became volunteers after release. In COVID-19 conditions this approach became a system model of counseling provision in prisons, which ensured continuity of HIV-related services for prisoners.

Conclusions/Next steps: 350 prisoners from 69 prisons of Ukraine will be trained as counselors. This approach will lay the basis for peer-to-peer service provision in prisons as such.

Provision of such services, as peer-to-peer provision of needle and syringe exchange services, OST-related counseling, which are currently unavailable in Ukrainian prisons, will be built on this experience.

EPD140

Ensuring access to drug addiction services for prisoners of Ukraine after release

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Background: Accordingto the 2019 IBBS study among prisoners 31,2% of prisoners have drug use experience; this number is 54,2% among HIV-positive prisoners. Most often the drug experience is reported by people aged 30-39 years. At the moment there is limited access to drug dependance support services in prisons, needle and syringe exchange programs are not available, OST is very limited.

Description: In 2021 Free Zone has developed a model of comprehensive interventions to ensure access of ex-prisoners to support related to drug addiction to assist in their resocialization, prevent repeated relapse into crime, prevent HIV transmission and improve their quality of life.

Three months prior to release prisoners take part in training to prepare themselves for release. The pre-release training course has been developed in cooperation with the Ministry of Justice and considering COVID-19 restrictions, thus, it is an online course with usage of video materials.

Courses are conducted on a weekly basis during three months prior to release. Courses take place on a routine basis in 53 penitentiary institutions (77% of all penitentiary institutions in Ukraine). The course covers issues of drug addiction, harm reduction programs, overdose prevention, OST. When released prisoners receive prevention packages which contains a clean syringe, alcohol wipes, naloxone ampules and instruction on first aid in case of overdose. During 3 months after release social workers ensure readdressing of ex-prisoners to harm reduction and OST programs or rehabilitation centers based on the client's needs.

Lessons learned: In 2021 pre-release life skills course has been taken by 2217 prisoners, 1498 of them were successfully readdressed to the programs that support people with drug addiction after release. Prevention packages were distributed to 84 prisoners to prevent overdose during the first days after release

Conclusions/Next steps: This intervention is an innovation for the penitentiary institutions of Ukraine.In 2022 it will be spread to all prisons in the country. The necessary normative documents are being developed to ensure provision of pre-release preparation and support by the NGOs at the cost of state budget

EPD141

Ensuring sustainable psychosocial services and comprehensive HIV, tuberculosis (TB), and hepatitis C virus (HCV) care package to detainees in Ukrainian pre-trial detention centers

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Background: Ukraine has the second-largest HIV epidemic in Eastern Europe, and HIV prevalence in Ukrainian penal settings is 8.9%. Since 2017, the USAID/PATH Serving Life project has implemented a comprehensive HIV, TB, and HCV care package for people in penal settings across 12 regions in Ukraine. In 2021, Serving Life, together with the Ministry of Justice of Ukraine's Center of Health Care (MOJ/CHC), implemented the first pilot to provide sustainable psychosocial and HIV services to detainees in a pretrial detention center (SIZO).

Description: A Serving Life-supported NGO hired and trained a social worker for HIV/TB/HCV prevention, HIV rapid testing, and treatment adherence in Poltava SIZO's health care unit. Serving Life financed the social worker's activities during the one-year pilot, while advocating for staffing changes to add this position as regular SIZO staff.

As a result of this advocacy, the MOJ/CHC granted approval to officially employ the NGO social worker in the SIZO using state funds, and as of January 2022, the first social worker was officially included in the SIZO's health care unit staff, employed and paid through MOJ/CHC.

Lessons learned: In 2021, the NGO social worker conducted counseling and motivational interviewing sessions for SIZO detainees (222 on HIV/TB/HCV prevention; 250 on HIV index case testing (ICT) and ART adherence; 663 on HIV pre- and post-testing; 31 on drug dependency). He also counseled 37 HIV-positive detainees (index clients), who accepted ICT services and provided contact information

for their 72 index partners. Seventy index partners were tested for HIV and 9 new HIV-positive cases were identified and linked to treatment, a 12.9% case yield from the social worker's efforts. Daily provision of psychosocial services to detainees by a trusted, trained social worker, without stigma and discrimination, was key to the pilot's success.

Conclusions/Next steps: The successful pilot in Poltava SIZO showed the value of counseling and motivational interviewing to provide comprehensive HIV/TB/HCV care in penal settings, and provided an opportunity to ensure sustainability of psychosocial services for detainees using state funds beyond the Serving Life project. The MOJ plans to expand this approach to all SIZOs in Ukraine in 2023.

EPD142

Inter-ministry convergence, prison peer volunteers, and technical assistance are critical for the scale-up of HIV, TB, STI, and hepatitis services among incarcerated populations in India

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Background: Prisoners have a higher prevalence of HIV, TB, STI, and Viral Hepatitis (HTSH) than the general population. However, diagnosis and treatment services are limited in Prisons and Other Closed Settings (POCS). SAATHII, in partnership with National AIDS Control Organization, and with funding from EJAF, implemented project Subhiksha to scale up HTSH services in 706 prisons and 239 OCS (women shelters) from 13 states between 2018 and 2021.

Description: Interventions included:

i. Facilitating formal agreements with Ministries of Home Affairs, Social Justice and Empowerment, Women and Child Development, and Health and Family Welfare;

ii. Integrating HTSH services within existing POCS facilities;

iii. Establishing linkages with local HTSH services for camp-based screening, confirmation, and treatment;

iv. Identification and training of 6,515 prison peer volunteers (PPV) to increase health literacy and service uptake;

v. Ensuring access to HIV services and social protection to family members; and vi) post-release follow-up of HIV+ inmates.

Lessons learned: Over 36 months, the project facilitated testing of 744,531 inmates for HIV, 588,843 for TB, 240,643 for STI, 64,900 for HBV, and 22,787 for HCV and enabled diagnosis of 2,252 HIV, 891 TB, 862 STI, 890 HBV, and 240 HCV cases.

Among these, >95% of TB and STI, 85% of HIV, 84% of HBV+, and 50% of HCV+ were linked to treatment. Additionally, 811 HIV+ inmates and family members were linked to social protection and 260 partners were screened for HIV, and 37 HIV+ were linked to treatment. Convergence across ministries helped in rapid scale-up and post-release follow-up. Trained PPVs were instrumental in motivating the inmates for HTSH testing and initiation of and adherence to the treatments.

The outreach workers obtained the correct residential addresses for post-release follow-up by gaining the trust through good counseling. Decentralized TB and STI services helped link >95% of cases to treatment. Shortage of prison guards to accompany inmates to services, unscheduled release, and difficulty in tracing inmates post-release led to linkage loss of HIV treatment.

Conclusions/Next steps: Based on the effectiveness and replicability the national program has expanded these HTSH interventions across the country through GFATM funding, beginning April 2021.

EPD143

A narrative inquiry into the experiences of transitions into and out of correctional facilities for people living with HIV

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Background: Limited research focuses on peoples transitions into and out of provincial correctional facilities in Canada. Transitions are complex and require the intersection and cooperation of social, health, and justice systems. Understanding transitions for people living with HIV (PLWH) is critical, because it holds the possibility to improve interdisciplinary coordination and practices for people who face structural marginalization.

The *purpose* of the study was to explore the experiences of transitions into and out of correctional centres in Alberta, Canada for PLWH. In this project transitions are conceptualized narratively.

Methods: Narrative inquiry is a qualitative methodology focused on understanding experience as a narrative phenomena. Integral to narrative inquiry is relational ethics, which is marked by a long-term engagement with participants in their social contexts and in diverse places.

Throughout the study, based on diverse field texts (conversations, notes, and artifacts), I have co-composed and co-constructed meaning alongside two male participants. The fieldwork is ongoing since July 2021. Through closely attending to the co-composed narrative accounts, narrative threads or resonances were discerned.

Results: The study provides insights into the sense-making processes and experiences of people who have experienced significant inequities. 'Stories to live by', a narrative term describing the interconnectedness of knowledge, context, and identities, are key to understand the experience of transitions for PLWH who have been incarcerated.

Participants' experiences challenge the understanding that they are 'transitory' and 'passive' recipients of care. Instead, participants see themselves as having agency and

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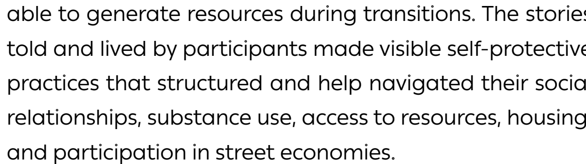

able to generate resources during transitions. The stories told and lived by participants made visible self-protective practices that structured and help navigated their social relationships, substance use, access to resources, housing, and participation in street economies.

Conclusions: Living in the context of transitions in and out of correctional facilities remains a part of a PLWH's identity across time. Participants lived and told stories of siphoning power from structural forces that regulate resources and relationships to themselves.

These insights into how PLWH make sense of transitions encourages further opportunities to foster agency amongst this population while reconceptualizing services and resources aiming to support PLWH.

EPD144

A COVID response to better serve prisoners and ex-prisoners

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Background: COVID quickly forced organizations to pivot the way they provided services to clients. PASAN was impacted in a specific way as ex-prisoners in community were not able to leave their homes and staff were not able to access prisoners inside the institutions to provide one on one support and programming. PASAN's COVID response took into consideration that Prisoners were being immensely affected by the pandemic with COVID-19 transmission rates rapidly increasing in institutions. Ongoing lockdowns also meant prisoners were unable to attend programming, do recreational activities like exercise, or access phones to call family and friends, resulting in prisoners spending more time inside their cells. The state of the prison environment and the lack of access and information to PPE culminated, causing the mental health of Prisoners to be impacted.

The need also grew to provide emotional support for ex-prisoners living with HIV/HCV that were experiencing isolation, heightened drug use, and lack of access to essential services during the pandemic.

Description: Calls were forwarded to staff work cell phones in order to remain in contact with prisoners, wellness worksheets were created and mailed as a response to the mental health concerns being reported by prisoners throughout the COVID-19 pandemic. PASAN partnered with PWA for food deliveries to create an opportunity to see clients and assess their needs, harm reduction supplies were delivered to clients, weekly wellness calls were made and staff were deployed to PWA as another method to remain in contact with clients.

Lessons learned: Providing these shifts in programming has shaped the way the organization provides services to marginalized and high-risk communities. Often the way organizations offer services is based on the expectation that clients come to staff, this method of providing services does not take into account the barriers and the reality of people incarcerated or previously incarcerated, those that use drugs, and are living with HIV/HCV.

Conclusions/Next steps: As a result of the strategies and interventions used during the pandemic access to clients in the community improved linkages to care. By having prisoners identify how best to support them demonstrated a best practice model for developing meaningful resources.

Young key populations

EPD145

HIV/AIDS knowledge, related-stigmatization and preventive behaviours among college students in Ghana: an exploratory study

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Background: Despite Ghana's low level of positive cases in HIV/AIDS (1.6%), the surge in HIV/AIDS positive cases in the Eastern Region is alarming. As of September, 2021, Ghana had recorded an astronomical new HIV/AIDS infections of 18,928 with majority between the ages of 15-24 years found to dominate in the Eastern Region. This age range is alarming because these are the youthful population in the Tertiary Institutions in Ghana.

This study therefore investigated the college students' knowledge on transmission, related-stigmatization and preventive measures employed in curbing the situation.

Methods: Using the cross-sectional mixed-method design, a sample 321 college students were surveyed with the HIV-KQ 18 knowledge instrument (Carey & Schroder, 2002), a 14-item HIV stigma instrument (Herek, Capitanio, & Widaman, 2002) and a self-developed 7-item access to HIV information instrument. The data collected were analysed descriptively and inferentially.

Results: The study found that majority of the respondents had inadequate knowledge on HIV/AIDS transmission, showed no compassion to those suspected to be living with HIV/AIDS and majority of them perceived HIV/AIDS as a myth. The study also found a positive relationship between knowledge in HIV/AIDS and related-stigmatization.

Therefore, there the need to improve upon the dissemination of HIV/AIDS information to bridge the knowledge gap and as well scale up measures to decrease the stigmatization of people living with HIV/AIDS.

Conclusions: Notwithstanding the numerous efforts made by the Ministry of Health, NGOs and other public health sectors in Ghana, it seems the level of knowledge and related-stigmatization among young college stu-

dents in Ghana is very low. There is therefore the need to increase the level of knowledge on HIV-AIDS through series of workshops and inclusion in the new Ghanaian curriculum.

EPD146
Gender norms, HIV risk, and attitudes towards PrEP and other HIV preventive interventions among South African adolescents

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Background: HIV infections have been increasing among South African adolescents. For long-term impact, HIV prevention/control strategies must acknowledge and address the social norms that underpin HIV transmission.
We, therefore, examined HIV-related social norms and perceptions among South African adolescents aged 15-18 years and evaluated their openness to using pre-exposure prophylaxis (PrEP) to reduce HIV risk.
Methods: We analysed cross-sectional data of 4,567 adolescents aged 15-18 years from the Fifth South African National HIV Prevalence, HIV Incidence, Behaviour and Communication Survey (2017/2018). Outcomes of interest in our study were HIV-related social norms and awareness of HIV prevention methods, including pre-exposure prophylaxis (PrEP).
Results: Our results showed that compared to their female counterparts, a significantly higher percentage of male adolescents endorsed the statement "Men can have two or more sexual partners at the same time" (14.2% vs 10.1%, p=0.021). Condoms were the most popular method of HIV prevention, with 83.5% of all participants reporting awareness. Yet, 35.4% of those sexually active in the past year reported not using condoms all the time.
Exposure to parental sex education and community campaigns for HIV prevention were both associated with increased awareness of HIV prevention measures and openness to PrEP. Unaided recall of PrEP was very low (3.7%), but most of those who were HIV seronegative (69.3%) were open to using it after learning about it.
Openness towards PrEP was significantly higher among those reporting vs not reporting past-year sexual activity (Adjusted prevalence ratio [APR]=1.16, 95%CI, 1.06-1.28), and binge drinking (APR=1.24, 95%CI, 1.08-1.41).
Conclusions: This study showed that male teens were a lot more permissive towards young men having multiple female sexual partners than with the reverse, and over a third of adolescents who were sexually active in the past year reported not using condoms all the time. Many South African adolescents were interested in trying PrEP, but initial awareness was low. Ensuring barrier-free access to evidence-based preventive strategies may benefit public health.

EPD147
Acceptability of HIV self-test among adolescent men who have sex with men andtransvestites and transsexual womenin Brazil

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Background: HIV self-testing (HIV-ST) is a technology that is part of combined prevention initiatives, currently considered strategic for controlling the epidemic, and may be especially relevant for populations among which HIV prevalence is highest. The literature describes this technology as well accepted among different groups, but there are knowledge gaps concerning specific groups, such as adolescents.
In this qualitative study, we aimed to analyze the acceptability of HIV-ST among adolescent men who have sex with men and transgender women in three Brazilian capitals.
Methods: We carried out interviews and focus groups with 74 participants from the PrEP1519 study, being 25transvestites and transsexual womenand 49 men who have sex with men.
All interviews were recorded, transcribed, and analyzed based on the Theoretical Framework of Acceptability (TFA) associated with the theoretical framework of vulnerability.
The TFA comprises seven dimensions of acceptability: "affective attitude", "perceived effectiveness", "intervention coherence", "self-efficacy", "participation load", "ethicality" and "opportunity costs".
We chose not to include the "opportunity costs" dimension, considering that HIV-ST is currently distributed by the Brazilian Unified Health System for the adult population and that it may also be done for adolescents.
Results: The analysis of the acceptability dimensions that make up the TFA show good acceptability of HIV-ST among men who have sex with men and transgender women, although not homogeneous.
Among the positive aspects of the tests there are, for instance, the agility and confidentiality as components of "affective attitude"; the practicality of use, privacy and emotional management related to the testing process associated to its "self-efficacy" and "perceived effectiveness".
However, there is the concern with how to deal with a positive result that is recognized as a "participation load" and about the "intervention coherence" there is a perception that testing is not effectively prevention method since for them this would only confirm an existing serological status.

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Conclusions: The importance of expanding the dispensation of self-tests among adolescents is reinforced, considering the context of combined prevention, the particularities of the expectations of use and it concerns to enhance self-care and expand the recognition of its possibilities in preventing.

EPD148

Development of a PrEP-inclusive STI and HIV prevention intervention for youth with sexually transmitted infections in primary care

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Background: There is a need for PrEP-inclusive HIV prevention interventions for adolescents with sexually transmitted infections (STIs) in primary care.
Our objective was to elucidate targets and content for a comprehensive HIV and STI prevention intervention for this population.
Methods: Mixed methods cross-sectional study enrolling 13-19 year olds with gonorrhea, chlamydia, trichomonas, or syphilis in the past 30 days at two urban primary care clinics. Participants completed surveys and audiorecorded individual interviews. Interview data were qualitatively analyzed by three independent team members using an integrated approach. Transcripts were first coded deductively using Fishbein's Integrated Behavioral Model (IBM) which posits that knowledge, social norms, and self-efficacy influence intention for behavior change. We then identified themes not represented in the IBM through inductive analysis.
Results: Surveys were completed by 35 youth, 33 (94%) of whom completed interviews. Participants were 85% cisgender females, 14% cisgender males, 1% transgender females, and 25% identified as gay, lesbian, bisexual, or queer. The majority (97%) identified as non-Latinx Black. Mean age was 17.2 years (SD 1.3). None used condoms consistently, 26% were aware of PrEP, and 69% were never HIV tested.
Five key themes emerged. Corresponding to IBM targets, youth desired an intervention that ameliorated knowledge gaps to improve informed prevention decision-making (theme 1), reframed negative social norms wherein condom use was viewed as a marker of relationship distrust (theme 2), and improved self-efficacy around PrEP initiation and HIV testing (theme 3).
Additionally, mental health played a key role for participants in both prevention behavior uptake and coping with STI diagnosis (theme 4).
Finally, youth emphasized a desire for counseling that allowed decisional autonomy and individualized goal setting (theme 5).
Conclusions: We have integrated these data and developed the T.A.K.E (Treat, Act, Know, Engage) Steps intervention, which includes:
1. Tailored prevention education,
2. Evidence-based communication skills to facilitate partner communication,
3. Skill building around accessing prevention health services including PrEP and HIV testing,
4. Mental health referral, and;
5. Motivational interviewing to enhance goal planning and readiness for behavior change.
The intervention will be further assessed in a randomized controlled trial for acceptability, feasibility, and impact on prevention self-efficacy.

EPD149

Behavioral factors affecting lack of condom-use negotiation among South African female youth

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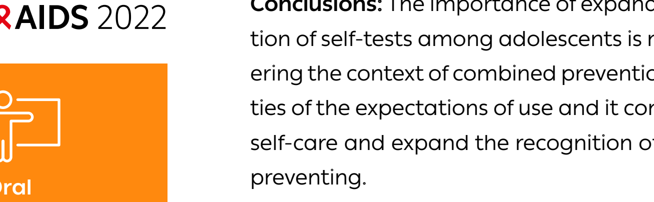
Background: In the war against HIV/AIDS and unintended pregnancies, studies have shown that sexual partners who can talk about the use of condoms and safe sex have a lower likelihood of contracting HIV and being victims of unintended pregnancy.
Methods: The data for the present study came from the individual record file of the 2016 South African Demographic and Health Surveys (SADHS), which contains information on women of reproductive age.
The study used responses from females aged 15-34 years from the 2016 South African Demographic and Health Survey (SADHS) data. Multivariate logistic regression modelling was employed to analyze the association between behavioral factors and condom use negotiation among female youth.
Results: Many of the behavioral variables were insignificant after adjusting for the effects of other behavioral variables. However, the stepwise logistic regression results showed that female youth that did not intend to use contraceptive had lower risk of condom-use negotiation (OR; 0.49, CI; 0.33-0.71) compared to female youth that were currently using contraceptive. Female youth that have tested for HIV have higher risk of condom-use negotiation (OR; 3.07, CI: 1.72-5.49) compared to those that have never tested for HIV.
Surprisingly, having experienced emotional violence increased the risk of condom-use negotiation (OR: 1.58, CI: 1.01-2.48) and condom use at last sex increased the risk of



condom-use negotiation (OR: 1.83, CI: 1.22-2.74). Findings also showed that none of the socio-demographic factors controlled for in objective four of the study were significant.

Conclusions: The study also established that some behavioral factors such as contraceptive use, ever delay or avoid pregnancy, HIV test, use of the internet, coerced sex, emotional violence, sex refusal, and condom-use with partner at last sex among female youth in South Africa predict condom-use negotiation with partner.

This study underscores the need for policies that promote delayed sexual activities more among young women in South Africa. It is important that HIV intervention stakeholders understand the significance of the behavioral factors that influence condom-use negotiation in providing strategies to consistent condom use among female youth in South Africa. In addition, this study adds to the literature on sexual behaviors, particularly condom-use negotiation among young people.

EPD150

HIV- and prevention-related knowledge and beliefs, HIV testing, and condom use in a school-based sample of 6,000 Rwandan adolescents

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Background: Comprehensive sex education was added to Rwanda's national school curriculum in 2016. We evaluated HIV- and condom-related knowledge/beliefs and their associations with HIV testing and condom use in a school-based sample of Rwandan adolescents to identify enduring gaps in HIV and family planning education.

Methods: From February-May 2021, we surveyed 6,082 students ages 12-19 (median: 15; 51% female) from 60 secondary schools in 8 Rwandan districts about their sexual health knowledge and behavior. We consolidated responses to 7 true-or-false questions testing HIV knowledge and 8 statements encoding condom beliefs which may facilitate or demotivate use to classify level of HIV knowledge (high, medium, low) and favorability of condom beliefs (prohibitive, middling, favorable). We estimated adjusted prevalence ratios (aPR) to compare HIV testing and condom use by HIV knowledge and condom beliefs.

Results: HIV knowledge was high overall, with 74% answering at least 6 of 7 HIV-related knowledge questions correctly. In contrast, beliefs about condoms were mixed, with students responding favorably to 4 of 8 condom-related statements on average. Many believed condoms could disappear inside the body (64%), were not suitable for casual (50%) or steady (40%) relationships, or were too embarrassing to buy (37%).

One third (38%) of students reported previous HIV testing, of which half (20%) had tested within the past year. Among the 28% of students who reported having ever had sex, 38% reported using a condom at last sex. Higher HIV knowledge was associated with increased HIV testing (aPR high vs. low: 1.3; 95% confidence interval [CI]: 1.1, 1.5) but not condom use.

However, students with favorable or middling condom beliefs were more likely to report condom use than students with prohibitive beliefs (aPR favorable vs. prohibitive: 1.6; 95% CI: 1.3, 2.1; aPR middling vs. prohibitive: 1.4; 95% CI: 1.1, 1.8).

Conclusions: Despite high HIV-related knowledge, HIV and pregnancy prevention among Rwandan youth may be stymied by prohibitive beliefs and misconceptions about condoms. The association between condom beliefs and condom use warrants renewed attention to educational gaps about condoms' value in prevention and motivates school-based interventions to create supportive social norms around condom use among youth.

EPD151

Trajectories of depressive symptoms and HIV-related sexual behaviors among adolescent girls and young women in Rural South Africa (HPTN 068)

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Background: In sub-Saharan Africa, adolescent girls and young women (AGYW) are twice as likely to experience depression and HIV infection as their age-matched male counterparts. Yet little is known about trajectories of depressive symptoms amongst this population or how trajectories of depressive symptoms overlap with engagement in HIV-related sexual behaviors such as early sexual debut, condomless sex, transactional sex, and age-disparate partnerships.

Methods: We used data from the HIV Prevention Trials Network (HPTN) 068 study in rural South Africa (2012-2019). AGYW, aged 14-20 at baseline, were followed approximately annually for up to 6 years. Depressive symptoms were measured with the Center for Epidemiologic Studies Depression Scale (CES-D-10) and group-based trajectory modeling was used to identify longitudinal patterns of depressive symptoms.

After model fit was assessed, each AGYW was assigned to the trajectory group for which they had the highest posterior probability of membership and HIV-related sexual behaviors (early sexual debut (≤ 15), condomless

sex, transactional sex, and age-disparate partnerships (partner≥ 5 years older)) for each group were descriptively compared using chi-square tests.

Results: Among 1753 AGYW included in our analysis, at baseline the median age was 16 (IQR 15-17), 28% were sexually active (n=507), and 33% (n=587) reported depressive symptoms. We identified three distinct depressive symptoms trajectories: "increasing across adolescence" (n=69, 4%), "decreasing across adolescence" (n=257, 15%), and "no depression across adolescence" (n=1437, 81%).

Across all visits, the "increasing across adolescence" and "decreasing across adolescence" groups, compared to the "no depression across adolescence" group, were more likely to have early sexual debut (26% 'increasing', 37% "decreasing', 21% 'no depression': p < 0.001) and ever engage in condomless sex (45% 'increasing', 55% 'decreasing', 39% 'no depression'; p < 0.001), transactional sex (35% 'increasing', 45% 'decreasing', 24% 'no depression; p < 0.001), and age-disparate partnerships (42% 'increasing', 49% 'decreasing', 36% 'no depression'; p < 0.001).

Conclusions: In rural South Africa, AGYW who experience depressive symptoms during adolescence are potentially more at risk of engaging in HIV-related sexual behaviors than AGYW who experience no depressive symptoms, particularly AGYW who experience depressive symptoms earlier in adolescence.

EPD152

Adverse childhood experiences and resilience among youth living with HIV in the Deep South of the United States

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Background: The southern region of the United States, referred to as the Deep South, is disproportionately affected by HIV. It has the highest rates of new HIV infections. Approximately one in five new HIV infections are among youth. Youth living with HIV (YLWH) have multiple health risks, including co-occurring mental health and substance abuse disorders, which negatively affect medication adherence, contribute to less engagement in HIV care, and result in poor health outcomes.

Research suggests that adverse childhood experiences (ACEs) contribute to HIV risk behaviors and that YLWH may be more vulnerable to the negative health outcomes and adverse effects of stressors. At the same time, many YLWH demonstrate resilience.

Methods: Using existing program evaluation data, we examined screening data from YLWH receiving HIV treatment in an integrated pediatric care setting. Data on adverse childhood experiences (ACEs) and resilience were collected from a subset of patients from January 2019 to August 2021 using the following measures: 10-item ACES questionnaire (Felitti et al., 1998), the Brief Resilience Scale (Smith et al., 2008), and the Resilience Scale (Wagnild & Young, 1993).

Because this study relied on anonymous program evaluation data, it was exempt from institutional review board approval. Descriptive statistics were used to describe the sample screening results. One-way ANOVAs and linear regression were used to examine differences in ACE and resilience scores based on demographic variables.

Results: Participants were 41 YLWH aged 17-24, primarily Black/African American Non-Hispanic young men who acquired HIV behaviorally. A slight majority of participants identified as homosexual, bisexual or questioning. Approximately one-third of YLWH screened positive on the ACE screener. There were no significant differences in scores based on demographic variables. Resilience screening data revealed moderately high resilience among YLWH. There were no differences in resilience based on demographic variables with the exception of living situation. Youth who were living with parents reported higher levels of resilience than those living with roommates or friends.

Conclusions: Approximately one-third of YLWH screened positive on an ACE screener, yet resilience was moderately high in our sample. These findings have important implications for HIV prevention and treatment targeting youth in the Deep South.

EPD153

"The change was too sudden": Experiences of transition to adult care for adolescents living with HIV in North-Central and North-Western Nigeria

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Background: There is an increased risk of disengagement for adolescents living with HIV (ALHIV) transitioning from pediatric to adult care. The Adolescent to Adult Patient-centered Transition (ADAPT) formative study explored experiences of ALHIVs in the transition cascade to guide tailored retention strategies.

Methods: For this qualitative study, 18 FGDs were conducted between July and August 2017 for purposively-sampled 15-19-year-old ALHIVs at six health facilities in NC/NW Nigeria. Participants were aware of their HIV status and on ART for ≥12 months. Pre-transition, transition and post-transition experiences were explored. FGDs were transcribed and thematically analyzed using MAXQDA Analytic Pro v12.3.9.

Results: For 149 ALHIV interviewed, mean age and age at disclosure were 17.0 (SD 16.0-18.0) and 14.0 (SD 12.0-15.0) years respectively; 79% were perinatally infected. ALHIV reported being unaware of transition, and ill-prepared to cope in the adult care environment.

- Pre-transition: Adolescents were uninformed about transition and the process was unplanned or poorly planned.

"They didn't tell me beforehand..., I wasn't happy about it, the change was too sudden"

"I came to the clinic that day... the doctor ...he said you are not supposed to be here now, what are you doing here? ... carry your folder, just go to adult clinic"

- At transition: There was no planned/coordinated transfer to adult care.

"I was having so many thoughts...because I don't know where they will decide to keep us"

"It was on a Tuesday; they were [like] this is your final day ... in fact move your folder to adult clinic; you will start adult clinic. I was shocked."

- Post-transition: Adolescents had difficulties settling in adult care.

"I went to the other side; just like, I feel lonely, I don't have anybody to talk to. I went to sit down quietly just like that"

"I felt very confused, ...the struggle there, it's not something that is easy ...they shout, they push one another.

Conclusions: ALHIV in our Nigerian cohort have gaps in transition preparation, planning and post-transition accommodation in the pre-, during, and post-transition periods. These experiences are important to consider in designing effective transition strategies that are responsive to ALHIV needs.

EPD154

High rates of co-occurring substance use: a key missed opportunity in young Black Latinx sexual minority men and transgender women living in the US

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Background: Young Black sexual minority men and transgender women have some of the highest burdens of HIV in the United States. Substance use (SU) negatively impacts uptake of HIV prevention and treatment services and may contribute to disparities in HIV outcomes.. This analysis aimed to examine patterns of SU behavior over time, factors associated with SU, and whether SU changed with the onset of the COVID pandemic.

Methods: A longitudinal analysis of 195 young sexual minority men and transgender women, aged 15-24 living in 4 cities (Baltimore, MD; Washington, DC; Philadelphia, PA; and St. Petersburg/Tampa, FL) recruited to participate in the PUSH randomized study of an 18-month status-neutral intervention to increase HIV medication and PrEP adherence. At each follow-up visit, participants reported demographics, sexual and SU (tobacco, alcohol, cannabis, and other – amphetamine, hallucinogens, narcotics) behaviors in the previous 3 months. Logistic generalized estimating equation model with robust variance was used to identify correlates associated with each SU outcome accounting for repeated measurements per participant, adjusting for baseline characteristics (age, sexual identity, gender identity), and pre/post covid.

Results: Most (76%) youth described alcohol/cannabis use. SU patterns are illustrated in the Figure. Younger (15-18 and 19-21) compared to older (22-24) participants experienced a lower odds of tobacco and alcohol use. HIV diagnosis and bisexual identity were associated with 2.14 and 2.30 greater adjusted odds of tobacco and cannabis use, respectively. Transactional sex was associated with a 2.58, 2.42, 2.63 and 3.57 greater adjusted odds of tobacco, alcohol, cannabis, and other drug use, respectively. Unstable housing had 2.87 and 2.06 increased adjusted odds of tobacco and other drug use. Post-COVID was associated with lower adjusted odds of tobacco/cannabis use.

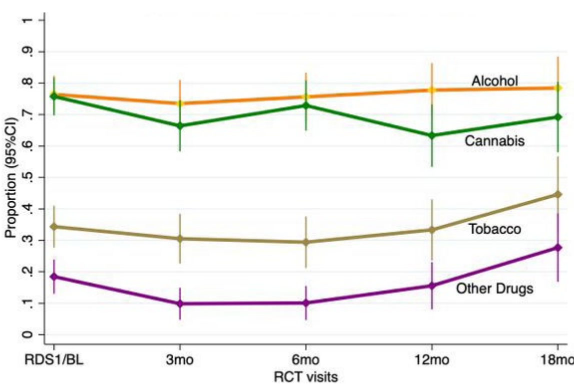

Figure. PUSH study: Substance use over time.

Conclusions: High SU indicates the need for integrated models to address co-occurring substance use, a key gap in HIV treatment adherence and prevention.

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EPD155

Next generation HIV stigma: young people's perceptions of PLWHIV in contemporary South Africa

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Background: South Africa has one of the highest rates of HIV and AIDS in the world. Driving the infection rates are gender-based violence, lack of knowledge of the disease and stigma.

The objective of this study is to examine the perceptions of young people (15-24 years old) toward people living with HIV and AIDS (PLWHIV) with the aim of identifying key attitudes for targeted intervention.

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Methods: The study set in South Africa, will use data from the SABSSM 2017 data which is a nationally representative survey conducted by the HSRC (http://www.hsrc.ac.za/). A sample of 9,113,879 young people (15-24 years old) are analysed. The study will examine key perceptions by demographic, socioeconomic and sexual behaviour (including GBV) of respondents. Descriptive and inferential statistics are used.

Results: The table below shows the percentage distribution of key perceptions toward PLWHIV among youth in South Africa. The table shows that social attitudes toward marriage (21.01%) and talking about HIV (13.49%) are particularly negative. In addition, socioeconomic perceptions pertaining to employment (14.28%) and buying food from someone with HIV (13.49%) are also highly stigmatised.

Rank	Perception	Yes	No	Don't know
1	A person would be foolish to marry a person who is living with HIV/AIDS	21.01	70.02	8.97
2	Is it a waste of money to train or give a promotion to someone with HIV/AIDS?	14.28	80.79	4.93
3	Are you comfortable talking to at least one member of your family about HIV/AIDS?	84.06	13.49	2.46
4	If you knew that a shopkeeper or food seller had HIV, would you buy food from them?	84.52	13.35	2.13
5	Would you buy fresh vegetables from a shopkeeper or vendor if you knew that this person had HIV?	84.53	13.07	2.4
6	Do you think children living with HIV should be able to attend school with children who are HIV negative?	89.61	7.79	2.6
7	If a pupil has HIV but not sick, should he or she be allowed to continue to go to school?	89.53	7.86	2.61

Table.

Conclusions: Despite the country's many efforts stigma around PLWHIV exists among young people in South Africa. This is concerning as young people will likely grow with these misconceptions and contribute to further perpetuation in the state. Efforts to reduce stigma among young people will reduce infections.

EPD156

The importance of psychosocial resources in positive adaptation to challenging situations among adolescents living with a perinatal HIV infection in Kwazulu-Natal, South Africa

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Background: The ability to cope with adversity (or positive adaptation to challenging situations) can improve health outcomes, particularly among adolescents living with a perinatal HIV infection (APHIV), exposed to HIV-related stressors. Despite APHIV's positive adaptation to challenging situations, little is known about the role of psychosocial resources in enhancing their ability to cope with adversity.

This study examines the association between psychosocial resources and the ability to cope with adversity among APHIVs living in KwaZulu-Natal, South Africa.

Methods: This cross-sectional study used baseline data from the VUKA Family Program, an RCT conducted with a convenience sample of 315 perinatally HIV-infected adolescents (ages 9 to 15) and their caregivers in KwaZulu Natal, South Africa, between 2011 and 2016. Predictors were psychosocial resources and counseling serviced use, with coping as the outcome. Psychosocial resources (e.g., positive parenting, number of supportive relationships, HIV knowledge) and the ability to cope with adversity were measured using APHIV self-reports to standardized scales. Counseling service use was assessed using caregiver reports to a single item measure. An ordinary least squares (OLS) regression model was conducted to examine the associations between psychosocial resources and the ability to cope with adversity. Regression analyses adjusted for child age, gender, living with a biological mother, and caregiver age.

Results: Univariate statistics indicate that among APHIVs, 60% reported high levels of positive parenting, 93% reported high rates social support, and 85% reported medium to high levels of HIV knowledge.

Among caregivers, 75% reported their APHIVs used counseling services. OLS regression results showed increased HIV knowledge (β = .09, p =.006), high rates of available supportive relationships (β = .23, p =.003), and positive parenting (β = .08, p =.042) were positively associated with the ability to cope with adversity. However, counseling service use (β = -.48, p = .016) was negatively associated with coping with adversity.

Conclusions: Psychosocial resources are associated with the improved ability to cope with adversity among APHIVs. Counseling is not enough for these youths. Psychosocial interventions that enhance coping and provide emotional/instrumental support should be promoted to better serve the needs of APHIV facing challenging situations.

EPD157

A new approach to achieving HIV prevention outcomes for AGYW: progressing the journey to relationship goals

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Background: In South Africa, our prior research indicated that 62% of high risk Adolescent girls and young women (AGYW) aged 15-24 did not see relevance for HIV prevention in their lives and thus weren't adopting preventive behaviors. In 2021, an innovative program was co-created with AGYW, implementing partners and donors (USAID, BMGF) and introduced that aimed to progress AGYW through their journey to a point where HIV prevention products would become relevant in their lives.

Description: Together with two implementing partners (ANOVA and TB/HIV Care) the Relationship Workshop was developed as a hybrid program that consisted of impactful one day in-person sessions once a week over 5 weeks along with asynchronous WhatsApp group conversations, much shorter than other structural programs.

Organized by 3 different segments of AGYW, the workshop is structured to start with relationship goals and work towards relevance of sexual health with interactive activities that build on one another. Different from didactic programs, facilitators help participants arrive at their own conclusions and priorities, culminating in commitments to behavior change.

Lessons learned: The pilot program successfully progressed over half of the participants (58%) in their relationship journey and that progression was durable after 3 months. Increases in relevance were seen in the increased interest in PrEp (51%), likelihood of testing (67%) and likelihood of asking partners to get tested (71%).

Key behavioral changes were seen in the increased PrEp initiation (69%), and testing (36%) along with self-reported changes of increased communication with partners about their relationship in the data collected for one segment. The experience created a sisterhood that was missing in the lives of high risk AGYW.

Conclusions/Next steps: Relationship Journey progression of high risk AGYW correlates with increased prevention behaviors such as testing, PreP initiation, etc. Scaling this program and its underlying principles represents an opportunity to prepare 62% of the market for multiple products in the HIV prevention pipeline.

To attract participants at scale, segment specific communication and channels can be optimised to meet AGYW where they are and address their relationship needs. A hybrid digital and in-person approach supports behavior change better than either method alone.

EPD158

Effects of quality of caregiver-adolescent relationship on HIV, HSV-2 and on pregnancy incidence among young women in rural South Africa enrolled in HPTN 068

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Background: Adolescent girls and young women (AGYW) are at an increased risk of acquiring HIV and HSV-2, and pregnancies are high as well in AGYW. Despite the protective effect of caregiver-adolescent relationships on risk behaviors, less attention has been paid to the effect of these relationships on sexually transmitted infections (STIs) and pregnancy.

Methods: We used longitudinal data from HIV Prevention Trial Network 068 – conducted among 2,533 AGYW (13 – 20 years) over 5 years in Agincourt, South Africa. Quality of caregiver-adolescent relationship (caring and closeness) was measured by asking AGYW perceptions of their relationship with their primary caregiver. Kaplan Meier and Cox models were used to estimate the effect of quality of caregiver-adolescent relationships (caring and closeness) on STIs and pregnancy.

Also, we assessed effect measure modification (EMM) by age (14-19 vs. 20-25 years) for STI risk using stratum-specific estimates and likelihood ratio tests (LRT) with a p-value <0.1 indicative of EMM.

Results: There were no significant differences in the hazard of HIV by our exposures (caring: hazard ratio (HR): 1.03, 95% CI: 0.75, 1.42; closeness: HR: 0.80, 95% CI: 0.57, 1.11).

Among 14-19-year-olds, those who reported caregiver caring were less likely to acquire HSV-2 (HR: 0.69, 95% CI: 0.51, 0.94, LRT = 3.89, p-value=0.0487); in contrast, there were no significant differences among 20 – 25-year-olds.

AGYW who reported high quality relationships had a lower hazard of incidence pregnancy (caring: HR: 0.79, 95% CI: 0.68, 0.93; closeness: HR: 0.76; 95% CI: 0.64, 0.91).

Conclusions: Findings indicate, positive caregiver-adolescent relationships are associated with reduced risk of HSV-2 among younger AGYW and pregnancy incidence. Family-centered interventions focused on improving these relationships are recommended.

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EPD159

Economic empowerment and adherence to antiretroviral therapy improve the quality-of-life and school-life satisfaction among adolescents living with HIV in Uganda

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Background: With the increased survival among adolescents living with HIV (ALWHIV) in the era of antiretroviral therapy (ART). ALWHIV experience psychosocial challenges such as school disruption, stigma, and discrimination. It is essential to pay attention to their psychosocial well-being.
In this longitudinal study, we explored the impact of a family-based economic empowerment intervention on the quality of life and School-life satisfaction among ALWHIV in Uganda.
Methods: We used data from a two-arm cluster-randomized trial between 2012 and 2018. The study recruited 702 ALWHIV (control =344 and intervention = 358), aged 10 – 19 years from 39 clinics in Uganda. The intervention included a long-term child development account, four micro-enterprise workshops, and 12 mentorship sessions.
We measured ART adherence using Wilson's three-item self-report measure. Quality of life was measured using four questions adapted from the Pediatric Quality of Life Inventory (alpha=0.9), while Satisfaction with school life was measured using an eight-item scale (alpha=0.9).
Outcomes were measured at baseline, 12, 24, 36 and 48 months post-intervention. We fitted three-level mixed-effects regression models to assess the impact of the intervention on the two outcomes.
We included the study group, the time of follow-up in years, and group-time interaction for each model. We also included adherence in the model to determine its association with our outcomes. We reported robust standard errors, and all p-values of 0.05 or less were considered significant.
Results: The intervention was significantly associated with increased school-life satisfaction, b = 0.74 (95% CI: 0.09 – 1.38), p value 0.026. Also, there was an increase in the quality of life of the adolescents over the five-measurement point, with statistically significant increases marked at 24 months b = 2.00 (1.06 – 2.93), p-value <0.001 and 48 months b = 1.00 (0.17 – 1.83), p-value 0.019.
In addition, optimal ART adherence was significantly associated with improved quality of life b = 0.52 (95% CI: 0.64 – 2.41), p-value 0.001 but did not affect school-life satisfaction.
Conclusions: Economic empowerment and optimal ART adherence play a key role in improving the quality of life among ALWHIV. HIV interventions should include economic empowerment and enhance treatment adherence.

EPD160

Food insecurity on trust in providers among adolescents and young adults newly diagnosed with HIV

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Background: The dual epidemics of food insecurity and HIV/AIDS are a growing concern in South Africa. Rates of undernourishment are increasing among people living with HIV (PLWH). Studies have shown the negative impacts of food insecurity on HIV related clinical outcomes. Given high levels of attrition in care for adolescents and young adults (AYA), we wanted to explore the association between food insecurity and trust in providers, a potential mediator of the relationship between food insecurity and wellness among AYA living with HIV.
Methods: We analysed baseline data from Standing Tall, a prospective cohort study of newly diagnosed HIV-positive AYA in South Africa collected between 2018-2019.
We performed a cross-sectional analysis of food insecurity, defined using the Household Food Insecurity Access Survey (HFIAS), and two measures of patient trust: complete trust in providers and complete trust in the healthcare system. Logistic regression analyses were performed with adjustment for the following covariates: age, gender, education, health literacy, and perceived social support.
Results: Overall, 100 subjects were included in the analysis. The mean age was 21 years old. Ninety percent of subjects were female. At baseline, the prevalence of food insecurity was 63%. There were minor differences in patient trust by food insecurity.
Those with less food insecurity reported higher complete trust (provider: 84% vs. 73%, healthcare system: 86% vs. 71%). In adjusted analyses, the odds of complete trust in the healthcare system was significantly lower in those with more food insecurity than those with less food insecurity (aOR: 0.28, 95% CI: 0.09, 0.97). The adjusted odds ratio for complete trust in providers was similar (aOR: 0.45, 95% CI: 0.15, 1.39).
Conclusions: The majority of AYA newly diagnosed with HIV in our study report high levels of food insecurity that are associated with lower trust in the healthcare system, potentially limiting antiretroviral therapy initiation and retention. Every health encounter with young PLWH should incorporate screening for food insecurity to increase early identification and referral to appropriate resources.

EPD161

Perspectives of youth living with HIV, parents, and public health experts on a novel mHealth application, *PEERNaija,* integrating medication reminders with virtual peer support and social/ financial incentives to improve adherence

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Background: Youth living with HIV (YLWH) have greater rates of virologic failure than their adult counterparts due in part to medication nonadherence. *PEERNaija* is a novel, gamified mobile health application (app) designed to improve medication adherence by integrating medication reminders with social and financial incentives, virtual peer social support (via chatroom), and early clinic outreach for non-adherent YLWH in Nigeria.

Methods: User-centered design was employed to develop, then refine, an initial prototype of*PEERNaija.*We utilized Focus Group Discussions (FGDs) to identify reactions to key features (user interface, medication reminders, incentives, and peer support), facilitators and barriers to app use, and how well the app would meet adherence needs. FGDs were conducted with 3 groups:

1. YLWH (ages 15-27 years) engaged in care,
2. Parents of YLWH, and
3. Adolescent/public health agency representatives in Nigeria.

FGDs were recorded, transcribed, and analyzed using thematic content analysis.

Results: Fifty-one Nigerian YLWH (29 female, 22 male) with poor (15%), suboptimal (36%), and high medication adherence (49%) (based on pharmacy refills in the prior year), 14 parents, and 5 public/adolescent health experts participated in the FGDs. All groups expressed enthusiasm about the *PEERNaija* app and thought it would improve medication adherence by providing daily medication reminders and critical peer support. YLWH expressed excitement, especially about the gamified and incentive components. All participants highlighted the importance of maintaining privacy and minimizing disclosure threats. Some facilitators and barriers varied by stakeholder group [Figure 1].

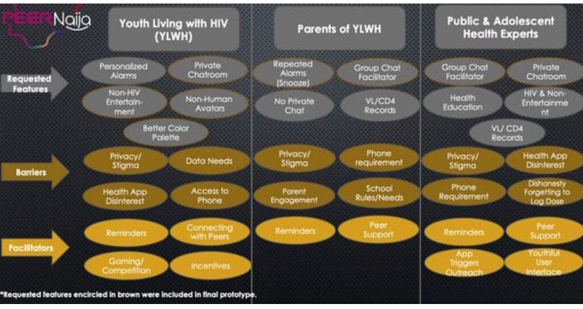

Figure 1. Stakeholder perspectives on facilitators and barriers to PEERNaija application use.

The app was refined in response to stakeholder feedback, prioritizing desired features of YLWH and addressing barriers across stakeholder groups.

Conclusions: Our findings suggest the*PEERNaija*app will be acceptable to all stakeholders (YLWH, parents, and public/adolescent health experts) and highlights the importance of user-centered design to adapt and refine mHealth interventions.

*Ekelem and Idigbe are co-first authors of this abstract.

EPD162

Factors for engagement in HIV-related risky sexual behaviors among young women in southwestern Uganda

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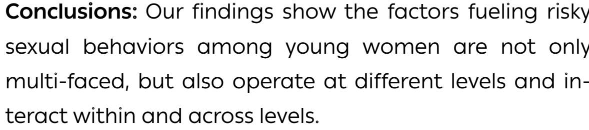
Background: Although sub-Saharan Africa has made commendable progress in the fight against HIV/AIDS, new HIV infections among young women remain high. In Uganda in 2018, young women (aged 15-24 years) had 14,000 new HIV infections, approximately triple the 5,000 among their male counterparts.

Methods: Using a modified Social Ecological Model for Young Women's Vulnerability to HIV Infection, this qualitative study explored the contextual and broader socio-structural factors underlying risky sexual behaviors associated with the high new HIV infections among young women (15-35 years) in Mbarara district, southwestern Uganda. From October 2018 to September 2019, we conducted 32 focus group discussions with purposively selected diverse stakeholders including young women, young men, elders and community members. Key informant interviews were conducted with 15 social workers. Focus group discussions and key informant interviews were audio recorded and transcripts analyzed using thematic analysis in ATLAS ti.

Results: The findings reveal young women continue to engage in transactional sex with older men to meet basic needs (food, shelter, school fees) and for materialistic gains (designer clothes, nice phones, cosmetics). Cross-generational sexual relationships were often characterized by imbalance of power to the disadvantage of the young women. Social norms that young people should submit to old people and that women are subordinate to men limited the young women's negotiating power for safe sex. Growing unemployment and underemployment even among college graduates were key facilitators of risky sexual behaviors among the young women. Dynamics at health facilities, including unprofessional health staff (judgmental, rude), long waiting times, and lack of privacy hindered young women from accessing HIV services. The rollout of antiretroviral drugs is reported to have reduced the perceived severity of HIV/AIDS and created a false sense of hope among young people generically.



Conclusions: Our findings show the factors fueling risky sexual behaviors among young women are not only multi-faced, but also operate at different levels and interact within and across levels.

The findings highlight the importance of implementing a holistic approach with different interventions at multiple levels (individual, dyad/relationship, friends/peers, family and community, institutional, policy) to address risky sexual behaviors fueling increased new HIV infections among young women.

EPD163

Engaging key population peer educators to improve HIV care and treatment outcomes amongst key populations

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Background: Key populations often face significant challenges in accessing care and treatment. In many countries including Uganda where certain sexual identifications and practices are criminalized, additional barriers are created by individuals' own fears of stigma, abuse, harassment and legal consequences. The COVID-19 pandemic catalysed paradigm shift in the delivery of health services with a greater push to the community and less focus on the facility. Alive Medical Services (AMS) with support from Frontline AIDS UK and Elton John AIDS foundation (EJAF) implemented a project aimed at promoting a resilient HIV response amongst Key populations.

Description: Peer educators from different categories of key populations including men who have sex with men, sex workers, transgenders were identified and trained in HIV care, counselling, linkage follow up and self-care interventions. Peer educators were assigned responsibility to follow up physically and virtually those in their category who are accessible to them and have consented. Peer educators would actively track and follow up appointment dates for refills and comprehensive clinical assessment. They pick refills or escort the client or inform the medical centre of the client coming to ensure they are fast tracked. Peer educators would distribute HIV self-testing kits and follow up to link for PrEP or ART. The peer educators report weekly on WhatsApp group and meet monthly with the facility staff to assess progress

Lessons learned: By Dec 2021, there was a 36% increase in the number of KPS retained in care, and the overall 12-month retention rate in care was at 96%, viral load coverage at 95% and viral load suppression at 93%.

Even with the COVID 19 challenges, overall performance across all of the HIV continuum for Key populations improved to be better than before COVID 19 as the peer educators intensified their community service delivery with close monitoring. Given that the Peer educators are also in care, they supported the others to overcome self-stigma and embrace self-care interventions.

Conclusions/Next steps: Peer to peer support models are ideal in promoting a resilient HIV response but also require intentional monitoring and support to track progress for effective and efficient delivery.

Keywords: Key population, Retention, Viral load

EPD164

A peer support model to promote adherence and retention in care in adolescents living with HIV during COVID 19

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Background: The COVID-19 pandemic has had a significant impact on adolescents' mental health, with less social interaction, higher levels of anxiety, and depression. Adolescents living with HIV (ALHIV) face additional challenges including reduced face-to-face contact with their healthcare providers.

We describe the implementation and adaptations of a peer support model to provide social and emotional care for ALHIV in the primary care setting during COVID-19 in Johannesburg, South Africa.

Description: A peer support model, adapted from the Zimbabwe Zvandiri model, was implemented within our existing psychosocial support programme at seven Department of Health primary care facilities in Johannesburg, for clients 12-24 years. The relatable peer supporters, who are young people living with HIV aged 18-24 years, educate, and motivate clients using their lived experience.

Due to the pandemic occurring in waves, we implemented an adaptable hybrid model with different methods of support according to the COVID-19 burden at the time. Enrolment of clients, typically done face-to-face, was done telephonically during COVID-19 waves.

Support sessions were conducted in-person at facilities when restrictions eased and via WhatsApp when cases increased and in-between visits. Data is presented from November 2020 to December 2021.

Lessons learned: 635 adolescents and youth were enrolled *(12-14 years: 192; 15-19 years: 244; 20-24 years: 199)*,15% (n = 98) of whom had previously disengaged and were brought back into care through the peers' support and then enrolled. Close to 3,500 virtual and face-to-face support sessions were conducted. Clients' positive feedback included enjoying discussing their challenges with someone relatable at convenient times, that virtual support helped break the silence during lockdowns, and interacting with their peers during the virtual group sessions.

Challenges with virtual delivery included lack of data or a device to connect, poor network coverage (often related to electricity cuts), lack of flexibility over group times and group participants not joining as planned.

Conclusions/Next steps: Despite the barriers, an adapted combination peer support model can be an effective intervention for continuity of psychosocial care for adolescents and young people living with HIV during COVID-19. A focus on emotional wellbeing is important during pandemics, and to improve adherence.

EPD165
Prevalence of mental health distress among recently diagnosed HIV-positive South African youth in the Standing Tall randomized controlled trial cohort

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Background: In South Africa, 3.5% of males and 10.4% of females aged 15-24 years are living with HIV. Living with HIV is associated with a higher likelihood of mental disorders, which is associated with lower rates of HIV treatment adherence.
Understanding which psychosocial factors such as social support and future life orientation, impact mental health symptoms could help inform future interventions. In this study, we examine changes in psychosocial outcomes after a recent HIV diagnosis.
Methods: Our cohort included 100 adolescents and young adults enrolled between April 2018 and October 2019 in Cape Town, South Africa. Eligible participants were ages 18-24 years old who presented to a mobile testing van or were enrolled in the Women of Worth community-based cash and care program, tested positive for HIV, and resided in the study area.
We compared demographic and psychosocial characteristics of participants over 6 months using descriptive statistics and bivariate correlations.
Results: 90% of the adolescents in our sample identified as female and 92% had a high school level education or above. Over 6 months, the percentage of participants who reported depression or anxiety symptoms fell from 44% to 7%.
Participants reported a slight increase in religiosity and orientation towards the future, fewer maladaptive coping mechanisms, and a slight reduction in social support.
Participants with persisting mental distress symptoms were more likely to report baseline or ongoing maladaptive coping mechanisms.

	Baseline	Endline	Change
PHQ-9 Score, mean (SD)	4.5 (4.2)	1.6 (2.3)	-2.9 (4.9)
Mild to severe depression, N (%)	34 (34%)	11 (11%)	-24%
GAD-7 Score, mean (SD)	3.7 (3.0)	1.6 (2.0)	-2.1 (3.0)
Mild to severe anxiety, N (%)	32 (32%)	9 (9%)	-23%
Composite mental health distress score, mean (SD)	8.2 (6.7)	3.2 (4.0)	-5.0 (7.4)
Religiosity, mean (SD)	75.4 (28.9)	84.8 (21.9)	10.0 (34.7)
Social Support, mean (SD)	55.2 (16.9)	52.8 (14.6)	-2.5 (23.8)
Life Orientation, mean (SD)	72.3 (13.0)	73.9 (9.3)	0.80 (12.9)
Maladaptive Coping, mean (SD)	35.5 (15.2)	31.0 (10.0)	-4.1 (16.3)

Table 1. Mental Health Outcomes (N=100)

Conclusions: The prevalence of mental health distress in our cohort was lower than previously reported in the literature, especially 6 months after diagnosis. Improvement was associated with a decrease in maladaptive coping mechanisms. Interventions that leverage healthy coping skills may help reduce the burden of mental health distress on South African adolescents newly diagnosed with HIV.

EPD166
The road to reach marginalized adolescent girls and young women with SRH/HIV services in Nairobi Kenya - responded driven sampling

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Background: Many adolescent girls and young women (AGYW) residing in informal settlements within Nairobi County engage in sex work but don't seek Sexual Reproductive Health (SRH) Services and HIV services. Cases of increased teen pregnancies and HIV incidences were observed from March 2020 to April 2021, where COVID-19 cases had led to school closure. Some of the marginalized AGYW are school going girls with babies, engaging in sex work to earn a living. They operate in shadows/fringes of existing hotspots/streets frequented by other sex workers, making it hard for healthcare providers to access and offer SRH/HIV services. Partners for Health and Development in Africa (PHDA) sought to mobilize and retain AGYW sex workers into a program offering free SRH/HIV services.
Methods: Responded Driven Sampling (RDS), method was employed to reach AGYW sex workers aged 15-24 years accessing SRH /HIV services at PHDA clinics in a period of three months. Fourteen seeds were purposefully selected from PHDA facilities, the seeds brought their friends following the Social Network Strategy (SNS) platform.
Results: In three months, we managed to reach, mobilize and link 100 AGYW to SRH/HIV services through RDS. All 100 AGYW were selling sex for survival on the streets and controlled hot spots, 67% (67) were school going girls with no parents, 46% (46) were single mothers. None of them was aware of availability of facilities offering free SRH/HIV services. 99% of the girls preferred three monthly PrEP/PEP

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injection as a form of HIV prevention-Among the reasons given were "confidentiality, no one knows or sees the drug in your body" another one said, "she does not want to be judged by her mother and friends in school".

All the girls agreed to HIV testing whereby 13% (13) tested HIV positive.

Most preferred 5AM-7PM as best time of accessing SRH/HIV services before going to school, or after leaving the streets, some chose 5 PM-7PM that's before heading to the streets/pallor or after school.12/70(17%) were treated syndromically for STIs.

Conclusions: Young sex workers have higher SRH/HIV burden, ways to help this group to access SRH/HIV services should be researched and devised by policy makers.

EPD167

Adapting tablet-based neuropsychological tests for luo-speaking adolescents and young adults with perinatally acquired HIV in Uganda: the translation process for two languages

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Background: Neurocognitive problems are common among adolescents and young adults (AYA) with perinatally-acquired HIV (PHIV) and detecting them requires neuropsychological (NP) testing. However, few NP tests exist for languages in Uganda (i.e., Luganda and Luo). Adapting NP tests for different languages requires careful consideration of word choice to ensure culturally appropriate and understandable translations. Additionally, NP tests may use technical words not readily translatable to other languages (e.g., "motor skills").

This study describes a novel process of translating a battery of tablet-based NP tests for use for AYA with PHIV in Uganda into the Luo and Luganda languages.

Description: Two professional translators were hired to translate the English NP tests into Luo and Luganda. After the English-to-Luo and English-to-Luganda translations had been generated, two groups comprised of bilingual speakers (Luo- English, Luganda-English) back-translated the respective translations into English. Translator groups met to compare and review all translations for accuracy, cultural appropriateness, and understandability.

Lessons learned: Groups identified translations that could cause confusion such as: words that were too formal (e.g., *obukulungwa* in Luganda for "circle"), words that did not convey the English as intended (e.g, "sign language" in Luo for "motor skills"), and words that did not accurately describe visual stimuli (e.g., "brown" in Luo for "yellow"). Some technical words did not have a direct translation and had to be resolved by the groups to produce an understandable alternative (e.g., there is no word for maze in Luganda, but "arrangement of walls" was an accepted alternative).

Conclusions/Next steps: Forward translation alone of NP tests from English to Ugandan languages did not provide the most accurate and understandable translations, which could affect an examinee's understanding of task demands and subsequent test performance.

Using a group of bilingual speakers to back-translate and review allowed for greater insight into the cultural appropriateness of the translations and helped produce translations that conveyed the intended meaning of the English text (especially technical terms) to understandable Luo and Luganda.

This process can serve as a model for future translations of NP testing, and our findings could inform future translations of NP tests for different languages.

EPD168

Engaging social networks to increase HIV case finding among key populations

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Background: In Zambia, the USAID Open Doors project (ODP) provides access to comprehensive HIV prevention, care, and treatment services to key populations (KP): female sex workers (FSWs), men who have sex with men (MSM), and transgender people.

After observing that the project's initial HIV case-finding rate among KPs was lower than the national general population yield of 12%, the project introduced the social networking strategy (SNS) to increase HIV case finding. We share lessons from eight project sites for implementation October 2017–September 2019.

Description: To implement SNS, ODP identified 33 KP peer leaders who were familiar with the project, maintained a large KP social network, and could mobilize their peers. Peer leaders were trained to identify high-risk clients from their social networks who could act as "seeds" to distribute coupons for services at ODP wellness centers to additional unreached clients. Each coupon included a unique identifier to track clients and seeds. Peer leaders were asked to identify at least three seeds to distribute coupons each month.

Monetary incentives were provided for every coupon returned to the wellness center. A risk assessment tool—evaluating condom use, number of sexual partners, and sexually transmitted infection history—was used to gauge clients' risk level and eligibility to receive a coupon.

Lessons learned: After implementation of SNS, project case finding increased from 13% in FY17 (FSWs=1,221 [16%]; MSM=117 [5.6%]; transgender people=30 [11%]) to 28% in FY19 (FSWs= 3,574 [32%]; MSM=774 [19%]; transgender people=119 [36%]). There was a significant increase in project yield in FY19 (*M* = 1105.75, *SD* = 370.3) compared to FY17 (*M* = 342, *SD* = 119.7), $t(3) = -3.21$, $p < .05$. By the end of FY19 the total SNS positivity contribution to the project yield was 32%, and 2,115 (76%) coupons were returned from 2,799 distributed to clients across all sites.

Conclusions/Next steps: SNS was successful in increasing case finding among KPs. Leveraging trusted and knowledgeable social relationships to extend HIV services to hard-to-reach KP individuals is a strategy that should be scaled up.

EPD169

Health care practices of young people and adolescents using PrEP from the perspective of health providers

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Background: Health providers are key in the delivery of PrEP tailored to young people and adolescents needs. We analyzed the perceptions of health providers regarding engaging adolescents into PrEP care in Brazil.

Methods: Nested in a PrEP demonstration study (PrEP 1519), eight in-depth interviews were conducted with health professionals who serve young people aged 15 to 19 years who use PrEP in a Center for Testing and Counseling in São Paulo, Brazil. Most were male (5), white (4), homosexuals (6), with complete graduation (7) and aged between 25 and 52 years old. The interviews were conducted by video call on account of the Covid-19 pandemic in October 2020 and finalized in February 2021.

Results: Health professionals described young people and adolescents as sincere and interactive during attendance. However, low of responsibility is an often cited and age-related characteristic. Providers reported that using a language closer to the teenager's daily life positively influences the relationship with health care and consequently improves adherence to PrEP use.

The use of PrEP is seen by professionals as a self-care strategy and they cite the ease of access to the service and the use of more welcoming professional practices as determining factors for the successful use of PrEP by adolescents. The sexual orientation of self-declared gay/homosexual providers is associated with the affection and paternalistic care given to adolescents, causing the provider to project a greater identification in the adolescent and, with this, they reported greater understanding of personal issues and sought greater proximity to the participants, able to influence the use of PrEP and other HIV prevention strategies.

Conclusions: Health providers have different perspectives about the use of PrEP and adolescents. Using daily and understanding language are factors that bring health providers closer to adolescents and improve the use and adherence of PrEP. Ease of access to the service and finding a diverse and welcoming team are crucial in health care for adolescents. Sexuality diverse providers are seen as capable an affectionate link capable of positively influencing the choices of health care and HIV prevention strategies.

EPD170

Effect of community and facility-based care on viral load suppression among young women on ART in the Mulago Immune Suppression (ISS) clinic

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Background: The burden of HIV is still high among young women aged between 15- 24 years in Uganda. Viral load suppression, an indicator of successful treatment outcomes, stands at 44.9% among HIV positive young women aged 15-24 years, much lower than the UNAIDS target of 73%. The Uganda Ministry of Health (MOH) released the national implementation guide for differentiated service delivery (DSD) to optimize quality of care and efficiency of service delivery for HIV treatment among specific populations, however, it is not clear if viral load suppression levels remain optimal among young women under DSD. We evaluated the effect of receiving community-based care versus facility-based care on viral load suppression levels among young women in the Mulago ISS clinic.

Methods: A retrospective cohort study was conducted among 49 young women receiving community-based care versus 153 receiving facility-based care identified during January 2018 and March 2020. Medical records of young women (15-24 years) who are HIV positive on the same ART regimen for at least 12 months, with a suppressed viral load, good adherence to ART of greater than 95%, were extracted and used for analysis. Main outcome variable was viral load suppression 12 months after ART initiation.

Results: Of the 202 young women studied, majority had normal weight (48.3%), no signs and symptoms of TB (98.0%) and in WHO treatment stage I (81.4%). Factors associated with viral load suppression included; receiv-

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ing community based care (Incidence risk ratio [IRR]= 1.43, 95% CI=0.88-2.36); PMTCT care entry point (IRR=4.21,95% CI=1.70-10.4).

Conclusions: The incidence of viral load suppression was increased by 43% among young women receiving community-based care compared to those receiving facility- based care. Based on these results, we argue there is potential of achieving better viral load suppression levels among young women by scaling up community-based care for treatment of HIV in Uganda, by augmenting the capacity of health care providers to deliver these services at that community level and increasing the number of community centers in the Kampala area. Further work will help refine treatment strategies and combat the spread of HIV in Uganda and beyond.

EPD171

CHILL the series: engaging key populations through use of edutainment and digital media

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Background: COVID-19 has furthered the issues as some of the population would have been forced to become more reclusive. The ASHE Company developed and produced the first season of a 13-part television series to help reduce the prevalence of HIV in Jamaica. The Chill Series tells the story of a group of Jamaican millennials as they navigate the realities of the still present HIV epidemic intrudes on their lives and pushes them to face fears and uncomfortable truths.

Description: CHILL the series was released in March 2021 on YouTube and featured the release of thirteen weekly episodes for 25 minutes each. Each episode pushed the envelope on various HIV related issues affecting MSM, Youth, PLHIV, women and TG in a culturally relevant manner. Each episode also featured a call to action and a 60 minutes live, interactive post-show inter active discussion on social media.

Lessons learned: The series had viewership of approximately 21,000.00 each episode. A total of 1027 MSM were tested through the CHILL Series and supporting interventions across the island. Approximately 30 PLHIV were identified during the period. 70% were new cases and 30% were known cases. Over 50% of cases identified were linked and/or returned to care.

	ASHE 03.01.21	ASHE 10.30.21	+/-	TABS 03.01.21	TABS 10.30.21	+/-
INSTAGRAM	4628	7084	+40.9%	3809	6980	+49%
FACEBOOK	7407	7689	+3.8%	592	664	+12.1%
TWITTER	1495	1515	+1.3%	895	902	+0.8%
YOUTUBE	1190	8090	+490.7%			

Table. Social media impact from March 1, 2021 to September 30, 2021

Conclusions/Next steps: CHILL Season 2 in being developed for release later this year. Partnership with Netflix, Amazon Prime, Hulu, Apple TV, Caribbean Media Broadcasting and other networks is being sought for global viewership and support of the global response and UNAIDS targets for 2030. Chill Season 2 will also explore the impact of COVID-19 on HIV.

EPD172

Future orientation protects against suicidal ideation among adolescents and young adults affected by perinatal HIV

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Background: Adolescents and young adults (AYA) with perinatal HIV infection (PHIV) are challenged by living with a stigmatized chronic illness while also navigating transition into adulthood. We previously found significantly higher rates of attempted suicide in AYAPHIV compared with perinatally HIV-exposed, uninfected (PHEU) peers. However, few studies have examined suicidal ideation

(SI), a strong predictor of suicide attempts, nor factors associated with SI in HIV-affected AYA. Future orientation has been found protective against SI in other AYA but has not been investigated in AYAPHIV and AYAPHEU. To inform interventions, we examined associations between future orientation and SI in AYAPHIV and AYAPHEU.

Methods: Data come from an ongoing longitudinal New York City (NYC)-based cohort study of 206 AYAPHIV and 134 AYAPHEU enrolled when 9-16 years and interviewed every 12-18 months. These analyses focus on 3 follow-up visits which included questions on future orientation and SI (follow-ups 2, 4 and 5). Past-year SI and psychiatric disorders were assessed using the DISC-IV.

Future orientation was assessed using four items, rated on a 5-point Likert scale (1=very low, 5=very high), measuring confidence that participants will:

1. Go to college,
2. Have an enjoyable job,
3. Have a happy family life, and
4. Stay in good health.

We used generalized estimating equations to estimate differences in mean future orientation scores by PHIV-status and adjusted odds ratios (AOR) and corresponding 95% confidence intervals (CI) for associations between future orientation and SI across visits, controlling for age, sex, follow-up, and PHIV-status.

Results: In this cohort of primarily Black and Latinx AYA living in vulnerable communities in NYC, across visits, AYA reported high future orientation (mean score=4.12), and relatively low rates of SI (15 AYAPHIV [3.20%] versus 6 AYAPHEU [2.00%]) with no statistically significant differences by PHIV-status in either variable. Overall, higher future orientation was associated with lower odds of SI (AOR=0.48, 95% CI: 0.23, 0.996).

Conclusions: Our findings highlight the resiliency of AYAPHIV and AYAPHEU, who reported high future orientation and low SI, despite HIV-related challenges. Understanding how future orientation can be cultivated and sustained, as well as how it protects against SI can inform preventive interventions for AYAPHIV and AYAPHEU.

EPD173

A moderated mediation model: does HIV status moderate the mediating role of coping between loneliness and depression among adolescents in India?

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Background: A high burden of mental health conditions has been reported among adolescents living with HIV. Stressors such as loneliness associated with HIV status may lead to poor coping styles contributing to this higher burden, potentially mediating the relationship between loneliness and depression among adolescents.

Hence, we examined the mediating role of coping strategies between loneliness and depression among adolescents living with and without HIV in India and the moderating role of HIV status on this relationship.

Methods: A cross-sectional and conveniently sampled study at a tertiary care government hospital in Pune conducted from August 2018 to June 2020 was leveraged for the secondary data analysis. The study included adolescents (15-19 years) living with (N=70) and without HIV (N =126). A moderated mediation analysis with bootstrapped confidence intervals was implemented in MPLUS 8 with loneliness as exposure, coping strategies as a mediator, depression as an outcome, and HIV status as moderator. Twelve separate models with coping strategies (venting, diversion, self-reliance, social support, solving family problems, avoidance, spirituality, close friendships, professional support, engaging in demanding activities, humor, relaxing) as mediator was implemented. Only significantly mediating strategies were included in the moderated mediation model.

Results: The mean age of the study sample (N=196) was 17 years, with a range of 15-19 years. Females and faith-based minorities constituted 59.18% and 9.18% of the sample. Depression and severe loneliness were reported by 57% and 23% of the study population respectively. Venting as a coping strategy was seen to mediate the relationship between loneliness and depression among adolescents living with and without HIV, with an indirect effect of 0.09 (p=0.02).

A unit increase in loneliness was associated with a 0.20-point decrease in venting as a coping strategy (p<0.05) and a 0.60-point increase in depression scores (p<0.05). Venting was associated with a 0.47-point decrease in depression scores (p=0.02). However, no moderation by HIV status on the mediating effect of venting was seen.

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Conclusions: The findings indicate that interventions to improve depression among adolescents living with HIV should not only focus on individual-level factors such as coping strategies like venting but also interpersonal factors to reduce loneliness.

EPD174

Mobile technology access and use among youth in Nairobi, Kenya: implications for mobile health intervention design

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Background: While few studies have used smartphone-based interventions to support the health of youth in SSA, there is growing interest in using this platform in this age group. Social media can be used to support the health of underserved youth beyond clinical settings. Young people are avid users of social media, but estimates of smartphone access among youth in sub-Saharan Africa are lacking, making it difficult to determine context-appropriateness of online and social media interventions.

Methods: We conducted a cross-sectional observational survey assessing technology access and use among youth aged 14–24 receiving general outpatient / HIV care in three hospitals in Nairobi, Kenya classified as a national referral hospital, a county referral hospital, and a sub-county hospital. Data collection was conducted between December 2017 and April 2018. Participants were recruited in-person through convenience sampling by study staff. HIV care clinics. Correlates of smartphone access and social media use were evaluated by Poisson regression with robust standard errors. Data were analyzed using R version 4.0.2.

Results: Of 600 youth, 301 were receiving general outpatient care and 299 HIV care. Median age was 18 years. Overall, 416 (69%) had access to a mobile phone and 288 (48%) to a smartphone. Of those with smartphones, 260 (90%) used social media.

Smartphone access varied by facility (40% at the sub-county hospital*vs.*55% at the national referral hospital, P=0.004) and was associated with older age [65% in 20–24-year-old*vs.*37% in 14–19-year-old, adjusted prevalence ratio (aPR) 1.58, 95% CI: 1.30–1.92], secondary*vs.*primary education (aPR 2.59, 95% CI: 1.76–3.81), and HIV*vs.* general outpatient care (aPR 1.18, 95% CI: 1.01–1.38). Social media use was similarly associated with facility, older age, higher education, and male gender.

Conclusions: These data suggest that smartphone-based and social media interventions are accessible in Nairobi, Kenya, in the general population and youth living with HIV, and most appropriate for older youth.

Intervention developers and policymakers should consider smartphone and social media interventions as candidates for youth health programs, while noting that heterogeneity of access between and within communities requires tailoring to the specific intervention context to avoid excluding the most vulnerable youth.

EPD175

Transactional sex among adolescents enrolled in a cash plus intervention in rural Tanzania: a mixed-methods study

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Background: Transactional sex or material exchange for sex is associated with HIV incidence among adolescent girls and young women in sub-Saharan Africa. The motivations for engaging in transactional sex vary from the fulfilment of basic needs, to enhancing social status or the expectation that men should provide.

Transactional sex is also associated with HIV risk behaviours, such as multiple sexual partners and other determinants of HIV risk, including partner violence and abuse, alcohol consumption, and inconsistent condom use.

Methods: Our study examines drivers of transactional sex within the context of the *Ujana Salama* 'cash plus' intervention in rural Tanzania and examines whether the 'plus' intervention reduced transactional sex among adolescents and young women. We use data from the first and third rounds of data collection.

The impact evaluation consisted of a parallel mixed-methods design where the quantitative and qualitative data collection occurred simultaneously, and integration of the findings were done during interpretation and the discussion.

We used multivariable logistic regression models to estimate the association between transactional sex and contextual factors and performed analysis of covariance (ANCOVA) to explore whether the cash plus reduced transactional sex. We used thematic content analysis for analysing qualitative transcripts.

Results: The prevalence of transactional sex among unmarried female adolescents at wave 3 was 26%. Findings show that increasing age is a risk factor for transactional sex (OR=1.80; 95% CI: [1.50, 2.17]), staying in school was protective against engagement in transactional sex and sexual violence was associated with increased odds of transactional sex (OR=0.23; 95% CI: [0.14, 0.39]).

The cash 'plus' intervention showed no impacts on reducing transactional sex (β=0.003, p=0.905), although there was evidence of improvements in food security.

Conclusions: The mechanisms of impact for a cash plus intervention on transactional sex is complex; economic insecurity is an important driver, but psychosocial factors and gendered social norms need consideration in intervention development.

Combination prevention interventions that can address structural drivers of HIV infection, such as barriers to school attendance and economic vulnerability, alongside empowering adolescents by addressing psycho-social factors, such as improving self-esteem or cultivating aspirations and addressing gendered social norms hold potential.

EPD176

Social support and life experiences among Adolescents living with HIV (ALWH): a mixed methods study conducted in Kilimanjaro, Tanzania

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Background: Tanzania has an HIV prevalence of 2% among adolescents aged 15-19. Despite having good access to lifelong ART, adolescents living with HIV (ALWH) have poor adherence to medication. Social support is key for people living with HIV (PLHIV) to manage their situation.This study describes social support and general life experiences of ALWH in Kilimanjaro, Tanzania.

Methods: We conducted a cross-sectional study using mixed methods from September 2021 to January 2022. A semi-structured questionnaire was used to interview adolescents aged 15-19 years receiving HIV care from four health facilities in Kilimanjaro Tanzania.

We conducted in-depth interviews with purposively selected adolescents until data saturation was reached. Descriptive statistics were done for quantitative data. Categorical variables were summarized using frequencies and proportions while numerical variables using means and standard deviations. Association was determined using P value. We used thematic analysis for qualitative data.

Results: We included 81 adolescents, 11 interviewed in-depth. Forty-four (54.3%) were male. Adolescents had an average of 9.3(SD 4.5) years in HIV care. 48(59.3%)of adolescents reached optimal adherence (≥95%).

Those with a supportive person to remind them to take medication were 67(82.7%) while 53(65%)had people that collected medication for them in case they couldn't attend.Seventy-one (88%) were part of peer support groups and 66(81.5%) received HIV education from those groups. Thirteen (16%) adolescents were in a relationship, but not sexually active.

Among 12 adolescents (14.8%) that reported experiencing difficulties due to their HIV status, 7(58%)were girls. Gender was not significantly associated with experiencing difficulties due to HIV(p=0.35).Themes from in-depth interviews were:

1. The need for reminders to take medication and clinic visits,
2. Peer support groups,
3. Financial support,
4. Difficulties in disclosing to new closer person and
5. Fear of unwanted disclosure at the work place.

Conclusions: Most ALWH are getting social support from close family members and peer support groups that are aware of their HIV status. However, they experience difficulties when needed to interact in a new environment i.e. work or when they get into a relationship.Multi-sectoral support systems are needed to assist them with each stage of life to enable them to retain to care and manage well their situation.

EPD177

Prevalence and influence of HIV stigma on the psychosocial wellbeing of people living with HIV/AIDS in University of Nigeria Teaching Hospital, Enugu, Nigeria

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Background: Purpose: To determine the prevalence and influence of HIV stigma on the physical, psychosocial and behavioural wellbeing of people living with HIV/AIDS (PLWH) in University of Nigeria Teaching Hospital (UNTH) Enugu, Nigeria.

Methods: The study period was about 10months. The study was carried out at PERFAR Clinic of UNTH, Ituku/ozalla, Enugu. It is a tertiary hospital with a total number of 22 wards. PEPFAR clinic is located discreetly away from the general hospital setting.

Design: The design was a cross sectional descriptive design. Study Population: A sample of 102 adolescents and young adults were statistically determined from population of 138.

Data Collection: data was collected using structured questionnaire adapted from the HIV stigma scale.

Method of Data Analysis: Collated data was analyzed using descriptive and inferential statistics. SPSS version 25 and Microsoft Excel 2007 used.

Results: Findings showed that the prevalence of HIV stigma was very high (97.5%). To determine the influence of HIV stigma on physical wellbeing of people living with HIV. The findings showed that the highest influence was

on pain/discomfort although experienced below average (2.49±1.10) followed by performing usual activities (2.44±1.04). The overall influence on physical wellbeing was below average (2.32±0.90).

Findings on the influence of HIV stigma on the psychological wellbeing of PLWH at UNTH. Overall influence of HIV stigma on psychological wellbeing was above average (3.48±1.06). The two factors-anxiety (3.44±1.12) and depression (3.52±1.16) were influenced aboveaverage. To identify the influence of HIV stigma on the behavioural and social wellbeing of people living with HIV/AIDS at UNTH.

Findings showed that the HIV stigma influence on behavioural and social wellbeing was mainly that of feeling isolated (3.24±1.36) and low self-esteem (3.21±1.22). The overall influence was below average (2.86±0.76).

Conclusions: The Implication of findings: From the findings, the prevalence of HIV stigma was high among PLWH, also stigmatization among PLWH has psychological and social influence on PLWH, the study helps health care professionals to be well informed and take precaution/care in handling PLWH in the clinical setting. It also puts health professionals at the forefront in fighting against stigmatization of PLWHA.

EPD178

Improving HIV Oral PrEP Continuation Among Adolescent Girls and Young Women (AGYW) Evidence from a novel branding and service delivery strategy in Zimbabwe

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Background: Nearly 1,000 Adolescent Girls and Young Women (AGYW) are infected by HIV daily in sub-Saharan Africa. The complex mix of Covid-19, social, cultural, and religious barriers make it challenging to reach AGYW with HIV prevention. In Zimbabwe, PrEP continuation remains a challenge among AGYW. Population Solutions for Health implemented a demand generation intervention dubbed the "V-campaign" in 3 Zimbabwean districts.

The intervention comprised implementing community interpersonal strategies delivered by trained peer mobilizers and health care workers, offering PrEP at community outreach sites, and issuing a V-"Starter Kit" which enables taking PrEP in a discrete, fashionable way that promotes self-care and boosts confidence.

Methods: V was implemented in 3 intervention districts between April 2021–December 2021, with 3 control districts for comparison. We hypothesized that AGYW in the intervention districts will have longer continuation rates at 3 months after initiation on PrEP compared to those in control districts. Using routinely collected data, we compared one-, two- and three-month PrEP continuation rates among AGYW in the intervention (N=1020) versus control (540) districts. Virtual qualitative interviews and site monitoring explored implementation fidelity and barriers and facilitators to contextualize trends in continuation data.

Results: Intervention districts performed significantly better compared to control districts (Figure 1):

Overall, 3-month continuation rates increased from 41% ((38%-43% (95% CI)) to 62% (60%-65% (95% CI)) in the intervention districts (27% increase) compared to a 13% increase in the control districts. Qualitative data indicated high levels of intervention acceptability and feasibility among young women and providers.

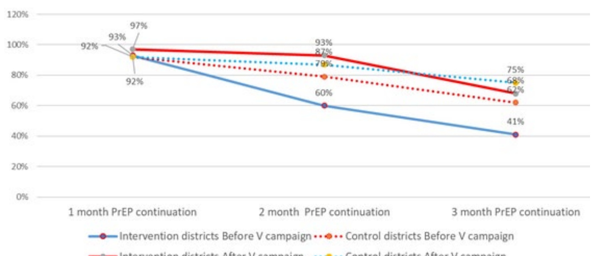

Figure 1. PrEP continuation rates before and after the "V" intervention.

Conclusions: The V-campaign has shown a significant impact in retaining AGYW on PrEP. The intervention will be scaled up to other districts in Zimbabwe with low uptake and poor PrEP continuation. Programs that seek to scale up PrEP continuation can adopt V to bring care closer to AGYW and enhance peer support and build self-empowerment.

EPD179

Research topic: the living conditions of vulnerable children in the rural areas of Lesotho: the case of Maphotong

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Background: This study explored the influences on the living conditions of vulnerable children in the rural areas of Lesotho; case study of Maphotong in Maseru district. The study conceptualised three factors which are poverty, child abuse and HIV/AIDS.

Description: A total of forty-two (42) respondents (adults; male=7 and female=16 while children; male=6 and female=14) participated in this study.

The overall objective of the study was to understand the living conditions of orphaned and vulnerable children in the rural areas of Lesotho. To do this, the study adopted the qualitative design whereby snowballing and purposive sampling techniques were used to get the forty-two (42) respondents from Maphotong community. In addition, face-to-face individual interview was used to gather information.

Thereafter, collected data was coded using different themes under each concept and analysed using framework analysis technique. Findings suggest that children

face challenges that make them vulnerable at home, school and at play. Under the concept of poverty, children are challenged with lack of adequate food and school needs as majority of them come from unemployed or underemployed families. Similarly, within the concept of child abuse, emotional and physical abuse as well as neglect seemed to be common risk factors at Maphotong.

Lessons learned: The results from the concept of HIV/AIDS show that children are vulnerable as they are stigmatised because of the HIV positive status of their parents.

Conclusions/Next steps: Majority of children at Maphotong are living with their grandparents because of orphan-hood and negligence by their parents and these challenges affect children's school attendance and performance while some children eventually drop-out of school. Despite the challenges, the findings have shown that children at Maphotong are resilient to overcome such challenges; for instance, amongst other things, they do herding and get paid.

Other populations vulnerable in specific contexts

EPD180
The state of aging with HIV in the US: implications on care coordination

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Background: Persons aging with HIV (PAWH) are the fastest growing group living with HIV in the U.S., with nearly 75% of all persons with HIV (PWH) estimated to be over age 50 by 2030. HIV amplifies the impact of aging, chronic inflammation, and chronic disease, and has increased demand for tailored care for older PWH. To better understand the health care experiences of PAWH, HealthHIV, a U.S. national nonprofit, fielded HealthHIV's Second Annual State of Aging with HIV™ National Survey.

Methods: HealthHIV recruited participants of diverse socioeconomic and demographic backgrounds through its database. Eligibility included:

1. PWH ≥ age 50, or
2. A person living with HIV ≥ 15 years.

The online survey encompassed 102 externally-reviewed qualitative and quantitative questions, and was fielded from March 15-June 16, 2021 using Survey Monkey. Univariate, bivariate, and multivariate statistics were calculated using Stata 17 and SAS 9.4 software, and compared to results from 2020.

Results: Of the n=479 eligible respondents, n=420 were PWH ≥ age 50, and n=59 were persons living with HIV ≥ 15 years. Respondents overwhelmingly used the word "evolving" to describe the state of aging with HIV. PAWH using telehealth to access care increased 11-fold from 2020, with 80% of respondents receiving treatment for chronic conditions other than HIV. 40% reported diagnosis of a mental health condition, and over 25% were in recovery from addiction and/or post-traumatic stress disorder. The cohort experienced high rates of stigma (28%), homophobia (19%), ageism (17%), and racism (10%) when accessing care.

Conclusions: The survey identified current healthcare needs of PAWH. Findings showed that COVID-19 altered how people aging with HIV are accessing healthcare. PAWH with multiple comorbidities require improved coordinated care that includes chronic condition management and behavioral health services.

Aging with HIV has mental health ramifications, including increased social isolation, suggesting opportunities for PAWH to socially engage, especially given limitations and restrictions with COVID-19. Additionally, discrimination remained a key barrier to accessing care.

EPD181
Influence of mandatory HIV testing policy on prenatal services seeking behavior among pregnant women in Nyamira North Sub-County Kenya

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Background: HIV/AIDS has had devastating effects in third-world countries. In the effort to contain the spread of the HIV virus, like some countries across the globe, the Kenyan government has instituted compulsory HIV tests policy for pregnant women seeking prenatal services in hospitals. According to this policy, pregnant women seeking prenatal services must undergo HIV tests without their consent. However, how the mandatory HIV test policy has influenced prenatal services-seeking behavior among pregnant women remains unclear. This study investigated how mandatory HIV testing policy has influenced prenatal services-seeking behavior among pregnant women in Nyamira North Sub County, Kenya.

Methods: This study that was qualitative in nature was undertaken between July and December 2021 in Nyamira North Sub-County Kenya. The study population was pregnant women. Five focus group discussions for pregnant women were organized and ten key informant interviews were undertaken. The participants for focus group discussions and key informant interviews were purposively selected. Qualitative data analysis techniques were utilized in data analysis.

Results: The study findings revealed that mandatory HIV testing policy is a stumbling block for prenatal services seeking among some pregnant women because of fear of HIV test outcomes, limited pre-testing counseling and psychological preparedness for HIV tests, and fear for counselors majorly hailing from the village knowing and spreading the women's HIV test results back in the village.

Conclusions: Mandatory HIV test for pregnant women seeking prenatal services is among the highly placed strategies to thwart the spread of the HIV virus in the world.

Although some pregnant women have a reservation to seek prenatal services in health facilities, there is a need for the creation of awareness on the significance of HIV tests during pregnancy and address structural and institutional shortcomings associated with HIV tests in health facilities to foster hundred percent access to prenatal services for reduced vertical transmission of HIV and safe delivery. This will have a far-reaching impact on the realization of the Kenyan government Universal Health Care agenda, African Union agenda 2063, and United Sustainable Development Goals.

EPD182

Risks and vulnerabilities among adolescent girls and young women accessing HIV prevention services at DREAMS Centers in Zambia

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Background: Many adolescent girls and young women (AGYW) in Zambia experience low socio-economic conditions, disproportions and socially created gender roles that pose health risks and increase vulnerability to HIV infection.

We present risk and vulnerabilities among AGYW enrolled into the Determined Resilient Empowered AIDS Free Mentored and Safe (DREAMS) program through the CIRKUITS and ZCHECK projects in Zambia.

Methods: The CIRKUITS/ ZCHECK DREAMS program identified risks and vulnerabilities among AGYW as a component of eligibility screening for DREAMS. A structured risk assessment form assessed sexual reproductive health, gender-based violence (GBV), orphan hood. The data were analyzed according to age bands of 10-14 years, 15-19 and 20-24 years.

To evaluate risks and vulnerabilities, we analyzed age disaggregated data for 12months (October 2020 to September 2021) across the six DREAMS centers in Southern and Western Provinces. We performed descriptive statistics and estimated risk and vulnerabilities, using Chi square tests to compare vulnerabilities by age and strata.

Results: In the 12-month period, 29,246 AGYW were screened for vulnerabilities: 9,506 (32.5%) were 10-14 years, 16,083 (55.0%) 15-19 years and 3,657 (12.5%) 20-24 years. In all the age bands less than 5% were mothers/pregnant, with 0.3% among the 10-14 years. As early as 10-14 years, 5% were sexually active and 1% reported transactional sex, which increased across age groups. GBV was highest at 18% in the 10-14 years and decreased across the older age groups. The distribution of all vulnerabilities differed significantly by age group, p<0.001).

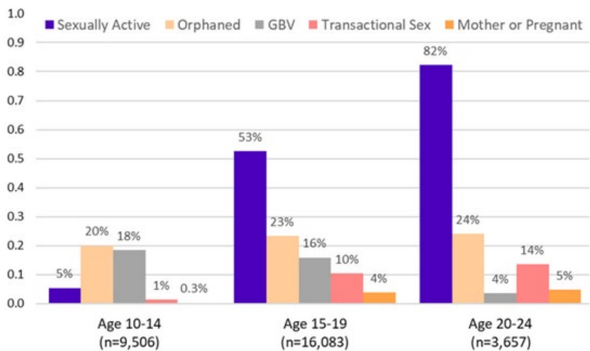

Figure 1. Risks and vulnerabiities reported by AGYW screened for the DREAMS program (N=29,246). Data indicate the percent of the age group experiencing the risk.

Conclusions: AGYW in Zambia experience multiple overlapping sexual and social vulnerabilities, including early sexual debut, early pregnancy, GBV, orphan hood, and transactional sex. Structured sexual reproductive health and HIV preventive services such as DREAMS for adolescents and young women are required to reduce HIV risk and avert new infections.

EPD183

PrEP Prescriptionin Primary Health Care: strategy for reducing racial inequities to access to HIV prevention in Brazil

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Background: PrEP has been available in Brazil as a public health policy since 2018. The prescription during this time was centered on reference services, mainly linked to health services that provide care for people living with HIV/AIDS. This care format allowed security in the construction of the strategy and organization of the network. However, access to referral services still presents important barriers for populations historically neglected in health care.

Despite efforts and the significant reduction in overall AIDS mortality in Brazil, the black population continues to show an increased mortality. And it is precisely this population that, since the beginning of the implementation, is the one that least accesses PrEP, compared to the white population.

Description: Brazil has been seeking the path of strengthening primary health care (PHC). In a country with continental dimensions, PHChas the potential to reduce inequities in access to health. Since September/2021 the Brazil MoH started to allow and encourage PrEP prescription in PHC. This is a very important step towards expanding access to PrEP in Brazil, precisely for those who need it most.

Lessons learned: In a short time of implementation, PrEP at PHC was already accessed more by black population than white. Comparing the proportion of black population who had access to PrEP in specialized public services with black population who had access to PHC in the months of September, October and November 2021, we observe higher access among black peoples than white at PHC.

In these 3 months, 62.8% of PHC users are black, in the proportion between blacks and whites (total of 610 people), while in the specialized service, 45.5% of users are black (total of 17.348 people). Since the beginning of the implementation, the majority of PrEP users in Brazil are white people. In Brazil, 53.6% of the population identifies as black.

Conclusions/Next steps: Despite an initial process, PrEP in PHC has the potential to provide this prevention technology to all municipalities in Brazil and expand access to the most vulnerable populations to HIV. PrEP in PHC is presented as one of the main strategies for the expansion of PrEP in Brazil.

EPD184

Factors associated with changes in alcohol use during pregnancy among women with HIV in South Africa and Uganda

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Background: The intersection of alcohol use and pregnancy among women with HIV (WWH) is poorly understood and of concern given potential negative health impacts on women, children, and families. Identifying the factors associated with changes in alcohol consumption during pregnancy is important for the development of alcohol use interventions for pregnant WWH.

Methods: A subset of pregnant WWH in Uganda and South Africa (N = 202) enrolled in a cohort study of people initiating ART between 2015 and 2017 who completed two assessments, six months apart, were included in the analyses.

We derived the following four categories based on AUDIT-C scores at each assessment:

1. No alcohol use at enrollment or follow up ("no use", n = 137, 67.8%);
2. No alcohol use at enrollment to any alcohol use at follow-up ("new use", n = 18, 8.9%);
3. Alcohol use at enrollment to no alcohol use at follow-up ("quit", n = 22, 10.9%); and;
4. Alcohol use at enrollment and continued use at follow-up ("continued use", n = 25, 12.3%).

We performed multivariable multinomial regression models, considering participants in the "no use" category as the reference, to assess demographic, psychosocial, structural, and HIV-related factors associated with these categories.

Results: In this sample (mean age = 26.2 years, mean gestational age = 19.7 weeks),living with a partner (vs. being single/divorced/widowed) was associated with lower risk of continued use (RRR 0.30, p=0.028), and severe food insecurity was associated with a higher risk of new use (RRR 3.20, p=0.089). Each unit increase in HIV stigma corresponded to a 23% reduced likelihood of being in the quit vs. no use group (RRR 0.77, p=0.081).

Conclusions: This preliminary investigation identified that, during pregnancy, WWH who live with a partner may have lower risk of continued alcohol use, and WWH who have food insecurity may be more likely to initiate use. Moreover, increased stigma may be linked to a reduced likelihood of quitting.

Future alcohol reduction interventions for WWH who are pregnant or breastfeeding may incorporate strategies to address partnership dynamics, food security, and community-level HIV stigma.

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EPD185

Health promotion messaging intervention reduces risky sexual behaviors and improves repeat testing among a cohort of adolescent girls and young women in Homa Bay County, Kenya

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Background: Despite UNAIDS reporting a 46% decline in HIV incidence among youth from 2000 to 2019, 82% of new HIV infections in sub-Saharan Africa occurred among adolescent girls and young women (AGYW) in 2019.

We used technology to deliver health promotion messages to promote safe sexual behaviours and HIV retesting among AGYW.

Methods: AGYW ages 15-24 years from Homa Bay-County, Kenya were enrolled into a study to determine their preferred recruitment strategies and testing modalities.

Those eligible participated in one of two longitudinal cohorts:

1. Newly diagnosed with HIV; and,
2. Testing negative and identified as high-risk using predetermined criteria.

Over 12 months, health promotion messages were sent quarterly to the AGYW living with HIV cohort to support retention and adherence and six-monthly to the HIV-negative cohort to encourage risky sexual behavior reduction and repeat test.

ART adherence and treatment message	Health promotion message
The best way to stay healthy is to follow medical advice: if on treatment, take your pills on time and keep your clinic appointments	*You are a strong female and deserve a healthy life. Regularly test. Protect yourself by not having sex or use condoms or PrEP when you do*

A brief survey on selected sexual behaviors and HIV testing was sent through short messaging system. We compared behaviors at baseline and follow-up using generalized estimating equations.

Results: We tested 1198 AGYW and enrolled 199 (16.6%) in the two cohorts. The mean age was 20.8 years, 19.6% were in school, 58.8% were married, 28.6% began sexual activity <15 years, and 8.5% tested HIV-positive, of whom 47.1% had a viral load <1000 cp/ml.

Over 12 months, participants self-reported significant reduction in multiple sexual partnerships (33% to 12%; p<0.001) and increase in condom use (25.1% to 53.6%; p<0.001), partner testing (70.9% to 85.7%; p<0.001) and HIV retesting (74.2% to 81.6%; p=0.099).

However, transactional sex increased from 14.6% to 24.2% (p<0.020) and drug use before sex increased from 4.5% to 14.6% (p<0.001).

Conclusions: Text messaging should be considered to promote safer sex practices and retesting among AGYW, and to provide data on patterns of ongoing risk to address.

EPD186

Impacts of the syndemic of HIV and early motherhood on adolescent girls and young women in South Africa

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Background: Persisting HIV infections among adolescent girls and young women combined with high rates of early motherhood threaten long-term health and social development. However, no studies have investigated if the negative effects of HIV infection and motherhood are exacerbated when they are experienced together/simultaneously.

Methods: We analysed data from 1,712 adolescent girls and young women in South Africa, combining data from Mzantsi Wakho and HEY BABY studies (2018-2019).

Participants were recruited through a multi-prong sampling approach, including health facilities, schools, community organisations and referrals, to minimise selection bias (>95% enrolment for each recruitment channel).

Ethical approvals were given by the Universities of Cape Town and Oxford, provincial government and health facilities. Standardised questionnaires measured past-year experiences across multiple domains, including SRH, violence, and education.

We assessed main and interaction effects of early motherhood and living with HIV using multivariate covariate-adjusted regression models.

Results: Three out of five participants were mothers, 46% were living with HIV, and 18% were mothers living with HIV.

Adolescent mothers were less likely to report: witnessing domestic violence (aOR=0.43 95%CI=0.32-0.58, p<0.001), sexual abuse (aOR=0.33 95%CI=0.22-0.52, p<0.001), consistent condom use (aOR=0.18 95%CI=0.14-0.23, p<0.001), and school enrolment (aOR=0.40 95%CI=0.30-0.54, p<0.001).

Adolescent girls and young women living with HIV were more likely to report: sexual abuse (aOR=1.60 95%CI=1.04-2.45, p=0.033), consistent condom use (aOR=1.64 95%CI=1.23-2.08, p<0.001), and less likely to report: school enrolment (aOR=0.58 95%CI=0.44-0.77, p<0.001).

Multiplicative interaction between motherhood and HIV was significant for sexual abuse, substance use, and school non-enrolment (Figure 1).

Motherhood and HIV synergistically accounted for 53% (attributable proportion=0.53 95%CI=0.32- 0.74), p<0.001) of school non-enrolment.

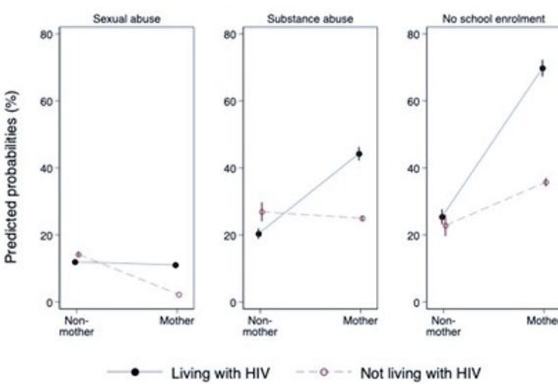

Figure. Adjusted predicted probabilities by motherhood and HIV

Conclusions: Targetted help to address school non-enrolment and excessive substance use may benefit young mothers, especially those living with HIV. Programmes must account for the syndemic of HIV and adolescent motherhood to improve the lives of adolescent girls and young women, and their children.

EPD187

HIV among men who pay for sex in Western Africa: a descriptive review and narrative synthesis

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Background: Many studies have reported how sex workers are at high risk of HIV acquisition and transmission. Men who pay for sex can contribute to HIV transmission through sexual relationships with both sex workers and their other partners. The aim of this study is to conduct a descriptive review and narrative synthesis of evidence to better understand HIV among men who pay for sex in Western Africa.

Methods: We conducted a review of population-based survey studies conducted in Western African countries (Benin, Burkina Faso, Cabo Verde, Cote d'Ivoire, The Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, and Togo) from 2010 to 2020 with information on paid sex by men.

We extracted information on population size, number of sexual partners, condom use, and HIV prevalence among sexually active men who pay for sex. Data were extracted and descriptively synthesized.

Additionally, search for peer-reviewed literature published from 2010 to 2020 was also conducted in PubMed, and Google Scholar using predetermined search terms. Abstracts were screened by two researchers according to the inclusion criteria pre-specified in the review protocol and narrative synthesis was performed.

Results: Within the period of analysis (2010 to 2020), our review identified 27 nationally representative population-based surveys which revealed that 7,969 men reported to have ever pay for sex with average of 7.0 lifetime sexual partners reported. From 15 population-based surveys, 3,798 of men who paid for sex have been reported to be living with HIV prevalence of 4.5%. Four thousand and forty-five (62.4%) men who pay for sex have been reported to use condom the last time they had sex based on findings from 17 population-based surveys. The narrative synthesis of the included 12 peer-reviewed articles revealed that men who pay for sex are one of the risk groups that can facilitate the spread of HIV within a population.

Conclusions: Our findings suggest that men who pay for sex should be recognized as a prime-concern population for HIV prevention in the Western African region.

EPD188

Associations between Intimate Partner Violence and HIV Risk Behaviours and HIV Prevention Cascades in Married Women in Manicaland, East Zimbabwe

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Background: HIV-negative married women experiencing intimate partner violence (IPV) may be a priority population for HIV prevention, but few studies have measured associations between IPV and sexual risk-behaviours in this group. We measured these associations and the condom HIV prevention cascade for uninfected married women experiencing IPV in a high HIV prevalence population in Manicaland, Zimbabwe.

Methods: Data on IPV, sexual risk-behaviours and HIV prevention cascades were collected in a general-population HIV sero-survey between August 2018 and December 2019 (N=9803). Associations between physical and sexual IPV in the last 12 months and HIV risk-behaviours were measured in age-adjusted logistic regression models. A condom HIV prevention cascade was constructed and focus areas for interventions identified.

Results: 15.5% (386/2450) and 5.1% (126/2450) of uninfected married women reported recent physical and sexual violence from an intimate partner. Physical violence was associated with early sexual debut, alcohol consumption, and multiple sexual partners in the last 12 months (Table 1).

Sexual violence was associated with early sexual debut but also showed a trend towards greater condom use. Large gaps in motivation (reflecting low risk perception and perceived negative consequences [reduced sexual pleasure]) and in capacity to use condoms effectively (reflecting partner resistance and lack of negotiating skills) were found in the condom HIV prevention cascade (Figure 1).

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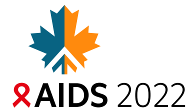

	Physical Violence			Sexual Violence		
Sexual risk behaviour	Yes (%)	No (%)	AOR (95% CI)	Yes (%)	No (%)	AOR (95% CI)
Age at first sex <17 years	44.0	29.8	1.79 (1.41-2.22)	41.2	31.2	2.17 (1.49-3.13)
Alcohol consumption (last 12m)	3.4	1.3	2.81 (1.38-5.43)	3.2	1.5	2.15 (0.64-5.50)
Multiple sexual partners (last 12m)	2.1	0.7	2.79 (1.11-6.50)	1.6	0.9	1.75 (0.28-6.07)
Non-regular partner(s) (last 12m)	6.0	5.5	1.02 (0.63-1.60)	7.1	5.5	1.30 (0.60-2.49)
Partner with STI (last month)	25.6	15.2	1.95 (0.93-3.81)	14.0	4.7	3.37 (1.25-7.61)
Condom use at last sex	5.7	5.5	1.09 (0.66-1.71)	9.5	5.3	1.89 (0.97-3.41)

Table 1: Associations between physical and sexual violence in the last 12 months and HIV risk behaviours in 2450 HIV-negative married women in Manicaland, east Zimbabwe, 2018-2019.

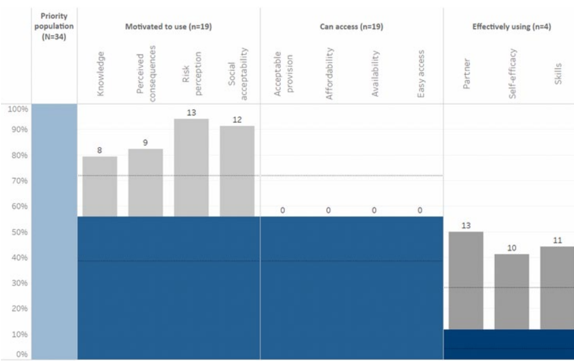

Figure 1: HIV prevention cascade for condom use in HIV-negative married women (15-54 years), at risk of HIV infection in Manicaland, east Zimbabwe, 2018-2019.

Conclusions: Interventions to screen, improve risk perceptions and reduce IPV among HIV-negative married women in Manicaland may reduce new infections in this group.

EPD189

Similarities and differences in men's experience of antiretroviral therapy (ART) and pre-exposure prophylaxis (PrEP) in Southern African high-prevalence settings

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Background: Advances in antiretroviral therapy (ART) and pre-exposure prophylaxis (PrEP) have led to significant progress towards HIV epidemic control. A key challenge remains in improving the engagement of men who have sex with women (MSW) in ART and PrEP interventions. This study compares the experiences of MSW on ART and those on PrEP in high HIV-prevalence settings in Malawi and Eswatini respectively.

Methods: The study is based on semi-structured in-depth interviews with MSW on ART in Blantyre, stakeholders and men in surrounding communities (n=72) and with MSW on PrEP, male stakeholders and community leaders (n=70) in the north-west of Eswatini. Interviews were audio-recorded, translated and analyzed in NVivo drawing on reflexive grounded theory. Haberer and colleagues presented major ART and PrEP differences (2015). Based on MSW's experiences in Blantyre and Eswatini, we have amended Haberer's table and bolded new insights (see results).

Results: Our studies showed that stigma, trust and relationships, sexual behavior when on ART or PrEP, education and information and service provision played an important role for men's engagement in antiretroviral drug-based HIV interventions. While PrEP was seen as a way to overcome serodifference and create ease in relationships, men on ART viewed seroconcordance as more re-assuring of the partner's loyalty and adherence support. Alcohol consumption could be combined with PrEP, which was seen more critically with ART. While men on ART primarily trusted relatives, for men on PrEP, the partner's real or perceived HIV-status was a major reason for initiating PrEP, yet she was also the main confidant. The need for male-friendly services was raised in both studies.

	Antiretroviral Therapy (ART)	Pre-Exposure Prophylaxis (PrEP)
Eligibility	Everyone tested positive for HIV	Everyone tested negative for HIV and at high risk
Regimen	Globally, mostly a daily regimen of three ARVs; various triple therapies available.	Presently a daily regimen of two ARVs (tenofovir disoproxil fumarate combined with either emtricitabine or lamivudine).
Benefit	Effective treatment - preventing onset of AIDS; prolonging life and restoring/ maintaining health; **becoming non-infectious (mentioned mainly by stakeholders).**	Effective prevention against HIV; **does not disturb sexual relations and can be combined with alcohol consumption. Tool to overcome serodifference; creating ease in relationships**
Duration	Life-long treatment	Exposure-related; intermittent.
Trust and relationships	**Reliance on practical and moral support from family for access to and retention on ART. Selective disclosure to trustworthy people (mainly family, partner and good friends). Greater ease with seroconcordant partner on ART; wariness of serodifference.**	**Rationale for uptake of PrEP closely linked to distrust in partner/partner's HIV-status. Sharing information about PrEP with partner, friends and colleagues; moral support from serodifferent partner. Ambiguous attitude towards partner on PrEP.**
Sexual behaviour after starting pill-taking	**Range of sexual behaviour from less or no sexual activity for fear of passing on virus to forgoing ART for better sexual performance.**	**Range of sexual behaviour yet no trend to increase number of sexual partners; condom decrease for various reasons including desire to procreate.**
Education/ Information	**Clinic- and community-based, yet detailed ART knowledge, e.g., "undetectable = untransmittable" unknown to MSW; media and community-based education to be strengthened**	**Largely clinic-based with some media and community education, but hardly reaching MSW. Treatment as prevention largely unknown to PrEP users in serodifferent relationships. Media and community-based education to be strengthened**
Psycho-social Concerns	Risk of stigma and discrimination with implications for daily pill-taking and frequent clinic visits. **Judged to have been promiscuous. Re-evaluating future plans.** Need to come to terms with side-effects and depression.	Risk of being confused with a person living with HIV and experiencing stigma with implication for daily pill-taking and frequent clinic visits. Risk of being seen as promiscuous. Consideration of side-effects for uptake and continuation.
Services	Mostly clinic-based **Need for community-based and male-friendly services**	Clinic-based **Need for community-based and male-friendly services**

Table.

Conclusions: MSW's experiences in Blantyre and Eswatini have highlighted important issues for men not previously included in an ART/PrEP comparison with a need to adapt education and service delivery. Further research will clarify if the additional points are gender- and location-specific.

EPD190

The role of finance and administration in supporting children living with HIV in Shelter Homes under the care of elderly mothers in Buikwe District in Uganda, East Africa

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Background: Children living with HIV under elderly care takers in Buikwe district continue to fail on ART treatment amidst the various interventions by the MOH in Uganda, the shelter faces shortages in financing dates for ART refill, ensuring good nutrition given their abject poverty.
The shortfall in resources has led to poor adherence to programme activities and low viral load suppression and poor school attendance. The idea was to strengthen OVC shelter in provision of comprehensive HIV/AIDs care, treatment and support to children living with HIV in Buikwe District by Batabaazi Cultural Troop.
Description: In February 2018 Batabaazi Cultural Troop with support from Slovakia initiated shelter homes to support mitigate the challenge of viral load suppression among children living with HIV under the care of elderly in clinical stage three (iii) and four (iv), the home started with five (5) children in the age bracket of 0-22 years, children were monitored on their adherence through directly observed therapy (DOT), nutrition and hygiene, provided with psycho social support for one year and later re-integrated back into their communities.
This was done within meager resources from few individuals and aid from Slovakia but this sources are not sustainable.
Lessons learned: Despite no funding, the meager funds raised locally have kept the shelter progressing
The program has supported over 300 children with comprehensive HIV package
The program has achieved 95% of viral load suppression of all children in the shelter.
The Shelter has supported over 133 children with education sponsorship and scholarship.
50 elderly mothers have been supported to start income generating activities in order to take care of the children after integration.
Registered reduced incidences of illness by 80% among the children due to good adherence especially contributing to good school attendance.
Conclusions/Next steps: Generation of funds through local approaches coupled with community support and other well wisher stakeholders has resulted into OVC shelter proving effective in the provision of comprehensive and coordinated HIV/AIDs services to children living with HIV as it provides a basis for easy monitoring of all indicators around treatment, care, nutrition, and support for Adolescents and young people living with HIV.

EPD191

Factors contributing to the risk and vulnerability to HIV infection among individuals with spinal cord injuries (SCI) in South Africa

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Background: HIV/AIDS has made a huge impact on human development and sexual reproductive habits in this century and especially in sub-Saharan Africa. It has only recently been acknowledged that despite the notion that those with a disability is asexual, HIV/AIDS has an equal if not greater effect on or threat to people with disabilities. The crucial elements of knowledge and information in the prevention of HIV/AIDS for people with disabilities are very clear.
The overall objective of this study was to assess the factors that exacerbate the risk and vulnerability of individuals with spinal cord injuries to HIV infection in order to develop a more effective HIV intervention.
Methods: A self-administered questionnaire consisting of the following sections were used to collect data in four provinces from survivors of a traumatic spinal cord injury in South Africa: Demographics; HIV-Knowledge (HIV- KQ-18); Sexual behaviors; Sexual communication and negotiation skills and Self-efficacy to refuse sex.
Results: Of the 242 participants, 71.5% reported being sexually active at the time of the survey. Significantly more males (50.7%) than females (36.5%) reported multiple sexual partners. Almost half (47.5%) indicated no condom use with last sexual intercourse with significantly more females (51.5%) reporting condom use than males (45.3%). Independent-samples t-tests showed that participants that reported having received peer education had significantly higher scores for HIV-knowledge ($M = 13.11$, $SD = 3.73$) than those who had not received peer education (($M = 11.83$, $SD = 4.41$) ($p < 0.05$). Low levels of HIV-knowledge, and being male were the strongest predictor of risky sexual behaviors in this sample.
Conclusions: It is clear that individuals with a traumatic spinal cord injury are still sexually active. Of concern however is the high number of participants that reported multiple sexual partners and the lack of condom use with their last sexual encounter. The importance of peer education with regards to HIV was evident in this study. Concerted efforts should thus be made to protect this vulnerable group of the population by means of empowerment, improving HIV-related knowledge, and including people with disabilities in HIV prevention education programs.

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EPD192

Navigating the sociality of womanhood and HIV - narratives by "No Show" mothers in PMTCT care in Kenya

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Background: In resource-limited settings, defaulter-tracing is one strategy hoping to return and re-engage mother-infant pairs who miss scheduled clinic visits during care to prevent vertical HIV transmission (PMTCT). Studies have explored barriers to care engagement, but few have captured the dynamics behind women who circle in and out of care despite tracing efforts.

Methods: Nested in a randomized control trial in Western Kenya, our study draws on interviews (N=15) conducted over a 10-months period ending July 2018 with 10 women aged 25-38 years who were re-engaged and traced either multiple times via phone calls or a home visit during their time in PMTCT care. Six others agreed, but failed to show up for the interviews.

Results: Narrative analysis illustrates how the linearity of the care continuum failed to harmonize with a social reality where women tap in and out of multiple social roles and identities that condition care engagement. Women described how they were both mothers, wives, neighbors, daughters, workers and how social relations and expectations could keep them from care when more immediate needs or those of others were put before a scheduled clinic visit. Most assured they had antiretrovirals, knowing the risks of rising viral loads. Sharing and social support would help them cope with what initially was a life-changing HIV diagnosis and some aspired to be peer counselors. Male dependency, fear of social exclusion and a life in poverty, on the contrary, kept most from disclosing their status in public. Most indicated that their HIV status was a result of infidelity.

Conclusions: While small-scale, our study illustrates that PMTCT care and engagement is social. Women navigate and balance multiple social roles and identities which condition care engagement beyond clinical assessments and facility schedules.

In this, socioecological factors such as gender, cultural and societal norms and poverty remain key challenges. We urge for scaled socio-structural efforts to engage hard-to-reach populations in PMTCT care.

EPD193

Differentiated service delivery of treatment and laboratory services for people living with HIV in closed settings to avert treatment interruption and HIV transmission, Mizoram, India

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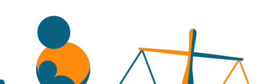
Background: In 2019, Mizoram state had the highest estimated adult HIV prevalence (2.4%) and annual HIV incidence (0.94 per 1000 at risk) in India, with 21% HIV prevalence among prison inmates. People who inject drugs (PWID) are disproportionately impacted by HIV and if incarcerated or in other closed settings, PWID may have limited access to prevention and treatment services; this is the case with Mizoram's central prison and drug demand reduction centres (managed by non-profit organizations for rehabilitation of PWID).

Description: Delayed ART initiation, irregular clinical follow-up, non-adherence, and limited viral load (VL) testing were identified as major challenges in closed settings as a result of limited transportation between prisons and the ART centres, and limited bridge care upon prisoners' release. In November 2018, we implemented a differentiated service delivery model that included decentralized drug dispensation, VL specimen collection, and biweekly clinician visits at the closed setting facility to enhance rapid ART initiation, annual VL testing, and post discharge follow-up (continuation of care).

Lessons learned: During November 2018- December 2021, we served 1,013 PLHIV in closed settings. The majority of those served were males (840, 83.1%), 26-36 years (486, 48.2%), and with a substance-use disorder (795, 78.1%). By the end of 2021, 416 (41.1%) PLHIV were still retained in the closed setting; 4 (0.4%) died and 593 (58.5%) were referred to ART centres for post-release follow up. Among the 416 who stayed in the closed settings, 89.7% (373) were due for VL testing; 64.2% (239) received a VL test in the last 12 months, and 93.2% of those tested 222 were virally suppressed. Among the 593 released from closed settings, 81.1% (480) were retained in ART care in the community.

Conclusions/Next steps: Differentiated service delivery models are essential to decrease treatment interruption for PLHIV in closed settings and to ensure retention in care. We experienced some challenges post-discharge for 8% of patients due to COVID-19 when VL testing was disrupted.

Despite this, decentralization of clinical and laboratory services with a coordinated post-release plan was key for higher rates of treatment engagement and VL testing access, leading to ongoing treatment engagement and high VL suppression.



EPD194

"Life is a lot more brighter now": exploring the perspectives of older adults living with HIV who use drugs regarding health and aging in Vancouver, Canada

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Background: Older adults living with HIV (OALHIV) who use drugs experience higher levels of comorbidities (e.g. mental illness, chronic pain) compared to the general older adult population. Further, OALHIV are more likely to be impacted by social and structural inequities (e.g., poverty, stigma) that further negatively impact their health and ability to manage co-morbid conditions. However, few studies have explored the perspectives of this population regarding the process of aging with HIV.

The purpose of this study is to explore how OALHIV who use drugs describe and understand the aging process, and its impacts on their health.

Methods: Between January 2019 and March 2020, we interviewed 42 OALHIV (50 years of age or older) who use drugs with complex comorbidities in Vancouver, Canada about aging. Interviews were transcribed verbatim and coded using NVivo qualitative software. Interview transcripts were coded and prominent themes were identified using deductive and inductive approaches.

Results: Many participants associated aging with positive changes to health-related behaviors with regards to substance use (e.g. reduction in substance use) and managing personal health needs (e.g. responding to health issues) due to factors such as perceiving their health as more precarious than when they were younger. They also emphasized that they no longer engaged in behavior that they characterized as "reckless" when younger (e.g. impaired driving, "unsafe" drug use).

Participants described "positive thinking" (e.g. "thinking good thoughts") and how their perspectives shifted to a more optimistic and accepting outlook on life and their health challenges. While many participants discussed positive developments in health-related behaviors and perspectives on life, they nonetheless reported experiencing accelerated aging-related conditions due to living with HIV, as well as worsening mental, physical, and cognitive health due to factors such as reduced mental acuity, feeling overburdened with health conditions, and social isolation.

Conclusions: These findings point to the ways OALHIV who use drugs may develop health-enhancing practices as they age, as well as the need for policies and programs that improve their mental, physical, and cognitive health, and prevent and/or delay the onset of co-morbid conditions due to living with HIV.

EPD195

Association between intersectional stigma and HIV care engagement among women living with HIV who inject drugs in Kyiv, Ukraine

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Background: Stigma continues to be a major barrier to care for people living with HIV. Recent work has drawn attention to the significance of intersectional stigma – the compounding impacts of stigma related to multiple characteristics such as drug use and HIV status on HIV care outcomes. People who use drugs represent a key population in Ukraine, yet few studies have focused on women living with HIV (WLWH) who inject drugs to understand how layered stigma correlates with care engagement.

Methods: Surveys were conducted in Kyiv between November 2019-2020 with WLWH who disclosed recent injection drug use. The survey assessed perceptions of internalized and enacted drug use and HIV stigma, HIV care history, drug use experiences, and other demographic characteristics. Univariable and multivariable logistic regression analyses examined associations between experiencing enacted and/or internal stigma related to HIV and/or drug use, with HIV care engagement as the primary outcome.

Results: Among the 306 women surveyed (median age 34 years), 43% reported high internalized stigma related to both HIV and drug use (22% high in either, 35% low in both). Experiences of enacted stigma were reported as: high related to HIV status and drug use (40%), high in either (39%), and low in both (21%).

Overall, 55% were engaged in care. In the adjusted model, experiencing internal stigma related to both drug use and HIV status (aOR: 0.52, 95% CI: 0.30, 0.92) and enacted stigma related to both drug use and HIV status (aOR: 0.47, 95% CI: 0.23, 0.95) were significantly associated with lower odds of care engagement, while women who knew their HIV status for more than 5 years were more likely to be engaged in HIV care (aOR: 2.29, 95% CI: 1.35, 3.87) after adjusting for disclosure, demographic characteristics, and injection drug use frequency.

Conclusions: This study adds to the growing body of evidence that intersectional stigma is a significant factor in HIV care engagement. Our findings underscore the need for additional programs to support women newly diagnosed.

Further research and targeted interventions are needed to address the multiple mechanisms and layers of stigma among WLWH who use drugs.

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EPD196

Female genital mutilation/cutting delays HIV elimination in Eastern Uganda: a case in Sebei region

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Background: Despite the efforts to reduce HIV prevalence in Uganda, by 2020 Ministry of Health estimated a 5.4% prevalence among adults (15-49) years, higher in women (6.8%) compared to men (3.9%). 29% of all new HIV infections are by adolescent girls and young women yet they represent just 10% of the total population. Social norms and some cultural practices have serious implications for the spread of HIV/AIDS. Female genital Mutilation is one of the practices speculated to increase the risks of HIV infection in Uganda, especially in Sebei and Karamoja region.
In addition to its known short- and long-term adverse physical, psychological, emotional and sexual impact. FGM is at 0.32% in Uganda (UDHS, 2016), but higher in Sebei and Karamoja (26.6% in the 2016 FGM survey). As well HIV prevalence was at 5.1% in the same region (UPHIA, 2016).
Description: United Nations Population fund in partnership with Action Aid Uganda and government of Uganda in 2021, built capacity and empowered young people (boys and girls), men, women, Police, religious and cultural leaders, health workers to implement interventions to eliminate FGM and reduce new HIV infections, in Kween, Bukwo and Kapchorwa districts. Conducted Inter-generational dialogues, community policing and surveillance, and HIV/SRHR awareness meetings. Conducted community service outreaches/camps, strengthened referrals and linkages of girls at risk to HIV for testing, same-day enrolment and livelihood-empowerment for HIV and FGM prevention.
Lessons learned:
- 4,205 adolescent girls tested for HIV, with positivity rate reducing by 56% to 0.86% 2021 compared to 1.96% positivity rate in 2020.
- Reached over 20,000 people with messages on FGM through dialogues and 5,000,000 people through mass media.
- Over 10,000 girls in hotspots received livelihood skilling integrated with HIV and SRHR prevention
- More than 100 communities & 100 religious / cultural leaders made public declarations to denounce FGM and prevent HIV new infections.

Conclusions/Next steps: FGM has no health benefits. Rather, it carries severe short- and long-term risks to the physical and psychological health of women and girls. Increase the risk of new HIV infection through the practice and the outcome as arite of passage to adulthood. Elimination of FGM will drastically lead to Zero new HIV infection in the practicing communities.

Community mobilization and demand creation

EPD197

Use of modern social media to improve tracking and addressing stock-outs by community-based organisations

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Background: Patient Control is a movement of people affected by HIV and other socially significant diseases. Its mission is to control provision of medical care across Russia, including monitoring and reacting to medicines shortages. To do so, the organisation needs to use all social media platforms, including the recently emerged ones. One of them is Tik Tok with more than 1 billion subscribers.
Our hypothesis was that this platform will help to obtain additional information about drug shortages in Russia which cannot be received though traditional monitoring tools (pereboi.ru website, forums).
Description: Our Tik Tok page: https://vm.tiktok.com/ZSe4aAoJk/ has been active since November 2021. The target group is Russian-speaking people living with HIV. We use specific tags for videos to enable the target audience to find them; statistically, tags are more effective in Tik Tok as compared with other media.
We use trends and adapt them to HIV infection to attract audience; to reach the goal of collecting messages about shortages, we use two broad content clusters: entertaining content (videos, news, useful tips, FAQs) and content to motivate people to write about stock-outs or other issues related to HIV care.
Lessons learned: In 3 months, the Tik Tok profile gained 373 subscribers and received 11 new ARV shortage reports from various regions of Russia. Drug shortages were mentioned in at least 11 comments, which makes it 22 messages in total with broad geographical diversity. Tik Tok enabled the organisation to reach people who do not have other social media accounts. Tik Tok interface is more convenient for people who do not wish to disclose their status as compared with other social media, such as Instagram, Facebook or VK, due to the system which enables users to more effectively conceal their activities, including subscriptions, comments, and likes from other users.
Conclusions/Next steps: Our experience shows that Tik Tok has proven to be an effective media tool for tracking medicine shortages by reaching new audience due to its

specific Interface, algorithms and its current popularity. Given sufficient Internet coverage in a country, it can become an additional source of information about healthcare issues from remote areas for grass-root communities.

EPD198
Offering online HIV services to key populations through a nongovernmental organization in Mali

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Background: In Mali, nongovernmental organization SOUTOURA is implementing the USAID/PEPFAR-funded EpiC project that supports HIV prevention and treatment services for key populations, including female sex workers (FSWs) and men who have sex with men (MSM). With technical assistance from FHI 360, SOUTOURA uses online peer education and an online booking application to reach MSM and FSWs not reached through traditional outreach approaches to refer them to offline services.

Description: From May 2020 to September 2021, SOUTOURA conducted online outreach and service promotion using posters, images, videos, and messages on social media platforms and instant messaging apps. Trained online peer educators helped clients take risk assessments and book HIV services using Ibadon, Mali's online reservation and case management app, which is available in French and Bambara and includes oral functions to facilitate use.

The app helps clients identify service needs through risk assessment, screens for COVID-19 risk, and facilitates HIV service booking in three regions (Bamako, Sikasso, and Ségou). For clients living with HIV, the system facilitates index testing and partner referral. Ibadon's data visualizations allow it to track the HIV cascade: number of risk assessments, bookings, arrivals, HIV test results, and antiretroviral therapy or pre-exposure prophylaxis uptake.

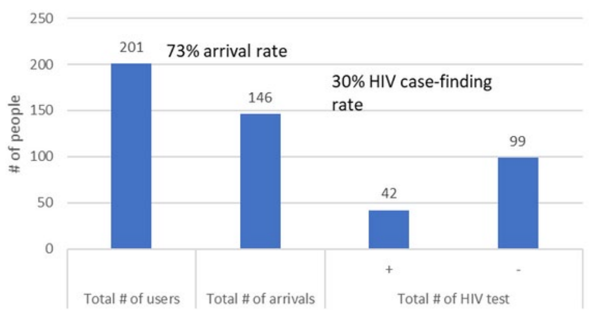

Figure. Total number of online users and HIV test results May 2020 - September 2021

Lessons learned: Online peer outreach was effective for reaching higher-risk MSM and FSWs. From May 2020 to September 2021, 57% of users were MSM and 12% were FSWs. Average age was 26 years.

Overall case finding among online clients was 30% (31% among MSM, 38% among FSWs) compared to an overall case-finding rate of 9%.

Conclusions/Next steps: Targeted outreach through online platforms used by key populations was effective for engaging younger, higher-risk individuals compared to traditional outreach approaches.

Next steps include intensified promotion of Ibadon on social media and using influencers to reach more key population members.

EPD199
Barriers to HIV/AIDS knowledge and prevention among deaf and hard of hearing people in Pakistan

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Background: In Pakistan, the estimated prevalence of HIV among the general population is less than 0.1% and according to WHO, 5% of every country's population has some sort of hearing impairment and approximately 10 million are hearing impaired in Pakistan. Out of which 1 million are Deaf Children with no awareness around HIV/AIDS.

We've found that deaf individuals lack access to HIV/AIDS information, due to problems in communication, No available material in sign language, low literacy and tightly woven social networks within the community.

Description: A project was conducted in two provinces of Pakistan for deaf and hard of hearing people to enable them to break the barriers preventing themselves from HIV/AIDS; aimed to engage people living in rural and urban areas to identify their knowledge around HIV/AIDS prevention and to build their capacity using sign language through different focused group discussions, Interactive sessions, training workshops and consultations.

Lessons learned: Significant differences in levels of understanding about certain aspects of how HIV/AIDS is spread were identified, capacity of deaf people were built as well as differences in available resources for access to accurate information.

1. More than 2000 deaf and hard of hearing people were engaged, educated and given the right education about HIV/AIDS prevention including males, females, transgender and other sexual minorities.

2. Through our more than 2000 direct beneficiaries and 14,000 indirect beneficiaries, we're continuously approaching more beneficiaries.

3. Videos are being developed on HIV/AIDS prevention and other components of SRHR in sign language.
4. This has now become a huge movement and now we are designing more projects focusing these people and engaging more partners onboard.

Conclusions/Next steps: These findings from Pakistan speak strongly to the need for the development of interventions that include people with disabilities in public health and HIV/AIDS strategies and that address their specific vulnerabilities. There should be proper awareness material for deaf and hard of hearing people in sign language to get proper education around HIV/AIDS and other components for their health and wellbeing.
Evaluating the adaptation of education material and the inclusion of the deaf population in HIV awareness programmes is an urgent next step.

EPD200
Reimagining our futures

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Background: During the COVID lockdown period over the last 2 years the need to move some forms of peer support to a virtual platform became essential. National Lottery funded project 4M: Women Living with HIV Re-imagining the Future, sought to find out how to help communities move towards recovery and renewal after the impact of COVID-19 drawing on all the creativity seen in communities and across civil society.

Description: Over 9 months, starting in November 2020, a virtual safe space training 21 members to use photography and creative writing to document and share their visions for better, self measured futures post-lockdown. To ensure maximum involvement (participation) the women were each provided with an android mobile phone and data bundles.

Lessons learned: Women who participated in the project were equipped with writing a joint femifesto, curating a virtual exhibition and used meditation tools they acquired to support their mental wellbeing. Participants additionally reported that working with others in a supportive, safe and trusted community space makes it easier for women to participate at their own pace. Working in a creative environment eases people into managing difficult emotions.

Conclusions/Next steps: Virtual creative peer support is essential in engaging with women living with HIV, this mitigates the challenges around language issues and use of technology. The main aim of this project is to share the outcomes of this work with key stakeholders including policy and decision makers with whom rest the power to makes changes and to improve the quality of life of women living with HIV. It shows the importance of creative spaces in enabling women's voices and facilitating participation.
It has helped women living with HIV and the community to see that it is possible to plan for the future although there are challenges. It has helped to reinforce the value of community spaces and strengthened the resolve to keep those going because of the benefit received.

EPD201
Lessons from COVID-19 on the use of digital tools to support HIV service uptake and community engagement in research: voices from India

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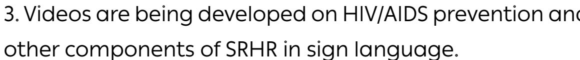
Background: COVID −19 catalyzed the use of digital tools in health, making it imperative to understand ways to include marginalized HIV affected communities. IAVI, in partnership with Quicksand and Humsafar Trust, facilitated virtual roundtables to explore the potential of strategies to enhance digital participation and people-centeredness in prevention and biomedical research.

Description: Two virtual roundtables were conducted in December 2020 and September 2021 with 34 participants representing PWID, MSM, TG, FSW and AGYW communities, researchers and technologists to understand a) existing digital ecosystems; b) digital behaviors during the pandemic; c) what these shifts mean for the design and scaling of future interventions. These conversations were audio recorded with due participant consent and transcribed. Data was coded using an inductive framework based on key areas of enquiry.

Lessons learned: Though COVID-19 fastened the adoption of digital tools, a significant segment of PWID, TG, FSW and AGYW communities are still on the digital fringe. Platforms like Facebook and WhatsApp were used for outreach and real-time reporting about condom/ needle availability; hyper-local service delivery; and access to referrals/peer support.
However, FSW, PWID and TG communities highlighted the need for legal digital support groups and awareness workshops.

Challenges: Digital literacy, privacy and data security are key concerns. Other emerging issues include digital fatigue, spread of misinformation and unequal digital access in communities, including gender disparities. Fear of stigma and violence due to outing of sexual/gender identities or engagement in sex work/substance use were voiced as barriers to participation, along with ambiguity around ethics of digital engagement in research.

Opportunities: Written/audio-visual content in community friendly language can enhance research participation and service uptake. Hybrid approaches that com-



bine digital and physical methods can help overcome access barriers by leveraging on shared community infrastructure and networks. Community gatekeepers, service providers, CBOs can play a critical role in bolstering digital inclusion and outreach with training. Maintaining confidentiality and ensuring data security requires detailed risk-mitigation strategies and skilling of researchers.

Conclusions/Next steps: To ensure uptake and scalability of digital strategies, it is imperative to better understand inter-/intra-community digital behaviors and strategize inclusion by strengthening digital literacy and addressing concerns around privacy, security, accessibility and affordability.

EPD202

Community-health workers have seized opportunities during the Covid-19 crisis to improve services for key populations: results from the international EPIC program

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Background: To understand and learn from the impact of the Covid-19 health crisis on HIV prevention and care, it is necessary to evaluate how it has affected key populations (KP) and community health workers (CHW) working with KP. The community-based research program EPIC aimed to evaluate this impact among CHW and KP.

In this descriptive analysis, we present preliminary findings among CHW in 7 countries.

Methods: EPIC, an international, community-based research program coordinated by Coalition PLUS, was launched in 2020. A questionnaire for CHW in direct contact with beneficiaries of the participating community-based organizations (CBOs) collected information on socio-demographic characteristics and the impact of the Covid-19 crisis. The questionnaire was deployed online and in paper format from March-December 2021 by organizations in Benin (Besyp), Burkina Faso (REVS PLUS), Burundi (ANSS), Senegal (ANCS), Colombia (Red Somos), Guatemala (CAS), and Spain (CEEISCAT).

Results: Among 558 CHW respondents, the median age was 38 years [IQR: 30;46], 52.1% (n=290) were women, and 64.7% (n=361) completed post-secondary education. Almost half (47.2%, n=262) identified with at least one KP. A majority (72.1%, n=380) reported a negative overall impact of Covid-19 on their work and 57.4% (n=304) reported an increase in workload. Almost all (93.9%, n=492) felt that their work was essential to their structure and 68.4% (n=361) reported being able to develop new professional skills. More than one quarter (27.3%, n=141) reported more frequent communication with the beneficiaries of the structure since the start of the pandemic and 65.7% (n=341) felt that the Covid-19 pandemic will be an opportunity to create new links or to strengthen existing links with beneficiaries.

Conclusions: Despite the increased workload and overall negative impact of Covid-19 on their work, the pandemic has reaffirmed the essential role of CHW in maintaining KP in care. CHW have notably seized the opportunity for capacity-building and to create or reinforce relationships with beneficiaries. As the Covid-19 crisis continues, and for future health crises, CHW can provide unique expertise for the improvement and adaptation of services for KP.

EPD203

Enhanced outreach demand generation activities for engaging transgenders with service delivery

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Background: Transgender people face inequalities in access to health and social services and are particularly vulnerable to HIV. However, there is limited documentation of models through which transgender people can be provided with HIV services and wider social support in low- and middle-income countries. The ACCELERATE project which is supported by USAID and PEPFAR in India and Implemented by John Hopkins University school of Medicine and YRG Care initiative called Mitr Clinic. In the efforts to improve the Transgender and Hijra (TG-H) programme in Maharashtra and Telangana states to provide comprehensive health care services to Transgenders.

Description: A series of stakeholder consultations were conducted to understand the needs, opportunities and challenges to improve the TG-H programme and design the technical assistance plan for the states, in close

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coordination with National AIDS Control Organizations (NACO), State AIDS Control Organizations and Technical Support Unit. The purpose of stakeholder consultations was to meet the community and relevant key players working with TG-H people to obtain inputs and understand their perspective on what needs to be done to enhance the service delivery. In continuation to the consultation, comprehensive health care service delivery models are developed.

Lessons learned: Based on the successful consultations the Mitr Clinic in Thane has reached 200 transgender individuals with evidence-informed clinical practice guidelines for primary care-initiated gender-affirming therapy for adults with gender dysphoria and an enabled bouquet of allied services such as healthcare services include gender affirmative hormone treatment and other sexual health services covering 61 HIV testing and counseling, testing and treatment for other sexually transmitted infections.

In addition, the clinic offers antiretroviral treatment and currently 4 clients are on ART and pre-exposure prophylaxis. Provision of select cosmetic/aesthetic services from M to F trans persons, referrals for wider range of services. Legal gender recognition documentation and access to social protection schemes.

Conclusions/Next steps: Community-based and client centric approaches can increase demand for and increase access to a range of tailored services for transgender populations. Community involvement and rights-based collectivization approaches that strengthen self and collective efficacy and identity of transgender communities provide an avenue for improving health and social services.

EPD204

Malawi EMPOWER's use of demand-creation strategies for sexual and reproductive health services for adolescent girls and young women during COVID-19 in Zomba and Machinga Districts

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Background: Adolescent girls and young women (AGYW) in Malawi bear a disproportionate burden of HIV compared to male peers; HIV prevalence is 2.3 times higher among young women ages 15-24 compared to young men the same age, according to the 2018 Malawi Population-Based HIV Impact Assessment. High access to and utilization of sexual and reproductive health (SRH) services among AGYW ages 10-24 requires increased use of demand-creation strategies in communities.

This abstract highlights the USAID-funded Malawi EMPOWER Activity's use of digital platforms in demand-creation strategies to increase SRH service uptake among AGYW in Zomba and Machinga Districts during the COVID-19 pandemic.

Description: Social and behavior change communication interventions were adapted to fit Malawi's COVID-19 restrictions, which suspended direct community mobilization.

To eliminate barriers to service access by increasing awareness of the services being provided in targeted districts, demand-creation messages on the benefits of services and service delivery schedules were shared with AGYW, community mobilizers, and health care workers through social media (Facebook, WhatsApp groups) and other digital platforms such as radio.

Lessons learned: Malawi EMPOWER began implementation in March 2020, just when the Malawi government established restrictive measures against COVID-19.

These restrictions suspended demand-creation activities such as dialogue sessions with AGYW, Go! Girls Clubs sessions, community special events, advocacy meetings, and campaigns. From March to April, EMPOWER experienced a 40% drop in AGYW accessing SRH, HIV, and gender-based violence (GBV) services due to the ban on these activities.

Following implementation of adapted strategies from the end of April to August 2020, 28,971 AGYW were reached with SRH services (family planning methods, counseling), including HIV testing services, representing a 73% achievement of the annual target of 39,643. Of these, 64% (n=17,090) were ages 10-14, 27% (n=7,051) were ages 15-19, and 9% (n=2,421) were ages 20-24.

Conclusions/Next steps: Although COVID-19 has presented barriers to full implementation of mobilization activities affecting the uptake of SRH/HIV/GBV services among AGYW, an adapted package of demand-creation strategies implemented through social media and other digital platforms was successful in reaching this population with messages and services.

Community-based approaches (including empowerment, outreach and service delivery)

EPD205

Providing integrated and comprehensive HIV response (prevention and services delivery) to the marginalized population: a community-based approach by OGA Services 4U Foundation

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Background: HIV response in Suriname continues to be disjointed, duplicated, and implemented in parts. Active players continue to work in isolation and as competitors sending mixed, inconsistent, and contradictory messages to the target groups.

Several members of the target groups are now in survival mode due to the economic hardship and do not consider HIV as a top priority.

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The main objective of this initiative was to provide an integrated and comprehensive health screening service. The scope spans HIV, NCD, COVID-19, welfare, and nutrition support.

Description: OGA Services 4U Foundation brought together over 10 different HIV and non-HIV organizations providing different services from assigned space in the same location in one day. Three communities (Texas, Flora, and Wan Hatti) were targeted based on a need assessment. These are marginalized communities with low levels of income, literacy, limited access to health services, and standard of living.

The target groups included single parents, unemployed, school dropouts, drug users, homeless, young persons, and indigenous people. Services provided included screen, counseling, and referral. Over 3,200 persons were reached. 100% of participants were happy being able to access different services in one location same day.

About 95% of participants indicated that they have never received any education or services on HIV and NCDs prior to this. The distribution of food packages and COVID 19 palliative addressed some immediate challenges of several participants.

During follow, 67% of the participants reported having accessed at least 1 other HIV and NCD within 2 months as a result of the intervention. Other communities are now requesting a similar intervention.

Lessons learned: The integration of services and partnership with local organizations including non-HIV such as FBOs increased reach and impact. Having diverse services available on the same day and location increased access to health services.

Strategic collaborations break barriers among players and facilitate the sharing of strategic information. The distributed palliatives helped to mobilize people and meet their immediate needs.

Conclusions/Next steps: Health services, especially HIV-related ones must be integrated and comprehensive. Forming strategic alliances is essential. No health service should be provided in isolation. Governments and stakeholders must facilitate strategic collaborations in the national response.

EPD206

Disclosure of HIV status among HIV positive women and other teen mothers, a vital procedure to preventing positive new borns/children

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Background: Disclosing one's HIV- positive status is an essential prerequisite for the prevention and care of persons living with HIV/AIDS and preventing spread of the virus to the new born. Disclosure is an important public health goal for a number of reasons like motivating sexual partners to seek testing, change behaviors and ultimately decrease transmission of HIV.

Women who disclose their status to partners are more likely to participate in programs for prevention of HIV transmission from mothers to infants.

This study sought to improve disclosure of HIV status among women attending the PMTCT (Prevention of Mother to Child Transmission) through routine peer- education, counselling and sharing experiences.

Methods: - A sample of 100 women who had not disclosed their HIV status to anyone were selected using random sampling in Mulago, Kawempe Division.

- They gave a verbal consent and accepted to receive peer counselling and education during their routine clinic visits from January to December 2019.

- Counselling and education about the importance status disclosure.

- The peer educator also shared her experience with the women and how to disclose to other people of choice.

- An interview questionnaire was administered on subsequent visits to assess disclosure and reason for non-disclosure.

Results: 100 women selected for the study, 11% women had disclosed their HIV status by the second visit and 27% of the women had disclosed by the third visit, 39% disclosed at the fourth month visit and 7% disclosed by the fifth visit. 51% disclosed to parents, 20% disclosed to friends and relatives and 13% disclosed to their spouses. 16% women did not disclose.

The major reasons for non-disclosure included stigma fear of partner abandonment and unstable partners.

Conclusions: Peer education and counselling can improve HIV status disclosure if done continuously at each routine clinic visit here in Uganda. Strategies to mitigate HIV related stigma in the community should be strengthened so that People with HIV are free to talk about their status without fear of being isolated or stigmatized.

Encourage the disclosure of one's status and hence preventing the passing on the virus to the baby born thus less positive numbers.

EPD207

Generating demand for pediatric dolutegravir 10 mg: early lessons from Afrocab's development of treatment literacy materials and subsequent collaboration with national governments

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Background: In mid-2021, pediatric dolutegravir 10 mg (pDTG), a child-friendly formulation of dolutegravir, began to be introduced in sub-Saharan Africa.

Community Advisory Boards (CABs) established with the support of Unitaid, Catholic Relief Services, the Clinton Health Access Initiative (CHAI), and Afrocab supported

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the introduction of pDTG by developing a suite of treatment literacy materials designed to sensitize mothers and caregivers about this new formulation.

Description: In advance of pDTG's introduction, CAB members formed a Working Group to develop a multimedia package of adaptable treatment literacy resources for use by ministries of health (MOHs), implementing partners, civil society organizations, and national PLHIV networks to expand access to information on pDTG and support demand generation. Materials included both print and audiovisual resources such as posters, pocketbooks, and videos.

Following initial development, national CABs shared the package of resources with MOHs for their review, local adaptation, and adoption. During the development and review process, CABs solicited feedback directly from caregivers during training's and workshops and relayed these to the relevant government stakeholders.

To date, these resources have been officially adopted by MOHs in over 10 countries and are being utilized to sensitize thousands of mothers and caregivers across the continent.

Lessons learned: The widespread endorsement, utilization, and impact of the CAB-developed pDTG materials highlight several key lessons for the development of future treatment literacy materials:

1. *Materials development should be driven by communities:* The success of these materials reflects the fact that the materials' core messaging and design was driven by communities. Furthermore, the diverse array of print and audiovisual materials addressed a range of knowledge gaps, while also triggering caregiver interest, confidence, and demand.
2. *Materials should be shared with MOHs for adoption:* Sharing these materials with MOHs prior to product introduction not only generated government buy-in, but ensured consistent messaging, accelerated widespread dissemination, and created synergies between MOH and CAB activities.

Conclusions/Next steps: Community-friendly, accurate, and consistent treatment literacy materials are vital for generating demand for HIV products. Empowering communities to lead material development efforts and encouraging them to collaborate closely with MOHs should become the norm for pDTG's and future optimal HIV product introductions.

EPD208

Beyond clinical interventions: using a community-based social work delivery approach to support viral load suppression among children living with HIV in five countries

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Background: Global progress towards 95-95-95 targets among children living with HIV (CLHIV) remain suboptimal. In Eastern and Southern Africa, 74% of CLHIV on ART age 0-14 years are virally suppressed (UNAIDS, 2020). Pact implements PEPFAR and USAID-funded orphans and vulnerable children (OVC) programming including family-based case management for CLHIV to improve HIV clinical outcomes including viral load suppression (VLS).

Description: Targeting CLHIV who receive clinical services from PEPFAR-supported facilities, Pact's case management service delivery approach enables OVC and caregivers to access needs-based comprehensive social services through professional or volunteer para-social workers.

This workforce supports continuity of HIV treatment through ART monitoring and counseling, disclosure support, reminders for appointments and multi-month dispensing pick-up, escorted referrals to health facilities, case conferencing with facility staff, psychosocial support, and linkages to CLHIV groups and food support.

From October 2020-September 2021, Pact provided case management to 24,277 CLHIV age 0-14 years on ART with viral load results reported within the last 12 months across five countries: Tanzania (n=17,896), South Africa (n=4,489), Eswatini (n=1,314), Rwanda (n=314), and South Sudan (n=264).

Lessons learned: Among these CLHIV, 90% were virally suppressed; country results ranged 80%-98%. VLS rates varied by age group, from 85% (age <1) to 90% (age 5-9). While variations between sex within age groups were minimal (<1.5%), greater differences (>5%) were observed in Eswatini and South Sudan. CLHIV in urban areas had higher VLS rates (91%) than rural areas (88%). VLS rates among CLHIV age 0-14 in Pact's programs were higher than national UNAIDS estimates for the same age band: South Sudan (83% vs. 36%), Tanzania (91% vs. 72%), South Africa (80% vs. 70%), Rwanda (98% vs. 89%), and Eswatini (92% vs. 91%).

Conclusions/Next steps: The social service sector can play an important role in pediatric VLS. CLHIV receiving case management through OVC programs have higher VLS rates compared to national estimates, yet quasi-experimental research is needed to determine the attribution of case management on VLS among CLHIV on ART.

Given observed variations in VLS, OVC programs should ensure interventions are tailored to meet the needs of CL-HIV as they age and transition to different ART doses and regimens.

EPD209

Reconciling advocacy and research to fight HIV/AIDS at the level of key populations

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Background: Curbing the epidemic of HIV in key populations can only be achieved by developing prevention methods in addition to traditional tools such as pre-exposure prophylaxis (PrEP) or community-based medical screening, two methods recommended by the WHO for which BESYP Network has carried out research projects and advocacy actions.

Benin Synergies Plus Network (BESYP) created in 2010, is one of the oldest LGBTI networks in Benin openly claiming the sexual orientation of its members and intervenes in the prevention and screening of HIV, medical orientation.

Description: BESYP Network carried out from October 2019 in December 2020 an experiment on community screening operated by LGBTI community workers in the cities of Cotonou, Porto-Novo and Abomey-Calavi.

The results were exceptionally convincing: 75% of people screened were for the first time and 95% of beneficiaries said they were satisfied, citing in particular the increased ease of communication and respect for confidentiality.

Upon completion, advocacy by BESYP Network with Plan International Benin and the Ministry of Health enabled the continuation of the strategy in the cities of the project, then its scaling up throughout the territory in June 2021.

Regarding PrEP, advocacy has enabled research.

After identifying barriers, BESYP Network in collaboration with Plan International Benin and POCAO of Canada developed arguments based on scientific evidence and institutional recommendations that it disseminated to the Ministry of Health.

This latter authorized Plan International Benin in collaboration with BESYP Network to conduct a pilot study on the feasibility of PrEP, jointly developed by the research and advocacy centers.

The study, targeting 200 MSM, began in August 2020. Its results are awaited by the Ministry of Health of Benin to decide on the means of implementation soon.

Lessons learned: These two examples show the correlation of research and advocacy. Advocacy makes it possible to implement research projects, the results of which legitimize and fuel advocacy.

Conclusions/Next steps: The common research and advocacy experience has already shown its impacts and it is important that it can continue.

Today, BESYP Network is trying to get support to achieve new goals such as the effective implementation of self-testing and community distribution of Antiretrovirals.

EPD210

Fostering flourishing communities: associations between collective empowerment, positive emotion, compassion, curiosity and HIV discrimination among rural Kenyans

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Background: HIV stigma remains a persistent barrier to ending the HIV pandemic. People within respective cultures must be the ones to challenge norms supporting HIV stigma. Understanding community and psychological processes by which cultural insiders challenge HIV stigma is essential to building effective interventions to end HIV stigma.

The broaden-and-build cycle of attachment security hypothesizes secure social connections provide a secure base to explore, affirm the value of others, and challenge exclusive norms. We assess whether collective efficacy predict less HIV discrimination among semi-rural Kenyans, and whether this association is mediated by "broaden and build" constructs of positive emotion, compassion, and social curiosity.

Methods: We collected cross-sectional baseline survey data from participants in a Kenyan community empowerment program to assess an on-going pilot trial of a novel 6-month positive psychology-based curriculum (n=335). Survey included validated scales of collective efficacy, positive emotion, compassion, social curiosity and HIV discrimination.

Structural equation modelling was used to assess serial mediating paths between collective efficacy and HIV discrimination.

Results: Controlling for age, gender, wealth and education, higher collective efficacy significantly predicted lower HIV discriminatory views (β=-0.17; 95%CI: -0.28, -0.07). This association was mediated by positive emotion (24%), and further by compassion (34.7%) and social curiosity (14%).

Through various direct and indirect pathways, women held more HIV discriminatory views than men (β=0.07); older respondents were more likely to hold discriminatory views than younger people (β=0.09); people with more wealth (β=-0.03) and more years of formal schooling (β=-0.01) were less likely to hold HIV discriminatory views.

Conclusions: The study supports an on-going approach to integrate multiple developmental goals, including ending HIV pandemic, within a community empowerment program.

Further research is required to understand whether observed determinants can be modified and reduce HIV stigma and discrimination, and whether improvements can further support community-led change around HIV

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stigma to end the HIV pandemic. Focus on enhancing collective efficacy, positive emotion, compassion and curiosity within the broader community in high HIV endemic areas may muster support for ending HIV stigma and advancing efforts to end the HIV pandemic.

EPD211

Community Advisory Board (CAB) ensure HIV Service Continuity in Binh Duong, Vietnam during COVID-19 pandemic

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Background: In June-November 2021, Vietnam faced its most serious wave of COVID-19, Binh Duong (BD) province had the second-highest number of COVID-19 cases. The health system in BD was significantly overloaded, as a result, access to HIV-related services was impacted.
Treatment continuity for people living with HIV on antiretroviral viral therapy (ART) and key populations (KPs) utilizing (Pre-Exposure Prophylaxis) PrEP was threatened due to travel restrictions and clinic shutdowns. Many individuals were unable to utilize their social health insurance (SHI) to access ART.
Description: In April 2019, provincial CAB have been formed to improve service delivery and advise health facilities on improvement. CAB BD consists of 10 people living with, affected by, or at risk of HIV and was recruited by BD Centers for Disease Control (CDC). Due to COVID-19 restrictions, CAB promptly coordinated resources to ensure continuity of services for ART and PrEP clients. With the timely support from BD CDC in providing travel passes and vaccination, CAB members navigated patients to available clinics for ART pick-up if their regular clinic was closed. CAB delivered ART or PrEP to those in quarantine or under lockdown. For patients whose SHI had expired, CAB counseled on how to extend coverage or access SHI from alternative sources through phone calls and virtual platforms.
Lessons learned: Due to this rapid community-led response, 1500/1650 (~90%) clients were supported to continue ART or PrEP without interruptions, and more than 500/600 (~83%) clients maintained their SHI coverage. This response mechanism, under the direct support of BD CDC, shows the value of an HIV innovation to mitigate the impact of COVID on HIV clients and to support overburdened health providers. This demonstrates that a strong collaboration between governmental entities and the community provides a holistic and timely approach to fill in health system gaps, especially for continuity of care for KPs and other vulnerable groups.
Conclusions/Next steps: CAB can play a critical role in response to public health emergencies, helping to assure continuity of services for clients. Scaling up CABs and empowering community-driven initiatives is necessary to build a more resilient society in the face of COVID and HIV pandemic challenges.

EPD212

Digital transformation in community-based HIV programs – are we there yet? Integration of a digital information App for community health workers in 5 districts of Zimbabwe

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Background: With rapidly changing guidelines and emergent public health threats such as COVID-19, reaching community health workers (CHWs) with appropriate, up-to-date information and myth-busters is a persistent challenge in large-scale HIV programs to reduce the 'know-do' gap. Digital transformation involves the use of digital technologies to improve the performance or reach of an organization or program. Boost is a mobile phone application designed in collaboration with CHWs intended to enhance confidence and client interactions through visual and interactive materials on HIV, sexual health and COVID-19. Our objective was to evaluate the use of Boost by CHWs in a large-scale HIV program.
Methods: We purposively sampled CHWs in the geographical catchment of 74 health facilities in 5 Districts of Zimbabwe where Boost was recommended for use. CHWs and their supervisors self-completed a survey on the installation, user-experience and reasons for (non) use of Boost on their smartphones using OpenDataKit. Survey data were analyzed descriptively using StataV15.1 and qualitative data analyzed thematically.
Results: From November-December 2021, 485 CHWs completed the survey. While the majority (66%; 319/485) of CHWs had used Boost, there were significant variations in App usage and frequency of use between rural/urban Districts, and clustered between sites within Districts. The most frequently cited reason for use of Boost by both CHWs and their supervisors was to increase their personal knowledge about a health topic (73%; 232/319); 98%(n=312) of CHWs reported use of the App had improved their confidence and communication with clients.
Additional support requested by CHWs to optimize Boost use included translation into local languages, mentorship/demonstration on App sharing/use with clients, and ensuring data-lite applications for download, storage and use.
Conclusions: We demonstrate the potential of digital applications for rapidly cascading information to CHWs when new evidence or guidelines are released. Reducing the 'digital divide' between rural/urban settings and normalizing digital technology use by CHWs at scale will require differentiated training and technical support strat-

egies. Community-based program implementers require user dashboards for targeted program remediation to improve coverage and implementation fidelity of digital strategies. Future research is required to evaluate the impact of digital tools upon the quality of services provided by CHWs.

EPD213

Randomized controlled trial of rise, a community-based behavioral counseling intervention that improves antiretroviral therapy adherence among Black/African American adults living with HIV

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Background: Compared to other races/ethnicities, Black people living with HIV are less likely to adhere to antiretroviral therapy (ART) and to be virally suppressed. These disparities may result from structural inequities (e.g., poverty, discrimination) and Black Americans' responses to inequities (e.g., medical mistrust; internalized stigma). Few evidence-based ART adherence interventions have been culturally tailored for Black Americans.
Methods: Rise is a community-based culturally congruent behavioral counseling ART adherence intervention for Black Americans. From January 2018-June 2021, we conducted a randomized controlled trial of Rise among 166 (85 intervention, 81 control) Black adults living with HIV in Los Angeles County, California.
A peer facilitator conducted five individual counseling sessions over 6 months using problem solving and motivational interviewing strategies, and social service needs assessments and referrals, to address adherence barriers. Up to four additional sessions were provided to those who remained non-adherent after the first month. Culturally tailored topics included discrimination; medical mistrust; internalized stigma; and social support.
Adherence was assessed with electronic monitoring. Surveys (at baseline and 7- and 13-month follow-up) included sociodemographic characteristics, HIV stigma, and HIV-related medical mistrust (conspiracy beliefs). Repeated-measures logistic or linear intention-to-treat regression modeling was conducted analyzing all follow-up observations with adjusted standard errors for within-participant clustering and nonresponse weighting for missing data, including study arm indicator and baseline value of the outcome as predictors.
Results: At baseline, average age was 49.0 years (SD=12.2); 76% were male, 20% female, 4% transgender male or female, and 1% gender-nonconforming. Intervention and control groups were comparable at baseline, without significantly different socio-demographic characteristics. Compared to controls, intervention participants showed two times greater adherence likelihood (≥ 80% of prescribed doses), OR (95% CI)=2.0 (1.1-3.6), $p < .05$; lower stigmatizing beliefs about HIV, OR (95% CI)=0.57 (0.32-1.00), p=.05; and reduced HIV-related mistrust, b(se)=-.21(.09), $p < .05$, at follow-up relative to baseline.
Moderation analyses indicated that intervention effects on adherence were stronger for younger participants, log odds (se)=-.05 (.03), $p < .05$.
Conclusions: Rise showed strong long-term adherence effects. It is critical to implement culturally congruent interventions like Rise that respond directly to the needs of Black American populations living with HIV.

EPD214

Integrated community delivery model to improve PrEP uptake and continuation for AGYW in Mazowe district, Zimbabwe

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Background: The Ministry of Health and Child Care (MOHCC) has been offering Oral Pre-exposure prophylaxis (PrEP) as part of combination HIV Prevention in Zimbabwe since 2017. PrEP is effective in reducing risk of HIV acquisition in high prevalence settings. Access to services including PrEP is a challenge for hard-to-reach rural communities, compounded by COVID-19 restrictions.
Pangaea Zimbabwe AIDS Trust (PZAT), in collaboration with MOHCC and Zimbabwe Technical Assistance, Training and Education Center (Zim-TTECH) embarked on integrated clinical outreach services to ensure PrEP uptake, effective use and continuation among vulnerable Adolescents Girls and Young Women (AGYW).
Description: From January to August 2021, integrated clinical outreach services were conducted around Mvurwi Hospital catchment area, Mazowe District to deliver a comprehensive package of services including oral PrEP, HIV testing and treatment, family planning, gender-based violence prevention and immunisation to community doorsteps.
Outreach points were identified based on remoteness. MOHCC and implementing partners collaboratively map points and plan the outreach visits. A PrEP Champion who is an AGYW mobilises clients and raises awareness on PrEP ahead of the outreach.

A multidisciplinary team including nurses and counsellors delivers services during the outreach. Outreach services are conducted monthly offering consistent and uninterrupted services. Data was captured and reported using standard MOHCC tools.

Lessons learned: Integrated delivery of services at community level improves access and utilization of services including PrEP. Between January and August 2021, 344/366 (94%) AGYW tested for HIV were negative, 157 were assessed for risk and 144 (92%) were initiated on PrEP. At outreach points, 296 AGYW collected PrEP refills.

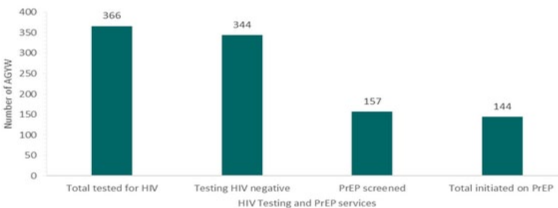

Figure. AGYW accessing HIV testing and PrEP services through community outreaches in Mvurwi, Jan-Aug 21

Conclusions/Next steps: Partners' collaboration in communities through integrated planning and implementation is essential for successful delivery of HIV prevention services including PrEP. Comprehensive HIV service provision can be effectively implemented with support from peer mobilisers. Under COVID-19 restrictions, communities can still access health services including PrEP using this delivery model.

EPD215

"Wumoja", an approach to increase sustainability in HIV prevention among children in primary schools in Nakivale refugee settlements

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Background: Refugee primary school children are becoming sexually active at a very earlier age and are at a risk of contracting STDS like HIV infection. Health education program like "Wumoja" could increase the level of knowledge, influence attitude and encourage safe sexual practices when implemented in schools.

"Wumoja" a Swahili word meaning together, is a practical approach used by ALIGHT to test the effects of an HIV/AIDS education program in Nakivale refugee's settlement.

Description: This intervention was started early 2018 after reviewing both the medical and education reports of primary schools in Nakivale refugee settlement, it was discovered that girls from the age of 14 to 16 are facing different sexual challenges both at school and outside school. These include early sexual practices within schools. The Wumoja approach was designed to reduce the children's risk of HIV infection and to improve their tolerance and care for the children with AIDS. Local teachers and health workers attended a 4 days' workshop pier to the implementation.

The intervention was targeting self-reported exposure to AIDS information, attitude towards children living with AIDS, having sexual intercourses for school going children, subjective norms regarding sexual intercourses that may affect girls at an early stage and the intentions of engaging in sexual intercourse by school going children.

The program was implemented for 6 months providing an average of 20 hours per school.

Lessons learned: Following the Wumoja approach, with direct involvement of children and teachers in schools, pupils reported significantly higher scores for the following outcome compared to the previous years before the program implementation: AIDS information 31% versus 12%, AIDS communication 29% versus 8%, AIDS knowledge 30% versus 5%, attitudes towards people with HIV 26% versus 2% .the program has improved the learning environment and also reduced the risks of HIV/AIDS among school going children.

Conclusions/Next steps: Wumoja has been an effective approach to providing AIDS education for primary school children in Nakivale Refugee settlement and this could be implemented to other schools across Uganda both primary and secondary and East Africa. Printing and distributing training materials among schools in remote villages is still a challenge.

EPD216

Fast-tracking viral load suppression among HIV positive children using a community-clinical collaborative approach in South Western Uganda

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Background: Whereas Uganda has attained significant gains towards HIV diagnosis and treatment, viral load suppression (VLS) among children remains unacceptably low. Data from Ministry of Health indicates that VLS among adults is performing better compared to children. Accordingly, VLS among children increased from 36% in 2016 to 48% in 2019 and fell far short of 2020 targets. USAID's Keeping Children Healthy and Safe (KCHS) is consortium project aimed at preventing new HIV infections and building capacity for lifelong ART.

Description: KCHS is a five-year project implemented in 17 districts of South Western Uganda by TPO Uganda in partnership with AVSI, REPSSI, ACORD and collaborating with USG funded Clinical Partners: TASO, UPMB, JCRC and RHSP supporting up to 64,910 beneficiaries who include children and adolescents living with HIV, HIV-exposed infants, biological children of female sex workers and children survivors of sexual violence. Signing and implement-

ing joint MOUs with health facilities, clinical partners has given birth to a Collaborative Approach. The approach involves pairing a Community Development Officers with Health Facility Counselors and community para-social workers to offer comprehensive services at household level which include; providing psychosocial support, responding to child protection and GBV, providing adherence counseling and clinical management.

Lessons learned: Viral load suppression for children consistently improved from 78% in quarter 1 of 2020 to 89% in the second quarter of 2021, to 90.3% in quarter 3 of 2021. Out of 4,725 children whose viral load was monitored in Quarter 3 a total of 4,265 were virally suppressing.

The project has intensified follow up of the 460 children with non-suppressed viral load status. Strengthening community-Health facility linkage is a key ingredient to fast-tracking viral load among HIV-positive children.

Conclusions/Next steps: Strong collaboration between community OVC mechanism with health facilities and clinical partners accelerates HIV prevention, care and treatment outcomes among children living with HIV since it enhances delivery of comprehensive package of services for vulnerable households where care is needed most.

EPD217

Clinic and community case finding to prevent and identify new HIV infections among children and adolescents at risk and improve treatment outcomes for those living with HIV in rural Malawi

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Background: In Malawi, 62,000 children 0-14 live with HIV, representing 6% of all infections - and a child prevalence of 0.7%, compared with 8.1% of adults - yet children represent 15% of AIDS-related deaths annually and 12% of new infections. Malawi is on track to achieve the UNAIDS 2025 95-95-95 goals, yet children and adolescents living with HIV (C/ALHIV) lag far behind adults in status awareness (88% overall vs. 75% among children) and viral suppression (97% vs. 74%).

Description: WEI/Bantwana and GAIA implement the USAID-funded Ana Patsogolo (Children First) Activity (APA) to prevent HIV infection and reduce vulnerability among OVCs and AGYWs (<18) in three high-burden southern Malawi districts.APA provides an evidence-based package of services delivered through community and facility-based active tracing and case management, and an integrated referral network across the HIV continuum.

To increase uptake of HIV and other health services GAIA: enrolls HIV+ participants into the programs; expands critical service provision to those most-at-risk (C/ALHIV and Children of parents living with HIV (CPLHIV)); strengthens health facility and community coordination; and extends the reach of evidence-based prevention interventions through hiring/training Community Linkage Facilitators, Child Protection Workers and Community Case Workers.

Lessons learned: From October 2020-September 2021, GAIA enrolled 15,546 OVCs and 6,448 AGYWs and increased the number of C/ALHIV receiving services by 143%, from 2,802 to 6,826. Individual case management ensured retention of 99% of enrolled CLHIVs and 80% achieved viral suppression.

Emergency nutrition, adherence counseling, home visits and case conferences were provided to CLHIVs with high viral load. ALHIV were enrolled in teen clubs to promote disclosure/adherence, provide recreational/psychosocial support and life skills, and support caregivers.

CPLHIVs participated in HIV prevention interventions, leveraging schools, community youth clubs, and faith-based networks to prevent sexual violence and reduce HIV risk. Risk assessments were conducted for 3,754 CPLHIVs, 51.3% with unknown status were tested, 2.3% tested positive and 100% enrolled in CLHIV programming.

Conclusions/Next steps: Layered programming including intensified clinic/community-based case finding, risk assessment and prevention, index testing, contact tracing and caregiver support present a promising approach to support CALHIV and their siblings and improve health outcomes among children to close HIV care continuum gaps.

EPD218

Using a two-stage crowdsourcing open call and Designathon to develop interventions for HIV partner services among men who have sex with men in China

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Background: Current HIV partner services (PS) in China use passive referral and encourage partners of clients to get tested at health facilities, failing to meet the needs of Chinese men who have sex with men (MSM) living with HIV. More effective partner services for MSM might be developed using crowdsourcing, which solicits ideas from large groups of people and shares the solutions with the public.

Description: We organized a two-stage crowdsourcing event that included an open call and a Designathon to solicit and develop intervention ideas to enhance partner services among MSM in China. The open call was an-

nounced online to call for submissions, including protocols addressing PS barriers, successful PS stories, expectations about ideal PS, and media messages for PS promotion purposes (images, videos, audios, etc.).
Exceptional submissions were recognized as semi-finalists and later used as the resources for the subsequent Designathon. The Designathon was a 48-hour challenge that brought together participants with different expertise (e.g., communications experts, healthcare providers, UI designers) to brainstorm as a team and deliver a comprehensive intervention plan.
Lessons learned: We found that the crowdsourcing approach empowered the MSM and people living with HIV (PLWH) communities to voice their demands. Of all participants, 14% (13/94) were MSM living with HIV, who shared their personal PS experiences and struggles.
During the Designathon, MSM and PLWH actively interacted with China CDC experts and healthcare professionals to co-create intervention plans and improve the feasibility. Second, the approach generated innovative strategies with minimal cost. From July to September 2020, the open call received 53 eligible entries; ten entries were designated as semi-finalists. Over two days in December 2020, the Designathon attracted 41 people who collaboratively developed eight detailed plans.
Promising intervention ideas included PLWH peer sharing and education, Internet-based partner services that allowed personalization of notification messages and improved follow-up linkage to care, third-party-initiated anonymous notification, and testing together without notification.
Conclusions/Next steps: The two-stage crowdsourcing approach mobilized MSM and PLWH community and fostered client-provider collaboration. The approach also produced high-quality content that could inform policy design. The effectiveness of the proposed partner service plans requires further evaluation.

EPD219
Navigating Quality of Life: effects of a peer navigation program for PLHIV in Australia

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Background: This paper explores the effects of a Peer Navigation Program (PNP) employing peer workers living with HIV to support the Quality of Life (QoL) of PLHIV in Victoria.
Methods: Our research took a community participatory approach, using mixed methods to observe program delivery and effects in real-world settings. Interviews with 27 clients were conducted July-October 2020, transcribed and thematically analysed. We also report analyses from the responses of a separate cohort of 36 clients to a validated measure of QoL (PozQoL), administered through a survey completed following first appointment and repeated at 2 and 4 months, between December 2018-2020.
Multiple linear regressions tested the significance of the relationship between time since baseline and changes in PozQol scores. Covariates were age, gender, sexuality and whether participants were Australian born.
Results: Interviews showed evidence that the PNP provided information, emotional support, positive identification and appraisal, which reduced felt stigma, social isolation and health-related concerns for newly diagnosed PLHIV. Timely linkage to community services and networks, migration and psychological services further supported psychosocial wellbeing and addressed concerns related to themes of life goals and expectations.
For participants who experienced discrimination in the migration system and high levels of social isolation and stigma in the community, the impact of an HIV diagnosis on life goals and expectations was more enduring.
Clients were able to access the PNP via phone or online during COVID-19 restrictions. Participants received welfare checks and help with access to medications and income support, but experienced challenges maintaining employment, social support and other activities which supported QoL.
Changes in PozQol scores were not statistically significant. Prior to COVID-19, PozQoL scores indicated improvements in social, functional, psychological and health concern domains. However, this plateaued during COVID-19 restrictions. Our ability to test for significance was limited by sample and effect size.
Conclusions: Our study found consistent qualitative evidence to suggest that the activities and strategies employed by the PNP can improve factors related to QoL.
Our ability to test the significance of observed improvement in PozQol scores was limited by confounders and sample size. These findings guide the aims, scope, activities and evaluation of similar programs.

EPD220

Valuing expertise: community and clinical collaboration in an Australian HIV peer navigation program

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Background: Our study examined how a peer navigation program (PNP), integrating insights and practices of peers living with HIV into clinical services, could improve the effectiveness of the HIV service environment in Victoria.

Methods: We conducted interviews and focus groups with 30 staff from a peer-based community organization implementing the PNP and its clinical partners. Interviews explored the quality of engagement and adaptation across diverse clinical settings and factors that influenced the program's effectiveness. Data were transcribed and thematically analysed.

Results: Participants highly valued peer navigator guidance to address the psychosocial complexities of a new HIV diagnosis and strengthen engagement with other support services and PLHIV community.

The PNP facilitated timely access to peer support and clinic-based appointments. The program also fostered greater appreciation among clinic staff of the practices, stories and experiences of peers working in these roles.

Participants reported that these factors contributed to stronger referral pathways between clinical and community services, reducing barriers such as cost, distance and hesitancy experienced by clients.

Participants reported in-depth consultation between community and clinical partners. This included introductory meetings with clinical and peer staff and the development of formal agreements outlining organisational obligations and program scope.

The PNP adapted service delivery based on assessments of client needs and service models, which required the delivery of flexible appointments available across clinical and community settings, phone and online.

Ongoing knowledge transfer between peer and clinic staff was recommended for learning and improvement and to address noted challenges in maintaining referral relationships for general practices and casual medical staff.

A peer-led workplace and employment frameworks in line with GIPA/MIPA principles guided policy, process and ethical considerations that arose in the recruitment, training and supervision of peer navigators. Adequate remuneration and employee assistance, cross-support from peers, mentorship, and additional development and employment opportunities all supported peer navigators to work most effectively.

Conclusions: The PNP met an identified need in Victoria's HIV care and support sector, providing stronger continuity of care between clinical and community services. This paper uses examples of successful engagement, adaptations and supportive peer-led workplace culture and frameworks to guide the implementation of similar programs.

EPD221

Determinants of viral load suppression among orphaned and vulnerable children on antiretroviral treatment in Tanzania

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Background: In Tanzania, only 47% of children on ART 0-14 years are virally suppressed (UNAIDS 2020). Although retention on and poor adherence to ART remain a challenge for children living with HIV (CLHIV), Orphans and Vulnerable Children (OVC) face greater limitations in accessing and utilizing comprehensive HIV care and treatment services.

In response to this, the current study assessed the determinants of Viral Load Suppression (VLS) among OVC aged 0-14 years living with HIV enrolled in HIV community-based interventions.

Methods: This study is based on data from the USAID Kizazi Kipya project (2016 – 2021) from 81 councils of Tanzania. Included in this study are 1,980 CLHIV on ART (0-14 years) with valid Care and Treatment (CTC) identification numbers, enrolled and served by the project for 24 months. VLS was defined as viral load <1,000 copies/mL. Data analysis involved multivariate logistic regression, with VLS as the outcome of interest and HIV interventions and household characteristics as the main independent variables.

Results: The overall viral suppression rate among OVC living with HIV was 85.3%. This rate increased with retention: 85.3%, 89.9%, 97.6% to 98.8% after 6, 12, 18 and 24 months of retention on ART, respectively. Similar rates were observed as the duration of adherence to ART increased. In the multivariate analysis, OVC attending PLHIV groups were 411 times more likely to be virally suppressed than those not attending (aOR=411.25, 95% CI 168.2–1005.4). OVC with health insurance were 6 times more likely to achieve viral suppression than those without (aOR=6.05, 95% CI 3.28–11.15). OVC from food secure households were almost 15 times more likely to be virally suppressed than their food insecure counterparts (aOR=14.93, 95% CI 8.76–25.45). OVC from households with five or more people were more likely to be virally suppressed than those in households with two people (aOR=2.97, 95% CI 1.25–7.07).

Conclusions: CLHIV reached by the different HIV community-based interventions were more likely to be virally suppressed than those who were not. To advance viral

suppression, efforts should be made so that all CLHIV are reached by HIV community-based interventions as well as integrating food support in HIV treatment interventions.

EPD222

Implementation of the local innovation spread through enterprise network model; lessons learned from male champions as a community of practice, Kiambu, Kenya

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Background: The National AIDS Control Council-Kenya (NACC) with support from Centre for Global Health Practice and Impact (CGHPI) of Georgetown University has been supporting Male Champions as a Community of Practice through the implementation of the Local Innovation Spread Through Enterprise Network (LISTEN) Model.

The Model focuses on Communities of Practice (CoP) using a Human Centered Design (HCD) approach to strengthen delivery of services (both Health and Non-Health) in the County. The model aims at:

1. Utilization of community formations/networks for health service delivery
2. Enhancing sustainability for HIV and Health programmes
3. Promoting accountability for results at all levels from community to County leadership
4. Enhancing Strategic information for timely decision making
5. Supporting the achievement of Universal Health Coverage (UHC)

Description: The Male Champions were first trained by the NACC as a channel to target men in non-health settings to respond to their health needs and address barriers for better health outcomes.

The Champions use community advocacy forums and peer to peer engagements to reach out to men where they are and provide information and services to address male gender health disengagement; vulnerabilities of men; societal perception of masculinity and promote sexual and reproductive rights.

Lessons learned:

1. Male Engagement has a potential to steer HIV response through advocacy, creation of awareness and neutralizing stigma.
2. Man to man talk enhances positive health seeking behaviors among the male gender.
3. HIV prevention tools like condoms are readily accepted by men when introduced to them by their peers.
4. Men generally have a poor health seeking behavior and the use of the Male Champions as advocates reverses negative masculinity perception.
5. Through HCD approach, men open to their fellow men and come up with implementable health solutions.

Conclusions/Next steps: Targeting men through peer-to-peer approach has greatly improved; identification and linkage to care and treatment of HIV+ males, Heath service uptake including HIV Testing Services and screening of basic non communicable diseases.

EPD223

Are helplines effective in the current context of health services organization to answer HIV/AIDS needs?

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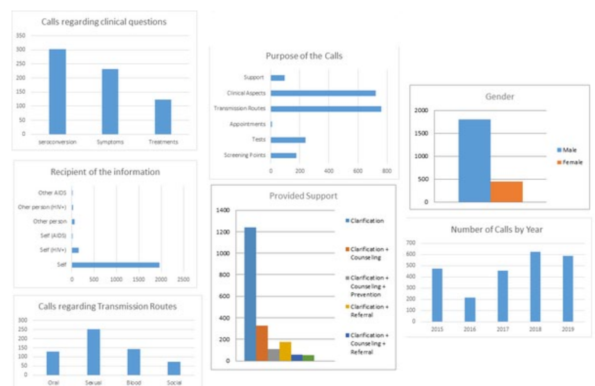
Background: "Linha SOS SIDA" is a helpline that was initiated in 1991 as the first service of the Portuguese League Against AIDS. This project was based on other similar experiences across Europe based on the important role developed supporting infected patients. Calls are free, anonymous, and confidential and the helpline works from Monday to Friday between 10AM to 9:30 PM.

Methods: This helpline aims to provide information on several aspects of the HIV and AIDS infection and/or other Sexually Transmitted Infections (STI), especially transmission routes, risk and safe behaviors, screening points as well as schedule specialized appointments, to provide emotional support for patients infected or affected by HIV and to refer for other community resources. Counseling is provided by specialized psychologists and according to WHO guidelines. Information was gathered through anonymous questionnaires and analyzed using SPSS, v.25.0

Results: Between January 2015 and December 2019, 2241 effective calls were received (excluding calls in which callers are not seeking to use the service), from which 1797 were made by men and 444 were women. Calls were analyzed using a data-sheet in which it's registered the age and gender of who is calling, the reason for each phone call, as well as the recipient of the information, the provided support.



Conclusions: There's been an increase of calls over the years, justifying the continuity of this helpline as a service. Women still rarely seek help about sexual relationships.

The main purpose to access this kind of service is to know about the of being infected after a risk behavior. Although there's an amount of information concerning HIV, remains an irrational worry about social transmission. The clarification process is an important strategy since it's an ideal opportunity to adjust misinformation and to recommend preventive measure.

EPD224

Understanding the survival of the unregistered community-based organization (CBO) in China's response to HIV/AIDS among men who have sex with men (MSM): HIV testing and beyond

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Background: How MSM-centered CBO delivering HIV/AIDS services survived in authoritarian China has drawn much scholarly attention. Previous work has identified political, economic, and personal relationships with the government as three unique survival opportunities.
However, most of the studies were contextualized under the influx of Global Health Initiatives; little is known how the unregistered CBO survived after the international donors withdrew their support.
This study aimed to analyze how the unregistered CBO took advantage of the three identified opportunities to survive and the implications for the well-being of MSM.
Methods: This study involved a one-year ethnography in Eastern China from 2020 to 2021. Daily participant observations were conducted at a local MSM-centered CBO contracted by the local municipal center for disease control and prevention (CDC).
The researchers conducted unstructured (N=40) and semi-structured interviews (N=10) with the CBO and CDC personnel and MSM concerning the CBO's survival and service delivery during the observations. Thematic analysis was employed for data analysis.
Results: Although the CBO failed to obtain legal registration, it adopted "business registration" to ensure one of its' identities is legal and recognizable.
The political opportunity remained fundamental for it to participate and assist the local CDCs in tackling increasing HIV/AIDS concerns. However, some political constraints discouraged them from addressing "LGBT" issues.
Outsourcing HIV testing to the CBO from the municipal CDC ensured their fundamental "revenues" through performance-based financing. "China AIDS Fund" filled the international donors' withdrawal gap and became a significant financial resource.
Collaborations with the CDCs, academia, and pharmaceutical industries also contribute to fundraising. Diplomacy capability and constantly pleasing the donors attached to the Chinese "Guanxi" culture, especially being obedient to officials' requests from CDC and government-organized NGOs, is decisive for future fundraising and long-term viability.
Conclusions: While the CBO seized various opportunities and strategies to survive, the major drawback seems at the expense of improving the quality of the HIV/AIDS services.
Due to a lack of capacity building and cultivation towards a professional "social work organization," the CBO might replicate the biomedical and behavioral approach while dismissing the sociocultural and community responses to HIV/AIDS. This warranted future studies to go further analysis.

EPD225

Linking KP clients to care through a community to public partnership – how C2P works in Ho Chi Minh City, Vietnam

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Background: For Vietnam's largest city and urban province, reaching key populations (KP) has been a challenge. Engaging KP groups as active participants organized as community-based organizations (CBO) is a viable option. These CBOs help support finding clients and linking newly identified clients to HIV services though a community-public partnership (C2P) model.
Description: The C2P model is a partnership between CBOs, health facilities (HFs), and LIFE (a local implementer as the technical and coordinating organization) to support KP client access to HIV services. LIFE helped to train and support CBOs founded and operated by KP, organize partnerships, sensitize HFs, then arrange agreements, support meetings and referral logistics to account for clients referred from CBOs to HFs. CBOs work within the communities they serve to find cases, counsel, test, and refer cases, as appropriate. HFs receive those referred clients to provide services, track referrals, and share feedback to improve community services.
Monthly meetings review program performance, discuss concerns, review client level feedback on both services in the community and facility and strengthen coordination.
Lessons learned: The C2P model in HCMC province included 17 CBOs working with 18 district health facilities, 3 private clinics and 2 hospitals. Data reviewed from October 2020 through September 2021 showed 32,474 contacts were made, 21,559 people were tested (66.6%), of those 1,769 tested positive (8.2%) and nearly all, 1,768, were linked to ART (99.9%).
Contributing factors to this success include CBOs were comprised of KP who supported engaging KP clients. CBOs enter this partnership and support clients as an organization, versus individuals, which helps build trust with HFs and clients. CBOs can also support HF with additional

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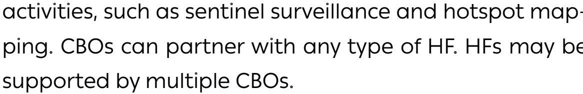

activities, such as sentinel surveillance and hotspot mapping. CBOs can partner with any type of HF. HFs may be supported by multiple CBOs.

Conclusions/Next steps: The C2P model was highly effective at ensuring clients are identified and linked to care. CBOs, particularly KP-led and operated, play a key role in responding to KP needs. The model's success has shown the value of CBOs working in close collaboration with HF. This has led to an expansion of the model to other urban provinces for scale-up.

EPD226

HIV knowledge among prospective healthcare professionals

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Background: The study aimed to investigate the knowledge about HIV among medicine and pharmacy students and their attitudes towards HIV infected individuals.

Methods: The study was planned as a self-administered questionnaire. The knowledge about transmission and prevention were classified as low, moderate and high for those who scored <50%, 50-79% and ≥80%, respectively. Students who reported positive attitude to at least half of attitude questions were regarded to have positive attitude.

Results: 306 medicine and 348 pharmacy students were included. More than 90% of students from both faculty were aware of transmission via sexual intercourse, blood/blood product and semen/vaginal fluid. Awareness of transmission by anal and oral sex was significantly higher among medicine students.

The knowledge that the virus can transmit via deep kissing was low for both groups. Medicine students were highly knowledgeable that the virus cannot transmit via handshake, kissing/hugging or coughing/sneezing whereas the knowledge was intermediate for pharmacy students.

The median score of medicine students was higher than that of pharmacy students for transmission (81.8% and 72.7%, respectively) and prevention (71.4% and 64.4%, respectively). The rate of moderate/high knowledge of transmission and prevention was significantly higher among medicine students (97.7 and 91.8%, respectively) than pharmacy students (90.8 and 77% respectively).

No statistically significant difference was observed in terms of the transmission and prevention knowledge according to gender.Significantly higher rate of medicine students (87%) had positive attitude towards HIV infected individuals than pharmacy students (50%) (Table 1).

No difference was found in the attitude according to gender.

		Medicine	Pharmacy
Transmission	Low	7 (2.3)	32 (9.2)
	Intermediate	124 (40.5)	220 (63.2)
	High	175 (57.2)	96 (27.6)
Prevention	Low	25 (8.2)	80 (23)
	Intermediate	220 (71.9)	224 (64.4)
	High	61 (19.9)	44 (12.6)
Attitude	Positive	265 (86.6)	167 (49.6)*
	Negative	41 (13.4)	170 (50.4)*

Table 1. Knowledge and Attitude of Students.

Conclusions: There was misconception or a lack of in-depth knowledge in both prospective physicians and pharmacists. Increased knowledge on transmission and prevention was found to affect attitude towards HIV infected individuals positively. Increasing awareness on HIV and reducing stigma may be achieved with in depth education of prospective health care professionals.

EPD227

Maintaining the 'fourth 90' during the pandemic using online, community-based health and wellbeing programs

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Background: The World Health Organisation added the 'fourth 90' as a goal to ensure a satisfactory quality of life for people living with HIV, to be achieved by 2030. The SARS-CoV-2 pandemic has presented many challenges to PWHIV to maintaining wellbeing across the social, psychological, physical and financial determinants of health. In response, BGF successfully pivoted by digitising new and existing program delivery online.

These programs create a safe network where PWHIV can share their experiences when receiving social support, positive influences, healthy distractions, and if necessary, referrals for specialised care.

Description: During the height of the pandemic (2020-2021) eight health and wellbeing programs across the aforementioned determinants of health listed were implemented. Participants (n=58) were recruited from BGF's internal database, social media and professional health-care referrals. Weekly group sessions were held over six weeks online using Zoom conferencing software.

Upon completion of each program, an online questionnaire was sent to each participant to evaluate the program's outcomes.

Lessons learned: Overall, most respondents reported that they successfully engaged with the programs to improve their sense of health and wellbeing during the period. They reported experiencing improvement and increased connection in their social relationships (Creative Writing; 100%, n=7), (Novel Connections; 90%, n=10). Respondents also reported improvements in their mental health (Creative Writing; 71.5%, n=7), (Zen Movement; 73.3%, n=15), (Qigong; 87.5%, n=8) from several programs;

as well as a reduction in experienced stress and anxiety, (Novel Connections; 80%, n=10), (CBT Training; 66.7%, n=9). Better Money Management, a financial program, saw each participant receive individualised advice tailored to circumstances with all (100%, n=4) reporting the skills learned would be useful in the future.

Most respondents reported experiencing improvements in their physical health (Zen Movement; 93.9%, n=15), (Qigong; 62.5%, n=8), (Better Sleep Training; 75%, n=4).

Conclusions/Next steps: These programs created an opportunity for PWHIV to connect as peers, share their stories and their lived experiences, cultivate new skills, and helped achieve their personal goals. They proved highly beneficial to participants, notably in terms of their mental health during a period of much uncertainty and anxiety. Future programs will continue to be based on client's needs analysis and interests.

EPD228

"Leave no one behind" – expanded community-based outreach strategies among People Who Inject Drugs (PWID) in North India

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Background: India's northern states bear a high HIV burden, especially among people-who-inject-drugs (PWID). HIV prevalence among PWID is estimated at 4.5% in Uttar Pradesh state and 16.2% in Delhi state (vs. 0.2% in general populations nationally). Prevention services uptake and treatment adherence among PWID in North India remains a challenge given structural barriers and lack of community engagement.

Description: An EJAF-supported program works to strengthen linkage to HIV prevention and care services among PWID in Uttar Pradesh and Delhi. Services include social networking and index testing approaches supported by community-oriented peers. The program identified PWID un-engaged with services at public facilities and facilitated linkage for opioid substitution therapy (OST) and testing for HIV, Hepatitis-C, and Tuberculosis. Staff engaged clients in prevention and treatment services based on test results. Staff elicited the sexual and injecting partners of clients through motivational interviewing-informed counselling, and facilitated HIV testing referral. The program regularly gathers PWID community input to inform service delivery.

Lessons learned: Between July to December 2021, the program reached 837 PWID in Uttar Pradesh and Delhi. Among them, 640 completed HIV testing, 147 (23%) were diagnosed as positive and 92 (63%) initiated ART. Among PWID reached, 136 were tested for Hepatitis-C, 66 (49%) tested positive and 23 (35%) initiated treatment. 528 clients were screened for Tuberculosis; and 06 (1%) tested positive and 05 initiated treatment. 247 PWID were linked to OST (164 newly linked and 83 re-linked). The program reached 115 sexual partners of PWID; among whom 82 were tested for HIV, 07 (9%) tested positive, and all initiated ART.

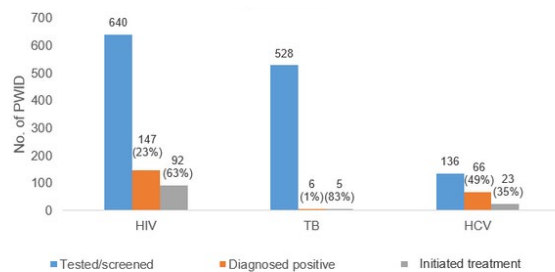

Figure 1. HIV, TB and HCV testing results among 837 PWID in UP and Delhi, India, July - Dec 2021

Conclusions/Next steps: Social networking and index testing approaches can complement existing public services to reach unengaged PWID and facilitate service access. Community engagement and peer-led outreach are critical to ensure community-friendly engagement with PWID and overcome barriers to access HIV and other health services.

EPD229

Finding men in need of HIV testing services who do not attend health facilities: a community-representative survey in Malawi

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Background: Men in sub-Saharan Africa have unmet needs for HIV testing services. Most community-based strategies target men at drinking spots, or sporting events. However, there is little evidence that the majority of men in need of HIV testing frequent these venues from a population perspective. To inform HIV outreach programs, we aimed to identify where men who had not tested for HIV *and* not attended a health facility in the last 12 months spend their time.

Methods: Men from 36 villages in rural Malawi completed a community-representative survey (n=1160). Inclusion criteria for the parent survey were: male; aged 15-65 years; never tested HIV-positive; and residing in a study village.

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We conducted a sub-analysis of men who had not attended health facilities using descriptive statistics to understand where men spent time when not working, and if they were willing to use HIV self-test kit (HIVST) in the community.

Results: 116/1160 (10%) of men had not tested for HIV and had not attended a health facility in the last 12 months. Among those, 56% had*never* tested for HIV. 53% were self-employed – most worked mornings (70%) and few worked on Sundays (10%). Only 28% reported drinking alcoholic beverages in the last 30 days and 10% spent time at drinking places. The most common place men spent time outside of work (with or without friends) was home (60%, usually on Saturdays and afternoons). The most common locations for socializing with friends were markets/trading posts (22%) and seated games (22%), both usually on Saturdays/Sundays. 91% of men were willing to use HIVST in the community (Table).

Conclusions: Reaching men in need of testing who do not attend health facilities may be most successful through targeted HIVST distribution on weekends at home, markets, trading posts and places where seated games are played.

Variables	n (%)	Day frequented
Demographics:		
Median Age, (IQR)	36 (21-49)	-
Married	82 (71%)	-
Work Type:		
Working Formally	2 (2%)	-
Self-employed (farming, business)	61 (53%)	-
Peace work	41 (35%)	-
Not working	12 (10%)	-
Health Behaviors:		
Never Tested	65 (56%)	-
Willing to test with HIVST*	106 (91%)	-
Drinking alcoholic beverages in past 30 days	32 (28%)	-
Time Spent		
Spend most of free time:		
Market/Trading post	7 (6%)	Sat, Sun
Home	70 (60%)	Sun
Bar/Drinking spot	6 (5%)	Sat
Seated games**	14 (12%)	Sat, Sun
Football/Active games	8 (7%)	Sat, Sun
Church	2 (2%)	Sun, Mon, Tue, Wed, Thu, Fri, Sat
Friend's/Relative's/Neighbor's home	5 (4%)	Sat, Sun
Other	4 (4%)	Sat, Sun
Hang out with your friends:		
Market/Trading posts	25 (22%)	Sat, Sun
Home	18 (18%)	Sun
Bar/Drinking spot	11 (10%)	Sat, Sun
Seated games**	26 (22%)	Sat, Sun
Football/Active games	16 (14%)	Sat, Sun
Church	3 (3%)	Sun, Mon, Tue, Wed, Thu, Fri, Sat
Friend's/Relative's/Neighbor's home	13 (11%)	Sun, Mon, Tue, Thu, Sat
Other	4 (4%	Sat

* HIVST refers to HIV self-test kit
** Seated games are games played while seated; mostly played at or near the market/business place.

Table: Characteristics of men who had not attended health facilities and where they spend their free time (n=116)

EPD230

Stepping Stones: creating safe spaces for addressing HIV, sexual and gender based violence (SGBV) and harmful substance use among vulnerable populations in South Africa

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Background: In South Africa, adolescent girls and young women (AGYW) account for ¼ of all new HIV infections; only 60% know their status; and only 46% of those with HIV take antiretroviral drug treatment (ART). Sexual and gender based violence (SGBV), alcohol and drug abuse contribute to violence, risky sexual behaviors and infectious disease transmission through needle sharing among people who inject drugs (PWID), such as "Nyaope", a common street drug.

From 2020-2021, Humana People to People South Africa (HPPSA) implemented *Stepping Stones* (SS) in Ehlanzeni District, Mpumalanga Province to create safe spaces for key populations to address issues that affect them personally.

Description: HPPSA conducted a series of 17 sessions with same-sex peers over the course of a week. Topics included: healthy relationships; gender equality; HIV; SGBV; alcohol/drug harm; and dealing with grief and loss.

Results from pre-post assessments showed 96% of participants increased their knowledge of HIV and planned to get tested. During sessions, participants were linked to a variety of treatment and support services through referral chains and warm hand-offs.

Lessons learned: Collaboration with local partners, governmental, non-governmental and community based organizations was invaluable in developing tailor-made strategies to increase access to essential wrap-around services for HIV, SGBV and substance use.

AGYW's participation in FHI360's skills training, for example, demonstrates the effectiveness of linkages to both health and non-health services. Data gathered through testimonials show clear connections between integrated support (like SS), and improved mental health.

There were noticeable reductions in acceptance of SGBV from participating AGYW, including an increase from 6% pre- to 95% post-participation who would report rape or other forms of violence to police.

Conclusions/Next steps: Stepping Stones activities created safe spaces for peer groups to discuss sensitive issues. Education and awareness led to increased HIV testing, access to ART and SGBV services, and a decrease (self-reported) in harmful alcohol and substance use. Recommendations for future implementation include: offer-

ing sessions on weekends to make them more convenient for participants who work during the week; creating both indoor and outdoor spaces for sessions (providing a safer option during pandemics); and offering HIV tests during the course sessions.

EPD231

Gay community-led digital network-based secondary distribution of HIV self-testing among Chinese men who have sex with men: lessons learned from three consecutive trials

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Background: Digital network-based secondary distribution of HIV self-testing (SD-HIVST) among men who have sex with men (MSM) leverages digital platforms and social network to enhance testing coverage. We aimed to use community-based participatory research by sharing community leadership with a community-based organization (CBO) to increase the uptake of HIVST through secondary distribution programs among Chinese MSM.

Description: We conducted three phases of clinical trials (Figure 1) in China, from 2018 to 2021, to assess the effectiveness of digital network-based SD-HIVST in various scenarios among Chinese MSM, partnering with the local gay-led CBO.

Three trials were all conducted using our SD-HIVST model where participants (defined as "index") order multiple HIVST online, get self-tested or distribute the kits to members within their social network (defined as "alters"), and uploaded the results to the platform. The local CBO contributed to the initial intervention design (Phase 1) and enhancing implementation strategies (Phases 2 and 3).

The CBO led establishment and maintenance of the digital platform, participants enrollment, HIVST shipment, testing results verification, and linkage-to-care follow-up across all three phases.

Figure 1.

Lessons learned: Throughout the course of three phases, 909 index participants (phase 1: 371, phase 2: 309, phase 3: 229) ordered 2147 HIVST (phase 1: 1150, phase 2: 759, phase 3: 238) and referred 154 peer-referral links (phase 2: 75, phase 3: 79). Each index participant successfully motivated an average of 0.85 unique alters in phase 1, 1.11 unique alters in phase 2, and 1.31 unique alters in phase 3. CBO plays a vital role in providing HIVST and counseling services, transforming the interventions from "for the community" to "by the community." The partnership with CBO facilitates both community empowerment and solidarity and the effectiveness of SD-HIVST.

Conclusions/Next steps: Forming and maintaining shared community leadership is the key to the success and effectiveness improvement of our secondary distribution programs.

EPD232

Adolescents and young people's experiences with HIV testing and linkage to care: findings from the Yathu Yathu study in two communities, in Lusaka, Zambia

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Background: Adolescents and young people (AYP) aged 15-24 in sub-Saharan Africa face a high burden of HIV. In Zambia, 3.8% of AYP are HIV positive (women: 5.6% men: 1.8%). An HIV and sexual and reproductive health (SRH) intervention, co-designed with AYP, was implemented from August 2019 to September 2021 (Yathu Yathu study).

The intervention offered comprehensive HIV/SRH services including HIV testing to AYP through community spaces (hubs) by peer support workers (PSW). AYP earned points for rewards when they accessed services. We report AYP's experience with accessing HIV services.

Methods: Between March 2020 and March 2021, 32 interviews were conducted with AYP accessing services from the hubs. Of these, 24 were interviews with nine qualitative cohort participants (six young women and three young men - one of each diagnosed HIV-positive through the hubs) each interviewed at least twice and eight with AYP who had accessed services from the hubs at different time periods. The interviews were audio recorded and transcribed verbatim. Data were analyzed thematically.

Results: AYP appreciated accessing HIV testing services through community hubs, and described them as easily accessible, private and confidential. For most AYP, hubs were the main source of knowledge on HIV transmission,

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prevention, treatment, and correct use of condoms. Hubs were also convenient places for HIV testing, and two AYP started accessing pre-exposure prophylaxis after their partners tested positive. AYP's motivation to test was influenced by the need to know their HIV status, which motivated them to take preventative measures: "*I feel nice because I know my status and I know how I can protect myself*".

Other motivating factors included earning points for rewards, and encouragement from pre and post-test counselling offered by PSWs, *"...even if they (results) are positive, I can do this"*. The PSWs facilitated linkage to care for newly-diagnosed HIV-positive AYP. Although limited to siblings, parents and partners, HIV status disclosure facilitated partner testing and linkage to care.

Conclusions: HIV testing services offered through PSWs in community hubs are acceptable to AYP. Community-based HIV interventions are a useful source of information, promote uptake of HIV testing and facilitate linkage to care.

EPD233
Mobilizing key populations (KP) in demand generation of HIV services and community-led monitoring (CLM) through community journalism: the Ripples experience

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Background: The "Ripples" online newsletter serves as an echo chamber of best practices in HIV service delivery and advocacy, especially in response to the COVID-19 pandemic where information sharing and community mobilization are critical.

Initiated by LoveYourself in 2020, the monthly newsletter has engaged over 70 contributors, including KPs from the Champion Community Centers network, and other advocacy groups and individuals, to produce and publish 14 issues with an average of 10-page-worth of news and feature stories per issue.

Description: As a community publication, Ripples covers a wide range of topics from community responses to regional and nationwide initiatives addressing the HIV and AIDS epidemic. Its coverage also includes topics with intersectionalities with HIV and AIDS like mental health, trans health, LGBTQIA-related issues, and women empowerment.

Aside from news and feature articles, community insights and human interest stories are delivered through literary, artworks, and opinion pieces. The online newsletter currently reaches 400-800 online readers monthly across the Philippines. It has also been receiving 20-30 reads daily with an average 5-minute reading time.

Lessons learned: Community journalism allows exploration of community issues in greater depth and context, and encourages active participation of community members in monitoring local activities. Through Ripples, community activities were documented, shared and recognized which we saw are integral motivating factors in increasing community participation in nationwide activities and in strengthening their collaboration with government and other local partners.

Trust and confidence are what drove high participation in the development and management of the online newsletter. Continued consultation and mentoring activities also encouraged greater ownership of the community publication among contributors. For some, sharing stories through Ripples has also become therapeutic amidst the pandemic and their HIV status.

Conclusions/Next steps: Government and community organizations should explore community journalism as both a demand generation strategy and a community-led monitoring mechanism.

This would imply focus on also enhancing the documentation and social marketing skills of community workers, not just on HIV service delivery.

Strengthening knowledge sharing and management initiatives, especially at the community-level, is equally important. Advocacy workers can collaborate with media and art institutions to diversify content and get greater amplification on these platforms.

EPD234
Thandizo mobile app: improved ART adherence, knowledge and leadership among young people living with HIV in Malawi

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Background: The Thandizo mobile app supports community health volunteers (CHVs) in their consultations with young people living with HIV (YPLHIV) to identify risk factors for non-adherence to antiretroviral treatment (ART). Based on the outcomes, CHVs provide personal advice through animation videos and refer YPLHIV to services.

Additionally, the app helps facilitation of group sessions and provides information, e.g. through a quiz. Thandizo was developed in 2018-2019 based on research and through co-creation. It was piloted (2019-2021) in Chikwawa and Mangochi districts, Malawi.

Methods: In 2021, a qualitative study was conducted including eight focus group discussions with randomly selected support group members (48) and CHVs (12). In-depth interviews with YPLHIV (8) and key informants (5) gave a deeper understanding on the outcomes of Thandizo. Quantitative health center data was analyzed for triangulation.

Results: Thandizo improved ART adherence among YPLHIV and most defaulters were brought back to care with successful retention. "The number of youth that were defaulting was on the rise and that's when they brought in the app. In the support group we managed to return

them to ART", said a female support group member. Health centers saw numbers of young defaulters drop from 476 (2019) to 96 (2021).

The safe space in support groups, which saw their numbers increase from 395 (2019) to 1440 (2021), helped young people to live a healthy life with hope for the future. The app helps YPLHIV to deal with stigma and increase their knowledge, skills and confidence. During co-creation, young people identified CHVs as administrators of the app. More confident, they now feel young people themselves should have a leading role.

External challenges persist. Stigma, especially by families, remains. Referrals to nutrition services are not possible, as no such services are available. Through economic empowerment, some support groups try to address this gap.

Conclusions: The safe space and sense of belonging offered by support groups, in combination with the attractive way in which the Thandizo app offers a learning experience, enhanced treatment adherence, knowledge and quality of life. In upscaling to other districts and countries, young people should be considered to administer the Thandizo app.

EPD235

Mobilization of transwomen cultural groups through festivals for gender affirmative services to enhance HIV screening in Pune, India

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Background: In India, the HIV epidemic is heterogeneous, with the Key Population Groups being the most vulnerable. Maharashtra is one of the top ten states with the highest HIV prevalence (0.36%), the highest estimated number of PLHIV (3.96 lakh), and the new infections in 2019 is 8.54 thousand. With a prevalence of 3.14 percent, transgender individuals are one of the most vulnerable groups to HIV.

A study undertaken by the National AIDS Control Organization indicates that 70% of Transgender people primarily engage in sex work and 71% face stigma in healthcare settings. The movement of transgender persons from various regions to Pune and Mumbai is significant, as Maharashtra is a prominent center for them to earn a living. Transwomen Population in Pune, Maharashtra forms various cultural groups including Hijra, Jogti-Jogappa and Aradhi. All these cultural groups celebrate certain tailor-made festivals.

Methods: This exploratory assessment aimed to explore the ways to enhance HIV screening through transwomen cultural festivals. Transwomen of varied cultural groups were approached through purposeful sampling after developing rapport at festivals in Pune.

The 10 focused group discussions were conducted between August 2021 and December 2021 with transgender people aged between 22- 52 years and were translated and transcribed.

Thematic analysis was done after developing codebook inductively. The key themes emerged were preference for non-HIV services and low-cost Gender Affirmative Services.

Results: Most of the participants were disheartened about discussion around HIV and emphasized on their non-HIV needs and underserved status. Based on the findings, a model was framed through linkage networks for subsidized/insured Gender Affirmative Services and festivals acted as the mobilization point.

Transwomen cultural festivals in India are not much explored, yet an easy point to reach the underserved individuals who are in dire need of low-cost gender affirmation. HIV testing as a mandate for any surgical intervention enhanced the HIV screening in this community.

Conclusions: The policymakers and implementing agencies need to be accountable at systemic level for better enforcement of Transgender Protection Act, 2019 and ratified human rights treaties through provision of subsidized or insurance-covered Gender Affirmative Services which can be integrated with HIV screening in unreached high-risk people.

EPD236

Theatrical performance as a potential tool to identify stigmatizing encounters and build community trust among PLWHA

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Background: Stigma is the result of negative cultural norms, values, and exclusionary practices toward individuals with multiple intersectional social identities and which affect negatively myriad areas of life and wellbeing. HIV-stigma may manifest as mistreatment or negligent provider behaviors in their interpersonal interactions with patients/clients.

Herein we introduce performance-based techniques to learn about and address HIV-stigma through.

Description: We held 10 sessions of performance exercises with 15 self-identified men in order to identify best strategies to spark affirmative discussions about what

1. Characterizes stigmatizing encounters, and
2. Support each other through community building and trust.

The sessions were held over zoom and included 2 sections of warm up, exercise, and discussion. Our goal was to build on existing theatre methodologies for community building and self-healing. During the sessions, participants engaged in acting out scenes and guided meditation to explore instances of HIV stigma they have experienced in their lives.

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Lessons learned: We collected interview data from participants to gauge if sessions built community trust and helped them identify HIV stigma in their lives. Some highlights of these lessons come from the participants musings, "As someone who is recently diagnosed, I feel stigma but these performance things helped me be calmer," or "I understand how stigma is grown from within and not external." We learned that the capacity of community building that comes from theatrical exercises was especially important for a group of otherwise strangers. The exercises helped them to bond, support each other, and to ultimately feel more empowered to confront stigmatizing situations in the future.
Conclusions/Next steps: We have developed a comprehensive performance method that when implemented in community health settings transform HIV stigma by initiating affirmative discussions about what counts as a stigmatizing encounter. This occurred through theatrical scenarios that spurred a conversation among participants about HIV stigma in their lives. Additionally, through meditative and mindfulness exercises, participants were able to reflect on the structural and social conditions surround those encounters as they experienced them internally. These new theatrical practices can help healthcare providers tackle stigma and ultimately to create improve the quality of the lives of those affected by stigma.

EPD237

Accelerating Viral Load Suppression among HIV positive children using a pairing approach in South Western Uganda

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Background: Despite significant gains Uganda has made towards HIV diagnosis and treatment, viral load suppression (VLS) among children remains unacceptably low. Data from Ministry of Health indicates that VLS among adults is performing better compared to children. Accordingly, VLS among children increased from 36% in 2016 to 48% in 2019 and fell far short of 2020 targets.
USAID's Keeping Children Healthy and Safe (KCHS) is a five-year consortium project aimed at preventing new HIV infections, reducing vulnerability and building capacity for lifelong ART
Description: USAID's Keeping Children Healthy and Safe (KCHS) is a five-year consortium project aimed at preventing new HIV infections, reducing vulnerability and building capacity for lifelong ART. Managed by TPO-Uganda KCHS is implemented in partnership AVSI, REPSSI, ACORD supporting up to 64,910 children during the first year across 17 districts in South Western Uganda. Signing and implementing joint MOUs with health facilities, clinical partners has given birth to a Pairing Approach that harnesses social workers and clinical staff capacities by jointly offering household-tailored services during home visiting: Intensive Adherence Counseling (IAC), clinical management, psychosocial support, child protection services, emergency food distribution aimed at addressing suppression barriers.
Lessons learned: Viral load suppression among children has consistently improved from 78% in quarter 1 of 2020 to 89% in the second quarter of 2021, to 90.3% in quarter 3 of 2021. Out of 4,725 children whose viral load was monitored in Quarter 3 a total of 4,265 were virally suppressing. The project has intensified follow up of the remainder 460 children with non-suppressed viral load status using a pairing approach.
Conclusions/Next steps: Strong collaboration between KCHS as a community OVC mechanism with health facilities and clinical partners has created enabling environment for achieving HIV prevention, care and treatment targets among children living with HIV since it enhances delivery of comprehensive package of services for vulnerable households where care is need most.

EPD238

Research as resistance:Struggle songs in community-based research with South African HIV-affected adolescent advisors

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Background: South African anti-apartheid protest songs were sung by activists and HIV-positive choirs to advocate for the implementation of a national anti-retroviral therapy programme. The use of song can create 'political alternatives' to the present, express difficult-to-articulate views, and offer a joint language to activists and researchers. We explore the use of song in HIV advisory activities with HIV-affected adolescents.
Methods: A long-standing group of adolescent advisors in the Western Cape of South Africa (n=16, ages 15-27) recruited from a longitudinal study of AIDS-affected children developed a musical theatre performance to reflect on their experiences of 12-years of HIV advisory activities.
Results: Participants re-wrote and performed struggle songs that had been used to advocate for HIV medicines by the Treatment Action Campaign (TAC). They conveyed their experiences of involvement in research through enacting a TAC-style support group, singing Senzeni Na 'What have we done?'. This song rhetorically asks 'What is our sin?' 'Is it AIDS'?
The second song, Jikelele ('Globally'/'Everywhere') was re-written by TAC and deployed to advocate for global access to the prevention of mother to child transmission. It was re-written by participants to describe the global nature of their involvement in research.

The third song, Nkosi Sikelela iAfrica was deployed to convey their desire to ameliorate the conditions of other young people on the continent. Historically, this song was engaged as a cry for change, unity and strength to fight oppression.

Adolescent advisors built upon the Treatment Action Campaign's approach of deploying 'culture as intervention' to interpret and share their experiences of participation in HIV-related research.

In (re)deploying struggle songs, they communicated that they understood their participation in research as a form of resistance to contemporary social and structural forms of oppression. They situated the issues on which their research is focused within ongoing histories rooted in apartheid, colonialism and the HIV-epidemic.

Conclusions: Through re-writing and singing songs, they demonstrated agency and suggested that the HIV research encounter is, and should be, a space of solidary and resistance.

This process of engaging song allowed for new meanings in the research encounter to be created, articulated and shared.

EPD239

Positive Living Program: a land-based support program to the Two-Spirited people living with HIV amid the COVID -19 in Toronto

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Background: 2-Spirited People of the 1st Nations is a community-led organization of the Two-Spirited communities of the First Nations, Metis, Inuit, who are living with or at risk for HIV and related co-infections in Ontario.It is providing a land-based comprehensive package of HIV Self -Testing, Treatment, and Care and Support.

Positive Living Program is a holistic program designed to cater to Urban 2-Spirited communities affected by AIDS. This program was started in early 2020 April when COVID – 19 hits hard the country.

Description: The Positive Living programs have 5 components that service the immediate needs of the Urban Two-Spirited communities,

a. Food for Positive Living,

b. Technology of Positive Living – monthly telephone, internet, and phone and tablet support along with tech support on zoom,

c. Transportation for Positive living,

d. Bed bug free Sleeping for Positive Living,

e. Sweat Lodge and Talking circle for Positive Living.

As of December 2021, 1800, warm meals, 550 phone and tablets, 1200 TTC pass, Presto cards, and TTC tickets, 25 beds, and mattress were provided. 160 community members attended sweat lodges and sharing circles.

Lessons learned: A significant number of the Two-Spirited Urban indigenous communities are living in extreme poverty and unemployment due to the systematic barriers, strong stigma, and discrimination. Due to the technological illiteracy and inaccessibility, most of the members were struggling to navigate services amid the COVID-19 pandemic. Once the program was rollout, significant numbers of the community members reach out to the agency for the service.

When those programs were initiated, community the service utilization rate has been increased by the 400%. From this project, we learned that land-based teaching and need-based services increase the service utilization rate. As a result, the intervention rate of HIV/AIDS and STBBI has been increased significantly within the two-spirited communities.

Conclusions/Next steps: Learning from the Urban project, we are going to conduct a need assessment among the Two-Spirited Communities who are affected by AIDS across Ontario.

Based on the inputs and suggestions, we are going to scaling up the Positive Living program along with the HIV Self-Testing and enrolment to treatment cascade to meet the universal target of ending AIDS by 2030.

EPD240

Integrating sexual health, HIV/AIDS prevention, control and patient support in faith communities: a fast track cities project in the United Kingdom

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Background: 47% of the UK population identify as belonging to a faith community. However, testimonies of PLWHIV confirm that HIV and sexual health remain unspoken subjects in faith communities.

Year 1 and 2 project aimed at faith leaders driving awareness and acceptance of HIV-related issues whilst also improving pastoral support for PLWHIV within their respective communities in London.

Description: Faith Works is a 3-year project funded by NHS Fast Track cities UK, conducted across London by Africa Advocacy Foundation (AAF), Jewish AIDS Trust (JAT) and NAZ. Using quality improvement (QI) models in 2020 and 2021, we conducted a root cause analysis using fishbone (Figure 1) to determine HIV/AIDS and sexual health challenges within faith settings.

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Social media platforms were used;
https://www.facebook.com/FaithWorks-London;
https://e-voice.org.uk/faithworks/
https://twitter.com/2020FaithWorks
for promoting health messaging in the conditions of lock-down and COVID-19 pandemic.
Furthermore, we drew from experiences of 6 Community Champions (PLWHIV) to design the training agenda. We carried out; one focus group discussion; 15 zoom meetings with purposively selected faith leaders; sent emails; made telephone calls and 16 virtual or in person training using applications such as Mentimeter and Jumboard

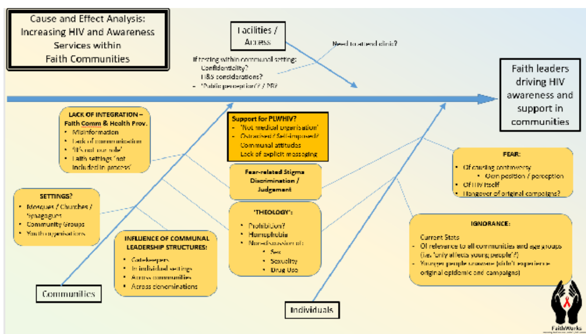

Figure 1. Faith Works project fishbone diagram for integrating HIV/AIDS and sexual health in faith communities.

Lessons learned: Persistence and experimentation with multiple approaches facilitated relationship-building and increased response rate from10% in October 2020 to 75% in October 2021. Social media engagement yielded 200 views via face book. 60 new contacts across the three religious communities were established. Using jumboard and mentimeter two themes emerged 1) Tackle HIV stigma , 2) Improve faith leaders' knowledge about HIV and sexual health.
Conclusions/Next steps: Accessing faith leaders, especially during the COVID pandemic, proved exceptionally difficult. Flexibility; personalising approaches for clients; development of cultural and theological insight and input into training settings for clergy achieved greatest impact. Public health should leverage relationships built with faith settings to influence HIV and sexual health education. Moreover, HIV and sexual health should be embedded into clergy training.

EPD241
Developing a training curriculum to build capacity in quantitative data analysis and interpretation for peer researchers

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Background: People living with HIV have been trained as peer researchers and have played a key role in the HIV response for decades. However, they are often less engaged in quantitative data analysis and interpretation, limiting their ability to take part in research studies.
To build capacity in these areas where peer researchers are less engaged, we designed and implemented an eight-week online training course teaching fundamentals of quantitative data analysis and interpretation.
Description: Eight peer researchers that were hired as part of the People Living with HIV Stigma Index team from British Columbia, Alberta, and Ontario participated in the training course. The course took place from February to March 2021 and the format involved 2-hour synchronous online lectures with time for group discussion and weekly homework assignments.
Key topics included research data terminology, asking analyzable research questions, understanding the data analysis process, statistical significance, interpreting visual representations of data, developing and delivering a research presentation, and knowledge translation skills. Focus groups were held and a 16-item pre- and post-training self-assessment survey was conducted to evaluate the training.
Lessons learned: Peer researchers' self-assessed knowledge and understanding of key training concepts significantly improved (Wilcoxon signed-rank tests; $p<0.05$) over the duration of the training. Focus groups revealed that peer researchers felt they gained the skills required to better understand quantitative research findings and developed the confidence to explain findings to community partners and study participants. The training also helped them to incorporate their existing lived experience into the data which brough the research findings to life and made them more relatable.
Conclusions/Next steps: Meaningfully engaging people living with HIV in all aspects of research will require building capacity in quantitative data and statistical analysis. Our training curriculum provides a template for research teams to utilize and adapt to build capacity in these areas of research in an engaging and easily accessible way.

EPD242

Improving acceptability, accessibility, feasibility and the uptake of sexual and reproductive health (SRH) services amongst young people through community safe spaces methodology

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Background: NACOSA's Adolescent Girls and Young Women (AGYW) Programme implemented in schools, higher education and communities in South Africa seeks to increase retention in school, decrease HIV incidence, teenage pregnancy, gender-based violence and increase economic opportunities. The National Adolescent and Youth Health Policy 2017 prescribed Adolescent and Youth Friendly Services to improve the quality of care for adolescents and youth.

The Programme has established adolescent-friendly community safe spaces to scale the uptake of SRH services, bridge accessibility, and acceptability barriers, which were threatened by the COVID-19 pandemic. These were essential during lockdown restrictions when health system's resources were prioritising COVID-19 responses.

Description: Community-based interventions have been a great resource in ensuring continuity of SRH provision during the COVID-19 pandemic where the health system was overwhelmed. Safe Spaces increased the number of decentralised points that offer adolescent HIV prevention Programmes.

Leveraging on local infrastructures, Safe Spaces were set up in HIV high-burden areas in Tshwane 1, Rustenburg, and Klipfontein sub-districts.

Safe Spaces provided home work support, psychosocial support, skills and empowerment, an opportunity for peer engagements, socialisation and importantly SRH services to AGYW.

Lessons learned: Based on the 54272 AGYW that were tested for HIV, with 3048 receiving contraceptives, 5955 AGYW received PrEP, 14432 having received sanitary packs, community-based interventions seem to be acceptable and accessible to AGYW.

There is an opportunity for intersectoral partnerships with government departments to scale SRH services and Programmes in Safe spaces. Integrating activities such as art, gardening projects attracts AYP to Safe Spaces.

Having ambassadors and influencers also improved the demand for services and peer engagements. Smaller Satellite Safe Spaces, also widely improved physical access.

Conclusions/Next steps: Engaging parents and guardians of young people, promote further acceptability and advocacy of Safe Spaces in communities.

Expanding behavioural structured services to include Vhutshilo 3, Grassroots Soccer, Stepping Stones, OVC support and integration of activities that respond to the needs of adolescents boys and young men. Implementing Comprehensive Sexuality Education in primary and secondary school, to improve access to SRH information. Lastly, increasing mobile clinics to ensure frequency at Safe Spaces, expanding working hours.

EPD243

Leveraging social welfare scheme in improving accessibility of ART among PLHIV- Lesson learned from Vihaan Program

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Background: In India, estimated PLHIVs are 2.3 million. These PLHIVs and families are in poor economic conditions due to reduced labor capacity, discrimination, fear of breach confidentiality, and increased medical expenses. These factors put the families or individuals at higher risk and exclude them from essential services. The low socio-economic strata of the PLHIV community affects the country's retention level towards ART.

To address this problem government employs social welfare and protections schemes to mainstream the PLHIV community as well as increase their ART retention. However, due to a lack of knowledge or essential documentation, the PLHIV community is not getting the available services.

Description: Vihaan care and support center (CSC) implemented across India is funded by GFATM and supported by NACO. The CSCs provide the following services such as counseling, support group meeting, and social protection (SP) camps to increase the knowledge among PLHIV for schemes. In all CSCs help desks were set up to facilitate the linkage of SP schemes for eligible PLHIV, referrals, and linkages made.

As a result, from April 2020 to March 21, a total of 89,449 clients were linked to various social protection scheme that includes financial protection, treatment and health check-up, education, policies regulations, and legislative support to PLHIV free of cost. Among the 89,449 clients, total male (45%), female (44%), Transgender (1%), children (11%) benefitted by the CSCs.

Lessons learned: Social protection and welfare are identified as a tactical priority in epidemic response and helping to alleviate the reverse impact on communities, households, and individuals. The social protection scheme tackles the insecurity by protecting PLHIV for being vulnerable, improved accessibility of ART along quality of life by contributing to livelihood. Improved socio-economic status helped the community to bring them in mainstream and increased adherence to ART, viral load suppression.

Conclusions/Next steps: Linkages with social welfare and protections schemes can lead to bringing all the PLHIVs in mainstream and decreasing the cases of stigma, discrimination, and AIDS-related deaths.

Further, these social protection schemes can be expanded to PLHIV and other Key populations with HIV-sensitive elements in India.

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EPD244

Community-led screening of depression among HIV-positive women in the EECA region

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Background: The purpose of the study is to explore the prevalence of depression among HIV-positive women in the EECA region and relationship of depression with physical health problems and life circumstances. Hypothesis: depression is a real problem for the mental, physical and social well-being of HIV-positive women, however depression is invisible and ignored.

Methods: Two standard scales were used to screen depression through online questionnaire:

- Patient Health Questionnaire - 9,
- Zung Self-Rating Depression Scale.

The rapid assessment also considered two types of depression in HIV-positive women - maternal (postpartum) depression and suicide attempts as the most severe complication of depression. Inclusion criteria: HIV-positive, live in a country in the EECA region, expressed a voluntary, informed consent to be screened and share their stories.

Results: 720 HIV-positive women from 11 EECA countries took part in an online depression screening survey. Approximately half of the respondents have been living with HIV for more than 10 years (47.4%), from 5 to 10 years (23.3%) and from 1 to 5 years (24.6%).

Most of the participants do not have a diagnosed mental disorder (68.8%). One third of the respondents had been diagnosed with depressive (16.2%), anxiety (12.6%) or other disorders (2.3%) at least once.

According to the Patient Health Questionnaire - 9, about one fifth of the respondents have signs of moderate depression - 10 or more points, which corresponds to the "yellow flag". More than a third of the respondents noted signs that correspond to the "red flag" - moderate depression (15.7%) and severe depression (12.8%).

According to the Zung scale for self-reported depression, 5.4% of respondents have signs of subdepression or masked depression, about a fifth of the respondents - a mild form of depression (20.9%). The majority of women (81.7%) do not seek help for depression.

Conclusions: At least a quarter of the survey's participants have experienced depressive episodes of varying severity. Most of the respondents are in a state of mental distress, which can contribute to the development of severe forms of depression.

Particular attention and response should be directed to maternal depression and suicide attempts as the most severe complication of depression.

EPD245

Comparison of knowledge on HIV/AIDS and STIs and practices among in- and out of school young people in Acholi and West Nile sub-regions

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Background: Uganda currently has at least 1.4 million people living with HIV with an estimated 23,000 Ugandans dying of AIDS-related illnesses annually. Young people especially young women 15-25yrs are disproportionately affected with HIV prevalence being almost four times higher than among young men of the same age. Disturbingly HIV prevalence in Uganda still stands high at 6%, despite the high prevalence of risky sexual behaviours. This necessitated a study of the knowledge, attitude, and practices (KAP) on SRHR/GBV among young people.

Methods: A household study based on a mixed-methods approach was conducted between June-October 2021 to establish the KAP on SRHR/GBV among young people.8,021 young people aged 10-24 years, in and out of school were sampled and surveyed across 18 districts in West Nile and Acholi sub-regions.

Results: The study revealed low knowledge about HIV/AIDS/STIs among the 10-14 years (15% in-school and 16.7% out of school) compared to 15-24 years (42.5%). [H1] This is significantly low compared to 50% of out-of-school & 32.8% of in-school young people who had comprehensive knowledge about HIV/AIDS nationally (UDH, 2016)

Further, only 5% of the 10–14-year-olds and 47.3% (49.0% of male and 45.5% of female) of 15–24-year-olds mentioned at least two signs and symptoms of other STIs among men or women.

Further 1.7% (10-14-year) and 38.4% of adolescents (15-19 years) and 83% of young people 20-24 years have ever had sex. 55.8% of these had had sex at less than 18 years while 61.7% of those that have ever had sex had it in the past four weeks.

Unacceptably, 27.5% were coerced into their first sexual act. Only 37.9% (34.0% among in-school and 41.7% out of school) believed that it is alright for parents to hold open discussions about sex with their children.

Conclusions: The results suggest significantly low levels of knowledge about HIV likely a signal of lack of interventions and/or weak packaging of running interventions. Specifically, weak exploitation of the school platform that reaches more young people is noted.

More interactive, informal, and age-appropriate strategies are necessary to increase knowledge of particularly the very young adolescents.

EPD246

Church-based HIV Care among U.S. Blacks: Challenges and lessons in the era of COVID-19

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Background: Church-based HIV interventions are a promising strategy to increase HIV awareness in high-risk Black communities. HIV care delivered by Community Health Workers (CHWs) has also been shown to increase HIV awareness and HIV screening uptake in diverse Black populations. In Miami-Dade County, a U.S. HIV epicenter, our established CHW team has established robust ties with local churches.

To expand HIV support in Miami's Black neighborhoods, our CHW team partnered with two historically Black churches to develop the Prevent & Reduce AIDS Infections through Spiritual Empowerment (PRAISE) study.

Description: In this pilot research, our street-based CHWs sought to train congregants to function as church-based CHWs, providing community members with HIV education, screening, and care linkage. Following study set-up in March 2020, the coronavirus pandemic emerged; both church partners ceased in-person services and substantial study design changes were made.

For the duration of the research, only one church congregant provided in-person services while the majority of activities were modified to occur through contactless interactions. In-person screening requests were replaced with a secure online submission form.

Community members completed a web-based request or used direct social media messaging to order free, same-day HIV screening. Within 30 minutes of each request, CHWs contacted participants to schedule contactless delivery of a home-based HIV testing kit. CHWs then used cellular-based visual conferencing applications (e.g. FaceTime, Zoom) to provide pre- and post-counseling, test administration support, and if needed, linkage to care.

Lessons learned: From June 2020 to January 2021, 1,571 people engaged in online HIV education and 100 individuals completed HIV screening. Most participants were Black (n=95) females (n=62), and the average age was 35-years-old. Nearly 70% of participants had condom-less sex in the past 12 months and 83% had prior experience with HIV testing. No participants tested positive.

Conclusions/Next steps: Despite coronavirus-associated limitations, PRAISE successfully adapted CHW services in a time of crisis. Effectively translating in-person strategies to contactless approaches was largely due to a resilient CHW team and unwavering support from church partners.In difficult times, when access to care is challenged, CHW interventions can serve as an adaptable, efficacious approach in the communities of greatest need.

EPD247

How are we doing? Using client satisfaction surveys to strengthen the quality of HIV care and treatment services among PLHIV in Zimbabwe

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Background: People living with HIV (PLHIV) are better retained in antiretroviral therapy (ART) care when they receive high-quality services meeting their needs. To support quality improvement initiatives, ZNNP+, designed and implemented monthly client satisfaction surveys (CSS) among its members in 15 districts of Zimbabwe. Information collected through the CSS was analyzed and used to strengthen client-centered services within public health facilities.

Methods: There were 315HIV-positive community HIV/AIDS service agents (CHASAs) recruited, trained, and equipped to administer monthly CSSs through a mobile-based application. These CHASAs sampled PLHIV accessing routine HIV services at health facilities or community outreach points and assessed the availability, affordability, accessibility, acceptability, and appropriateness of the HIV care and treatment services they received.

Client satisfaction questions were measured on a 10-point Likert scale with a satisfaction rating ≤5 triggering a probe into the reasons behind the rating.

Concerns raised by the client were recorded for qualitative thematic analysis. Data were consolidated and analyzed descriptively using Microsoft Excel.

Results: Between October-December 2021, 3,911 adults aged ≥18 years were interviewed across 260 health facilities and outreach service points, of whom 2,680 (69%) were female. Services like cervical cancer screening and PMTCT contributed to a higher female-to-male ratio.

The majority (92%; n=3,598) rated services as very good and good, 8% rated them as average, bad, and very bad. Among the 8% (n=313) reporting dissatisfaction, their reasons were categorized into 6 thematic areas: spent a long time before being served (39%); few staff serving clients (20%); bad attitude from healthcare workers (18%); slow service (9%); limited space/privacy for consultation (9%); late opening (5%).

Overall, satisfaction was better for outreach point users (98%, 597/610), compared to 86 % (2838/3301) for those accessing facilities, p<0.001. Outreach points were mostly rated for limited travel distances although disadvantages cited were lack of privacy, long waiting times, and lack of comprehensive services.

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Conclusions: Routineclient satisfaction surveys can ensure that PLHIV inform service quality improvement through documented feedback for healthcare providers to strengthen client-centered service provision and address challenges that result in reduced retention, adherence, and poor health outcomes.

EPD248

Let me tell you what we want! Qualitative considerations for expanding HIV Prevention using digital strategies among a sample of Black women at risk for HIV in rural America, US

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Background: Black women in the United States are continuously and disproportionately affected by HIV, comprising nearly 60% of incident diagnoses. The Centers for Disease Control and Prevention indicated that half million women could benefit from the use of PrEP to prevent HIV acquisition. Despite this, Black women represent less than 1% of PrEP users. Considerations for expanded biomedical HIV prevention strategies have largely focused on key populations of women in the Western, Southern, and Northeastern regions of the US, effectively omitting women in rural America, US, who are also disproportionately impacted by HIV.

Description: This qualitative study aimed to:

1. Assess Black women's perceptions of knowledge and awareness of PrEP to
2. Inform components of a digital strategy designed to increase Black women's knowledge and awareness of PrEP in rural geographies using the community based organization as a tool for innovation.

Lessons learned: By and large, Black women were unaware of PrEP as a biomedical HIV prevention strategy. Women reported feelings of social disadvantage and being "left behind" other populations who have access to and benefited from PrEP use since being approval for use. Participants advised that any digital strategies aimed at increasing Black women's knowledge and awareness of PrEP should center women's sexual health empowerment and paradigms of sex positivity, and not focus on risk, disease, and fear.

Digital components should include a diverse representation of Black women across age, skin color, weight, and sexual orientation. Multiple engagement platforms should be utilized to disseminate the information to Black women by community based organizations with trusted relationships with Black women.

Conclusions/Next steps: Development of digital marketing and education strategy specific to considerations provided by rural US Black women is currently underway. Results will inform the development of a PrEP focused mobile (m)Health application to bridge the GAP between women's lack of access and rate of utilization in historically underserved areas of the US highly impacted by HIV.

EPD249

Art and creativity focused groups for people living with HIV. Lessons from community-based efforts in Mexico City

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Background: Support groups for people living with HIV (PLWH) have proved critical sharing information developing strong networks and meeting peers. Most of the groups in Mexico City for PLWH take place either inside specialized clinics and other health centers, or are hosted by activist groups and collectives.

The project started by Ofender La Sociedad (OLS) collective is unique in its approach and centers on using creativity and arts as a means of building safe spaces and networks for PLWH and their allies (family members, partners, friends, etc.) The name of the collective alludes to the way certains identities, practices and livelihoods offend a part of the society.

Description: The workshops have opened a space to talk about HIV outside of the medical context, which can at times be intimidating, and have succeeded in invading spaces where talking about HIV and AIDS in groups is relatively new or unseen: museums, art centers, and cultural hubs. Participants, who average 20 to 25 people per group (around 80% of participants identify as male, 15% as female and 5% as non-binary) recognize valuable lessons learned through the group's activities and promote learnings in their own spheres.

The model developed by OLS also opens up the possibility of participants forming their own groups, one of the best examples of this is a group dealing with substance use and abuse for PLWH.

Lessons learned: Using tools from the arts and creative strategies allows PLWH to easily engage in conversation on previously taboo or difficult subjects and provides a common line of communication with their allies. These themes include fears, stigma, pleasure, self-care, with particular attention in the intersection of being Mexican and HIV positive. So far, the work within OLS has ventured into two kinds of workshops: first the themes addressed were explored through drawing, expanding then to include collage and in the last few groups, activities were designed using creative writing.

Conclusions/Next steps: Resulting from the group's work, both an exhibit and fanzine have been produced. Another issue of the zine is already in the making, as is another exhibit besides the next group centered around poetry written by PLWH.

Comprehensive sexuality education

EPD250

The prospects of CSE in HIV/AIDS prevention and treatment in Ghana

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Background: Comprehensive sexuality education is the bedrock of tackling various SRHR issues in the world, but the effort and commitment to seeing it through in Ghana have always been met with backlashes from religious and cultural conservative groups with the caption; "You want to spoil our children". It is worth noting that CSE not only guides young people in and out of school to know about the consequences of various sexual expressions, but also promotes personal development through modules and sessions on communication and negotiation skills, tolerance, and empathy. In 2020, out of 18,928 new HIV infections in Ghana, a total of 5,211 are young people 15 and 24 years, and 83% female, a concern for all.

Description: Many young people are not aware of their rights and cannot access sexuality education and youth-friendly health services, GUSO raised awareness amongst young people of their rights and gave them a voice. As a Youth Champion with the Ghana SRHR Alliance, GUSO adopted varied approaches to advocacy in schools and communities through radio, plays, market visits, forums, capacity building, and special outreaches for instance on Menstrual Hygiene Day.

GUSO was implemented between 2015 to 2020 in Northern Ghana and;

1. 87,263 youth were reached with various SRHR services.
2. 947 young people, teachers, and service providers trained.
3. Over 3.8 million community individuals including PLV reached.

Lessons learned: The lessons included;

1. Working in an alliance and leveraging the experience of other partners helps to create synergy and effectiveness when implementing program activities.
2. Comprehensive Sexuality Education created safer school environments, strong referral systems to trusted counselors and health professionals.

Conclusions/Next steps: In achieving the 95-95-95 strategy to end the AIDS epidemic by 2030, sustainable and integrated efforts are required. For instance, household support is essential to give young people the needed information to make safe choices, and in case of HIV infection, we feel comfortable enough to seek treatment without stigma and discrimination.

For strategy, any sensitive project intervention should directly involve religious and traditional leaders or representatives within the community using empathy as a key tool, allowing them to see the issues from the perspectives of others clearly without judgment.

EPD251

Promising short-term outcomes among adolescent girls and young women participating in Zambia DREAMS

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Background: USAID/Zambia Community HIV Prevention Project (Z-CHPP) is a PEPFAR-funded project implementing Determined Resilient Empowered Aids-Free Mentored and Safe (DREAMS) programming for adolescent girls and young women (AGYW) in Zambia. While DREAMS is built on evidence-based interventions, gaps in the ways in which AGYW benefit from DREAMS activities remain.

Pact conducted an outcomes assessment survey to determine the extent to which the core DREAMS activity- a 13-week HIV education curriculum (Stepping-Stones)-has led to positive immediate outcomes.

Methods: Using single-stage cluster sampling, 2,392 AGYW aged 10-24 were recruited into the study between November 2019 and March 2021. Using a quantitative survey tool, data were collected by 11 randomly selected DREAMS mentors who administered the survey to AGYW at enrollment and at graduation. The tool included measures on resilience, HIV knowledge, and stigma.

Frequency analysis was used to compare distribution of categorical variables among the same cohort of AGYW before and after completion of the Stepping-Stones curriculum.

Results: Results demonstrate an increase in AGYW who reported resilience (i.e., social support and connectedness) from 51% (2,388) pre-intervention to 85% (3,964) post-intervention. Findings also showed an increase in HIV knowledge: 82% of AGYW post-intervention who believed that having multiple sexual partners increases the likelihood of contracting HIV compared to 60% pre-intervention and 94% (2,103) at post-intervention believed that HIV cannot be cured by ARVs compared to 63% (1,424) pre-intervention. Results also showed a decrease in perceived stigma of testing HIV positive from 39% (815) pre-intervention to 24% (509) post-intervention.

Conclusions: DREAMS, particularly the Stepping-Stones curriculum, resulted in positive short-term outcomes among AGYW. Further research will be conducted to assess the extent to which these gains are retained after completing the Stepping-Stones intervention.

Findings from both studies will be used to inform future HIV prevention programming for AGYW aged 10 – 24 years in Zambia.

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EPD252

Applying universal design to learning to ensure access to comprehensive sexuality education for learners with disabilities

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Background: Comprehensive sexuality education (CSE) is essential for young people to develop knowledge, skills, make informed decisions and practice safer sex. However, young people with disabilities (YPWD) lack access to CSE, despite their increased vulnerability to HIV, STIs, unintended pregnancies and violence. The exclusion of YPWD is driven by negative attitudes about their sexuality and disability and lack of skills and tools amongst educators to provide accessible CSE to YPWD.

Methods: We tested the feasibility of implementing the Breaking the Silence (BtS) approach to CSE. BtS aligns with the UN technical guidelines on sexuality education and teaches educators how to apply universal design to learning. We purposely selected one school for the Deaf and one for learners with intellectual disabilities. All staff members were invited to participate in the BtS training workshop and study.

We conducted a school situation analysis, 50 staff KAP surveys with the TSE-Q (validated scales) and key-informant interviews in both schools. We applied descriptive statistics and content analysis.

Results: In the pre-survey participants lacked accessible CSE material, training, and skills to teach CSE. They held misconceptions such as CSE sexualizes children, learners with disability are asexual or over-sexed and cannot learn how to make informed decisions. In the post-survey less educators believed misconceptions, they were more aware of their learners' vulnerabilities and increasingly agreed that their lessons should include information on sexual development, behavior, health and orientation.

Participants reported acquiring new skills and material to build correct vocabulary, talk about sensitive topics (masturbation) and demonstrate complex concepts with concrete material using multiple senses. They also identified opportunities brought by the COVID pandemic to teach about personal space, hygiene, touch, and violence.

Conclusions: Implementing CSE correctly and ensuring that it is accessible to all learners despite ability and disability type requires knowledge, skills and tools to do so. The BtS approach provides simple step by step instructions and tools that can be implemented by educators using local materials. The BtS approach continued engagement with educators attitudes, believes and cultural backgrounds starts to shift to negative attitudes and misconceptions. This shift needs to be strengthened through ongoing support.

EPD253

How Community-Based Participatory Research contributed to the development of Phénix: a sex education program for gbMSM that combines eroticism and risk reduction

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Background: Phénix is an innovative sex education program for cis or trans gbMSM, regardless of their HIV status. Its goal is to teach participants how to better combine eroticism and risk reduction, without compromising on pleasure. It was developed in 2006, in accordance with the steps proposed by Intervention Mapping and based on evidence from studies on the needs and sexuality of gbMSM. The program was revised in 2015-2020 with the participation of communities:

1. Consultations with community organizations, and former facilitators and participants were held to assess the needs of gbMSM and implementation sites;
2. Advisory committees comprised of former facilitators and participants were set up to revise the program's structure, tools and contents,
3. The revised program was implemented in community and clinical settings, and evaluated with the help of the facilitators involved,
4. Based on the results of the evaluation, a final version of the program was created with the collaboration of the advisory committees.

Description: Phénix stands out for its risk reduction approach, which emphasizes sexual pleasure and eroticism. Participants are encouraged to explore their sexual preferences, identify their level of comfort with sexual risks, and create combinations of STBBI/HIV risk reduction strategies that fit the contexts of their sexual activities. Erotic educational videos illustrate erotic skills that participants can integrate into their sexuality. Over the course of the workshops, participants are led to set personalized goals that combine risk reduction strategies and erotic skills to improve their sexual well-being.

Lessons learned: The project has demonstrated the importance of community involvement in every step of the revision and evaluation process, which allowed to develop a program that is effective, appreciated and that meets the needs and realities of communities.

Although Phénix is available throughout Quebec in different formats (group and individual, French and English), program facilitation is subject to the will and capacity of the organizations to offer it.

Conclusions/Next steps: To ensure the sustainability of the program and to render it available to as many people as possible, the next step is to evaluate the acceptability and feasibility of a stand-alone, self-supporting online version.

EPD254

AMAZE global partnerships: development, integration, adaptation, and dissemination of animated, sexuality education videos for young people and digital resources for parents and teachers

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Background: Today there are 1.8 billion young people in the world, and they are more connected through technology than all previous generations. Globally, knowledge of HIV prevention among young people remains low and access to comprehensive sexuality education (CSE) is critical to ensure young people have the knowledge they need to prevent new HIV infections and access treatment. With COVID-19 and the repeated suspension of in-person schooling across the globe, the need for digital resources for CSE has become greater than ever.
The AMAZE initiative seeks to respond to this need and leverage technology with the goal of increasing access to scientifically accurate, age-appropriate, culturally sensitive, gender-transformative, and inclusive sexuality education through short, animated videos that young people can access on their own or through schools and programmes, while equipping teachers with resources to support CSE delivery and parents with materials to encourage sharing of information and talking with their children about sexual and reproductive health, including HIV prevention, treatment, and support.
Description: Launched in the United States in 2016, AMAZE is implemented by Advocates for Youth and YouthTech Health, in partnership with organizations around the world, which seeks to respond to this need. Informed by young people, sexuality education experts, and the International Technical Guidance on Sexuality Education, AMAZE videos address a wide range of CSE topics, such as puberty, relationships, contraception, HIV, sexual violence, digital safety, bullying, sexual orientation, gender identity, and others. AMAZE provides partner organizations interested in using, translating, adapting, or creating new videos with information, technical guidance, and existing assets along with guidance and materials for dissemination through existing programming and digital platforms.
Lessons learned: AMAZE's CSE videos have reached approximately 52 million views, with 500 original, dubbed, or adapted, short, animated videos produced in 35 languages and 55 countries. Best practices include supporting a holistic approach and decentralized model led by local partners with regional and global efforts; meaningfully engaging young people; and developing processes and documentation for scale-up.
Conclusions/Next steps: AMAZE will work to strengthen its scaling-up model, support institutionalization of digital CSE resources with education and health sectors and address new and emerging topics impacting young people's lives.

Couples- or family-centred approaches

EPD255

Kenyan women's preferences, expectations, and experiences with male partner support during pregnancy in the context of prevention of mother to child transmission services

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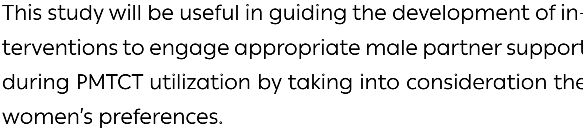
Background: Male partner participation in prevention of mother-to-child transmission of HIV services (PMTCT) influences maternal and child outcomes. While many studies have sought to increase male partner attendance at PMTCT, few studies have evaluated female preferences for and experiences with male partner engagement.
This study assessed how women's preferences for male partner support throughout PMTCT of HIV services compares to their actual experiences with male partner support.
Methods: This was a prospective quantitative analysis nested within a larger cluster randomized control trial at 12 government hospitals in Kenya. All participants were surveyed at PMTCT enrollment, delivery, and 6 months postpartum. Variables in the survey included in this analysis include demographics, a 4-point Likert scale that assessed preferences for male partner support, and experiences of partner support. We used descriptive statistics and proportions to summarize data.
Results: Data from 1,173 women were evaluated. Of these, 1,007 (85.8%) reported a current relationship, 1,023 (87.4%) disclosed their HIV status to at least one person, 761 (65.0%) disclosed to their male partner, and 851 (73.2%) lived with their current male partner.
Among women with partners, the following were indicated as somewhat or very important to them: partner attendance at ANC appts (65.5%), provision of monetary support (87.9%), provision of advice (84.6%), partner help with household responsibilities (58.5%), reminders to take medication (77.8%), and partner encouragement (89.8%).
Among the 734 women who completed delivery surveys, 26.5% of women's partners attended any ANC appts.
Women were supported often or sometimes in the following ways: monetarily (77.3%), advice (62.9%), medication reminders (57.4%), help with household responsibilities (39.3%), and encouragement (70.3%).
Conclusions: Preferences for male partner support varied among women and included components of emotional, informational, and financial support. There is a gap between female preferences and experiences with male partner support.



This study will be useful in guiding the development of interventions to engage appropriate male partner support during PMTCT utilization by taking into consideration the women's preferences.

Future analyses will look at how preferences for male partner support in later phases of PMTCT (i.e. delivery, postpartum) align with actual experiences and how experiences impact retention.

EPD257

Engaging family members to support infant feeding, early child development, and ART adherence is acceptable to families with HIV-exposed uninfected children in Zambia

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Background: HIV-exposed uninfected (HEU) children are at increased risk for poor health, growth, and development compared to HIV-unexposed uninfected children. Family members (including male partners) influence child care and feeding, and integrated family-centered interventions could improve outcomes for HEU children.

We assessed the acceptability of engaging family members to support postpartum women living with HIV (WLWH), with emphasis on ART adherence and infant care and feeding.

Methods: To inform the design of future family-centered interventions in Lusaka, Zambia, we conducted trials of improved practices, a formative research methodology that follows participants over time as they try new behaviors. We enrolled WLWH with infants <3 months of age and their family members.

We implemented an integrated nutrition, early child development, and ART counseling package, and conducted a series of in-depth interviews.

At visit 1, WLWH described adherence, care, and feeding practices. At visit 2, WLWH and family members received exclusive breastfeeding (EBF), early child development, and ART adherence counseling. At visit 3, WLWH and family members reported their experiences trying recommended practices for 2-3 weeks. Interview transcripts from each visit were analyzed thematically using Atlas.ti.

Results: Participants included 20 WLWH, 15 male partners, and 8 female family members. WLWH reported several barriers to EBF, the most common were concerns about insufficient breastmilk and fears about vertical HIV transmission through via—even with high ART adherence. This resulted in infrequent breastfeeding and mixed feeding.

Participants expressed appreciation about the counseling they received. Family members valued the opportunity to participate in counseling sessions and described improved knowledge about infant care and feeding support.

After counseling, most family members reported increased confidence to support EBF and early child development, and greater participation in responsive caregiving. This was confirmed by the index WLWH. Family members reported supporting ART adherence through reminders and encouragement.

Conclusions: Families with HEU children need tailored support. In this context, engaging family members to support infant care and feeding and ART adherence through an integrated counseling package was found to be acceptable. Family-centered approaches to support postpartum WLWH and HEU children are promising and should be considered for further evaluation.

EPD258

Mbereko+Men - partners for PMTCT! impact of male partner engagement on maternal mental health and care-seeking in rural Zimbabwe

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Background: Male partner involvement is associated with increased uptake of prevention-of-mother-to-child-transmission interventions. Mbereko+Men is a low-intensity, community-based program that engages women and men in separate, complementary activities to improve men's practical support for women and babies to increase care-seeking and maternal mental health.

Our objective was to explore the impact of Mbereko+Men and male involvement upon maternal mental health and health service uptake in rural Zimbabwe.

Methods: We conducted a cluster-randomised controlled pragmatic trial. Data were collected through two independent cross-sectional surveys before/after intervention or standard-care in communities of 8 rural health facilities in Mutasa District, Zimbabwe. Survey participants were women who had given birth within the previous six months and their male co-parents.

The primary outcome was women's mean score on the locally-validated Shona-language version of the Edinburgh Postnatal Depression Scale (EPDS), with cut-off score ≥12 for clinically significant symptoms of anxiety and depression. Data analysis was conducted using Stata 15.1. Models were adjusted for age, education, and number of pregnancies (for women) or number of children (for men), and clustering effects, with significance-level of p<0.05.

Results: From April-May2016 and Oct-Nov2017, 890 women and 315 male co-parents were interviewed. At endline, women's mean EPDS was 3.5/30 (95% CI 2.8-4.2); 8.9% (95%CI 6.1-12.8) had an EPDS≥12. Women's characteristics associated with EPDS≥12: HIV-positive status, intimate partner violence in previous 12 months and primipara.

Male partner behaviours and attitudes significantly associated with women's mean EPDS score: men sometimes/usually participate in ANC; men sometimes/usually hold/soothe baby at night; men's use of violence against intimate partner in previous 12 months (women's report) (worse EPDS); help obtain/prepare special food postnatally.

Decline in mean EPDS was 34% greater in the intervention arm compared to the control arm (aRR 0.66; 95% CI 0.48–0.90, p=0.008), with significant increases in early ante- and postnatal care and couples HIV testing.

Conclusions: We demonstrate the impact of male co-parent involvement on maternal mental health and care-seeking. Low-intensity gender-synchronised interventions to engage women and men can be effective to improve maternal mental health and care-seeking in the context of gender inequality and demand-side barriers to care.

EPD259

The feasibility and acceptability of engaging the brothers and sisters of Latinx gay men (LGM) to promote PrEP use

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Background: We explored the feasibility and acceptability of engaging the siblings of Latinx gay men (LGM) in the promotion of PrEP to prevent HIV infection.

Family ties affect Latinx people's physical and mental health and can be leveraged in health interventions, but this resource has been overlooked for LGM. This study sought to address the dearth of HIV-prevention family-based interventions for LGM by focusing on sibling relationships. We answer the question: Can the siblings of LGM be engaged to promote PrEP as a strategy for HIV prevention?

Methods: We used a mixed methods design and we used the Information-Motivation-Behavioral Skills and Stages of Change models to create instruments. We conducted surveys and dyadic interviews with LMSM-sibling pairs (n=31) and three focus groups only with the siblings of LMSM (n=20) in Los Angeles *between March 2020 and January 2021.*

We explored how study participants described, interpreted, and understood their experiences of sibling support; how open they were to talking about HIV PrEP and sexual health; and how siblings might support LGM PrEP use.

Results: We enrolled 31 sibling pairs. We found:

1. *LGM can be motivated by their siblings to take PrEP.* Twenty-two (71%) LGM reported that they would take PrEP if it would make their sibling worry less about them and five (16%) started using PrEP after the interviews.
2. *Siblings are willing to provide instrumental and emotional support for PrEP use.* They were willing to go to the doctor with their LGM brother and remind him to take a pill every day. Nineteen (95%) siblings in the focus groups reported that they would take PrEP if it would help their brother get started.

Conclusions: The siblings of LGM can be engaged in PrEP promotion. To engage siblings, we recommend:

1. Create dissonance in siblings;
2. Empower siblings to talk about PrEP, not sex;
3. Clarify misconceptions around the side effects of PrEP, and;
4. Create informational materials specifically for siblings.

EPD260

Fatherhood and engaging men in Maternal, Neonatal and Child Health (MNCH) services in South Africa

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Background: In South Africa, uptake of HIV services remains lower amongst men compared to women, resulting in poorer clinical outcomes. Several factors contribute to this situation, including stigma, confidentiality concerns, inconvenient clinic operating hours, fear of an HIV-positive test result, and long-waiting times. Additionally, women living with HIV are frequently identified whilst attending other routine services, particularly antenatal and well-baby care. Novel approaches and strategies are needed to increase men's routine utilization of health services. For many men, fatherhood is an important part of being a man. Maternal, neonatal and child health services (MNCH) present an opportunity to improve male engagement with routine health services and subsequent uptake of integrated HIV care.

However, men's involvement in MNCH services remains low. This study explored the concept of fatherhood and factors influencing men's involvement in MNCH services.

Methods: This was an exploratory, qualitative study. Three focus group discussions (FGDs), involving 33 male participants, were undertaken to collect data from men living in communities across Johannesburg. Men were recruited from local communities by male peer counsellors, employed by Anova Health Institute under the men's health programme. Data was transcribed and analysed thematically using NVivo software.

Results: The study found that the male participants were eager to be involved in MNCH services. They valued fatherhood and were making concerted efforts to be involved fathers. However, multiple factors influenced men's involvement in MNCH services. Barriers included sociocultural norms, employment commitments, boredom and disengagement while waiting for services, negative staff attitudes and long waiting times. Participants identified multiple facilitators that would encourage their attendance at MNCH services including: positive staff attitudes, quick service, active engagement, positive affirmations by health care workers (HCWs) and the visibility of male HCWs' in MNCH spaces.

Conclusions: The study highlights that men strongly desire to be involved fathers and included in MNCH services. HIV programmes should support and harness this to actively engage men in HIV services.

However, to encourage greater men involvement in MNCH, socio-economic and healthcare system related factors need to be addressed when designing strategies that would create more inclusive, family orientated, male-friendly and integrated MNCH services.

EPD261

Comprehensive family centered case management of children of sex workers: lessons learnt from the USAID supported OVC Children Tariro Program in Mutare District, Zimbabwe

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Background: Little attention has been drawn to the reality that sex workers are often parents whose children potentially face HIV vulnerabilities unique to their family situation. The USAID funded FACT OVC program seeks to contribute to the epidemic control by enhancing HIV and GBV prevention, care and treatment services to most at-risk sub-populations in selected districts of Manicaland and Masvingo Provinces from October 2020 to September 2021.

Description: FACT Zimbabwe implementing the OVC program targeting specific sub populations with highest risk to HIV such as children and adolescents living with HIV< 18 years; children of adults living with HIV at risk of treatment interruption; children of female sex workers (especially sex workers living with HIV); and survivors of sexual violence. In order to identify and address the unique vulnerabilities to HIV of children of sex workers, case management approach has been employed as one of the Most at risk to HIV in Mutare District.

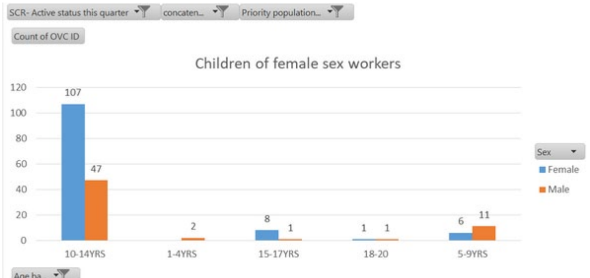

Figure.

Lessons learned: Through the family centered case management approach, assessments were done to identify the children's vulnerabilities and their needs leading to care plans development service provision and monitoring of 269 children in Mutare District. Unique care plans were developed according to age, sex, and vulnerability. 63 children were linked to education, 14 CLHIV were enhanced adherence support, 113 went through financial literacy and sexual violence prevention sessions and 2 underwent growth monitoring. The mothers of these children are participating in caregiver programs.

Conclusions/Next steps: Effective implementation of the case management approach will contribute to the reduction of HIV risk among children of sex workers.

While there is a standard package designed for the program, children of sex workers pose unique and multiple challenges that cannot be packaged and therefore requires a case management system that identifies and responds to each of the unique needs of children of sex workers.

EPD262

Preliminary impact of a brief, mHealth HIV/STI prevention intervention on creating a tailored risk-reduction plan among cisgender male couples who are in a new relationship

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Background: We developed and pilot-tested OurPlan, a brief, theoretically guided mHealth intervention, to encourage cisgender male couples who are in a new relationship (i.e., 1 year or less) to develop a tailored, risk-reduction prevention plan that includes evidence-based strategies. OurPlan contained 4 modules (M1-M4) with a geo-locator sexual health resource finder; M1 focused on

communication and decision-making skills and M2 covered prevention strategies that included an activity to create a tailored prevention plan (outcome).
Methods: To evaluate the preliminary impact of OurPlan, we conducted a 2-month pilot randomized controlled trial (RCT) using a 30-day waitlist control condition with 42 cisgender male couples in the US. Targeted Facebook/ Instagram ads were used for recruitment. Upon eligibility, consent and as part of enrollment, each couple had to attend a brief, Zoom meeting to receive the study app that provided access to assessments (baseline, 2-month follow-up) and OurPlan (intervention).
After completion of the baseline assessment, couples were randomized via 1:1 block allocation to either immediately receive OurPlan to use for 2 months or be placed in a 30-day delayed waitlist before receiving access to use OurPlan. At month 2, all participants completed a follow-up assessment.
Preliminary impact of OurPlan was examined at the dyad-level by assessing changes in the primary outcome - couples' creation of a tailored, risk-reduction prevention plan - over time with three data sources: self-reports from baseline and 2-month follow-up assessments, as well as from paradata.
Results: Retention was 86% (36 couples) for the pilot RCT. Comparing self-reported baseline to follow-up data, there was a 28% increase (i.e., 37% to 65%, $p<0.05$) of partnered men who reported having a prevention plan in their relationship over time.
Applying the same comparison and using dyadic data, the number and proportion of couples with both partners who concurred they had a prevention plan in their relationship doubled over time (i.e., 25% to 50%, $p<0.05$). No significant differences were observed between trial arms.
Conclusions: Overall, the results showed potential promise for OurPlan to encourage cisgender male couples to create a tailored risk-reduction, prevention plan in their relationship.
Our next step is to conduct a Type 1 Hybrid Trial.

Harm reduction

EPD263

A qualitative study of people who use new psychoactive substances and harm reduction services in eight countries of the Eastern Europe and Central Asia region

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Background: Research examines the use of new psychoactive substances (NPS) and the harm reduction response in eight countries of the Eastern Europe and Central Asia (EECA) region: Belarus, Estonia, Lithuania, Moldova, Serbia, Kazakhstan, Kyrgyzstan, and Georgia.
The aim is to generate a more accurate picture of current patterns of NPS use and harms associated with it in each country through recording the lived experience of people who use drugs and harm reduction service providers in order to inform the harm reduction response.
Methods: The study involved desk research and semi-structured interviews and focus groups with 166 people who use drugs and 69 health and harm reduction service providers in eight countries.
Results: People who use drugs in all countries were aware of NPS. Synthetic cannabinoids and synthetic cathinones are predominant groups of NPS and widely available, whereas synthetic opioids seem to be more present in Estonia and Lithuania. NPS users generally reflected two groups: those who have more experience with drug use, who have shifted to the use of NPS for a variety of reasons, and young people with no/ little previous history of drug use. A main risk of NPS is the absence of drug checking, because users don't know what they are actually consuming.
Other health-related risks include overdoses, mental health issues and increased risk of transmission of human immunodeficiency virus (HIV) and hepatitis C virus (HCV) caused by unsafe use of drugs (mainly by frequent injections, sometimes up to 30 injections per night), often combined with increased number of sexual contacts and riskier sex practices.
In most of countries providers of harm reduction, drug treatment programs and ambulance services are not prepared to provide people who use drugs with quality support and counselling to reduce risks associated with NPS use.
Conclusions: The study identified patterns of NPS use, risk behaviours and drug-related harms. It presented more accurate picture of NPS use in 8 countries of EECA region. Research identified gaps in the current treatment and harm reduction response. These findings may inform and improve current harm reduction services to meet the needs of people who use NPS.

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EPD264

Montreal overdose crisis: a collaborative response by and for communities

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Background: The covid pandemic has exacerbated the Quebec overdose crisis. The sanitary and repressive measures put in place and the concentration of public health efforts on covid issues have made access to health care more difficult, leaving people who use drugs more vulnerable to overdoses and STBBIs.

Community organizations have expressed the need to quickly access data on overdoses and the substances that cause them in order to prevent overdoses. The concerted efforts of 21 TOMS member organizations working in harm reduction and STI prevention led to the creation of the Programme d'Observation sur les Drogues et les Surdoses (PODS).

Description: Member organizations' workers, as well as drug users, participated in committees and consultations in order to meet everyone's needs. The PODS will help identify overdoses and the substances that cause them.

It is composed of a two-part questionnaire: identification of the substance and its adverse effects, and information on a possible overdose. It is intended for community workers, health professionals and people who use drugs.

Lessons learned: Offering a community response to community needs allows us to take ownership of the data, while remaining close to the issues experienced by the concerned communities . The need for an easy-to-use tool and to democratize access to data is essential to achieve our goal.

Some specific issues were named: confidentiality, the type of data to be collected or the "dope alerts" model for example. Bringing these different needs together required an even broader consultation than expected, particularly with the communities concerned.

Conclusions/Next steps: Next steps include to work with the groups so they adopt the tool, while carrying out various steps to make it known. As such, we are aiming for a double launch: a general public launch to which all people likely to be interested in the PODS platform, and a launch with community groups that work with people who use drugs.

A project of this magnitude, carried out in consultation with stakeholders, aims to provide an additional tool for people who use drugs, who may be at higher risk of HIV exposure, to take care of themselves while reducing the risks associated with drug use.

EPD265

Perspectives on perceived barriers and benefits of integration of harm reduction services and PrEP among people who use drugs in Uganda

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Background: People who use drugs (PWUD) are at increased risk of HIV acquisition and often encounter barriers to accessing healthcare services. Understanding PWUD drug and harm reduction use experiences, along with HIV risk perceptions, may inform strategies to optimize integration of pre-exposure prophylaxis (PrEP) with harm reduction services and align with their needs and priorities.

Methods: We conducted semi-structured interviews with 23 PWUD in Kampala, Uganda, from May-November 2021. We recruited participants with and without previous experience accessing harm reduction services using purposive and snowball sampling. Interviews were audio recorded, translated, and transcribed. We used thematic analysis of structured debrief reports and a subset of full transcripts to identify drug and harm reduction use experiences, HIV risk perceptions, and perspectives of integrating PrEP into harm reduction services.

Results: PWUD were predominantly male (ages 20-53 years), with 4-39 years of drug use experience; all reported prior HIV testing. Overall, participants were knowledgeable about PrEP and trusted its efficacy, though few reported ever taking PrEP. Many reported willingness to use PrEP if available, and if they perceived themselves as being at risk. Most participants reported frequent HIV testing, were relatively aware of their personal HIV risk, and accurately identified situations that increased risk, including sharing needles and engaging in sex work to facilitate drug purchases. COVID-19 caused increased risk to participants, since traditional sources of income were limited by COVID-19 prevention measures. Participants supported integrating PrEP into harm reduction service delivery but advocated for changes in how these services are accessed. They described challenges in acquiring sterile needles and syringes, noting that high costs associated with individually purchasing them were prohibitive, as were existing policies within harm reduction centers that required exchanges.

Stigma experienced in healthcare facilities and challenges acquiring money for transportation presented additional barriers to accessing current facility-based harm reduction services.

Conclusions: Meeting the needs of PWUD in Uganda will require addressing barriers to accessing existing harm reduction services. Approaches to integrating PrEP into harm reduction services that are informed by PWUD experiences has the potential to prevent HIV acquisition among this key population.

EPD266

CHEMSEX: KONTAK & ImpakT, programs adapting to the reality and needs, of men who fuck men on drugs

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Background: Over the last decade, we have seen changing and growing needs for HIV/AIDS prevention in environments where sex and drugs are one for certain gbMSM communities. We realized that there was an urgent need for interventions around drug use in a sexual context, because there were no services, not even a strategy to prevent or support users who were facing this growing phenomenon. Moreover, it was the beginning of a specific substance becoming available on the market that came to play an important, if not the main role in CHEMSEX: crystal meth.

Knowing that the risks are changing, our approach to preventing these risks must also adapt. And to adapt, we must understand the basics of CHEMSEX and the needs of its communities. Within a prevailing medical and abstinence context, ACCM deemed it crucial to expand and diversify its prevention and support services and offer a diversity of harm reduction resources to chemsex communities.

Description: We offer harm reduction information sessions at parties, one-on-one support services and safer sex and safer drug material distribution and deliveries to gbMSM who practice chemsex. To meet our communities' needs and facing increasing demands, we recently developed the ImpakT program with a partnered organization to offer group support sessions (drop-in format) as well as harm reduction workshops that will include topics identified and selected by users themselves.

Lessons learned: During our interventions, what most often comes up from our users is that they feel misunderstood by health professionals. In the KONTAK and ImpakT programs, we use a holistic, harm reduction approach.

The main lesson we learned is that rather than trying to have people stop using, we focus on the human being in front of us and how they want to improve their quality of life, in a non-judgmental way.

Conclusions/Next steps: By meeting people where they are at, and forming bonds of trust, we can provide the harm reduction tools and information needed to be able to make informed decisions on their use, which will ultimately contribute to reducing the risk of HIV transmission.

EPD267

Building a harm reduction-based hospital

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Background: Casey House is a small hospital in Toronto, Canada. Historically serving clients living with HIV, we now also care for those at risk of HIV, including a high proportion of people who use drugs (PWUD). Hospitals are often sites of stigma and discrimination for PWUD, resulting in early discharges, reluctance to access care, and follow up inequities.

Description: As result of internal advocacy, we initiated safer drug use kit (SDUK) distribution on a 24/7 bases in 2014. Over subsequent years we refined our harm reduction (HR) philosophy and practices. Organizationally we implemented mandatory all-staff training on HR, trauma-informed care and racial justice; Board-approval of HR-based policy advocacy statements; expansion of organizational mandate to include people at risk of HIV; partnered with peers and researchers to create new knowledge around HR-based hospital care.

Clinically we implemented a managed alcohol program; a drop-in community care clinic for SDUK clients; safer supply prescribing to inpatients; a low-barrier psychiatric clinic; non-abstinence-based substance use group programming; inpatient and outpatient supervised consumption services.

Our services are informed by and developed with involvement of clients and populations served. Throughout the COVID-19 pandemic we have seen a dramatic increase in clients and community members accessing HR-specific services. We believe this shows the value of embedding services in 24/7 facilities.

Lessons learned: We have designed and implemented hospital services with an explicit HR lens to provide services acceptable and sensitive to the needs of PWUD. Providing inpatient and community care in a HR framework allows for all patients to maintain continuity of care and achieve optimal health outcomes

Conclusions/Next steps: Providing hospital-based care within a HR framework is an ethical and practical way to address health inequities experienced by PWUD. Having HR permeate every aspect of our hospital reduces stigma and allows for clients to reach their health goals.

Our experience points to the promise and potential for hospitals to improve health care for PWUD by embracing a HR approach. Clients traditionally excluded from hospital care engage in multi-disciplinary care at our hospital and report high rates of satisfaction with the care they receive, with corresponding increases in retention in care.

EPD268

Utilization of harm reduction services following nonfatal overdose events during the COVID-19 pandemic in the United States: results from a cohort study of overdose survivors

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Background: Maintaining access to harm reduction and substance use disorder treatment services during the COVID-19 pandemic remains vital in preventing overdose fatalities and mitigating the risk of HIV acquisition. Persons who use drugs with history of an overdose event are particularly vulnerable to having a fatal overdose. However, little is known about the events surrounding nonfatal overdose in the COVID-19 pandemic.

Methods: We conducted semi-structured interviews with persons who survived an overdose during the pandemic. Our sample was derived from a larger study of 570 people who were recruited from SUD treatment and harm reduction programs (N = 21) across nine states and Washington, D.C. Interviews followed timeline follow-back memory retrieval methods to elicit narratives about overdose events and health service utilization. Interviews were professionally transcribed verbatim, coded, and analyzed.

Results: The pandemic caused disruptions that contributed to study participants' overdose events, such as increased isolation, changes in the drug supply, and challenges receiving SUD treatment. However, harm reduction programs remained widely accessible. The majority of participants regularly accessed harm reduction services and were revived by a friend or family member with naloxone obtained from their program.

Additionally, respondents demonstrated knowledge about the risks of acquiring HIV, skin and soft tissue infection, and blood infections associated with intravenous drug use. Most were not aware of the content or potency of the drug that caused their overdose, and prior or current utilization of fentanyl test strips was mixed. Following overdose events, several respondents did not receive medical services. Commonly cited reasons included fears of being stigmatized and the belief that the hospital would not provide helpful assistance.

However, most informed their harm reduction program of their overdose and said they received adequate support from their program, demonstrating that relationships between programs and persons who use drugs are potentially life-saving.

Conclusions: Harm reduction programs play an essential role in reducing risk of overdose and HIV infection among persons who use drugs. This study finds that harm reduction programs have remained widely available during the pandemic.

Expanding access to harm reduction services is critically important in reducing drug related morbidity and mortality, especially during times of crisis.

EPD269

Antenatal care; an experience of pregnant women testing HIV positive in Koome Island, Mukono-Uganda

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Background: There has been an evolution and development of the role of midwives regarding the testing of HIV during pregnancy. This has created a debate on the provision of this screening over the past years moreover, there is no fully explored impact of the positive HIV test among pregnant women during antenatal in Uganda.

This study therefore, explored the real understanding of the experience of pregnant women after receiving a positive test during antenatal care.

Methods: The methodology was based on Heidegger's (1962) hermeneutic phenomenology to discover and examine the experience of testing positive in pregnant women during antenatal and what it means by this experience. Data was collected using in-depth interviews and the results were analyzed using the reflection by van Manen's (1990) hermeneutic phenomenology.

Thirteen women receiving antenatal care and HIV positive were used for the interviews. Recruitment was from one Health center IV in Koome Island and other HIV support organizations. National adverts were also carried out to increase the diversity of the experiences.

This was also accompanied by a number of literature reviews. Key informant interviews from the midwives attending to the pregnant women were also conducted to get their experiences about the women who test positive during the antenatal.

Results: Results indicated that there was a balance of major themes which included; acceptance, confidentiality and stigma issues, changed attitude, shock and disbelief; anger and turmoil, acceptance and resilience.

Primary and secondary themes included: hyper reaction, not believing the positive results, sorrowfulness and attitude change, abortion considerations, self-segregation from others, relationship breakups and suicide considerations.

A number of women reported stigma prevalence and how they dealt with both stigma and living with HIV; some developed resilience. They also developed strategies to cope up which included; being secretive with their status and their child or children and focusing on themselves.

Conclusions: It was concluded that caring skills of midwives were crucial and needed by the pregnant women during the HIV diagnosis. There was also a very big demand for midwives in the health centers.

EPD270

Challenges in informed consent and use of a decision support tool in HIV remission ("cure") trials: view of clinical trialists

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Background: HIV remission ("cure") research has features that make informed consent challenging. Potential participants must understand risks to their own health, and in trials with analytic treatment interruption (ATI), risks of HIV transmission to partners. Few studies have explored these challenges from the perspective of clinical trial team members who recruit and educate trial participants.

Methods: We conducted an online survey of international remission trial teams. Survey items used 4-item scales to assess anticipated effect of decision aid use (negative/no/positive/unsure), and 7-point scales to assess attitudes (-3; 0; +3). Eligible respondents were experienced recruiting, educating and/or consenting participants to HIV remission trial(s), or actively planning HIV remission trial(s).

Results: 40 investigators responded to this portion of the survey. 45% rated it difficult for the average person to decide about trial enrollment, 25% neutral, and 30% easy. 87.5% perceived that trial participants make an informed choice about enrollment. Topics identified as most important to decision making were: voluntary nature of participation (mean 2.51); potential for partner transmission during ATI (mean 2.44); and anticipated risks/harms (mean 2.23). Topics for which understanding was rated as most difficult were: possibility for negative psychological impacts of participation (mean 0.18); uncertainty inherent in trials (mean 0.64); and potential for unexpected risks/harms (mean 0.68).

	Count	Percent
Self-defined race		
Asian or Asian American	7	17.5
Other	6	15.0
White	27	67.5
Age (years)		
30-49	13	33.3
50-59	14	35.9
>60	12	30.8
Education		
Bachelors' Degree or Other	7	17.5
Masters' Degree	6	15.0
MD	14	35.0
PhD	5	12.5
MD/PhD	8	20.0
Residence		
Asia	6	15.0
Europe	5	12.5
North America	24	60.0
Other	5	12.5
Role within trial team		
Principal Investigator	31	77.5
Study Coordinator or Other	9	22.5

Table 1. Respondent's socio-demographic characteristics (N=40) *Cell sizes under n=5 are combined.*

Percentages anticipating a positive effect of decision aids were: 67.5% decision making, 57.5% trial process/flow, 42.5% retention, and 30% recruitment rates. However, 52.5% expect decision aid use prior to consent would increase investigator time requirements.

Conclusions: Most investigators perceive that remission trial participants make informed choices. They identify priority topics and subjects for which achieving understanding is most difficult; these require particular attention in decision aids. Most reported positive or neutral attitudes about decision aid use, but they anticipate that use will require additional researcher time. These data inform our decision aid development.

EPD271

The Wellness Warriors: Indigenous-led HIV peer mentorship network

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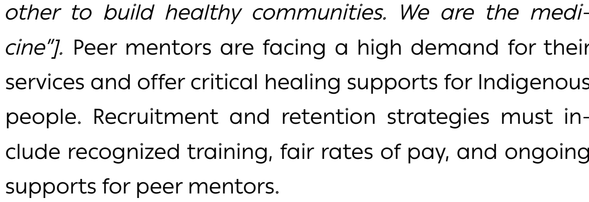
Background: Peer mentorship is a pragmatic, relational, and culturally appropriate way to support People Living With HIV (PLWH) and is widely regarded as a critical support service and harm reduction strategy. Peers are positioned to identify otherwise unseen risks and reframe the understanding of patient experiences, supporting informed choices and self-determination.

As a relational approach to care, improving social connections and supportive networks is an important role offered by peer mentors.

Description: The 'Wellness Warriors' is an Indigenous-led peer mentorship network that provides peer-to-peer supports for PLWH in acute care settings, as well as in urban and on-reserve communities across Saskatchewan, Canada. The need for cultural supports, including traditional and land-based approaches, is an important part of the healing journey for this PLWH population. Indigenous peer mentors provide access to critical cultural connections and traditional ceremonies. The Wellness Warriors support both care providers and PWLE access treatment and receive needed clinical, social, and cultural care.

Lessons learned: The Wellness Warriors report impact in supporting PLWH: ["*This work is so rewarding... patients have said that if it wasn't for me helping them, they wouldn't have anyone"*],as a means to connect to one another for support [*"That's why we come together like this ceremony, listening to each other, being their supports. Think back to our traditional ways, our communal living. That's the way I follow"*]and to nurture healing practices within the community ["*I see our people helping one an-*



other to build healthy communities. We are the medicine"]. Peer mentors are facing a high demand for their services and offer critical healing supports for Indigenous people. Recruitment and retention strategies must include recognized training, fair rates of pay, and ongoing supports for peer mentors.

Conclusions/Next steps: Peer mentorship is a critical component of HIV care. Integrating and remunerating this work into the standard of care is culturally responsive, innovative, and impactful approach to supporting better patient outcomes for PLWH.

Intersectional identities and multiple vulnerabilities to HIV and co-infections

EPD272

"I feel they are left out of the discussion..." – Perspectives of health practitioners on adherence to Antiretroviral Therapy among Persons with disabilities living with HIV in Nigeria using Intersectionality

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Background: This study argues that dominant sociocultural beliefs and the subsequent invisibility of people with disability within in population and health data are barriers to Nigeria meeting the UNAIDS Global 2030 goal. To meet these goals, people with disability living with HIV should be recognised as key populations in HIV surveillance data and health system planning.

Methods: This qualitative study adopted an intersectional lens. Fifteen healthcare practitioners were purposively sampled from 6 Nigerian states based on Nigeria's AIDS Indicator Impact Survey. Participants included medical doctors, nurses, clinical pharmacists, development workers, adherence counsellors and staff of donor organisations. Data collection employed semi-structured interviews with a consequent analysis using Reflexive thematic analysis conducted using NVivo 1.5.1.

Results: The findings revealed that sociocultural beliefs are still endemic and drivers for the stigma that negatively impacted ART adherence. Additionally, the lack of recognition of persons with disabilities as key populations has limited the collation of disability disaggregated data resulting in their invisibility within the HIV continuum of care and limited funding for HIV programmes.

The study also found that while antiretroviral therapy was available in Nigeria, persons with disabilities had financial challenges accessing ART, causing non-adherence.

The healthcare practitioners in this study held underlying reductionist views informed by the medical model of disability with the potential of affecting the quality of ART services they offered persons with disabilities living with HIV. Core constructs of intersectionality such as social inequality, power, social context, and social justice revealed the marginalisation experienced by persons with disabilities living with HIV.

Conclusions: This study adds new knowledge in understanding ART adherence in the Nigerian context. The study proposes a pathway for Nigeria in positioning itself as a global leader in accelerating the progress it has already recorded in HIV programmes. Healthcare practitioners will need to adopt the social model of disability lens, which has the potential to improve the quality of care offered to PWDLWH.

With Nigeria being the first country to conduct the largest population-based HIV survey, the findings of this intersectional study has a global significance for persons with disabilities having HIV.

EPD273

What shapes people living with HIV's experience of stigma? A qualitative exploration of social-structural conditions

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Background: Evidence demonstrates that HIV stigma impedes the health and wellbeing of people living with HIV (PLWH). Yet, HIV stigma is often studied through psychosocial perspectives without considering social-structural conditions. A greater understanding of which social-structural conditions shape experiences of HIV stigma may strengthen intervention efforts.

The current study uses qualitative methods to explore how three social-structural conditions, including geography, social positions, and social relationships, shape the experiences of PLWH throughout the state of Delaware.

Methods: PLWH and providers were recruited in 2017 from an HIV care program within several locations in Delaware. Individuals were eligible to participate if they were age 18 or older, spoke English or Spanish, and received or provided care at one of three locations. Interviews with Spanish-speaking participants were conducted with an interpreter. All interviews were conducted in person, digitally recorded, and later transcribed. Participants included 42 PLWH and 14 providers. All interviews were transcribed in English and then analyzed using a grounded theory approach.

Results: Results suggest that HIV stigma is still prevalent across Delaware, and PLWH's experiences of HIV stigma are shaped by geographic location, social positions, and social relationships. Participants reported that PLWH in the southern part of the state and rural areas as well as Latinx and Haitian PLWH experience more pronounced HIV stigma. The study captures that some LGBTQ PLWH

experienced positive health outcomes and less anticipated stigma. Moreover, PLWH experienced stigma from healthcare providers and anticipated substantial stigma in employment settings.

Conclusions: The current study suggests that social-structural conditions, including geographical locations, social positions, and social relationships, may fundamentally shape experiences of stigma among PLWH.

Multi-level stigma interventions are recommended to best address the social-structural conditions that shape experiences of HIV stigma among PLWH. Inspired by the positive health outcomes of LGBTQ PLWH, it may be essential to integrate empowerment-based components to combat intersectional stigma.

EPD274

The context of stigma experienced by sexual and gender minority people with HIV in Dominican Republic: a qualitative study

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Background: Stigma exacerbates health disparities affecting disadvantaged groups globally. Finding Respect and Ending Stigma around HIV (FRESH) is a healthcare setting stigma-reduction intervention developed in sub-Saharan Africa, adapted for the southern United States, and currently being tested via a pilot hybrid type 1 effectiveness-implementation study in Dominican Republic (DR). The goal of the DR adaptation is to reduce stigma experienced by sexual and gender minority (SGM) people living with HIV in clinical settings.

The purpose of the current analysis is to present themes related to HIV stigma, intersectional stigmas, and stigmatizing experiences in healthcare settings that guided FRESH intervention adaptation for HIV clinics serving SGM clients in DR.

Methods: Data collection occurred in Santo Domingo and Santiago, DR (2021) and included four focus groups with men who have sex with men with HIV (n=26), 14 in-depth interviews with transgender women with HIV, and 16 in-depth interviews with healthcare workers from HIV clinics. Following rapid qualitative analysis to inform intervention adaptation, two Research Associates thematically coded data using NVivo software.

Results: Major emergent themes included vulnerability of immigrant populations, the role of religion in fueling stigma, and strong intersectional stigmas related to HIV, sex work, gender, and sexual orientation in clinics and communities. An example quote on the experiences of transgender women and migrant workers is: "...[my friends] have been treated as if they were animals. In this country people treat [transgender women] and Haitians like garbage." Both health workers and clients recognized the persistence of stigma in clinics.

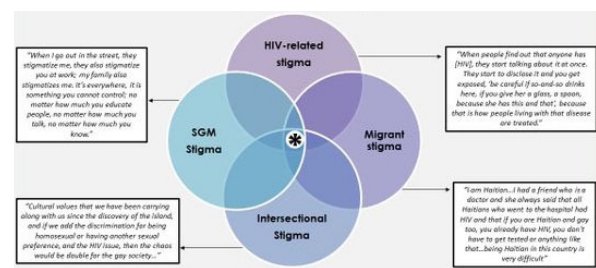

Figure 1. Intersectional stigmas experienced by sexual and gender minority (SGM) clients with HIV in Dominican Republic.

** Multiple experiences of stigma and descrimination.*

Conclusions: Programs aiming to reduce stigma experienced by SGM clients in healthcare settings need to address structural barriers, including local inner and outer contexts of HIV service provision. These findings offer insights for addressing stigma and thereby reducing health disparities experienced by SGM clients in Spanish-speaking settings.

EPD275

Access to Indigenous cultural and health Services among Indigenous people living with HIV in Ontario, Canada: findings from the Ontario HIV Treatment Network Cohort Study (OCS)

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Background: Indigenous cultural services are critical in the health and wellbeing of Indigenous Peoples. We examined the utilization of these services among Indigenous Peoples living with HIV who participate in the Ontario HIV Treatment Network Cohort Study (OCS).

Methods: The OCS is a longitudinal study of people receiving HIV care at 15 clinics in Ontario, Canada. Sociodemographic and sociobehavioural data are collected through interviewer-administered questionnaires. Begin-

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ning in 2020, Indigenous participants (N=67) were asked if they accessed Indigenous cultural and health services, such as Indigenous ceremonies (e.g., smudging, sweats, powwows), traditional medicines, or gatherings with Elders or Knowledge Keepers.

Results: Of the 67participants (21 Cisgender women, 2 trans women, and 44 men), most were older than 45 years (57%), on ART (94%), and had annual income of <$20,000 (66%). About half, 35 (52.2%) accessed Indigenous cultural and health services in the past two years.

People who had received services in the past two years were more likely to be 45 years or younger (54.3% vs. 31.3%; p=0.057) and women/transwomen (51.4% vs. 15.6%; p=0.002) than those who did not access services.

Those who accessed services were more likely to report current depression (54.3% vs. 28.1%; p=0.030), less likely to rate their general health as excellent/very good/good (57.1% vs. 75.1%; p=0.068), and as likely to have accessed an HIV care provider in the past 18 months (68.6% vs. 75.0%; p=0.560) or to be on ART (94.3% vs. 93.8%; p=0.999).

Importantly, more than one-third (n=26, 38.8%) experienced barriers in accessing Indigenous cultural and health services, including long travel distance and lack of knowledge (about the services or where to access them).

Conclusions: HIV rates are persistent among Indigenous Peoples in Ontario, including additional challenges in accessing treatment and achieving viral suppression. Indigenous participants who experienced greater mental and physical health challenges accessed cultural services.

People who accessed services had equivalent HIV outcomes and are more likely to have HIV visits than their counterparts. Interventions that eliminate barriers and increase access to Indigenous cultural services will support HIV care and promote wellbeing, particularly for people with low income and experiencing mental health issues.

EPD276

Mechanisms linking Gender-Based Violence to worse HIV care and treatment outcomes among women in the United States

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Background: Gender-based violence (GBV) and substance are enduring barriers to HIV care engagement among women living with HIV (WLHIV) in the United States (US). However, little is known about the mediating role of substance use in the relationship between GBV and worse HIV treatment and care outcomes in this population. To reduce this gap in research, we studied WLHIV in the Women's Interagency HIV Study (WIHS), to test the hypothesis that substance use mediates the association between:

1. GBV and suboptimal adherence to antiretroviral therapy (ART), and
2. GBV and poor engagement in HIV care.

Methods: From 2013-2016, WLHIV in the WIHS completed eight semi-annual assessments on GBV, alcohol and drug use, adherence to ART and HIV care engagement. Leveraging longitudinal data, multilevel logistic regression models were built to estimate adjusted associations be-

tween GBV and suboptimal (<95%) adherence to ART and at least one missed HIV care appointment without rescheduling. Mediation analyses were then performed to test whether hazardous drinking and illicit drug use (excluding Marijuana) mediated the associations between GBV and the two HIV treatment and care outcomes.

Results: Among a total of 1,717 women, 5% reported recent GBV, 17% reported suboptimal adherence to ART, and 15% reported at least one missed HIV care appointment.

Among those with suboptimal adherence or engagement in care, the proportion of those who engaged in hazardous drinking (18% and 16%, respectively), or any illicit drug use (22% and 19%, respectively), was higher compared to the overall sample (10% and 11%, respectively).

Women who experienced GBV had a significantly higher odds of suboptimal adherence (aOR=1.99; 95% CI=1.40-2.83) and missed appointments (aOR=1.92, 95% CI=1.32-2.33). Hazardous drinking and illicit drug use mediated 36% and 73% of the association between GBV and suboptimal adherence and 29% and 65% of the association between GBV and missed appointments, respectively.

Conclusions: Findings from this study suggest that substance use is a critical underlying mechanism through which GBV adversely impacts HIV treatment and care among WLHIV in the US. As such, to achieve optimal HIV continua outcomes among women, interventions should address the combined epidemics of GBV and substance use.

EPD277

The intersectionality of substance use and associated HIV risk among MSM and TGW population in India – learnings from a case-control study in India

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Background: Programmatic evidence shows a high risk of HIVamong Men who have Sex with Men (MSM) and Transgender Women (TGW) populations who use psychoactive substances. But the lack of scientific evidence and historically, traditional programs compartmentalizing either sexual or drug use, we miss the opportunity to address the intersectionality.

This study aims to understand this intersectionality and suggest recommendations to redesign the national program.

Methods: A case-control study was conducted among MSM (170) and TGW (94) residing in 5 states of India from MSM and TG programs. We enrolled 132 PLHIV beneficiaries identified in the last 6 months and matched them with controls who were screened HIV negative in the last 6 months.

A study tool was created using the WHO Family Health International tool (questions pertaining to sexual history, drug use, identity), NACO Integrated Biological & Behavioral Survey tool (drug use and socio-demographic profiles), and United Nations Office on Drugs & Crime book published by Dr. Ambekar(injecting substances) as a base to measure substance use and sexual history.

Results: The results shows, 86% of cases (MSM – 59%, TGW – 27%) and 82% of controls (MSM – 51%, TGW – 31%) were found to be substance users (p 0.40). The most popular substances were, Alcohol [cases – 80% (56% MSM & 24% TGW) controls 80% (49% MSM & 31% TGW)] followed by Cannabis [cases – 42% (29% MSM & 13% TGW) controls 49% (31% MSM & 18% TGW)] and Injecting substance users [cases 10% (MSM 6% & TG 4%) & controls 5% (MSM 4% & TGW 1%)]. 34% of Alcohol users, 38% of Cannabis users and 77% of injecting heroin used substances before/during sexual intercourse.

Those substance users who had previously been forced into performing sexual acts were 2 times (AOR: 2.48; 95% CI: 1.19 – 5.15) more likely to get HIV infection.

Conclusions: Considering the high prevalence of drug use and low knowledge on harm reduction services in the MSM and TGW program, these programs need redesigning by considering the intersectionality of substance use and HIV risk. In addition, special focus needs on those who have had traumatic experiences in the past.

EPD278

Improving viral load suppression rates among children and adolescents living with HIV through strong clinic community collaboration across 5 district in Southwestern Uganda

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Background: Under the PEPFAR/USAID Integrated Children and Youth Development (ICYD) Activity (2020-2025) in Uganda, World Education/Bantwana Initiative delivers technical assistance to seven local OVC partners to close HIV treatment gaps for children and adolescents living with HIV (C/ALHIV). Nationally, at 68%, C/ALHIV viral load suppression (VLS) continues to lag behind adults at 92% (MOH Sept 2021). The ICYD Activity has improved VLS among C/ALHIV though close clinic coordination to address the clinical, structural, and interpersonal dynamics at the community level which contributed to poor VLS outcomes.

Description: The ICYD Activity actively enrolls C/ALHIV, delivers services, and monitors and tracks treatment outcomes with clinic teams from clinic to community level. Trained ICYD linkage facilitators placed in clinics coordinate clinic staff and social workers to review clinical data, jointly assess and address non-suppression root causes, develop care plans, and monitor and track progress on treatment goals at community level.

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In March 2021, ICYD Activity enrolled 188 unsuppressed C/ALHIV across 5 districts onto the OVC program; 100% were enrolled on optimal treatment regimens. Joint home visits found severe food insecurity in COVID-impacted families, poor understanding of treatment adherence, and unreliable caregivers.

Social workers mobilized churches for food relief and linked families to local farmer resources, scheduled adherence and nutrition counseling with trained clinicians, helped families strengthen coping skills, intensively monitored unsuppressed children, and helped caregivers and adolescents better manage HIV treatment over the long term. By December 2021, 94% of these children were virally suppressed.

Lessons learned: Tested, promising practices include:

1. Upskilling the community workforce as frontline HIV service providers;
2. Data sharing and joint monitoring by clinic and community teams during home visits for complex cases;
3. Engaging community, government, and faith-based social protection partners to expand access to critical resources;
4. Introducing and upskilling the community workforce to simple HIV treatment data collection tools for ongoing monitoring.

Conclusions/Next steps: ICYD will scale up these strategies and document outcomes, including deepening capacity of organizations to build strong, coordinated clinic partnerships, collect and utilize data to monitor HIV treatment outcomes, and strengthen community social protection and safety net networks for ongoing support.

EPD279

Exploring the multi-dimensional and intersectional inequalities in healthcare utilisation among openly identifying and non-identifying MSM in KwaZulu-Natal, South Africa

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Background: Significant inequities in health care utilization exist among men who have sex with men (MSM) who balance multiple, intersecting social groups and identities. This is especially true for non-identifying MSM, who despite their disproportionately high risk, remain underserved by existing HIV programs.

Methods: In-depth interviews were conducted with MSM in KwaZulu-Natal, South Africa using a human centred design approaches that sought to learn more about participant's beliefs, relationships, interactions, and practices. Interviews were cconducted in isiZulu and/or English. Participants were sampled using snowball sampling, and purposively screened to ensure both openly identifying and non-identifying MSM were sampled. Research activities were approved by the Foundation for Professional Development Research Ethics Committee (FPDREC) [Reference 01/2021]. Data were analysed thematically using an integrative inductive-deductive framework approach. Healthcare utilization and healthcare needs were explored across intersectional categories, such as, identifying, and non-identifying MSM.

Results: Between May and August 2021, 41 IDIs were conducted, participants had a mean age of 29 years (min: 20 and max: 48), 83% African, 54% rural and 45% urban, 59% engaged in sex with men but did not identify as MSM or gay. MSM are not a homogenous group and constantly navigate multiple and sometimes-contradictory religious and cultural expectations. Participants reported experiences of vulnerability, a sense of alienation and discrimination from family, friends, community members.

Additionally, non-identifying MSM expressed persistent feelings of guilt, shame, and fear. Resulting in infrequent testing for HIV, little to no STI service access and sparse awareness of oral PrEP. Key disparities in awareness and access emerged along indicators of inequality, namely, younger men, those with few financial means, non-identifying men, men with multiple partners.

Fewer opportunities for testing as well as social and system-wide barriers such as harmful gender norms, inaccessible or unfriendly services contributed to a lower uptake of HIV services.

Conclusions: The intersection of race with age, sexuality, and identity (identifying vs non-identifying), can negatively affect ones vulnerable mens' risk of HIV.

These findings highlight the importance of multi-dimensional and cross-cutting healthcare access interventions to address the intersectional barriers experienced by MSM. MSM need to be involved as co-designers of interventions.

Behavioural factors impacting acceptability and uptake of an HIV vaccine

EPD280

Understanding participant motivation to participate in HIV prevention vaccine and monoclonal antibody trials in South Africa

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Background: South Africa has the largest HIV epidemic worldwide, with 13,5% incidence. Volunteering participants are pivotal to conduct research on HIV vaccines and eliminate new HIV infections. Little data exists in South Africa on what motivates participants to volunteer for trials, what links socio-demographic and HIV risk profile to motivation, and on staff perceptions of participant motivation.

This study aimed to explore participant motivations and discouraging factors compared to staff perceptions on participant motivation and identify demographic and behavioral links to motivation in South Africa.

Methods: Participants included those who enrolled/screened/declined into one of five HVTN trials (HVTN100, HVTN111, HVTN108 and HVTN702, HVTN703/HPTN081) at four clinical research sites in KwaZulu-Natal, South Africa, within the greater eThekwini area including urban precincts and semi-rural settings.

This study included mixed-methods: quantitative analysis of 78 participant case report forms compared to a matching questionnaire completed by 38 staff. Qualitative analysis of 25 participant interviews explored motivation to participate.

Results: Staff strongly perceived reimbursement, free medical tests and vaccine protection to be the greatest motivational factor whereas participants reported altruistic factors and receiving information to avoid high-risk behavior as more significant. Qualitative findings revealed that free healthcare tests and reimbursement motivated all participants, but not as significantly as staff perceived. Receiving information to reduce HIV risk and helping to find a vaccine were deemed more important by participants.

Women, especially those with high HIV-risk partners, were motivated by gaining information on HIV protection, wished behaviors and receiving encouragement for good conduct and were discouraged by stigma, negative community perceptions and safety risk. Only women, from all HIV-risk groups, reported being motivated from knowing somebody living/died with HIV.

Conclusions: Misalignment exists between staff and participants around motivations to participate in clinical trials. Gender, social factors, individual and partner HIV-risk influenced participants volunteering for trial participation in South Africa. Understanding these multi-factorial influences can assist in improving staff-participant relations and positively impact recruitment and retention in HIV clinical trials.

A greater focus should be placed upon the community desire to learn and be provided with educational stimuli (including decliner or screened out participants), which may be lacking in resource-scarce areas.

EPD281

A qualitative interview study to explore perceptions of a prophylactic vaccine for human immunodeficiency virus (HIV)

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Background: Despite high unmet need, universal acceptability of an HIV vaccine is not guaranteed. This study developed a conceptual model of perceptions of a future prophylactic HIV vaccine by adults across the United States (US).

Methods: Participants were identified through research databases and social media advertisement. Sampling quotas purposively targeted demographic diversity. Interviews were conducted by experienced qualitative interviewers, lasted approximately 60-minutes, were audio-recorded and transcribed. Open-ended questions explored decision-making factors regarding willingness to receive an HIV vaccine. Data were thematically analyzed using Atlas.ti v7.5 following Kaufman et al's socio-ecological model of HIV prevention.

Results: Fifty-five participants were interviewed; n=23 from demographic groups considered by the US Center for Disease Control as at 'higher risk' for HIV than the 'general population' (n=32). N=23/55 were also parents/caregivers who discussed vaccination of their children aged 9-17 years. Participants were mean 37 years (range 20-75); 51% female, 38% male, 11% non-binary/other gender; 42% identified as White, 35% Black or African American, 22% of Hispanic/Latino origin; 15% current PrEP users.

While participants acknowledged vaccination would be beneficial to prevent HIV (n=54/55 [90%]) and provide emotional 'peace of mind,' perceived HIV susceptibility was the most frequently reported decision-making factor ('general population,' n=29/32 [91%]; parent/caregiver, n=22/23 [96%]; 'at-risk,' n=17/23 [74%]). The clinical profile/practicalities of the vaccine were reported as important, e.g., risk of adverse events (n=54/55 [98%]), perceived vaccine efficacy (n=47/55 [85%]), administration schedule (n=23/32 [72%]), duration of immunity (n=15/55 [27%]). Parents/caregivers would consider their child's opinion/preference (n=9/23 [39%]). Few participants reported fear of stigma (n=12/55 [22%]), but many were concerned by vaccine-induced seropositivity (VISP) (n=34/55 [62%]).

Few subgroup differences were observed. Participants who considered themselves at risk of HIV generally reported no barriers to vaccination, and more frequently discussed potential improved relationships/sex-life. Participants receiving/considering PrEP discussed unique factors e.g., comparative efficacy/side effect profile of a vaccine versus PrEP, and risk of a gap in protection.

Conclusions: Individual perceptions of HIV susceptibility most influenced willingness to receive a future HIV vaccine. The perceived primary benefit of vaccination was

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protection against HIV and consequent emotional reassurance/reduced fear. Perceived concerns included side effect risk, VISP, administration schedule, and duration of immunity.

EPD282

The moderating effect of HIV-stigma on the relationship between sources of perceived social support and self-efficacy among adult patients living with HIV, in KwaZulu-Natal, South Africa

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Background: For people living with HIV (PLWHA), treatment adherence self-efficacy is considered as a critical predictor of psychosocial well-being and adherence to antiretroviral therapy (ART). Through previous studies social support and HIV-stigma have been noted to be independently linked with adherence to ART among adult PLWHA. However, the process through which the HIV-stigma moderate the relationship between sources of perceived social support and HIV adherence self-efficacy is not fully known.

Therefore, the study investigated whether the relationship between sources of perceived social support and HIV adherence self-efficacy is moderated by HIV-stigma.

Methods: The study was conducted in November 2019 at King Edward VIII hospital based in Umbilo Durban, KwaZulu-Natal, South Africa. Using a cross-sectional survey design a total of 201 adult patients 71% (n=142) female and 29% (n=59) male, aged 18-75 years receiving ART completed a self-administered questionnaire measuring self-efficacy (Adherence Self-Efficacy Scale [ASES]), social support (Multidimensional Perceived Social Support [MPSS]), and HIV-stigma (Short Version of HIV Stigma Scale [HSS]). The data were analysed using hierarchical multiple regression analyses through SPSS version 27.

Results: The results showed that treatment adherence self-efficacy was significantly and positively predicted by social support from family (r= .47, p <0001) friends (r= .37, p <0001), and significant other (r= .35 , p <0001).

Furthermore, the results of hierarchical moderated regression analyses indicated that HIV-stigma moderated the direct relationship of social support and self-efficacy from both sources of support namely family (B= -0.027, t= -2.58, p <.011) and friend (B= -0.029, t= -2.65, p <009). The analyses also revealed that the relationship between social support from significant other and self-efficacy was not moderated by HIV-stigma (B= -0.004, t= -0.351, p >.726).

Conclusions: The findings suggested that the sources of social support remain an invaluable resource to bolster treatment adherence self-efficacy among PLWHA, however the future interventions should also consider targeting HIV-stigma to improve adherence to ART among this population.

EPD283

The relationship between depression, HIV-stigma and adherence to ART among adult patients living with HIV at tertiary Hospital in Durban, South Africa: the mediating roles of self-efficacy and social support

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Background: Although, numerous factors predicting adherence to antiretroviral therapy (ART) among people living with HIV/AIDS (PLWHA) have been broadly studied on both regional and global level, up-to-date adherence of patients to ART remains an overarching, dynamic and multifaceted problem that needs to be investigated overtime and across various contexts. There is a dearth of empirical studies on the interactive mechanism by psychosocial factors predict adherence to ART among PLWHA in South Africa.

This study investigated the relationship between depression, HIV-stigma, and adherence to ART among adult patients living with HIV at a tertiary Hospital in Durban, South Africa and the mediating role of self-efficacy and social support.

Methods: A total of 201 male and female adult patients aged between 18-75 years receiving ART at King Edward VIII Hospital's ARV clinic were sampled, using time location sampling (TLS) and data were collected using self-administered questionnaire. Guided by Health Locus of Control Theory and Social Support Theory, data were analysed using SPSS through bivariate, logistic regression and mediational analyses.

Results: Chi-square analysis showed that there was a statistically significant difference found between depression and ART adherence ($\chi 2$ (4) = 16.140; p < .003), while between HIV stigma and ART adherence no statistically significant difference was found ($\chi 2$ (1) = .323; p >.570). Binary logistic regression indicated that depression was statistically associated with adherence to ART (OR= .853; 95% CI, .789–.922, P 0.31).

However, the findings showed that the effect of depression on adherence to ART was not significantly mediated by self-efficacy (Sobel test for indirect effect, Z= 1.01, P> 0.31). The effect of HIV stigma on adherence to ART was not statistically significant (OR= .980; 95% CI, .937– 1.025, P>.374), but the effect of social support on adherence to ART was statistically significant, only after the effect of HIV stigma was controlled for (OR= 1.017; 95% CI, 1.000– 1.035, P<.046).

Conclusions: The results revealed that depression is a significant predictor of adherence to ART. Thus, the findings also suggested that in effort to alleviate the psychosocial impact of depression on adherence to ART, a special consideration of self-efficacy and social support should be taken.

EPD284

Dual oral therapy in France (PROBI study): the acceptability of switch among HIV patients and physicians

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Background: Oral dual therapy aims to maintain a similar efficacy to triple antiretroviral therapy while reducing toxicity in the management of people living with HIV (PLWH). The PROBI qualitative study evaluated the acceptability determinants when switching from tritherapy to oral dual therapy, among HIV patients and physicians in France.

Methods: Semi-structured interviews (N=30) were conducted between November 2020 and February 2021 with PLWH (n=15) and physicians (n=15) residing in metropolitan and overseas France. The physicians' experience was considered (young vs. experienced) along with the duration of HIV infection among PLWH. The interviews underwent lexicometric analysis (Iramuteq software) followed by a thematic content analysis (NVivo 12 software). The methods were triangulated.

Results: The interviews highlighted three common expectations when switching to dual therapy: maintenance of efficacy, simplification of treatment in daily life, and maintenance of quality of life.

The acceptability of switching to dual oral therapy was the result of a two-faceted assessment process:

1. Motivational process, aiming "to do better" which is influenced by the physician's experience and the patient's duration of HIV;
2. Process of comparison with other available simplification strategies, through a benefit/risk balance.

The representations on dual therapy play an important role in the acceptability. Physicians considered the switch from an evidence-based approach. Patients acknowledged the switch in laymen terms and considered the possibility of dual therapy as a sign of their good health.

Conclusions: The acceptability of a change in treatment to dual oral therapy depends on motivations related to the elimination of adverse effects and the simplification of treatment.

However, the qualitative approach highlighted that the acceptability of treatment change depends on an evaluative cognitive process to be considered in treatment changes.

Interventions to reduce stigma and discrimination

EPD285

Acceptance-based, intersectional stigma coping intervention for people with HIV who inject drugs: an RCT in St. Petersburg, Russia

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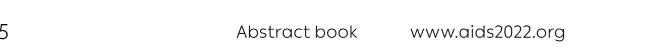
Background: People with HIV who inject drugs experience multiple, intersecting forms of stigma which adversely impact care utilization needed to ending the HIV epidemic. This RCT evaluated a behavioral stigma coping intervention's effects on stigma and care utilization.

Methods: We randomized 100 adults with HIV and past 30 days injection drug use (IDU) at a harm reduction non-governmental organization (NGO) in St. Petersburg, Russia. The control group had access to usual services at the NGO. The intervention group received three weekly 2-hour group sessions of an adapted Acceptance and Commitment Therapy intervention, in addition to usual services at the NGO.

Primary outcomes were changes in HIV and substance use stigma scores 1 month after randomization. Secondary outcomes were self-reported initiation of antiretroviral therapy (ART), engagement in substance use care (outpatient, inpatient, or 12-step program), and change in total number of injections in previous 30 days at 6 months post randomization.

We used linear regressions and linear probability models with robust standard errors to estimate the effect of the intervention on continuous and binary outcomes, respectively. We adjusted primary outcomes for baseline stigma scores, injection frequency, history of ART, and depressive symptoms. We used unadjusted analysis for secondary outcomes except for a change in injecting frequency adjusted for baseline score.

Results: There were no major imbalances across arms. Participants were 47% female with a mean age of 38 years ± 5.4 at baseline. At 1 month, HIV and substance use stigma changes did not differ between groups (p=0.141, and 0.112, respectively). At 6 months, participants in the intervention group were more likely to initiate ART (20% vs. 3%, OR=0.17, 95%CI [0.05, 0.29], p=0.005) and to engage in



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substance use care (23% vs. 7%, OR=0.17, 95%CI [0.03, 0.31], p=0.017) than control participants. Intervention participants had less frequent injections in the previous 30 days (adjusted mean frequency of injection -8.58, 95%CI [-17.15,-0.01], p=.0497).

Conclusions: This brief stigma-coping intervention did not change how stigma manifests in people with HIV and current substance use stigma. However, it reduced stigma's impact as a care barrier, improved HIV and substance use care, and decreased IDU, which warrants further investigation.

EPD286

HIV and drug use stigma among patients and providers in Vietnam

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Background: The "twin epidemics" of HIV and drug use have synergistically posed severe public health challenges in Vietnam. People living with HIV who use drugs (PLHWUD) combat both drug use stigma and HIV stigma in healthcare and treatment settings.

This study examined different layers of stigma that PLHWUD and their healthcare providers reported and explored relevant factors and associations.

Methods: Data were collected from 60 communities in four provinces of Vietnam. A total of 241 PLHWUD and 120 community health workers (CHW) were recruited and participated in the study. For both PLHWUD and CHW participants, we use two sets of identically-worded questions to measure the stigma attached to drug-using and the stigma associated with HIV infection.

In addition to comparing levels of stigma toward HIV vs. drug-using, we examined associations between PLHWUD perceived stigma and their mental health, as well as CHW stigma and their levels of confidence in service provision.

Results: For PLHWUD, drug-related stigma measures were significantly higher than their corresponding HIV stigma. HIV-related stigma was negatively associated with mental health status (standardized estimate: $\beta = -0.23$, $P = 0.0164$). However, we did not find a significant relationship between drug use stigma and mental health (standardized estimate: $\beta = -0.11$, $P = 0.1977$).

The majority of the CHW reported higher levels of stigma associated with drug-using than towards HIV infection. Compared to the CHW reporting higher stigma towards drug-using, those with higher stigma towards HIV infection were significantly less confident in service provision (Estimate = −0.41, SE = 0.11, $p < .001$).

Conclusions: We observed that, for both PLHWUD and CHW, stigma toward drug use was significantly higher than HIV. The relatively lower level of HIV stigma could be explained by the evolvement of the legislative environment and scientific advancements and education in Vietnam. This study's higher drug-using stigma reflects a more significant social devaluation of drug use than HIV. Nevertheless, our findings suggest that HIV stigma reduction should be prioritized for improving PLHWUD's mental health and CHW's service delivery.

EPD287

Associations between and intersectional implications on openness about HIV status and suicide thoughts in a diverse national sample of young people living with HIV in Sweden

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Background: The focus in HIV care so far have been to reach good physical conditions and through the UNAIDS 90-90-90 target. However, health also includes mental and social well-being as well as the absence of stigma and discrimination.

The overall aim of this study is to explore the association between living as open with HIV as one wants and suicide thoughts among 16-29-year old young people living with HIV in Sweden. A secondary aim is to see how this can be understood in the intersections of gender and sexual identity.

Methods: This study is based on a national survey of young people living with HIV conducted at HIV-clinics in 2018. The survey had 173 respondents, giving a response rate of 36 percent. Logistic regression models were used to calculate odds ratios (OR) using suicide thoughts as the outcome variable and open with HIV status, gender and sexual identity as exposure variables. Gender and sexual identity was combined to investigate intersections.

Results: The results show that suicidal thoughts are more common among young people who report that they were not as open as they wanted to be with their HIV status (OR 1.71 95% CI : 0.90 – 3.25). The analysis also indicate that the associations of suicide thoughts intersects with gender, sexual identity and openness with one's HIV. In general, men had higher odds ratios of suicide thoughts if they reported not being as open as they wanted to with their

HIV status, or belonging to a sexual minority, compared to heterosexual men being as open as they wanted. In women, the groups were smaller and the same pattern was not observed.

Conclusions: The findings add to previous knowledge and guide policy and practise as it point not only to the possibilities if being as open as one wants with HIV status but also to how this has different implications depending on the intersection of sex and sexual identity. The results pinpoint the need of larger studies to investigate intersections further.

EPD288

Gender and sexual minority inclusive healthcare services: a satisfactory though temporary policy. The perspective of the community

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Background: In Argentina, prevalence rates of HIV among transwomen (34%) and men who have sex with men (MSM, 12%-15%) greatly exceed the rate among general population (less than 1%). Gender and sexual minority (GSM) friendly or inclusive healthcare services were initially designed as public policies to facilitate access to HIV/STIs prevention and care. Such services currently provide comprehensive healthcare to GSM people in a free of stigma and discrimination context.

The purpose of this study was to assess these services from the perspective and perceptions of the community and users.

Methods: A qualitative study was conducted in eight GSM inclusive healthcare services in Buenos Aires Province, Argentina. Thirteen semi-structured interviews with GSM leaders and four focus groups with healthcare users: gay/bisexual cisgender men (n=6), trans femininities (n=4), trans masculinities (n=7) and lesbian/bisexual cisgender women (n=6). Data were analyzed by three researchers, using thematic analysis and organized by identity group to explore for specific needs.

Results: In all GSM groups, participants consider that inclusive healthcare services are a public policy that has facilitated GSM access health: HIV and other STIs testing and treatment; hormone therapy, and general healthcare consultations. However, GSM leaders and service users highlighted the importance of making themselves visible in other health settings and warned that having differential services may inadvertently contribute to perpetuating barriers to healthcare, such as negative attitudes towards GSM and health workers' lack of knowledge of their health needs.

In turn, they identify the need to promote full inclusion of these populations in the general healthcare system, especially for trans people, by including peer navigators and addressing stigma and discrimination towards this community.

Conclusions: GSM inclusive healthcare services are perceived by the community as a satisfactory, though temporary and insufficient policy. Efforts should still be oriented to address barriers to access to the general healthcare system by reducing stigma and discrimination in health settings, including training on gender perspective, and increasing awareness of GSM specific characteristics to better adjust services. To do so, it is important to recognize the expertise that comes from lived experience from the GSM community.

EPD289

Feasibility and acceptability of a stakeholder-informed intervention to reduce internalized stigma and shame as barriers to HIV self-care among men who have sex with men with substance use disorders

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Background: Men who have sex with men (MSM) with HIV and substance use disorders (SUDs) are likely to have inconsistent engagement in HIV care and ultimately suboptimal viral suppression, in part due to the behavioral and emotional consequences of internalizing stigma related to HIV, substance use, and being MSM.

Feasible and acceptable interventions are needed to address these behaviorally influential psychological barriers to HIV self-care.

Description: We are conducting a pilot randomized control trial of a novel stakeholder-informed and theory-based text-enhanced psychobehavioral intervention to reduce the impact of internalized stigma and shame on engagement in HIV care among MSM with SUDs who were sub-optimally engaged in HIV care (i.e., virally detectable, recently missed and not rescheduled HIV care appointments, or nonadherent to antiretrovirals) in Boston, Massachusetts.

The intervention includes five one-on-one therapy sessions focused on increasing emotional and cognitive awareness, compassionate self-reappraisal, and self-efficacy of behavioral goal setting, plus personalized bi-directional text daily messaging designed to extend the impact of the intervention.

The study involved an additional five research visits.

Lessons learned: Of the 42 randomized participants to date, 50% identified as Black, Native American, or biracial; 20% self-described as Hispanic; 63% reported <$20,000/year income; and 52% reported limited access to affordable housing. Participants attended an average 93% of study visits and responded to an average of 76% of the daily text messages. Participants randomized to the intervention group indicated a mean score of 2.7 on the Client Satisfaction Survey (0=quite dissatisfied-3=very satisfied). Preliminary data suggest that those who completed the intervention were more likely to be virally suppressed at the final 6-month follow-up-visit (100%) compared to the control group.

Additional differences in engagement in care were also identified, including the intervention group reporting an average of 1.6 versus 3.6 consecutive days between antiretroviral doses in the past 30 days.

Conclusions/Next steps: Preliminary results indicate this stakeholder-informed and theory-based intervention is feasible and acceptable for MSM living with HIV and SUDs who are sub-optimally engaged in care. Promising pilot data also indicate that the intervention may be associated with a higher proportion of viral suppression at final follow up compared to the control group.

EPD290

The impact of stigma and discrimination on people living with HIV in Homa Bay County, Kenya

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Background: In Kenya, more than 1.5m individuals live with HIV. At least 20,000 people died while 41,000 new infections were documented in 2019 alone. Homa Bay County recorded an HIV prevalence rate of 26.0% and contributed to 14.0% and 15.1% of new infections among adults and children respectively. The persistent HIV-related stigma and discrimination have proved to impede a successful HIV response. Even with increased access to ART, HIV-related stigma and discrimination are rampant resulting in low HIV-testing among men, slowed engagement with care, and increased attrition from care. To attain the UNAIDS proposed world targets (of 95-95-95), the world needs to redouble the efforts to avert the projected 7.7m deaths in 10 years, decrease the amplified HIV infections, and overturn the slowed public health response towards HIV.

Methods: The study was conducted in Homa Bay County between November 5, 2021 and December 5, 2021. Using a phenomenological research design, 47 women and 40 women who were HIV-positive and 10 healthcare providers were recruited to participate in in-depth interviews. The study was granted permission by the ministry of health (Homa Bay County) and the respective hospitals from which the healthcare professionals were drawn. The information collated was analyzed using thematic analysis technique and the themes were presented.

Results: The findings showed that stigma and discrimination are highly gendered and more prevalent in communities that record how the incidence of HIV. Enacted stigma such as verbal discrimination, segregation, humiliation, physical violence, and rejection was documented as some of the past experiences. The majority of the interviewed women indicated acute internalized stigma like shame, worthlessness, and embarrassment that results in depression and anxiety. Anticipated stigma among women depicted marital dissolution, physical and verbal abuse, public ridicule, and gossip. Anticipated stigma was salient among women with internalized stigma and those that had faced enacted stigma from their partners. As a result, anticipated stigma resulted in avoidance of care, seeking care in remote areas, and hiding HIV medications.

Conclusions: Reflecting on these findings, the government policymakers and other organizations will devise suitable strategies to avert stigma and discrimination among HIV-infected people and increase testing and treatment.

EPD291

Managing stigma: a qualitative analysis of sustainability in NYS healthcare facilities

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Background: Although several stigma-reduction interventions have been implemented for decades for People Living With HIV (PLWH) and key populations (KPs), many of these interventions do not focus impacting or adaption to long-term changes in systems of care that promote non-judgmental, welcoming care preventing discrimination. This short-term focus directly and adversely impedes interventional sustainability intended to reduce and eliminate stigma within healthcare settings.

Description: To understand the factors leading to institutionalization of system-wide activities, we identified five (5) facilities that implemented multiple stigma reduction

strategies into their routine servicing and care beginning in 2017. Facilities were purposively selected based on awareness of the authors and colleagues of voluntary continuation of both stigma measurement and reduction interventions, following an initial quality improvement (QI) activity within New York State. Key staff from each facility participated in virtual interviews that were recorded, transcribed, and reviewed by the authors.
Thematic analysis revealed attributes of sustainable interventions and their respective enabling and hindering factors, each of which was later grouped into domains.
Lessons learned: The strongest facilitator of embedding stigma reduction into clinic processes was co-production, characterized by involving PLWH and KPs in the design and implementation of interventions through participation in both short-term initiatives and long-term committees.
Other important domains included: support from agency and program leadership; organizational structures such as stigma plans and committees; expansion of education throughout the entire organization; visualization of PLWH and KPs in educational materials and posters; integrating multiple stigma reduction interventions within the organization (e.g., mental health, equity, & drug use); creating structured fields and templates in information systems; online reporting systems; and, allocation of resources and linking activities with agency QI activities.
Although the statewide initiative was identified as a catalyst for initiating a structured measurement system, the intervention sustainability was attributed to clinic-driven efforts leading to change in organizational culture.
Conclusions/Next steps: Sustainable stigma reduction interventions within healthcare settings are driven by organizational culture, commitment, and responsiveness to people receiving care.
Meaningful participation of PLWH and KPs in planning and implementation of stigma reduction interventions and actualization of co-production are important strategies to mitigate barriers to achieve desirable technical and experiential health outcomes.

EPD292

Reducing discrimination faced by MSM and Transgender Women in public hospitals: preliminary efficacy of a pilot workshop-delivered intervention among healthcare providers in India

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Background: Indian government is aiming at 'zero discrimination' in public healthcare settings. Studies have documented discrimination experiences of men who have sex with men (MSM) and Transgender Women (TGW) in public healthcare settings, hindering access to health/HIV services.
To contribute to scalable interventions, we developed and tested the efficacy of a theory-based pilot intervention to reduce stigma/discrimination faced by MSM and TGW in public healthcare settings.
Methods: In November 2021, we conducted two half-day workshops for clinical (n=24) and non-clinical staff (n=28) of a government hospital in Chennai. The sessions aimed to improve knowledge and attitude towards MSM/TGW through interactive sessions, speeches by role models (popular opinion leader strategy), exercises, and discussions with MSM/TGW activists ('contact' hypothesis).
A self-administered questionnaire assessed knowledge, attitude, practices, and comfort level before and after workshop. Paired t-tests and chi-square tests were conducted.
Results: Participants' mean age was 39.1, and mean years of practice was 12.5.The majority (86.5%) reported no prior friends/colleagues who are MSM/TGW, and none had prior training on MSM/TGW. There was no significant difference in the mean attitude score (7 items) before and after the intervention among clinical/non-clinical staff, although attitude in relation to certain items improved; e.g.,13% of clinical staff endorsed the statement 'sex between two men is just plain wrong' before training, which reduced to 7.7% after the training.
Among non-clinical staff, there was a significant increase in the proportion who reported being comfortablein providing care to MSM/TGW (pre-training=46.4%; post-training=81.8%, $p<.01$). Post-training, a higher proportion of clinical (65.2% to 91.7%, $p=.02$) endorsed the statement that healthcare providers should challenge misinformation about MSM/TGW.
Similarly, clinical (95.8%) and non-clinical staff (81.0%) endorsed the need for a hospital non-discrimination policy to protect MSM/TGW.

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Conclusions: This pilot intervention shows preliminary evidence for improving certain aspects of attitude and comfort level. COVID-19 pandemic prevented having an intervention of longer duration.

As part of the intervention, we also shared four videos and text messages after the training to promote acceptance, and follow-up data are being collected. The intervention will be replicated in another site to further evaluate its effectiveness before potential scale up.

EPD293

Community-level HIV stigma a driver for HIV interventions

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Background: HIV related stigma is a barrier to seeking treatment for people living with HIV (PLWH) it further imposes a concerning threat to the interventions in place to prevent and manage HIV. The attitudes and perceptions of South African communities is a key driving force of HIV related stigma. The aim of this study was to assess the level of stigma among community members and the acts of stigmatising that PLWH are subjected too.

Methods: A cross sectional descriptive survey using semi-structured research administered questionnaire was conducted among 670 clients from 16 primary health facilities in Tshwane, Gauteng. The 12-item short version of the Berger HIV stigma scale was adapted to fit South African communities and employed in order to analyse the stigma factors from the community.

The HIV stigma factors studied included personalised stigma, disclosure concerns, negative self-image, and concern with public attitudes.

Results: The median age was 27 (IQR= 17-60) with majority (n=425, 92.4%) having done an HIV test within the last three years. The findings indicate that the level of overall stigma was low (n=338, 50.4%) in the community.

However with high levels of stigma being scored for sub-components such as disclosure concerns (n=376, 56.5%) and public attitude (n=351, 52.8%). Having tested before was significantly associated with higher levels of stigma. Community members attributed lack of knowledge, fear of infection as key causes of stigma, and the key stigmatising act being moral judgement.

However community members maintained that if they received more education, stigma could be prevented.

Conclusions: Despite the overall level of stigma in the community being low, concerns of disclosure and community attitude carry a high level of stigma.

Advocacy message: Stigma that emanates from the community is detrimental to the successful roll out of programs or interventions geared at improving prevention and management of HIV. Improving the knowledge of communicates on disclosure and attitudes may yield in even lower levels of stigma.

EPD294

Implementation of trauma informed care, harm reduction and gender affirmative care among HIV service organizations in the U.S. South: an analysis of regional survey data

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Background: The U.S. South is disproportionately impacted by HIV compared to other U.S. regions. Ending the epidemic in the South requires sustained engagement in HIV care. Trauma-informed care (TIC), harm reduction (HR) and gender affirmative care (GAC) are person-centered approaches that have been proven to reduce stigma and enhance healthcare utilization.

This study examined the extent to which HIV service organizations (HSOs) in the U.S. South implement these approaches.

Methods: 207 organizations completed a survey which asked about organizational characteristics, services provided, perceived service gaps, and implementation of TIC, HR and GAC. HSOs in the South were identified from the U.S. National Prevention Information Network and the Substance Abuse and Mental Health Services Administration databases and included if they served people living with HIV. Data were analyzed using frequency distributions.

Results: *TIC.* 57% of organizations self-reported taking a trauma-informed approach to care. 43% screened clients for trauma and 29% provided specific trauma interventions. 36% addressed trauma in their policies and procedures documents. 21% do not address trauma in these or other ways.

HR. Half of organizations reported harm reduction-oriented organizational policies. 58% reported that their community-facing documents reflect HR. Only 26% provide specific HR services.

GAC. 70% of organizations reported that their organizational documents use the client's preferred/chosen name and pronoun.

Training. Fewer than half of the organizations completed an organization-wide training in TIC, HR, or GAC (44%, 36% and 33% respectively). Most organizations reported interest in receiving training in all three.

Barriers. The most commonly cited barrier for implementation of all approaches to care was funding (70% for TIC; 55% for HR; 43% for GAC), followed by expertise (65%; 37%; 41%) and capacity and staffing (60%, 36%; 37%).

Conclusions: To the authors' knowledge, this is the largest survey of HSOs in the U.S. South which captures data on person-centered approaches to care. Our findings reveal significant gaps in implementation of these criti-

cal approaches and the need for organizational systems change. Author recommendations include prioritization of funding for in-depth and long-term capacity building with tailored implementation coaching for HSOs in the U.S. South.

EPD295

Stigma reduction through forum engagement in a digital health intervention for young Black and Latinx men and transwomen who have sex with men

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Background: Promoting online forum engagement in digital health interventions (DHI) has demonstrated preliminary efficacy in reducing HIV and sexuality stigma among young Black and Latinx men and transwomen who have sex with men (YBLMT).

We explored forum engagement and whether forum engagement was associated with stigma reduction from baseline to 3-month follow-up in an mHealth intervention.

Methods: HealthMpowerment 2.0 was designed to reduce stigma and promote social support through user-generated content among YBLMT (ages 15-29) active (contributors) and passive (observers) users.

We summarized participants' weekly, real-time forum interactions and time spent on HealthMPowerment 2.0 over 12 weeks. Linear regression tested the effect of forum engagements on stigma and social support levels at 3-month follow-up.

Results: Average duration of forum engagement was 12.85 (range 0.06-214.97) minutes. Among 232 participants, 97 contributors either generated posts or commented on others' posts.

Over 12 weeks, contributors posted 1.49 times and commented 3.87 times, on average. Participants engaged with the forum most during their first two weeks of the study (see graph).

There were no differences in demographic characteristics between contributors (32.8%, spent 5+ minutes and posted >=1 post or comments) and observers (67.2%, spent < 5 minutes or did not post).

Compared to contributors, observers (passive readers and non-users) in the forum experienced a significant change in measures of challenging stigma (β =0.17; p=0.01) and had marginally significant improvements in emotional support (β =2.21; p=0.067).

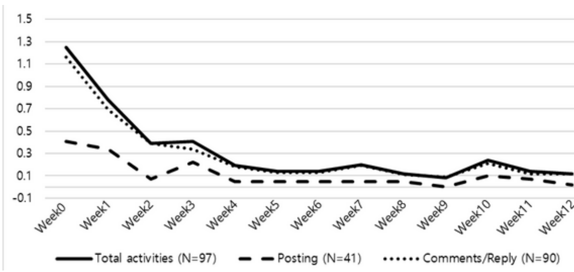

Figure. The number of activities in the Forum.

Conclusions: Contributors and observers may have different gains from engaging in forums as part of a stigma reduction intervention. Given the key role of forum engagement in stigma reduction, analyzing active versus passive forum participation is warranted. Finally, implementation strategies to sustain participants' forum engagement throughout the intervention are needed.

EPD296

Interventions to address HIV-related internalized stigma, stigma and discrimination in healthcare and in laws and policies: a systematic review

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Background: While efforts have been made to evaluate stigma reduction interventions, there is little consolidation of existing evidence.

Methods: We carried out a systematic review to address two questions: What is the effectiveness of interventions that aimed to reduce internalized stigma, stigma and discrimination experienced in healthcare settings, and stigma and discrimination entrenched in national laws and policies? What common 'critical factors for success or failure' can be identified that might inform future interventions? Random effects meta-analyses summarized results on each type of stigma and discrimination where possible.

We assessed the risk of bias in individual evaluations and applied GRADE criteria to the body of evidence. The protocol (PROSPERO CRD42021249348) incorporates stakeholder input, and the data are available in the Systematic Review Data Repository.

Results: Seventy intervention evaluations met inclusion criteria: 36 addressed internalized stigma, 19 stigma and discrimination in healthcare settings, and 15 stigma and discrimination in law and policy. Interventions to address internalized stigma focused primarily on education, counselling and support, with only seven including par-

ticipants other than people living with HIV such as family members. Across these studies, we found a reduction of internalized stigma (SMD 0.50; CI 0.28, 0.90; 16 studies). Intervention focus and study designs varied, as did the stigma measures used. Interventions to address stigma and discrimination in healthcare settings focused on sensitization and capacity building of health workers, sometimes alongside other staff and/or clients or students.
Effect estimates varied considerably but most studies showed positive effects (SMD 0.71; CI 0.60, 0.84, 8 studies). Interventions to address stigma and discrimination in law and policy were geographically diverse and ranged from court decisions and policy directives to advocacy efforts and legal empowerment. Positive impacts documented include reductions in stigma and discrimination, even as study designs precluded meta-analysis.
Conclusions: Interventions have had success in reducing all types of stigma and discrimination reviewed. Nonetheless, heterogeneity of interventions, measures and follow-up time impedes comprehensive meta-analysis. There is a need and opportunity to facilitate learning across interventions to facilitate replication and adaptation in other contexts. These lessons can inform initiatives to address stigma and discrimination at scale to help attain global HIV-related goals.

EPD297

A cross-sectional analysis of U=U as a potential educative Intervention to mitigate HIV stigma among youth living with HIV in South Africa

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Background: The HIV educative campaign *Undetectable Equals Untransmissible* (U=U) is a potential gamechanger to address HIV stigma. We investigated what percentage of South African adolescents were aware of U=U, and the associations with perceived HIV stigma and past-year HIV testing.
Methods: We used a cross-sectional design. Data were from the 2017/2018 South African National HIV Prevalence, Incidence, Behaviour and Communication Survey. HIV status was measured using both laboratory confirmation and self-reports.
Among adolescents aged 15-18 years, we calculated the percentage who believed that "the risk of HIV transmission through sex can be reduced by an HIV-positive partner consistently taking drugs that treat HIV." Data were weighted to yield nationally representative estimates.
Results: Overall, 49.8% of all adolescents aged 15-18 years (and 49.2% of those HIV seropositive) believed that the risk of HIV transmission through sex can be reduced by an HIV-positive partner consistently taking drugs that treat HIV. After adjusting for HIV status, geographic location, race, sex, and orphanhood status, those with belief in U=U were less likely to endorse stigmatizing statements that teachers with HIV should not teach (IRR=0.63, 95%CI, 0.47-0.84), pupils with HIV should not attend class (IRR=0.62, 95%CI, 0.45-0.84), or that children with HIV in general should be in segregated schools (IRR=0.55, 95%CI, 0.41-0.74).
Among those reporting not living with HIV, U=U belief was associated with increased likelihood of past-year HIV testing (IRR=1.19, 95%CI, 1.01-1.41).
Conclusions: U=U belief was associated with reduced stigma perceptions and increased HIV testing. Adoption of U=U into clinical practice guidelines in South Africa may benefit public health.

EPD298

#SácateLaDuda: a transmedia strategy to promote the reduction of HIV stigma and discrimination through community interventions among MSM

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Background:
Mexico has a concentrated HIV epidemic. The prevalence indicates MSM as the principal group (17.3%), CENSIDA (2019). The HIV panorama in Mexico remains uncertain: there is shortage of ARVs, an inefficient PrEP program implementation, as well as HIV new cases while facing the COVID-19 pandemic.According to the Needs Assessment for the Repositioning of Telsida Study (2011); there is low appropriation and awareness on HIV among MSM, due to the lack and inaccuracy of information on risky behavior, detection, care and treatment.
This issue has led to two principal barriers for MSM to access HIV screening tests: fear and shame.#SácateLaDuda's (Zero Hesitation) objective is to increase awareness among MSM on HIV and STIs prevention through a human-centered approach, focusing on pleasure and self-care. By creating safe spaces and implementing accesible information in order to reduce discrimination and stigma through a transmedia strategy.
Description: #SácateLaDuda is a digital platform launched in June 2020 designed upon 7 lines of action:
- Serophobia and discrimination
- Living with HIV
- U=U
- Pleasure and prevention
- PrEP and social justice
- Sexism and self-care
- Substance intake

With health professionals supervision, an interactive website was created, as well as original content and pedagogical tools. A digital marketing strategy was implemented to reach potential and targeted populations.Our key activities include: HIV testing and counseling, virtual

drawing rooms for people living with HIV and coffee talks with activists and health professionals. Covering a wide range of expressions on living with HIV, encouraging prevention as pleasure and self-care, as well as making information on the topic accessible.

Lessons learned: By transforming science data into accessible information, we reached the following impacts:

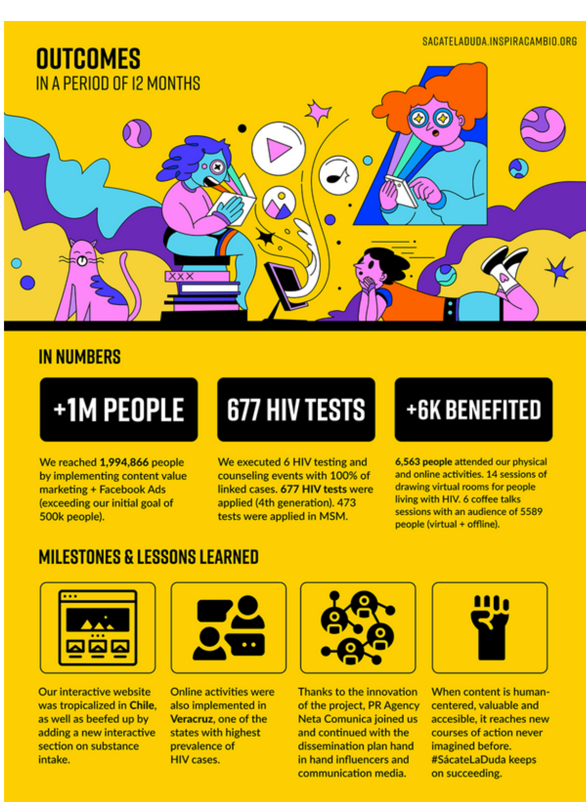

Figure. Outcomes in a period of 12 months.

Conclusions/Next steps: Due to its transmedia nature, #SácateLaDuda not only reached its quantitative goals, but a significant change in the behavioral and awareness paradigm within affected communities, while contributing to its own sustainability.

EPD299

Does online educational video intervention reduce HIV related stigma among international students studying in language schools in Japan?

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Background: HIV related stigma is a major human right related barrier to achieve the global goal of ending HIV epidemic by 2030. HIV stigma and discrimination prevent vulnerable population to access the HIV related services. Migrants are more vulnerable to HIV related stigma in the host country than the general population. Evidence is scarce on interventions to reduce such stigma among migrants.

The objective of this study is to examine the role of online educational video to reduce HIV related stigma among international students studying in language schools in Japan.

Methods: We conducted a longitudinal study among 183 students from China, Vietnam and Nepal studying in Japanese language schools in Japan. Out of them, 85 watched the online educational video about HIV testing services in Japan and 98 students watched the educational video about TB diagnosis. To measure the HIV related stigma, we assessed "desires for social distance" and "anticipated stigma" during baseline and follow-up after 7 days of watching the online video. We conducted bi-variate analysis using Chi-squared and t test.

Results: At baseline, the intervention and control groups had similar characteristics for HIV knowledge score (mean 22.6 vs. 23.4, p=0.06), perceived risk of HIV score (mean 15.0 vs. 15.9, p=0.247), presence of desires of social distance stigma on HIV (26.8% vs. 26.2%, p=0.241), and presence of anticipated stigma on HIV (33.9% vs. 40.4%, p=0.692).

At follow up, compared to control group students, fewer students in the intervention group had anticipated stigma on HIV (31.6% vs. 43.4%, p=0.024). However, at the follow up, we did not find any statistically significant differences for HIV knowledge score, perceived risk of HIV score, and presence of desires of social distance stigma on HIV.

Conclusions: This study shows that the online video educational intervention about HIV testing services in Japan is associated with decrease in HIV related stigma among international students studying in language schools in Japan. Such finding will be helpful in designing HIV program and improve the access to HIV testing services for international migrants living in Japan.

EPD300

Forum engagement within app-delivered stigma reduction interventions: Insights from HealthMpowerment 2.0

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Background: Mobile app-delivered HIV stigma reduction interventions increasingly offer opportunities for interactions among participants through forums and message boards. Participation in online forums typically demonstrate a similar pattern; a few core users (superusers) contribute most of the content, many peripheral users con-

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tribute less frequently (contributors), and a larger number of users participate without posting (observers). Forum engagement and resulting network structure have not been well-characterized for app-delivered stigma reduction interventions.

Methods: We analyzed data from HealthMpowerment (HMP) 2.0, an app-based intervention that promotes user-generated content and social support to reduce intersectional stigma and improve HIV-related treatment and prevention outcomes among young Black and Latinx men and transwomen who have sex with men (ages 15-29 years). The HMP 2.0 forum was seeded with posts generated by participants in a prior trial (HMP 1.0) and youth advisory board (YAB) members engaged in the forums to facilitate conversation. Data were extracted from the HMP 2.0 SQL database. Network data were analyzed and visualized using the igraph packages in R.

Results: The HMP 2.0 forum contained 1,606 unique posts across 365 top-level forum threads created by study participants (40.2%), seeded participants from HMP 1.0 (28.5%), YAB members (24.0%), and study administrators (7.2%). Of the 226 study participants, 6 were superusers (posting to >=20 threads), 42.0% were contributors (authoring >1 post/comment/reply), 43.5% were observers, and 12.8% were non-users (spending <1 min. in the forum). Superusers and YAB members were highly central in the forums (average betweenness 335 and 143, responsively), with YAB members effectively seeding threads to current study participants (see graph).

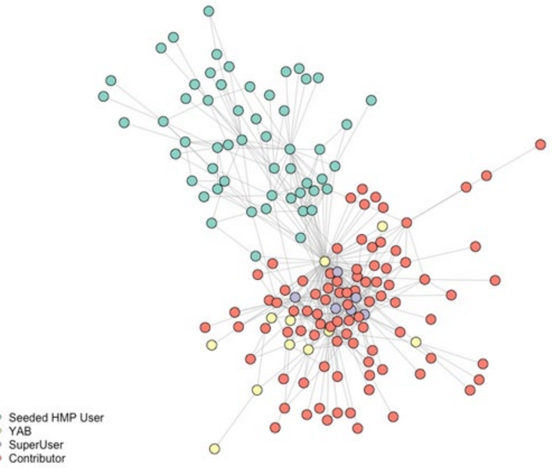

Figure. Network structure of forum engagement within HealthMpowerment 2.0

Conclusions: Forum engagement within HMP 2.0 has been strong, with nearly half of all study participants actively contributing. Youth advisory board members and superuser participants play a key role in fostering a cohesive and engaging online community.

EPD301

Impact assessment of a Faith-based strategy for HIV mitigation in Nigeria

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Background: Stigmatization of persons living with HIV (PLHIV) has continually been reinforced by religious condemnation of premarital and extramarital sex, which contributes to feelings of guilt, default in treatment, denial and shame. It also results to defensive behaviour, fatalism and self-stigmatization among PLHIV. Nigerian Network of Religious Leaders Living with or personally Affected by HIV and AIDS (NINERELA+) and her partner Christian Aid UK, Nigeria implemented a two year project, "Strengthening Faith-based HIV Response", in Anambra, and Benue States Nigeria, between April 2017 and March 2019.

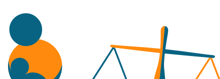
The intervention focused on empowering faith communities with right information on HIV, addressing faith interferences to HIV service uptake and empowered faith leaders to work as advocates of HIV stigma mitigation.

This Study is an impact assessment of the faith-based strategy for HIV mitigation implemented in two Nigerian States.

Methods: Data from a cross-sectional representative survey of 510 faith community members in 20 intervention congregations and 500 congregants in 20 control congregations in same locations were analyzed in comparison with the baseline data. The key outcomes of interest were congregants' willingness to accept HIV result if tested positive, willingness to share communion with PLHIV, knowledge of HIV prevention, care and treatment at: baseline (April, 2017); project close (March 2018); and follow-up (July to September, 2021).

Results: From comparative data analysis of intervention and control congregations, a total 1010 respondents (52.6 female) were in post follow up survey, and 430 (female 51,2%) in the baseline survey. There was an estimated 26.7% increase in likelihood to accept HIV positive result from baseline to follow up in intervention group and 18.3% increase when control group. Compared to the control group, there was significant increase on willingness to receive communion with PLHIV in the intervention group (OR 0.6445, 95% CI: 0.5245to0.7920, P=0.0001).

Conclusions: The intervention was able to achieve positive attitudinal shift at the community level, and significant effect of the intervention was found in improving HIV literacy and community level stigma. Replication of the initiative in other communities and for public health response are recommended.



EPD302

Framing of HIV/AIDS in selected newspapers in Nigeria from 2019

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Background: The study's overall goal was to determine how HIV/AIDS articles were framed in selected Nigerian newspapers from 2019 to 2021. Framing focuses on how the media draws public attention to specific themes. Invariably, how a story is presented to the media audience can influence how they perceive the issue and, consequently, how they will digest this piece of information.
This research examined the extent of coverage of HIV/AIDS stories compared to other stories in the newspapers, the sources of these reports, the frames utilised in the reportage, and the themes under which stories on HIV/AIDS were covered.
Methods: Four national newspapers were examined: The Daily Sun, The Guardian, The Nation, and Vanguard. The study employed the content analysis research method, and adopted the constructed week sampling technique to select 112 editions (Two weeks per year) of the four newspapers for two years (14 days x 4 newspapers x 2years = 112 editions).
Results: The data collected from the newspapers indicated that articles on HIV/AIDS were inadequately reported, as most of the stories were under the straight news category and were snippets from reports on health programmes at the federal and state levels.
This study also aimed to determine the veracity of the allegations levelled against the Nigerian media about the stigmatisation of people living with AIDS. Stories on HIV/AIDS were reported with a significant level of insensitivity, as in a similar study I conducted on mental health.
Conclusions: Health communication is a sensitive topic, and in an attempt to enlighten the public, panic and discrimination can be established without intending. Thus, it becomes imperative to consider the vulnerability of HIV/AIDS patients while gauging the story to avoid the superficiality that can cause misinformation.
Framing the story is as substantial as the information itself. If the stories are framed to respect people's privacy and be polite towards others, this notion will be ingrained in the masses.

EPD303

Affective characteristics as predictors of attitude towards people living with HIV in Cross River State, Nigeria

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Background: People living with HIV/AIDS usually face discrimination and are now and then disregarded due to antagonistic perspectives of their condition. Adopting correlational research design, the study investigated affective characteristics as predictors of attitude towards people living with HIV (PLHIV) in Cross River State, Nigeria.
Specifically, the study investigated the combined and relative predictive impact of affective characteristics such as emotional intelligence, anxiety disorder, self-esteem, depression disorder, bipolar disorder, and self-confidence on attitude towards PLHIV in Cross River State.
Methods: The study adopted Krejcie and Morgan (1970) sample determination method in selecting a sample of 758 individuals living with PLHIV. The instrument used in data collection for the study was a questionnaire titled; "Affective Characteristics and Attitude Towards PLHIV Scale" (ACATPLHIVS).
The data collected for the study were analyzed using descriptive statistics and Multiple Linear Regression analysis tested at .05 level of significance.
Results: The results revealed that emotional intelligence, self-esteem, and self-confidence had significant positive impact on attitude towards PLHIV, while anxiety disorder, depression disorder and bipolar disorder had significant negative impact on attitude towards PLHIV.
Conclusions: It was concluded that affective characteristics play significant roles on attitude towards people living with HIV (PLHIV) in Cross River State.
It was recommended among others that; counselling services should be provided for households of PLHIV to minimize the discrimination against PLHIV.

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Other behavioural approaches

EPD304
Positive Linkage Initiative (PLI) for young populations in Zambia to help with the HIV response

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Background: Adolescents aged 10-19 comprise 23 percent of the total Zambian population. There are approximately 1.7 million adolescents aged 15 to 19 years in Zambia. In 2014, there were around 856,000 adolescent girls aged between 15-19 according to the 2010 National Census 2014 estimates. Young people as a whole along with other sub groups defined as key populations in the 2017-2021 National HIV and AIDS Strategic Framework, will continue being a primary concern of the Government of Zambia. In the 2016 Zambia Population Based HIV Impact Assessment showed that while the HIV incidence in the adult age group 15-49 years was 3.6 times higher in women than men, in the same age bracket, the incidence among young women, aged 15-24 years, was 11.8 times higher than among young men of the same age group.
It is in view of this that the National HIV/AIDS/STI/TB Council (NAC) introduced an initiative known as the Positive Linkage in order to improve the uptake of HIV services among young people both negative and positive.
Description: NAC with support from UNICEF trained young people in Peer Education & theatre for development as a way of imparting skills which they would be using in their day to day activities with the adolescents and young people.
The focus of the initiative is on linking HIV Positive trained peer supporters who are experienced with supporting adolescents living with HIV to peer educators in health centers to help mentor and develop their capacity to support adolescents living with HIV.
Lessons learned: Adolescents now have understanding and motivation to form possible solutions to solve these issues and provides an atmosphere where adolescents can voice out, defend themselves and encourage their families to accept who they are. It's helped to reduce stigma among young between those who are negative and positive.
Conclusions/Next steps: The PLI envisions itself contributing significantly to the transformation of adolescents to become more assertive and take charge of their health thereby reducing HIV infections through promotion of healthy behaviors which will translate into an increase in the uptake of access to HIV and SRH services.

EPD305
MINA. For Men. For Health – applying private sector consumer marketing approaches to strengthen behaviour change communications for men living with HIV in South Africa

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[1]*Project Last Mile, Johannesburg, South Africa,* [2]*Ipsos, New York, United States,* [3]*Ipsos, Johannesburg, South Africa*

Background: Despite considerable gains, South Africa has not yet achieved 90-90-90 targets to achieve HIV epidemic control. A variety of societal and psychosocial factors that limit men's uptake of HIV services, means the gap between men and women in HIV treatment (-12%) and viral suppression (-8%) has persisted and grown over time. Despite adult men making up only 34% of the PLHIV population, men make up 60% of AIDS deaths.
Description: PEPFAR engaged Project Last Mile (PLM) to apply private sector consumer marketing best practices to test a new behavior change communications approach for MLHIV. Historically, there have been limited behaviorally-driven, national-scale communications targeting men in South Africa. Leveraging best practices from The Coca-Cola Company, PLM applied an insights driven strategic marketing process.
Through this process - "MINA. For Men. For Health" (MINA) was developed as a national brand to encourage men to take responsibility for their health. MINA was endorsed by the National Department of Health (NDoH) in South Africa for a national scale-up, and launched via a national media and in-clinic campaign at the end of 2020.
Lessons learned: In the first 3 quarters after launch, men's HIV testing accelerated 22% versus 14% for women in facilities where MINA was activated. Men's treatment initiation grew 10% vs 2% for women in the same period. This campaign has been the first effort at developing a national-scale, NDoH endorsed, targeted communications effort for MLHIV using a consumer-marketing approach. Initial results suggest a positive link between men's exposure to the MINA campaign and positive HIV health-seeking behaviors.
Conclusions/Next steps: Initial findings suggest that a targeted consumer marketing approach, coupled with national scale media and sustained investments can support behavior change amongst priority HIV population segments. As MINA was designed to support long-term behavior change, the campaign will continue to be monitored to assess how initial gains are sustained and scaled. The next phase of the project will continue testing how consumer-marketing approaches can influence health behaviors, with a focus on integrating U=U messaging to motivate viral suppression and outline a strategy for reaching men more effectively outside health facilities.

EPD306

Feasibility and efficacy of telephone-based psycho-educational intervention on psychological distress among people living with HIV in Ibadan, Nigeria

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Background: In 2020, Nigeria had an estimated 1,700,000 people living with HIV (PLWH) with 86,000 new cases, and 49,000 deaths from AIDS-related illnesses. Psychological distress is common in PLWH with serious implications on disease progress. In order to control this ongoing epidemic and optimize antiretroviral treatment (ART), attention is increasingly focused on mental health as an important correlate of HIV-associated outcomes.
The objective of the study was to determine the initial feasibility and efficacy of psycho-educational intervention on psychological distress in a pilot trial among PLWH in Nigeria.
Methods: This was a two-arm study where 22 PLWH were assigned, balancing age and gender, to the intervention versus control groups. The study took place at the Infectious Disease Institute, Adeoyo Maternity Teaching Hospital, Ibadan, Nigeria between July and November 2021.
The intervention consisted of nine weekly psycho-educational sessions focused on basic HIV education, medication adherence, the role of psychological distress on well-being, and mental and emotional skill-building. Sessions were delivered via telephone by clinic nurses, who received training on the intervention approach.
Outcome variable was psychological distress which was measured by general health questionnaire (GHQ-12) and Hospital Anxiety and Depression Scale (HADS). Assessments were carried out at baseline and two-weeks post intervention. A difference in difference approach using analysis of covariance (ANCOVA) and partial eta squared was used to compare outcomes between groups.
Results: The mean (SD) age of the participants was 54 (13.30) years, females (59%), males (41%). Ninety percent were on dolutegravir-based ART with an average of 90% adherence (based on self-report). The completion rate of intervention was 100%, however 27% of the participant rescheduled their intervention to a later date. An average of 5 hours (in total) was spent in completing the telephone-based psycho-educational intervention per individual in each of the groups.
Comparison of change in outcomes of interest between groups demonstrated a significant improvement in GHQ and HADS in the intervention arm compared to the control condition with an effect size of 0.50 and 0.57 respectively for GHQ and HADS.
Conclusions: Telephone-based psychological intervention was feasible and demonstrated initial efficacy to reduce psychological distress in PLWH in Nigeria.

EPD307

Psycho- social factors as predictors of psychological wellbeing of people living with HIV/AIDS in Oyo State

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Background: It has been observed that people living with HIV/AIDS have poor psychological wellbeing in Nigeria and this has resulted to lethargy, suicidal ideation, poor adherence to treatment regimen and, poor clinic attendance. Previous studies have not adequately addressed this and its influencing factors.
Hence, this study examined self-concept, social support, emotional intelligence, self-blame and socio-economic status as predictors of psychological wellbeing of people living with HIV/AIDs in Oyo State, Nigeria.
Methods: The study utilized survey research design of expos facto type and structured questionnaires were used to gather data. The study adopted multistage sampling procedure to select three hundred (300) people living with HIV/AIDS from three major clinics that provides healthcare services for them. Three research questions were raised and answered. Data collected were analyzed using descriptive and inferential statistics.
Results: The result revealed that female respondents dominated the study with 240 (80.0%) while the rest 60 (20.0%) were male. The result revealed that self-concept ($r = .250$, $p<0.05$), social support ($r = .299$, $p<0.05$), emotional intelligence ($r = .211$, $p<0.05$) and socio-economic status ($r = .410$, $p<0.05$) positively and significantly correlated with psychological wellbeing while self-blame ($r = -.192$, $p<0.05$) negatively and significantly correlated with psychological wellbeing of people living with HIV/AIDS. The result also indicated that self-concept, social support, emotional intelligence, self-blame and socio-economic status had significant joint influence on psychological wellbeing of people living with HIV/AIDS on treatment in Ibadan, Oyo State, Nigeria ($F(5,294)= 29.084$; $p<0.05$).
Conclusions: The study concluded that self-concept, social support, emotional intelligence, self-blame and socio-economic status have relative and joint contribution to psychological wellbeing of people living with HIV/AIDS in Ibadan metropolis, Oyo State, Nigeria. Thus, it was recommended that psycho-educational intervention should be organized for people living with HIV/AIDS to boost their self-concept and emotional intelligence and mitigate self-blame.

Keywords: Self-concept, Social Support, Emotional intelligence, Self-blame, Socio-economic Status Psychological Wellbeing, People living with HIV/AIDS

EPD308

Needs and contents of a customized digital tool to improve retention in care: a mixed methods study among pregnant and breastfeeding women living with HIV in Tanzania

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Background: Retention in care and adherence to medication among pregnant and breastfeeding women living with HIV (PBWLH) is crucial for prevention of mother to child transmission (PMTCT) of HIV. Due to the wide coverage of mobile phones, digital tools have been described as a potential intervention to improve adherence.
Therefore, the main objective of the study was to understand the needs and contents for a customized digital tool for retention in care and medication adherence among PBWLH.
Methods: A mixed-methods study was conducted from September 2021 to January 2022 at four health facilities. PBWLH (15-50 years) receiving PMTCT services were enrolled in a survey using a semi-structured questionnaires. The questions focused on exploring the adherence, clinic visits and mobile phones experience. Twenty breastfeeding participants were purposively selected and enrolled to use an internet enabled medication dispenser for one month, the so-called Wisepill dispenser. They also received different types of SMS reminders for a period of four weeks and after that feedback on their adherence patterns from a nurse counselor.
They used an automatically generated adherence report from Wisepill. In-depth interviews (IDI) were conducted to explore: barriers, needs and contents of digital tools and contents of tailored feedback on adherence patterns. We conducted descriptive analyses of quantitative data and thematic content analyses of qualitative data.
Results: Among 142 women interviewed, 42 (29.5%) were pregnant and 100 (70.5%) were breastfeeding. The majority 134 (95%) had access to mobile phones and used SMS daily. Ninety-six percent were interested in receiving reminder messages.
However, 31 (22%) reported to have network challenges. Nearly 82 (58%) preferred to be reminded daily before medication intake time. Showing adherence graphs during tailored feedback sessions was highly appreciated. Preliminary analyses of IDIs showed that SMSs were very helpful to remind taking medications and all wished to continue using the device. Also, health educational messages on HIV, sexual, alcohol use, nutrition, breastfeeding and entrepreneurship were preferred to be added.
Conclusions: Tailored digital tools seem to be feasible and acceptable in this group. This study helps to construct useful content for future digital adherence tools to support the health of pregnant and breastfeeding women living with HIV.

EPD309

Association of unmet social needs with uncontrolled viremia in people living with HIV

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Background: People living with HIV (PLWH) often have unmet social needs that put them at risk for uncontrolled viremia, disease progression, and HIV transmission.
Methods: The Einstein-Rockefeller-CUNY Center for AIDS Research (ERC-CFAR) Clinical Cohort Database contains electronic health record (EHR) data on patients within the largest health system providing HIV care in the Bronx, New York.
Using a 10-item social needs assessment tool based on the validated Health Leads Screening Toolkit and integrated into the EHR, we determined the self-reported prevalence from 4/2018-12/2019 of social needs among a sample of adults living with HIV (N=377) or without HIV (N=27,833). Among PLWH, we examined the association of the presence of each social need with HIV virologic suppression (<200 copies/mL).
We determined prevalence ratios (PRs) and 95% confidence intervals (CIs) by modified Poisson regression, adjusting for age, sex, race/ethnicity, language preference, and insurance status.
Results: PLWH were 55% women, 41% Black, and 44% Hispanic, with median age 53 (IQR 44-60). One-third of PLWH reported at least one social need, nearly twice the percentage among people without HIV (33% vs. 18%, $p<0.001$).
Among those reporting at least one social need, 58% of PLWH had multiple needs, compared with 50% of people without HIV.
Compared with people without HIV, PLWH reported a higher prevalence of all social needs assessed, with healthcare transportation and housing needs significantly higher ($p<0.05$) in adjusted analyses (Table).
PLWH reporting transportation needs were 26% less likely to have a suppressed viral load (adjusted prevalence ratio 0.74, 95% CI 0.56-0.98, p=0.03) than PLWH without transportation needs.

Social need	Social needs by HIV status			Association of each social need with virologic suppression (N=377 PLWH)	
	PLWH (N=377), N (%)	Without HIV (N=27,833), N (%)	P-value	Adjusted prevalence ratio (Ref. = without social need), 95% CI	P-value
Transportation for healthcare	47 (12)	1,389 (5)	<0.001*	0.74 (0.56-0.98)	0.03*
Housing stability	44 (12)	1,336 (5)	<0.001*	0.90 (0.72-1.14)	0.39
Food security	40 (11)	1,612 (6)	<0.001	1.05 (0.87-1.27)	0.61
Housing quality	39 (10)	1,420 (5)	<0.001*	1.02 (0.83-1.25)	0.87
Paying for healthcare	28 (7)	1,215 (4)	0.004	0.85 (0.62-1.18)	0.33

*P<0.05 after adjustment for age, sex, race/ethnicity, language preference, and insurance status. Other social needs that differed significantly between PLWH and those without HIV were legal help (P<0.001), getting along with partner/family (P=0.02), and interpersonal violence (P=0.001).

Table.

Conclusions: PLWH reported more social needs than those without HIV, with healthcare transportation a considerable barrier to virologic suppression. Addressing social needs including transportation may be an important means to help End the HIV Epidemic.

EPD310

Knowledge and attitude towards HIV prevention measures among pharmacy students at the University of Cyberjaya

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Background: A pharmacist is a profession that potentially plays a role in HIV response. The services include HIV testing, dispensing PrEP, clean needles, antiretroviral, and performing medication therapy management.

This research study is to assess the HIV knowledge, attitude, and prevention among BPharm students at the University of Cyberjaya.

Methods: A cross-sectional study was undertaken in May 2021 involving 50 BPharm students. Participants were given an online questionnaire on knowledge and attitude towards HIV/AIDS and its prevention. The HIV knowledge (HIV-KQ-18), a score of 1 was assigned for a correct and 0 was assigned for wrong and unsure answers. For each item, the percent of the correct answer is calculated.

Attitude towards HIV/AIDS Use a 5- point Likert scale and negative attitude statements are the reverse. The data were analysed using SPSS version 23 statistical software.

Results: The mean HIV Knowledge (HK) score for females is significantly higher than males, 6.2 and 5.9 respectively, while for the attitude score, the male is higher than females, 43 and 40 respectively. The scores ranged from 0 to 18. The majority, 46 (92%) had at least 14 questions correct and 4(8%) score all correct.

The study found many students still have a misunderstanding on HIV transmission including oral sex and deep kissing. In addition, the students have a misconception on the window period of the HIV testing which one-week risk behaviour will tell whether the person has HIV or not. The attitudes of the showed more than half of them believe that a person can get HIV by sitting in a hot tub or a swimming pool with a person who has HIV.

Finally, there is no correlation were found between HIV knowledge score and attitude score in the cohort (R=0.141, P=0.328).

Conclusions: Overall, the study found lower knowledge and prevention towards HIV/AIDS among first- and second-year students compare to third and fourth students. However, all students showed positive attitudes towards HIV/AIDS. Training and strengthening of education syllabus can convey accurate information and produce a competent pharmacist.

EPD311

The social and behavioral impact of the parenting for lifelong- health program to caregivers and teens in Eswatini

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Background: Parent-child communication and healthy relationships are important in combating risky behaviours that may lead to HIV infection among youth. In Eswatini parents do not spend time with their children to provide sexual education at household level (Mgadi:2003), reflecting poor parent-child relationships. Eswatini Ready, Resourceful, Risk Aware Project is implementing the Parenting for Lifelong Health (PLH) program targeting teens and caregivers of teens to promote positive parenting and reduce risky HIV behaviours.

The hypothesis tested in this study is to provide evidence that caregivers and teens will have positive parental attitude after participating and completing the PLH program.

Methods: Secondary data analysis of routine data collected within ongoing implementation was explored to assess parental behavior and perception before and after program participation. 1832 caregivers and 1587 teens completed a pre PLH survey. Both participated in the 14 weeks parenting for teens program between October 2020 to September 2021. Upon completion, 1130 caregivers and 846 teens completed a post PLH survey. Regression models were conducted to assess pre-post differences programme effects using base package installed by default in R Studio (version 4.0.3). Variables that were not normally distributed were square root transformed. A significant ($p<0.05$) regression coefficient was considered to indicate programme impact on the outcome of interest.

Results: The regression results shows that caregiver (726 females (64.25%) and 404 males (35.75%) and teen (10-19 years) was associated with an improvement in child be-

haviors (caregiver-report: *b*= -0.11, p=0.00; teen-report: *b* = -0.20, p=0.00), parental mental health (caregiver-report: *b* = -0.17, p=0.04), and financial condition (caregiver-report: *b* = -2.07, p=0.00) at post-intervention.

Although we did not detect any difference between the pre- and post-caregiver reports in terms of parenting style (b =0.66, p=0.10), the teen-reported data indicated that they experienced more positive parenting practices (b = 1.00, p=0.00) after the programme.

Conclusions: Evidence suggests that exposure to PLH program influences positive parenting practices amongst parents and teens. The PLH intervention may also be adapted for teenagers and caregivers in prison. Future studies should investigate differences in HIV infection rate of participants exposed to PLH compared to those not.

EPD312

Perceptions of weight gain from use of dolutegravir-based regimens in women living with HIV in Uganda

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Background: Dolutegravir (DTG)-based regimens have been recommended by the WHO as the preferred standard first-line HIV treatment in low- and middle-income countries. Evidence suggests an association with weight gain, particularly among black women.

Our study investigated perceptions of weight gain from DTG-based regimen use on body image and adherence of antiretroviral therapy in women living with HIV (WLHIV) in Uganda.

Methods: Between April and June 2021, we conducted semi-structured interviews involving 25 WLHIV (adolescents, women of reproductive potential and post-menopausal women) and 19 healthcare professionals (clinicians, nurses, ART managers and counsellors) purposively selected from HIV clinics in Kampala.

The interviews explored perceptions of body weight and image; experiences and management of weight related side effects associated with DTG; and knowledge and communication of DTG-related risks. Data was analyzed thematically in NVivo 12 software.

Results: Our findings indicate WLHIV in Uganda commonly disliked thin body size and aspired to gain moderate to high level body weight to improve their body image, social standing and hide their sero-positive status. Both WLHIV and healthcare professionals widely associated weight gain with DTG use, although it was rarely perceived as an adverse event and was unlikely to be reported or to alter medication adherence. Clinical management and pharmacovigilance of DTG-related weight gain were hampered by the limited knowledge of WLHIV of the health risks of being over-weight and obesity; lack of diagnostic equipment and resources; and limited clinical guidance for managing weight gain and associated cardiovascular and metabolic comorbidities.

Conclusions: The study highlights the significance of large body-size in promoting psychosocial wellbeing in WLHIV in Uganda. Although weight gain is recognized as a side effect of DTG, it may be welcomed by some WLHIV. Healthcare professionals should actively talk about and monitor for weight gain and occurrence of associated comorbidities to facilitate timely interventions. Improved supply of diagnostic equipment and support with sufficient guidance for managing weight gain for healthcare professionals in Uganda are recommended.

EPD313

Suicide ideation and attempt among people living with HIV in South Carolina: 2005-2016

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Background: Risk factors for suicidality among people living with HIV (PLWH) could change over time, along with the development of combination antiretroviral therapy (cART). Only a few studies have investigated the trajectories and leading risk factors of suicidality along with the advance of cART with longitudinal data.

This study aimed to examine the leading risk factors of suicide ideation/attempt among PLWH in South Carolina, overall and stratified by different cART eras (early period:2005-2008 and late period: 2009-2016).

Methods: Retrieved from the HIV/AIDS electronic reporting system at the South Carolina Department of Health and Environmental Control (DHEC), the statewide PLWH who were diagnosed between 2005 and 2016 were included for this study. Suicide ideation/attempt was defined based on ICD-9/10 codes. Cox proportional hazards model was employed to examine the association of suicide ideation/attempt and predictors including demographics, HIV-related characteristics, and mental health conditions.

Results: Among a total of 8,567 PLWH, the incidence of suicide ideation/attempt increased from 717.1 per 100,000 person-years (95% Confidence Interval [CI] 497.6-936.7) in the early cART era (2005-2008) to 861.8 (95% CI 738.6-984.9) in the late cART era (2009-2016). Across cART eras, PLWH with suicide ideation/attempt were consistently less likely to have AIDS diagnosis, and more likely to be 18-39 years of age, have a diagnosis of major depressive disorder, co-

caine use, and alcohol use (*ps*<.05). Leading risk factors of suicide ideation/attempt could also change across cART eras. In the early cART era, PLWH with suicide ideation/attempt were more likely to be White and diagnosed with bipolar disorder (*ps*<.05).

In the late cART era, suicidal ideation/attempt was positively associated with transmission through injection drug use, anxiety, post-traumatic stress disorder, schizophrenia, and personality disorder (*ps*<.05). Neither initial CD4 nor viral load was not associated with suicide ideation/attempt in any cART eras.

Conclusions: The overall suicide ideation/attempt rate has increased, and mental health conditions became more prominent risk factors of suicide ideation/attempt in the late cART era. Improved access to psychiatric care may have facilitated the identification of mental health conditions. Timely counseling or pharmaceutical interventions of these conditions might have prevented escalation to the severe end of the suicide ideation/attempts spectrum.

EPD314

Loneliness and its correlates in older people living with HIV in Wuxi, China: a cross-sectional study

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Background: Loneliness is common among older people living with HIV (PLHIV). However, little is known about the prevalence of loneliness and factors that impact loneliness. This study aimed to explore factors affecting loneliness among older PLHIV.

Methods: A cross-sectional study was conducted among PLHIV attending the Fifth People's Hospital of Wuxi, Jiangsu Province, China from March to October 2021. Eligible participants were men and women living with HIV who were 50 years and older (older PLHIV).

Loneliness and aging perceptions were measured using the short-form of the UCLA Loneliness Scale, and Brief Aging Perceptions Questionnaire, respectively. Correlates of loneliness were assessed using multivariable logistic regression analyses.

Results: A total of 200 older PLHIV (148 men and 52 women, median age 59.5, IQR 54.0-67.0) were recruited. Participants were predominately heterosexuals (75.5%, n=151), and all homosexuals were men. Over half (54.5%, n=109) reported loneliness symptoms. Loneliness was associated with aging perceptions (adjusted odds ratio =1.12, 95% confidence interval =1.06-1.19).

No statistically significant association was found between loneliness and age. Older PLHIV who self-identified as homosexual were more likely to report loneliness (adjusted odds ratio =3.397, 95% confidence interval =1.48-7.79).

Conclusions: Our findings highlight the high burden of loneliness among older PLHIV. Mental health healthcare for older PLHIV should be taken by aging perceptions specific rather than age. Homosexual older PLHIV may require extra mental health care compared to their bisexual and heterosexual counterparts.

Further researches are needed to verify these findings and examine novel interventions to reduce loneliness in older PLHIV.

EPD315

Predictors of viral load suppression among key populations: evidence from a low resource setting in Bulawayo, Zimbabwe

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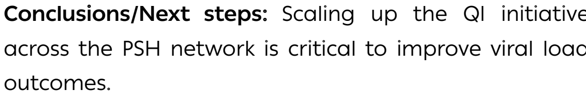
Background: Statistics from the United States Agency for International Development (USAID) show that viral load suppression rates among key populations remain below the target 95%.Beginning of 2018, clinics supported by PSI through Population Solutions for Health (PSH) with funding from USAID on the Going the Last Mile for HIV Control program showed a combined viral load suppression rate of 92% between 90% and 93%.

This enquiry sought to identify factors associated with viral load suppression and evaluate the contribution of Quality Improvement (QI) initiatives at Bambanani New Start Centre (NSC) in Bulawayo.

Description: A cross-sectional and longitudinal analysis of data from key populations served by Bambanani NSC, prioritized clients who were on ART for at least 12 months and had at least one unsuppressed viral load result from 2015 to 2021.PSH introduced structured QI initiatives at the beginning of 2020 to improve viral load outcomes. A comparison of outputs before and after implementing the intervention was conducted. Data were generated from PSH's electronic medical record and analysed using STATA V13. Hazard ratios were calculated to identify factors associated with viral load suppression and a t-test compared mean uptake of unsuppressed viral load outcomes before and after QI implementation.

Lessons learned: Men who have sex with men and high-risk men were both 1.5 times (95%; C.I: 1.06 – 2.27), (95%; C.I: 1.06 – 2.28) more likely to have an unsuppressed viral load compared to their counterparts who are female sex workers, transgender, and females respectively. Clients initiated on ART at static site were 78% (95%; C.I: 0.13 – 0.39) less likely to have an unsuppressed viral load result compared to clients initiated from outreach points. Significant mean uptake of 5 and 1 (95%; C.I: 2.42 - 4.8) showed that before QI initiatives the mean number of clients to have an unsuppressed viral load result was higher compared to after the implementation of structured QI.



Conclusions/Next steps: Scaling up the QI initiative across the PSH network is critical to improve viral load outcomes.

EPD316

Social and clinical outcomes of adolescents and young adults living with HIV transitioned from pediatric to adult centered care at University Teaching Hospital of Kigali (CHUK)

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Background: In Rwanda, the prevalence of HIV has been stable since 2005 (3% among adults 15-49 years)(4). The introduction of highly Active Antiretroviral Therapy (HAART) had a great impact on the outcome of patients living with HIV in general, many children with HIV are surviving up to adulthood(6)(7). This represents the need for transition from pediatric to adult care(8). The transition period has been associated with high drop-out rates with resultant poor retention in care and increased morbidity and mortality(8)(9).
Since 2016, the pediatric HIV clinic at CHUK has transitionned adolescents and YA to the adult-centered clinic, but no evaluation of their outcomes has been done. Our aim is to determine their outcomes and to assess their retention in care.
Methods: A cross-sectional study was conducted at the University Teaching Hospital of Kigali (CHUK), which is a public referral tertiary level hospital located in Kigali. Participants were HIV-infected adolescents and YA transitioned from January 2016 to December 2019. Data was collected in their clinical records and by in-person interview. Descriptive statistics were used to describe the study population and paired T-test was used to compare pre-and post-transition viral loads (VL).
Results: During the study period, 85 adolescents and YA were transitioned from pediatric to adult HIV clinic at CHUK. Among them, 57 consented to the study. The median age at the time of transition was 19 years.
More than half of the youth (69.6%) confirmed that they were sexually active, 7% stated that they had STI (s) other than HIV since the time of transition and 15.8% stated that they had opportunistic infection (s) since the time of transition.
At 3 years post-transition, the VL suppression had increased from 82.5% to 94.7% and the mean VL had decreased from 4454.3 to 3867.9. The difference in means of viral loads was not proven to be statistically significant. The majority of our population (96.5%) were still engaged in care.
Conclusions: In the third year post transition, there was good outcome as the VL load suppression was higher and the mean VL went below the baseline. There was a high rate of retention in care among our participants.

EPD317

Gender dimensions of adolescent intervention acceptability: lessons from a systematic review of studies with young adults in Africa

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Background: Intervention acceptability has been linked to more targeted interventions, better implementation and effectiveness, and higher participation rates. However, acceptability studies with adolescents in low- and middle-income countries (LMICs) are relatively scarce, and no existing reviews aggregate the evidence from Africa.
Methods: We conducted a systematic review to identify studies assessing acceptability of HIV prevention, testing and adherence interventions in sub-Saharan Africa, with young people aged 10-24, published over the past decade.
We synthesized quantitative and qualitative findings across studies, through descriptive synthesis and inductive thematic analysis, to determine which HIV interventions young people found acceptable or unacceptable, their reported reasons for acceptability or unacceptability, and gender differences in acceptability findings.
Results: Review search generated 6196 records, and 55 final eligible studies assessing 60 interventions for acceptability. Acceptability was high among 49 of the 55 studies. Of the 41 studies that included male and female participants, 14 disaggregated results by (male versus female) gender. Six of these studies (3 quantitative and 3 qualitative) highlighted gender differences in acceptability findings.
The three quantitative studies respectively showed higher acceptability for HIV testing at school and for male circumcision among females, and higher acceptability of the HPV vaccine among males. Instead, three qualitative studies revealed gender differences regarding reasons given for SRH intervention acceptability.
For instance, in an HIV vaccine study, friends and family members were strong motivators for vaccine uptake among adolescent women, while young men were more likely to see vaccines as an opportunity to stop condom use and engage in multiple sexual partnerships.
A second HIV vaccine study revealed adolescents' preferences for a vaginal ring and HIV vaccine because of young women's desire for greater agency and autonomy, and male distrust of female partners.
Conclusions: Our results highlight gender-related factors among the key influencers of acceptability or unacceptability of SRH interventions with young people in Africa. However, most existing study designs do not allow for a disaggregated analysis of acceptability by gender. Moreover, not one of the studies in this review referred to a broader conceptualisation of gender or worked specifically with minority populations such as LGBQTI or young adults living with disabilities.

EPD318

Generating demand for the test that counts: community-led campaigns to increase routine viral load testing

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Background: Routine viral load testing (RVLT) is key to effective HIV treatment monitoring for people living with HIV (PLHIV). Scaling up RVLT is essential to achieving viral suppression for people on antiretroviral treatment.
However, uptake of RVLT among PLHIV remains low, hindered by a mix of demand and supply-side barriers; a significant barrier is the lack of awareness of the need for RVLT. Innovative, targeted community-led approaches are needed to generate demand.
Description: Building on a three-month pilot phase, the International Treatment Preparedness Coalition and six community organisations developed stepwise campaigns in the Democratic Republic of Congo, Kenya, Sierra Leone, South Sudan and Zimbabwe. Community, lab and health ministry representatives jointly identified country-specific barriers to RVLT and affected populations.
Audience and context-specific multimedia communication campaigns were rolled out by communities between July and December 2021. A post-campaign survey assessed campaign receptivity and changes in behaviour.
Lessons learned: Overall, communication campaigns reached over 78,000 adults, youth and expectant mothers living with HIV. Tailored messaging was disseminated across varied media: WhatsApp, Facebook, Twitter, Instagram, radio, virtual and peer-educator engagement meetings. Of the 188 people polled, peer educator meetings (50%), virtual meetings (14.5%), WhatsApp (14.4%) and Twitter (10%) were rated most effective in conveying the messages. The information was best received when it was easy to understand, fun and interactive and presented by community members.
Additionally, knowledge gain led to relevant action, including taking a viral load test (82%, n=186), telling one's friends (83%, n=188) and asking for interpretation of results (76%, n=185). Coupling the messaging with the Undetectable=Untransmittable campaign and ensuring that recipients of care understood the results were deemed critical in encouraging behavioural change. However, lab reagent stockouts, non-functioning machines and prioritization of COVID-19 testing emerged as barriers to RVLT.
Conclusions/Next steps: Context-specific communication campaigns are effective tools in creating demand for viral load testing, particularly when informed and adapted to local realities. While dissemination through social media channels gained traction, in-person meetings were preferred for greater engagement and understanding of the messages. Documenting and addressing persistent systemic barriers to RVLT is critical to ensuring increased demand improves treatment outcomes for PLHIV.

EPD319

Assessing antiretroviral adherence in highly treatment-experienced individuals

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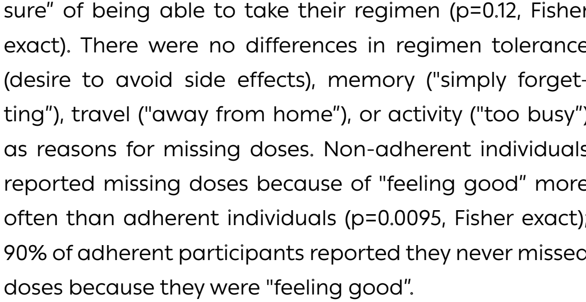
Background: Non-adherence to antiretroviral therapy (ART) is the most common reason for rebound viremia. Assessment of regimen adherence has not been extensively investigated in highly treatment-experienced individuals. Studies identifying reasons for non-adherence for this group are necessary. We previously conducted a study of highly treatment-experienced individuals with ongoing viremia and identified non-adherent individuals during inpatient directly observed therapy (DOT). Participants completed an adherence survey at entry. We herein analyzed baseline adherence survey responses in adherent and non-adherent individuals.
Methods: Twenty HIV-1 infected individuals with documented viremia >1000 copies/ml on ART enrolled in a clinical study of DOT. Participants completed the ACTG baseline adherence questionnaire II during screening and were admitted to the NIH Clinical Center for 7-8 days of self-guided DOT. Participants were instructed to request their ARV drugs. Participants were considered adherent during the DOT period if ART was requested for >90% of prescribed doses. Questionnaire responses in adherent vs. non-adherent individuals were analyzed using T- and Fisher exact tests.
Results: Seven participants were non-adherent and 13 adherent during DOT. Average participant age was 45.5 years (range 26.0-51.3), median CD4 54.0 (13.8-90.3), median viral load 4.46 $\log_{10}$ copies/mL (4.32-5.00), mean years on ART 17.2 (SE 6.1), and mean number of ART drugs 11.8 (SE 4.5). No differences in education level, current alcohol or substance use were present between groups. Reported regimen confidence was high in both groups with no differences in number of individuals who were "extremely



sure" of being able to take their regimen (p=0.12, Fisher exact). There were no differences in regimen tolerance (desire to avoid side effects), memory ("simply forgetting"), travel ("away from home"), or activity ("too busy") as reasons for missing doses. Non-adherent individuals reported missing doses because of "feeling good" more often than adherent individuals (p=0.0095, Fisher exact); 90% of adherent participants reported they never missed doses because they were "feeling good".

Conclusions: Most self-reported answers regarding reasons for missing doses did not discriminate between adherent and non-adherent individuals in this group of highly treatment-experienced individuals. Development of new tools in assessing ART adherence, including questions regarding individual well-being may be useful.

Conceptualizing social and structural factors and their impacts

EPD320

Prevalence and factors associated with risky sexual behaviors among female adolescents in Zambia

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Background: Despite decades-long commitment to women's reproductive health rights, sexually-transmitted diseases and unintended pregnancies continue to be major public health concerns in sub-Saharan African. To address the dearth of a nation-wide studies in the African continent, this study aims to explore the prevalence and factors associated with risky sexual behaviors (RSB) among Zambian female adolescents.

Methods: Data on adolescent females, aged 15-19 (n= 3000), were obtained from the 2018 Zambia Demographic and Health Survey, an interviewer-administered, nationally representative survey that used multistage sampling. The study conducted multivariable logistic regression to explore the correlates of RSB.

Results: Of respondents, 49.7% reported ever having sexual intercourse and 35.3% (71.1% of sexually active respondents) reported engaging in RSB. The following RSB percentages were reported: intercourse before age 16 (25.1%), non-use of condoms at last intercourse (18.8%), engaging in transactional sex (3.1%), alcohol use at last intercourse (2.3%) and multiple sexual partners (0.9%).

Educational attainment and household wealth showed strong inverse trends with RSB risk and there were notably large geographic differences in RSB within Zambia (22.1% in Lusaka region versus 62.4% in Western province). The multivariable results of the of all respondents revealed that those who were older, employed, less educated, less wealthy, residing in Southern, Western and North Western provinces and those with no exposure to print media were significantly more likely to have engaged in RSB (AOR: 1.28-4.11, p<0.05).

Among sexually-active females, similar trends were noted except that younger, non-married adolescents without internet access were at higher risk of RSB.

Conclusions: Given the negative health outcomes associated with RSB, Zambian adolescent health care programs may strategically target limited resources to the identified risk groups.

EPD321

"Things are easy and faster" - Client and healthcare worker experiences with Differentiated Service Delivery in western Kenya

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Background: Kenya implemented treat-all in 2016 for people living with HIV, increasing treatment access but further over-burdening health facilities. To relieve impacted clinics,the Kenya Ministry of Health (MOH) rolled-out Differentiated Service Delivery (DSD), allowing stable adult clients on antiretroviral therapy (ART) to attend clinics less frequently through facility- and community-based models.

This study sought an in-depth understanding of ART client and healthcare worker (HCW) experiences with DSD to assess impact.

Methods: In August 2020, nine Focus Group Discussions (FGDs) were conducted at three MOH facilities in Kisumu County. An urban, semi-urban and rural facility were selected with each conducting HCW, adult (≥18 years) male client, and adult female client FGDs. Ten participants per FGD were purposefully selected representing multiple DSD models for client groups and client interaction variety among HCWs. Client FGDs were conducted in their language preference (English, Kiswahili, Dholuo), while HCW FGDs were in English.

Discussions focused on DSD experiences, barriers, satisfaction, and recommendations. FGDs were led by a trained facilitator using a guide and were audio-recorded, transcribed, translated, coded and analyzed in Dedoose software, version 9.0, by qualitative researchers.

Results: High satisfaction with the efficient clinic services was the predominant theme. Clients appreciated spending less time at the clinic, while HCWs appreciated the reduced workload, less congested facilities, and more time

for clients requiring clinical care. Both clients and HCWs indicated improved staff attitudes and more meaningful client encounters with the reduced workload. Perceived stigma with community-based models was a common thread due to privacy concerns; therefore facility-based models were overwhelmingly preferred.

Clients and HCWs agreed that DSD services add to clients' motivation to adhere and stay virally suppressed. Recommendations centered on further spacing of refill and clinical visits, improved privacy measures for discrete community delivery, and adherence support for suppression.

Conclusions: This study provides important insights on how well DSD is received by clients and HCWs and the efficiencies it brings to service delivery.

This study also elucidates initiatives to consider including further spacing of clinic and refill visits, addressing privacy concerns to bolster community-based DSD, and strengthening adherence support to optimize client-centered care and health outcomes.

EPD322

Sexual, gender and racial minority stigma as barriers to HIV prevention services and research

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Background: Although sexual and gender minorities (SGM) of color in the United States are at increased risk for HIV acquisition, previous research has not fully identified the challenges that participants face to more fully engage in HIV prevention services or research. Applying Meyer's Minority Stress Theory (MST) as our conceptual framework to the lived experiences of SGM of color, we explored barriers to HIV prevention services and research engagement.

Methods: We conducted a qualitative thematic analysis of responses from an online survey (N=222) administered between December 2019 and February 2020 on Qualtrics XM. Criteria for eligibility included: assigned male sex at birth; had sex with a cisgender man in the past year; resided in the U.S.; over the age of 18; self-reported HIV-negative serostatus; and self-identified as Asian, Black/African American, or Hispanic/Latinx. Responses were coded by a research team of eight coders, including five Community Advisory Board members. Quotes from survey responses were selected to illustrate emerging themes.

Results: Of 2,193 individuals who completed the eligibility screener, 381 (17.4%) met eligibility criteria, and 222 (10%) completed the survey. The majority of participants (66.7%) identified as cisgender men, followed by transgender women (21.8%); transgender men (5.6%); and gender-nonconforming (GNC) (6.0%). In terms of sexual orientation, the majority of participants identified as gay (44.1%) or bisexual (36.9%). Across racial/ethnic groups, there were no significant differences by age, income, or education. Emerging themes included fear of exposure of SGM identity; a lack of education, leading to a failure to adopt safer sex practices; stigma and discrimination during participation in HIV prevention research; access to care and racial discrimination; and the sustainability of medication and financial incentives. Some participants felt singled out, targeted or blamed for HIV transmission trends within their community while other participants felt disregarded or ignored by current HIV research and service mechanisms.

Conclusions: By tailoring HIV prevention research and services to the needs of SGM of color, health care providers and researchers can better address health disparities within this population. Themes can be utilized to more effectively engage research participants and HIV prevention service recipients.

EPD323

The impacts of sleep-related breathing disorders on sleep architecture, physical and psychological health in HIV infection: a matched case-control study

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Background: Sleep-related breathing disorders (SRBDs) is a common sleep disorder in HIV-infected persons, which is not only associated with loud snoring and excessive daytime sleepiness but also increase the risk of anxiety and depression. However, the impacts of SRBDs on physical and psychological health in HIV infection have not been fully evaluated.

We aimed to investigate the impacts of SRBDs on sleep architecture and the development of loud snoring, excessive daytime sleepiness, and affective disorders in HIV-infected and non-infected men.

Methods: A secondary data analysis using matched case-control study was conducted. 54 HIV-infected persons (case group) were enrolled from 2016 to 2019. A control group with HIV uninfected men were matched for SRBDs severity and were selected for comparison. For both cohorts, an overnight sleep study using a Somte 32 V1 monitor was done.

Results: The mean age of the 108 patients (including 54 cases and 54 matched controls) was 33.75 years. Study participants had different levels of SRBDs severity, 40 (37.0%) had apnea and hypopnea index (AHI) < 5 events/hour, 36 (33.3%) AHI between 5 and 15, and 32 (29.7%) AHI ≥ 15. HIV-infected persons with SRBDs had lower mean

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body weight (kg/m2) (23.74 vs. 27.22) and mean neck size (cm) (36.45 vs. 38.85) compared to matched controls. Central-apnea index (CI) was higher in the case group rather than matched controls (mean CI, 0.34 vs. 0.17, p = 0.049). The mean percentage of slow sleep stage included stage 3 sleep (10.26% vs. 13.94%, p=0.034) and rapid eye movement sleep (20.59% vs. 17.85%, p=0.011), and were significantly lower in the HIV-infected persons than among matched controls.

No differences in anxiety and depression between HIV-infected persons and matched controls were identified. Only louder snore and excessive daytime sleepiness showed significantly lower in HIV-infected persons compared to matched controls.

Conclusions: HIV-infected persons with SRBDs appeared to have a high CI and may relate to a lower percentage of slow sleep stage than matched controls. However, it does not confer a higher risk for affective disorders. A longitudinal study is recommended to examine the impact of SRBDs on health outcomes in HIV-infected persons.

EPD324

Communicating about PrEP use within interpersonal relationships: qualitative experiences of gay, bisexual and other men-who-have-sex-with-men in England

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Background: Oral pre-exposure prophylaxis (PrEP) use among gay, bisexual and other men who have sex with men (GBMSM) is crucial to ending the HIV epidemic by 2030. This qualitative study explores how the first wave of PrEP users in the UK PROUD study communicated about their use of PrEP within interpersonal relationships.

Methods: Between Feb-2014 and Jan-2016, 41 in-depth interviews were conducted with GBMSM and a transwoman at sexual health clinics in England. Interviews were conducted in English and audio-recorded. Recordings were transcribed, coded and analysed using thematic analysis. Interviews explored participants' communication about PrEP, reasons for communicating or not, and societal attitudes towards PrEP.

Results: Participants discussed their PrEP use across a range of interpersonal relationships, with most speaking to at least one person which was usually a sexual partner or friend.

Discussions took place in-person and on-line. Motives for choosing who to discuss PrEP with and how to discuss it, varied depending on the interpersonal relationship and included making decisions about starting PrEP, navigating sexual behaviours and relationships, and raising awareness about the benefits of PrEP.

Responses to discussions about PrEP varied across and within social groups, from some people being supportive and interested in PrEP for themselves, to others disapproving of PrEP completely. Discussions with sexual partners were usually supportive and positively influenced adherence. Discussions within social networks were mostly positive and recognised as a primary source for information-sharing. However, negative social attitudes including PrEP-stigma, condomless sex as a taboo, and a general lack of awareness of PrEP among GBMSM were reported. The novelty of PrEP in the UK at this time was noted as a contributing factor to these responses.

Conclusions: These findings highlight that it was important to most PrEP users, to discuss PrEP with partners and friends. As the first wave of PrEP users in the UK, interactions were mostly positive but tainted by a lack of awareness about PrEP and resistance to an HIV prevention method perceived to facilitate condomless sex.

These findings provide insights into how early PrEP adopters communicated about PrEP and could inform the introduction of current and future PrEP products in new settings.

EPD325

Countering fear, phobias, stigma, lack of knowledge: designing and implementing appropriate HIV awareness and testing strategies and interventions for people with hepatitis C - Georgian experience

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Background: Hepatitis C prevalence in Georgia is7% (Georgian National Centre Disease Control). UNAIDS estimates HIV prevalence in Georgia at 2.2% (www.aids.uanaids.org) but little is known about the knowledge of HIV among injecting drug users (IDU's) with HepC or the uptake of HIV testing amongst this key population.

Hepa plus, the first NGO HepC Georgian patient organization put in place an intervention to explore with HIV negative IDU's with HepC their knowledge and attitudes to HIV, the barriers to testing and or/accessing treatment, as well as their attitudes to their Hepatic C self-management.

Methods: IDU's with Hep C, clients of our service, were invited (through self-selection) to take part in an intervention; a series of participatory focus group discussions and 30 individual in-depth interviews.

60 individuals came forward as participants; 30% were women 70% men and ages ranged from the mid-twenties 20's to 60's.

4 focus groups (2 men only, 1 women only, and 1 mixed) of an hour or so in length. The format of these groups was that of an open (facilitated) discussion.

Both focus groups and the interviews were conducted to ensure confidentiality and establish ground to allow for open/non-judgmental discussion.

Results: Attitudes to, and knowledge about, HepC and HIV varied widely in both the focus and interviews. Many expressed the following:

Participants viewed HepC as a non-stigmatized condition ('it is curable') but HIV as a death sentence and stigmatized condition.

The view that someone looking healthy 'probably not having HIV' was still prevalent as was the fear that if known to be HIV+ this would mean exclusion from the IDU community; the sharing of drug equipment though reduced was not universally absent.

Gaps in knowledge of HIV transmission routes were evident, access to commodities and strategies for maintaining good sexual heath was an issue.

Conclusions: Resulting from this work we are putting in place a specific HIV testing program for our clients, attuned to their fears and concerns, as well as interventions to support our clients to make more informed choices that will assist them in reducing their vulnerability to HepC and HIV

EPD326

Internalized HIV stigma decreases for newly-diagnosed people living with HIV in Rwanda during their first 6 months in care

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Background: Stigma remains a key barrier to care engagement for people living with HIV (PLHIV), particularly early in the disease course. There are limited data characterizing trajectories of HIV stigma for newly-diagnosed PLHIV.

We aimed to describe change in anticipated, enacted, and internalized HIV stigma after diagnosis among PLHIV in three health centers in Kigali, Rwanda.

Methods: We included data from the baseline and 6 month visits of an ongoing pilot study comparing differentiated HIV care models (NCT04567693). Participants were newly-diagnosed, adult PLHIV on antiretroviral therapy (ART) who enrolled between October 2020-May 2021. The HIV Stigma Scale and HIV/AIDS Stigma Instrument were used to measure anticipated (expectation of negative actions related to HIV-status), enacted (experience of negative actions related to HIV-status), and internalized (application of negative HIV-related feelings and beliefs to self) stigmas. We used paired t-tests to assess significance of change in stigma scores from baseline to 6 months and Chi-squared tests to examine associations between demographic and clinical factors and decrease in internalized stigma (vs. no decrease).

Results: Among 90 participants, 60% were female, mean age was 31, and 93% initiated ART within 7 days of enrollment in care. Among 85 participants with baseline and 6 month data, there was no significant change in mean anticipated stigma score (Baseline 2.40, 6 Month 2.49, $p = 0.33$), a small decrease in mean enacted stigma score (Baseline 1.05, 6 Month 1.02, $p=0.04$), and a substantial decrease in internalized stigma score (Baseline 1.93, 6 Month 1.35, $p < 0.001$). A higher proportion of participants who were formally employed had a decrease in internalized stigma, compared to those who were self or unemployed (71% vs. 42%, $p=0.01$); no other factors were associated with a decrease in internalized stigma.

Conclusions: In this cohort of newly-diagnosed PLHIV, we observed a significant decrease in internalized stigma over the first 6 months in care. These findings suggest early engagement in HIV care and use of ART may contribute to a reduction in internalized stigma. Subsequent studies should further explore the relationship between formal employment and internalized stigma as well as other mechanisms of change in internalized stigma over time.

EPD327

Global online interest in HIV/AIDS and STI before and during the COVID-19 pandemic: an infoepidemiology ecological study

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Background: In an increasingly connected world through the internet, HIV and STI transmission seems easier. Likewise, the internet has been a major source of health-related information and interventions, especially amid the COVID-19 pandemic. While online search traffic has been investigated for non-communicable diseases, particularly relating to health interventions, this has not been done for HIV and STI.

We looked into how COVID-19 has changed public interest in HIV and STI and determined associations between search patterns and country-specific characteristics.

Methods: We did an ecological study using secondary data from the Google Trends™ dataset. We analyzed the search volume index (SVI) for terms "HIV/AIDS", "Sexually Transmitted Infection", and "COVID-19" from 2004-2021 in all countries. Mean differences in SVI between HIV and STI, and pre-pandemic and during the pandemic were deter-

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mined using t-test. Correlations between SVI and country-level socioeconomic and HIV-related attributes using Spearman's rank-order correlation.

Results: In the past two decades, SVI for HIV/AIDS were significantly different from that of STI (p<0.001). There was a gradual decline in search in HIV/AIDS, whereas a sustained volume was noted with STI.

Interest in both HIV/AIDS (p<0.001) and STI (p<0.001) were significantly different in pre-COVID-19 pandemic in 2019 and during the pandemic in 2020. Individuals were mostly searching for its signs/symptoms, diagnosis, and transmission; HIV treatment interest was low. SVI was negatively correlated with the country's GDP, GDP per capita, proportion of internet users, percent change in HIV and AIDS-related death incidence, and estimated number of PLHIV. SVI was highly positively correlated with adult HIV prevalence rate.

Conclusions: This is the first infoepidemiology ecological study in HIV. Individuals were generally more interested in HIV than STI as a whole. Significant drop in search interest were noted during the COVID-19 pandemic. As country development core indicators were negatively correlated with SVI, it affirms the disproportionate HIV burden and lack of access among low- and middle-income countries.

Moreover, the high positive correlation between adult disease prevalence and SVI suggests the internet as a significant source of information. These emphasize the need for health promotion information accessible online and commensurate support for holistic development and wellbeing.

EPD328

HIV care engagement among people living with HIV receiving food assistance in the United States: a qualitative analysis

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Background: There is a strong population-level association between socioeconomic factors and HIV infection. Resource-poor environments often endure structural impediments, including low median household income, limited access to healthcare, and food insecurity, which have negative consequences on health behaviors associated with HIV. It is likely that the COVID-19 pandemic has exacerbated these concerns, particularly among people living with HIV (PLH). The relationships between food assistance, food insecurity, and care engagement among PLH have significant implications for public health; yet the lack of qualitative work in resource-rich settings has not allowed for a nuanced understanding of this phenomenon.

The purpose of this study was to explore socio-contextual factors that influence care engagement among PLH receiving food assistance in the United States.

Methods: Twenty-five PLH receiving food assistance were recruited from January-October 2021. First, enrolled participants completed a survey assessing socio-demographic characteristics, medication adherence, and food insecurity.

Second, semi-structured interviews discussed various socio-contextual factors that influence engagement in HIV-related care. A thematic content analysis reported semantic level themes describing factors influencing HIV care following an integrated inductive-deductive approach.

Results: Most participants self-identified as male (52%), Black/African American (68%), and straight/heterosexual (60%). Ages ranged from 24-85 years (*M*=39.9 years, *SD*=17). Past-month antiretroviral therapy (ART) adherence ranged from 75%-100% (M=95.5%, SD=6); the majority self-reported viral suppression (64%). More than half of participants were food insecure (56%), with 4%, 24%, and 28% indicating mild, moderate, and severe food insecurity, respectively. Qualitative analysis revealed two themes.

First, participants described the impact of food insecurity on their HIV care through various mental health and behavioral pathways. Food insecurity eroded participants' mental wellbeing which affected their ART adherence and HIV care.

Second, participants described the positive influence of social support on the facilitation of care. Support from clinicians, friends, and family helped participants adhere to ART and encouraged care engagement.

Conclusions: Results indicate the need to prospectively study socio-contextual factors influencing HIV care among PLH receiving food assistance.

Through a more nuanced understanding of these factors, interventions at the individual, community, and policy levels can be implemented to address food access with the goal of increasing engagement in HIV care.

EPD329

Resilience, social support, and healthcare empowerment on HIV care engagement and viral suppression among young Black sexual minority men with HIV in the US South: overcoming social and structural barriers

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Background: In the United States (US) South, young Black sexual minority men (YBSMM; ages 18-34) are the most disproportionately impacted by HIV. HIV transmissibility

is heightened by less engagement in the HIV care continuum (CC) and lower viral suppression among YBSMM living with HIV (YBSMM+). Informed by Minority Stress Theory and Syndemic Theory, this exploratory analysis of data from a community cohort of (N=224) YBSMM+ in the US South sought to shed light on the impact of socioeconomic distress, intimate partner violence, depressive symptoms, HIV-related social support, resilience, and healthcare empowerment on CC engagement.

Methods: We first conducted bivariate analyses which established associations of each of the above latent predictor variables of interest and the latent outcome variable HIV CC engagement defined as: being on antiretroviral therapy, being retained in care, and having an undetectable viral load. We then constructed a structural equation model (SEM) in Mplus predicting HIV CC engagement and assessed for the potential mediating effect of healthcare empowerment.

Results: We found higher socioeconomic distress (b=-0.25, SE=0.10, $b*$=-0.29, p=0.013), intimate partner violence (b=-0.23, SE=0.09, $b*$=-0.30, p=0.007), and depressive symptomatology (b=-0.05, SE=0.01, $b*$=-0.40, p<0.001) were associated with lower engagement in the HIV CC. In contrast, higher resilience (b=0.31, SE=0.11, $b*$=0.31, p=0.006) and healthcare empowerment (b=0.69, SE=0.14, $b*$=0.62, p<0.00 1) were associated with higher HIV CC engagement.

We tested an SEM model and found the data fit the model well: RMSEA=0.04; CFI=0.98; SRMR=0.07. HIV-related social support and resilience were found to have significant indirect effects such that higher HIV-related social support (b=0.09, SE=0.05, p=0.076) and resilience (b=0.20, SE=0.08, p=0.019) were associated with higher HIV CC engagement through their respective impact on healthcare empowerment. Depressive symptoms maintained a significant direct effect on the outcome but no indirect effect via healthcare empowerment. Higher healthcare empowerment was associated with higher HIV CC engagement (b=0.57, SE=0.18, $b*$=0.58,p<0.001) in the mediation model.

Conclusions: The findings from this exploratory analysis of the impact of individual, social and structural Barriers on HIV CC engagement suggest that there is hope for overcoming the deleterious effect socioeconomic distress and intimate partner violence have on HIV CC engagement by targeting healthcare empowerment among YBSMM+.

EPD330

Developing a validated scale to measure PrEP stigma among adolescent girls and young women in Western Kenya

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Background: Qualitative research suggests stigma is a barrier to effective pre-exposure prophylaxis (PrEP) use among adolescent girls and young women (AGYW) in sub-Saharan Africa. However, no validated scales are available to measure the prevalence of PrEP stigma in this population or evaluate the impact of stigma-reduction interventions. We developed and validated a scale to measure PrEP stigma experienced by AGYW using PrEP in Siaya County, Kenya.

Methods: An initial scale was developed from a conceptual framework, literature review, and participatory workshops with AGYW, revised after cognitive interviews with 13 AGYW PrEP users, and pilot tested with 200 AGYW receiving PrEP through Ministry of Health (MoH) and DREAMS programs. Confirmatory factor analysis (CFA) was used to test the hypothesized 4-factor structure characterized by stigma forms (perceived, anticipated, enacted, and internalized). We assessed convergent validity by examining correlations with HIV, gender, and sexuality stigma measures, and construct validity by comparing scale scores between groups of AGYW categorized by recruitment site and PrEP disclosure outside the household.

Subscale	Number of items	Cronbach's Alpha	Example item
Perceived stigma	5	0.83	People in my community think taking PrEP means you have HIV
Anticipated stigma	4	0.73	I worry that finding out I take PrEP would cause others to tease or insult me, call me bad names, yell at me, or scold me
Experienced stigma	5	0.76	People have avoided or left me out of social events because I take PrEP
Internalized stigma	3	0.73	I feel ashamed about using PrEP

Table 1: PrEP stigma measure subscales

Results: The final scale included 17 items (Cronbach's alpha=0.81) with 4 subscales (Table 1). The four-factor structure fit well based on CFA results and correlations with other types of stigma (rho=0.08 to 0.43) indicated that PrEP stigma is a distinct construct. Prevalence of perceived stigma was highest (79%), followed by anticipated (68%), experienced (42%), and internalized (23%) stigma.

Friends and female community members were the most common sources of perceived, anticipated, or experienced stigma, followed by male partners, family outside

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the household, and other male community members. AGYW receiving PrEP from MoH had higher perceived stigma (p=0.03) and internalized stigma (p=0.11) scores than those from DREAMS. AGYW who disclosed PrEP outside the household had higher experienced stigma scores (p<0.001).

Conclusions: Psychometric results support the validity and reliability of our PrEP stigma scale among AGYW in Kenya. The high prevalence of each form of PrEP stigma suggests a need for interventions targeting PrEP users, social networks, and the community-at-large.

EPD331

Sociostructural influences on HIV-related injection risk behaviors among women who trade sex in Tijuana, Mexico: a venue-based, multi-level analysis

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Background: Most studies focus on interpersonal factors associated with injecting risk behaviors,; however, work on socio-structural factors and place shape such HIV-related injection risks is more limited. In particular, characteristics of injection venues, the places where injection occurs (e.g. homes, brothels, shooting galleries, outdoor spaces, etc.), can play an important role in drug-related outcomes, including HIV, and will be examined here.

Methods: Women aged 18 years old and older residing in Tijuana and who reported past-month injection drug use and sex work (N=150) completed surveys between April 2016 and December 2018. Measures chosen for this analysis were guided by the socioecological model (See Figure 1).

Using multilevel modelling, where 271 venues were nested within 150 participants, we examined the association between a composite measure of injection risk (i.e. frequency of injection risk behaviors), injection venue characteristics, and sociodemographic factors.

Results: In multilevel models, older participants (β=-.02, 95% CI [-.04,-.01]) and higher safe injection self-efficacy scores (β=-.05, 95% CI [-.08,-.02]) were negatively associated with, while reporting an average monthly income of ≥3500 Pesos (β=.40, 95% CI [.11,.68]) was positively associated with injection risk.

The proportion of people who encouraged the sharing of needles at venues was positively associated with injection risk when the proportion was report as half (β=.42, 95% CI [.11,.74]), more than half (β=.57, 95% CI [.16,.99]), or all (β=.77, 95% CI [.40,1.14]), relative to none. Injecting at hotels or pensions was negatively associated with injection risk scores (β=-.44, 95% CI [-.80,-.08]), and the presence of police or military patrols at venues were positively associated with injection risk scores (β=.35, 95% CI [.06,.63]).

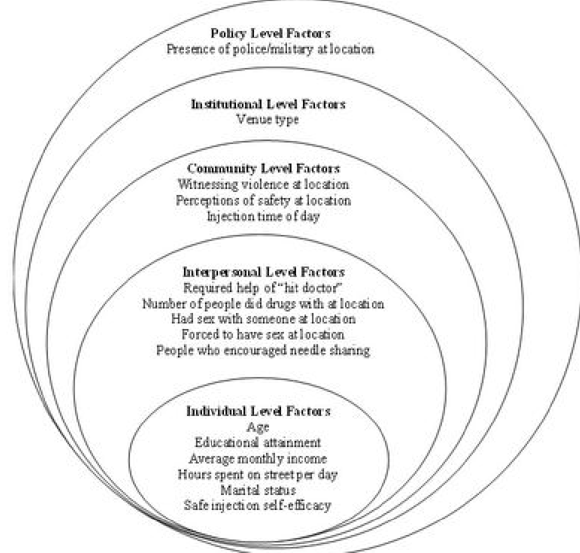

Figure 1. Socioecological influences on injection risk behaviours among female sex workers in Tijuana, Mexico: A venue-based, multi-level analysis.

Conclusions: Venue characteristics play an instrumental role in determining potentially risky injection behaviors. The findings of this study have implications for interventions that seek to reduce injection risk behaviors among women who inject drugs in Tijuana, Mexico.

EPD333

Engaging city councillors to address social and structural drivers of HIV in Blantyre City: a formative study

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Background: Blantyre City has the highest HIV prevalence in Malawi. The 2021 HIV epidemiological estimate in Malawi reported that Blantyre City records the highest number of people living with HIV (10%), despite its contribution to only 4.5% of the national population in Malawi. Rural-urban migration, poverty, under-employment, lack of basic social amenities, and under-regulated industries such as bars are some of the major drivers for HIV transmission in the city.

However, interventions aimed to address HIV risks are largely biomedical, with little focus on addressing the structural drivers of HIV. Elected city councillors have the

potential to provide oversight of HIV programmes in their wards and can address the structural drivers of HIV. However, they are not optimally utilized.

Objectives: To identify opportunities and gaps for engaging councillors to address social and structural drivers of HIV in Blantyre City.

Methods: Between November and December 2021, we conducted a qualitative study in Blantyre City, involving 58 purposively sampled participants: 22 city councillors; 14 representatives from the District HIV and AIDS coordinating committee (DACC) and City AIDS coordinating committee (CACC); 7 partners from various non-governmental organizations (NGOs) working on HIV programmes; and 15 community leaders. Data were collected through in-depth interviews, transcribed verbatim and analyzed thematically with the aid of MAXQDA software.

Results: DACC and CACC members, as well as NGO partners were knowledgeable about HIV/AIDS including the current trend. Councillors and community leaders had limited knowledge about HIV/AIDS.

Councillors reported that they play critical roles in community development programmes in their wards including formulation of bi-laws and mobilization of resource. However, they were not actively engaged in HIV/AIDS programmes.

Poverty, easy access of alcohol and other substances from unregulated bars, prostitution and early marriages were key structural drivers of HIV infections reported by all participants. Gender based violence, HIV stigmatization, poor access to healthcare facilities and low HIV sensitization were said to hinder uptake of HIV preventive methods.

Conclusions: Stakeholders involved in the fight against HIV/AIDS should invest more on capacity building the councillors through training and provision of HIV/AIDS information to enable them initiate HIV risk reduction changes in their communities.

EPD334

"Protective, private, proud": elucidating identity and stigma processes among gay and bisexual men who inject drugs in Australia

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Background: Gay and bisexual men (GBM) report higher rates of sexualised and injecting drug use compared to heterosexual men, with established associations to HIV infection. Stigmatisation of people who inject drugs is linked to negative health outcomes, but sexual minority perspectives remain underrepresented. This study explored injecting drug use among GBM in Melbourne, Australia, focussing on identity and stigma processes at the intersection of drug use and sexualities, and their implications for wellbeing.

Methods: In-depth qualitative interviews were conducted with nineteen GBM who inject drugs between June-October 2020. Interviews explored participants' experiences and concerns related to drug use, pleasure, risk, and relationality in drug using contexts and beyond. Data were analysed using grounded theory methods.

Results: Interviewees were between 24 and 60 years old. Seventeen men identified as gay and two as bisexual. Injecting histories ranged from two to 32 years. Most interviewees injected methamphetamine (n=18) in sexual settings and eleven were living with HIV. Four themes were identified:

1. Early experiences of stigmatisation were reproduced through *"othering discourses"*, suggesting a hierarchical organisation of local gay communities by drug practices, HIV status, and masculine ideals.
2. *"Group membership"* was facilitated through sexualised/injecting drug use, enabling sexual identities to be self-actualised.
3. "*Dynamic self-hood"* distinguished narratives of men who spoke of themselves as 'drug addicts' from others rejecting such labels; who protected their wellbeing through benevolent self-acceptance irrespective of drug use and/or HIV status.
4. Emotional pain resulting from internalised stigma was seen to feed negative experiences and outcomes, but *'understanding who I was, was curative'*.

Conclusions: Findings revealed that social exclusion processes resurface within gay communities through intrasex competition and hegemonic masculinities; influencing GBM's sense of self and drug use careers. Inhabiting a positive self-concept appears critical to holistic wellbeing, beyond any benefits experienced from sexualised drug use. Fostering *"dynamic self-hood"* should be prioritised when engaging with GBM who inject drugs, including through further de-stigmatisation of drug use and HIV-diagnosis.

Findings highlight that health disparities arise not from within gay communities but society at large, and more attention must be paid to disrupt broader power dynamics and harmful social processes.

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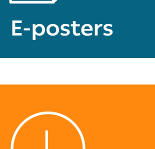

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EPD335

Barriers and enablers toHIV self testing in the private sector among sexually active females and males in Kenya, Uganda, and Nigeria: findings from qualitative market research

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Background: HIV self-testing (HIVST) has been proven to be effective in increasing demand for HIV testing among populations that are at risk of HIV acquisition. While HIVST products are penetrating the market in many countries, there are unanswered questions on how to develop consumer demand and how to ensure linkage into care, treatment, and prevention post HIVST.

We conducted qualitative research to understand the enablers and barriers to uptake, use, post-test linkage and results reporting among current and potential users of HIVST in the private sector.

Methods: 104 In-depth interviews (IDIs) and 15 group discussions (FGDs) were conducted among sexually active males and females of 18 – 29 years. Purposive sampling was used to enroll sexually active males (89) and females (95) into the study. Research was carried out July – September 2021 in Kenya, Nigeria, and Uganda.

Thematic analysis was used to analyze and code the data using NVivo. We analyzed patterns of themes within the data and identified enablers and barriers to HIVST uptake, use, post-test linkage and results reporting.

Results: Respondents identified key enablers including social media advertising as a key source of information on HIVST. Bundling of HIVST kits with other products eased the purchasing moment.

Users had confidence in the efficacy of HIVST which made them trust the test results. The implications of a reactive results influenced users to link into confirmatory testing. Users suggested they were willing to report their results to strengthen HIV programs and research.

Respondents cited the following key barriers: fear of a reactive result which made HIVST unattractive to non-users, lack of awareness that the kits were sold in pharmacies and concerns of user errors which resulted in the lack of confidence to self-test. Participants recounted delays in linking into confirmatory testing following the shock of a reactive result.

Lack of information on how to report HIVST and concerns over data privacy were cited as key hinderances to reporting.

Conclusions: These results provide the basis for co designing interventions that will support HIVST users complete the HIVST journey in terms of purchase, use, post-test linkage and results reporting.

EPD336

Perspective of healthcare workers in Nigeria on the introduction of new pediatric antiretroviral drugs: experiences, enablers and barriers

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Background: Nigeria recently introduced pediatric dolutegravir (pDTG) based regimen as the preferred first-line antiretroviral therapy (ART) among children <20kg. Prior to this introduction, the country has implemented over 3 regimen transitions within the last decade, the most recent being transition to lopinavir/ritonavir-based regimen. With the imminent transition to pDTG based regimen, feedback from healthcare workers (HCW) on their experiences, enablers, and barriers to introducing new antiretrovirals (ARVs) to patients is important to guide ART transition in-country.

Methods: In June 2021, focus group discussions (FGDs) were conducted among HCWs as part of an operations research on pDTG in 7 ART facilities across 7 states (Akwa Ibom, Benue, Cross River, Lagos, Plateau, Rivers and Sokoto). Participants included clinicians, pharmacists, nurses, and adherence counsellors directly involved in prescribing/dispensing ARVs to patients. The FGDs were facilitated using a guide designed to elicit responses on barriers/enablers to prescribing new pediatric ARVs. Discussions were recorded, transcribed, and a codebook developed on MS Excel. This was then analyzed by 2 independent reviewers to assess for major themes.

Results: 31 HCWs participated in 7 FGDs (4 – 7 participants per FGD).64% of respondents noted that bitter taste will discourage them from prescribing new drugs, while 45%,

36% and 14% respectively stated difficulty with administration, high pill burden and frequent dosing as barriers. Other limitations to prescription of new ARVs and the proportion of respondents that indicated them are frequent introduction of new ARVs in-country (63%) and concerns on sustained availability (25%), misconceptions (21%) and initial fears among patients about side effects (14%).
65% of respondents indicated that availability of scientific evidence on superiority of the new drug is a key enabler for prescription, while 60% and 38% respectively sweet taste and capacity building for HCWs on the new drug as enablers. The participants considered pDTG as an improvement on the current pediatric ARV in terms of taste, frequency of dosing, ease of administration.
Conclusions: Findings from the FGDs provided insight into the perspective of HCWs on the introduction of new pediatric ARVs. This will inform scale-up plans for transitioning clients to pDTG and increase preparedness for future ARV transitions.

EPD337
Factors associated with antiretroviral treatment interruptions among people living with HIV in British Columbia, Canada

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Background: Treatment interruptions (TI) limit the therapeutic protection offered by modern antiretroviral therapy (ART), thereby leading to poorer clinical outcomes and increased risk of HIV transmission. We evaluated factors associated with time-to-first TI among people living with HIV (PLWH) in British Columbia (BC), Canada.
Methods: Between January 2016-September 2018, we purposively recruited a representative sample of PLWH aged ≥19 years in BC into the STOP HIV/AIDS Program Evaluation (SHAPE) study. Participants completed surveys at enrolment and followed through time with data linkages to the BC HIV Drug Treatment Program.
Surveys collected sociodemographic information, drug use, homelessness, and incarceration history. TI were defined as >60 days late for ART refill and pharmacist-reviewed TI alert sent between enrolment and December 2020.
We conducted bivariate analyses comparing baseline data from participants who did and did not experience TI. Multivariable Cox proportional hazards regression was used to model time-to-first TI.
Results: Among 639 PLWH included in this analysis, 21.3% were women, 59.0% identified as men who have sex with men, 69.6% identified as Caucasian, and 15.5% self-identified as Indigenous. The median age at enrolment was 50 years (Q1-Q3:42-57) and median follow-up time was 4.15 years (Q1-Q3:2.98-4.65). Of 154 (24.1%) participants who experienced a TI since enrolment, the median time to their first TI was 15.9 months (Q1-Q3:8.1-29.3), and median length of their first TI was 96 days (Q1-Q3:76-154).
We found a higher proportion of those reporting recent homelessness (64.3% vs. 45.4%; p<0.001), recent injection drug use (34.4% vs. 15.9%; p<0.001), food insufficiency (79.2% vs. 59.4%; p<0.001), lifetime violence (87.0% vs. 72.0%; p<0.001), and incarceration history (54.6% vs. 29.1%; p<0.001) experienced a TI during the study period.
In the multivariable Cox model, lifetime experiences of incarceration (adjusted hazard ratio [aHR]:1.97, 95%CI:1.33-2.91) or violence (aHR:1.94, 95%CI:1.12-3.37) had increased risk of TI during study follow-up, while those aged ≥60 years (vs.<40; aHR:0.39, 95%CI:0.20-0.77), and greater than high school education (vs. less than high school; aHR:0.68, 95%CI:0.42-1.12) had a reduced risk.
Conclusions: We found lifetime experiences of incarceration or violence to be associated with TI, illustrating the impact of pervasive structural inequities across the life-course on ART treatment.

EPD338
Shared mechanisms underlying elevated risk for HIV and overdose among women who use drugs: a scoping review

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Background: Despite our often singular focus, the overdose epidemic is only one part of a set of epidemics, which may impact women in unique ways. These epidemics have shared antecedents, including the use of unregulated drugs and HIV: macro and micro social, economic, physical and policy factors create risk environments that increase women's vulnerability to HIV and overdose, but little is known about the mechanisms underlying this intersection.
As a step to fill this gap in knowledge, we conducted a scoping review to explore linkages between risks for overdose and HIV among women.
Methods: We searched PubMed, PsycINFO, CINAHL, Web of Science, and SOCIndex to identify papers that address both HIV and overdose among women who use drugs, as well as barriers to engagement in health care and social services.
Articles that reported disaggregated data for women, analyzed both overdose and HIV, were published in English, and that published empirical findings were included for review.

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Results: The search yielded 311 abstracts, of which 18 were eligible and included in the review. Overlapping risks for HIV and overdose were especially pronounced among women experiencing structural inequities related to racism, houselessness, incarceration, and engagement in sex work.

Studies also demonstrated a need for greater awareness of stimulant use as it relates to both overdose and risk for HIV through sexual risk taking among marginalized women, as well as a need for integrated health and social services that address HIV and overdose prevention, alongside reproductive health and violence.

Supervised consumption sites are also an important tool for addressing structural vulnerabilities that underlie overdose and for improving linkage to HIV prevention and care.

Conclusions: Scoping review findings demonstrate that there are few studies focused on overlapping risks for HIV and overdose among women, suggesting a missed opportunity for developing coordinated responses to interrelated epidemics.

Given the profound impact that both overdose and HIV have on women, their families and communities, the identification of the shared causes and consequences of these co-occurring health conditions is a critical first step towards mitigating harms to women's health through comprehensive intervention, programs and policy.

EPD339

Motivations for starting and stopping PrEP: experiences of AGYW in the HPTN 082 study

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Background: Consistent daily use of oral pre-exposure prophylaxis (PrEP) for prevention of HIV infection presents a significant challenge for adolescent girls and young women (AGYW). We explored AGYW's motivations for starting, stopping, and restarting PrEP.

Methods: HPTN 082 was an open-label PrEP study that enrolled AGYW between 2016 and 2018 at sites in Johannesburg and Cape Town, South Africa and Harare, Zimbabwe. Participants were aged 16-25 years, HIV-negative, sexually active and PrEP-eligible.

Participants were randomised to receive standard adherence support (counselling, two-way SMS, monthly adherence clubs) or enhanced support with drug-level feedback plus the standard adherence support. All attended quarterly follow-up visits over 52 weeks. Serial in-depth interviews were conducted at the 13- and 26-week study visits. Participants were purposively sampled from each site to include PrEP adherers, decliners, and special cases such as those reporting social harms. A Grounded Theory approach was used to guide the analysis.

Results: There were 67 AGYW interviewed (Harare, n=25, Johannesburg, n=22, Cape Town, n=20) of which 66% (n=44) reported declining, delaying, pausing, intentionally skipping and/or discontinuing PrEP. Of those that skipped or paused PrEP, more than half (n=25) restarted PrEP during the trial.

In decisions to initiate PrEP, almost all AGYW were motivated by perceived risk of HIV, and many were influenced by the presence or absence of support from family, peers and partners. Changes in HIV risk perception were less important in decisions to stop and restart PrEP. AGYW most commonly cited HIV- and PrEP-related stigma as motivation for stopping PrEP.

The fear or experience of side effects caused some participants to decline, delay or stop PrEP. Motivations for restarting PrEP included retention events, encouragement from clinic staff, and support from female relatives.

Conclusions: HIV risk perception only influenced some AGYW's decisions to stop and restart PrEP use. The dominant role of HIV stigma and social influence in decisions to stop and restart PrEP suggest the need for community and family-level interventions geared towards destigmatizing HIV prevention, and the potential benefit of embedding PrEP delivery within youth friendly services that create opportunities for peer support.

EPD340

Social determinants of health exacerbate implementation and access barriers to telehealth HIV care in the Southern United States. Results from a scoping review of research and intervention needs

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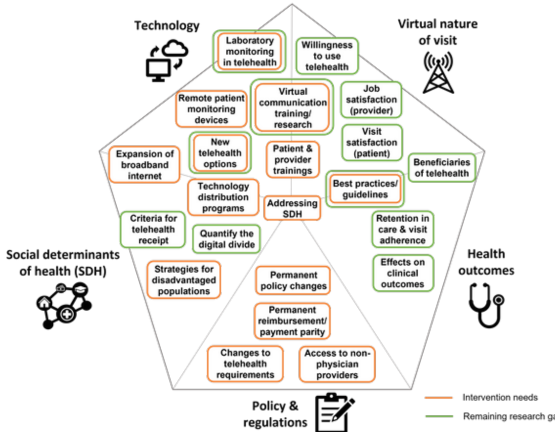
Background: The South is the epicenter of the HIV epidemic in the US, with a disproportionate burden of HIV among racial and ethnic minorities and rural-living communities. Telehealth was rapidly implemented to mitigate widespread interruption of HIV care services due to COVID-19, however not all persons with HIV (PWH) benefited from telehealth.

This study sought to understand how intervention needs and research gaps described in the academic literature related to telehealth barriers experienced by PWH and HIV care providers in Southern US.

Methods: In August 2021, PubMed, Embase, CINAHL, PsycINFO, and Web of Science were searched for publications describing telehealth in HIV care during COVID-19 following PRISMA-ScR guidance. Search terms were organized in three domains: *HIV*, *telehealth*, and *COVID-19*. Literature was analyzed and synthesized using thematic analysis and meta-synthesis methodology.

Results: Thirteen peer-reviewed articles were included in this study; four of which described implementation and access barriers to telehealth HIV care in the South; and twelve outlined intervention needs and research gaps to sustain and improve telehealth HIV care. Reported barriers to telehealth HIV care were categorized into four domains: technology-related barriers, virtual nature of HIV care visits, policies and regulations, and social determinants of health (SDH). SDH were reported to amplify other barriers to telehealth HIV care such as limited access to technology, lack of rural connectivity, low digital literacy, and feeling uncomfortable with virtual visits. Intervention needs and research gaps identified in the literature were mapped by barrier domains and extended by a health outcomes domain (see Figure 1).



Notes: Implementation and access barrier to telehealth domains are: technology, virtual nature of HIV care visit, policies and regulations, and social determinants of health (SDH). The health outcomes domain was added to map related research gaps and intervention needs. Intervention needs and remaining research gaps may address multiple barrier domains.

Figure 1. Telehealth in HIV care: Intervention needs and remaining research gaps by barrier to telehealth HIV care domains.

Conclusions: SDH interact with other barriers to telehealth HIV care in the Southern US. While the identified intervention needs and research gaps address multiple telehealth barrier domains, recommended interventions to improve SDH remain unspecific. Future telehealth research and interventions must include foci on SDH and the effects of telehealth on HIV care outcomes.

EPD341

"The way the nurse talked to me I will not go there again:" a qualitative comparative analysis of the reasons for interruption in care of people living with HIV in Ghana

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Background: Understanding how people perceive and conceptualize health system challenges is important when considering the effectiveness of solutions for public health challenges. There is increasing acceptance in contemporary literature of the competition between powerful expert technical views and the lived experiences of clients.

This is a comparative analysis of competing views among three health system actors:

1. Health care providers,
2. Civil society organizations (CSOs),
3. And people living with HIV, concerning the reasons for why HIV clients in Ghana experienced interruptions in care.

Methods: The study is a cross-sectional exploratory qualitative research conducted by the USAID Strengthening the Care Continuum project (Care Continuum), implemented by JSI Research & Training Institute, Inc., supported ART sites in two regions of Ghana: Western and Western North. From October to December 2020, healthcare staff (n=10), clients (n=10) who had interrupted care, and CSO staff (n=8) were selected and engaged in in-depth interviews to inform the Care Continuum's back to care campaign. A thematic comparative data analysis approach was employed.

Results: Analysis of the data showed a clear divergence in opinions among the three groups. While clients expressed a lack of satisfaction with care due to the condescending attitude of health care staff, coupled with last mile issues such as distance and lack of financial means, health care staff blamed clients for being worrisome, superstitious and engaged in harmful health seeking behaviors. CSO staff attributed the high levels of interruption in care to structural factors, such as the lack of differentiated service delivery modalities, and called for more collaboration with heath facilities to roll out community ARV delivery, to address challenges.

Conclusions: The results of the study highlight the need for researchers and consumers of researchto conscientiously coalesce the views of various actors and take into account differing interests and power dynamics when finding practical solutions to pressing public health problems. The lived experiences of clients deserve particular attention.

EPD342

The prevalence and correlates of alcohol use and alcohol use disorders among young people (15 – 24 years) and adults in Eswatini, Malawi and Zambia

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Background: Excessive alcohol use is a remarkable trouble in public health worldwide. It is escalating in Sub-Saharan Africa due to marketing aggressively and lack of individual and policy level interventions. We used the national representative population-based HIV Impact Assessment (PHIA) data to determine the prevalence and correlates of alcohol use (AU) and alcohol use disorders (AUD) in young people and adults in Eswatini, Malawi and Zambia.

Methods: PHIA surveys 2015 – 2017data was analyzed. The surveys employed multistage sampling strategy to recruit study participants at household level. The sample in each country dataset were as follows Eswatini(n=9885) Malawi(n=19405), and Zambia(n=27,382). The analysis utilized multivariable models of logistic regression models that identify the correlates of AU and AUD.

Analyses was adjusted for weights, stratification, and clustering using the survey platform analysis in Stata version 15. P-value of <0.05 was considered statistically significant.

Results: Alcohol use prevalence in young people and adults was 17.9% and 23.3% in Eswatini, 10.9% and 22.1% in Malawi, and 14.6% and 32.4% in Zambia. The prevalence of AUD in young people and adults was 9.1% and 14.2% in Eswatini, 3.5% and 11.2% in Malawi, 7.6% and 20.6% in Zambia. The correlates of alcohol use and AUD encompass being male (aOR: 4.62 (95% CI: 3.35 -5.79), age group, higher education level (aOR: 1.70, 95% CI: 1.16 -2.48), divorced or separated or widowed in all 3 countries (aOR: 1.96, 95% CI: 1.55 -2.48), HIV positive status in Zambia (aOR: 1.49, 95% CI: 1.12 -1.99), multiple sexual partners in Malawi (aOR: 11.90, 95% CI: 6.76 -20.93), employed class in Zambia (aOR: 2.06, 95% CI: 1.64 -2.59) and engaging in commercial sexual relations in Malawi.

Conclusions: The reported alcohol use and AUD are common in youth and adults in Eswatini, Malawi and Zambia. Both alcohol use and AUD are related with being male, age group 20 – 24 years old, educational level (higher), HIV status, transactional sex and multiple sexual partners, widowed or separated and HIV status and risky sexual behaviours in the three countries.

There is an urgent need for targeted alcohol interventions and such interventions could be integrated with sexual and reproductive health programs.

EPD343

How sociodemographic factors, types of stigma, and protective factors impact uptake of the Undetectable Equals Untransmittable (U=U) campaign message among people living with HIV

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Background: In 2016, the Prevention Access Campaign launched the Undetectable equals Untransmittable (U=U) campaign based on evidence that people living with HIV who are on antiretroviral therapy (ART) and maintain an undetectable viral load cannot transmit HIV to others. However, there is a need for increased uptake of U=U campaign messages and a lack of understanding around factors that create barriers to uptake.

This study examines the impact of sociodemographic factors, stigma, and protective factors on the awareness and perception of the U=U campaign message in Canada.

Methods: Participants from Ontario (n=240) were recruited from September 2018 to August 2019 as part of the People Living with HIV Stigma Index. The survey contained questions about awareness and understanding of the U=U message, different types of stigmas, and protective factors. Binary logistic regression models were created to examine the impact of demographic factors, stigma, and protective factors on awareness, perception, and belief in the U=U message, as well as whether participants discussed U=U with their healthcare provider.

Results: Participants were aware of the U=U message (n=231, 96%), however only 42% (n=100) had discussed U=U with their primary healthcare provider. Most participants said that U=U has affected their lives in a positive way (n=136, 57%) and that promotion of U=U would reduce HIV stigma (n=174, 74%). Participants with high enacted stigma were less likely to believe U=U can reduce HIV stigma (OR: 0.37; 95% CI: 0.16, 0.85) while those with high self-efficacy were more likely (OR: 4.86; 95% CI: 1.52, 15.54). Individuals with high self-efficacy also said that U=U affected their lives in a positive way (OR: 4.21; 95% CI: 1.31, 13.57) while older individuals, women, and gay/bisexual participants were less likely to feel that way. Older individuals were less likely to have discussed U=U with their healthcare provider (OR 0.29, 95% CI: 0.12, 0.73).

Conclusions: Identifying barriers to the uptake of the U=U message is key to reducing HIV stigma and promoting initiation of and adherence to ART. These findings shed light

on the population groups that may need support around the U=U messaging and protective factors that may help with uptake of these messages.

EPD344

Health care services (Malaria, TB, HIV and AIDS prevention treatment, care and support for LGBTIQs persons and other vulnerable groups (sex workers, female drugs users) a challenge in Liberia context

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Background: The HIV Epidemic is a big and serious problem in Liberia for LGBTIs Persons and other vulnerable groups. 47, 000 people living with HIV in Liberia, the prevalence rate of HIV among key population had significantly increased to 37.9% in MSM,27% in TG; 16.7% in FSW and 9.8 in PWID also with a high prevalence among uniform personnel of which we have started working with Law enforcement as the protective arm of the LGBTIQ community and other vulnerable groups. Because of lack of limited access to health care services members of the LGBTIQ (MSM) community and other vulnerable groups have suffered issues of violence, abuse at health facilities discrimination at health facilities.

Description: Based upon the challenges LGBTIQ members and other key populations faced in accessing health care services we were able to have stakeholders' dialogues with relevant health care practitioners where members of LGBTIQ (MSM) and other vulnerable groups go for HIV services. We also had a face to face interaction with those direct PLHIV beneficiaries who were able to have an engagement on issues affective them to access HIV and other related services. Conducted joint stakeholders' consultative meetings with Health care workers which included nurses, ART dispensing officers for a dialogue using the human rights based approach and also the international human rights instruments.

Lessons learned: The engagements through advocacy is gradually addressing issues the LGBTIQ (MSM) community and other vulnerable groups are facing in Liberia in terms of accessing HIV services and other related HIV services which has to do with the inclusion of MSM and other vulnerable groups within the National strategic plan of HIV in Liberia and it has been included into decision and policy making also has instituted policy that discriminated LGBTIQ (MSM) and other vulnerable groups. The usage of the international instrument and the human rights based approach with health care practitioners have sharped the intervention in Liberia.

Conclusions/Next steps: The prevailing stigma around HIV can have a significant impact based on the high prevalence rate amongst these populations. Based upon this, HIV-related stigma needs to be address through human rights advocacy using the Human rights based approach.

EPD345

Transport to HIV-care centers as a determinant for adherence to HIV-care in adult women living with HIV in the State of Chiapas, Mexico

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Background: A fifth of people living with HIV in Mexico are women. Chiapas, is a State in the southern border with the highest female/male ratio of HIV-infection, is among the poorest and highest concentration of indigenous peoples in Mexico, and has a roughed geography. The HIV epidemic among women in Mexico has been associated to conditions of social vulnerability, but little is known about social determinants of access to HIV-care.

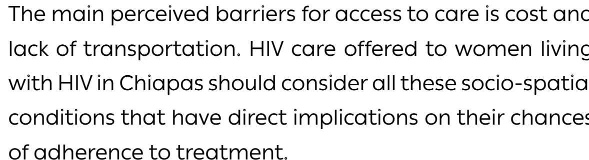
We describe transport-related characteristics as potential barriers to access HIV-care for women living in the State of Chiapas, Mexico.

Methods: We conducted a cross-sectional study in a random sample of 216 uninsured, adult women attending any of the 13 HIV-care centers managed by the Chiapas Ministry of Health. We applied structured questionnaires during November-December 2020 to collect information on socioeconomic characteristics, time and cost of transportation to the centers, type and number of vehicles and roads used, and perceived difficulties to reach centers.

Results: Median (IQR) age was 27 yo (22-32yo). Most were married (n=132, 61%) or widowed (n=42, 20%), and had children (n=200, 92%). 72.1% lived in households with monthly income ≤3,000 Mexican pesos ($150USD). The remaining (27.9%) lived in households earning 3,001-6,000 pesos (Minimum wage was 4,251 pesos per month). 34.8% of participants spent between 0-30 min in getting to the HIV-care center, 19.5% between 31-60 min, 18.6% between 61-80min, and 26.9% ≥90 min per visit.

Also, 18.6% needed riding ≥3 vehicles to reach their center. 97.7% used public, collective transportation: 53.4% used buses, 35.3% collective taxis, 20% walked, 26% used minivans, 11.16% motorcycle taxis, and only 2.3% their own vehicle. The main perceived transport barriers to the HIV-care centers are insufficient money (68.3%), lack of transportation (33.5%), roads in bad condition (23.7%), roadblocks (14%), and family difficulties (7%).

Conclusions: Even when HIV care centers are relatively close for women living with HIV in Chiapas, cost is high relative to their income.



The main perceived barriers for access to care is cost and lack of transportation. HIV care offered to women living with HIV in Chiapas should consider all these socio-spatial conditions that have direct implications on their chances of adherence to treatment.

EPD346

Social determinants associated with HIV misconceptions: hierarchical linear modelling of weSpeak survey data from heterosexual Black men in Ontario

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Background: HIV responses in Ontario do not adequately engage and address the needs of Black men. weSpeak is a 5-year research program to address HIV vulnerabilities of Black men and promote their collective resilience.

In this paper, we present the results of the factors associated with misconceptions about HIV among ACB men from the weSpeak program.

Methods: We used mixed methods comprising of surveys, focus groups and individual interviews. This paper reports on the survey results. A total of 866 participants completed the questionnaire: Ottawa (n=210), Toronto (n=343), London (n= 157) and Windsor (n=156). HIV misconception was measured as the number of statements on the HIV Knowledge questionnaire with incorrect answers. Misconception scores ranged from 1 to18.

We used a hierarchical linear regression model (HLM) to predict HIV misconceptions while controlling for the effect of the city of residence. At p <.05, factor coefficient (β) > 0 associated with more misconceptions, and β < 0 associated with fewer misconceptions.

Results: HIV misconceptions are associated with many social determinants. Of the 236 participants with HIV misconceptions, 11.4% (n=27) had many misconceptions (7-13) while 88.6% (n=209) had fewer misconceptions (1-6). All independent variables jointly contributed 23% (R^2= .23, p<.001) variation in HIV misconceptions. Association of misconceptions and city of residence was not statistically significant (R^2= .02, p>.05). Men who experienced more discrimination (β= .24, p<.05, 95%CI = .02, .46) and had negative attitudes to condoms (β= .06, p<.05, 95%CI = .01, .12) had more misconceptions. Being born in Canada (β=-1.01, p<.05, 95%CI = -1.86, -.18), having higher education (β=-.37, p<.001, 95%CI = -.53, -.22), and being more resilient (β=-.04, p<.05, 95%CI = -.07, -.01) are associated with fewer misconceptions.

Conclusions: Access to education alongside HIV literacy, anti-discrimination policies including anti-racism in healthcare, and resilience-building are critical to developing effective HIV responses and debunking HIV misconceptions among Black men.

Dynamics of social status and power: Sex, gender, age, race/ethnicity, sexual orientation and disability

EPD347

Disparity in HIV medication and viral suppression change for recent Venezuela immigrants living with HIV migrating to Miami

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Background: Recent Venezuela immigrants living with HIV (VILH) migrating to Miami may have faced the challenge of medication disruption and barriers to care due to economic crisis in Venezuela that may worsen their HIV outcomes in Miami.

Methods: The objectives of this study were to examine and compare HIV medication and virologic suppression change among VILH over time and others new to care in the Miami area. Medical records related to HIV medication histories, diagnosis, and lab tests were abstracted for the first, second, and last clinic visits from four major HIV clinics in Miami. HIV-infected patients were eligible if their first visit falls in 2015-2019. Three groups of new enrollees were compared: VILH, US-based, and migrants from elsewhere.

Results: 528 (238 VILH, 114 US-based, and 176 migrants from elsewhere) medical records were abstracted until January 2022. Ninety percent (155/172) of VILH left Venezuela after 2012. The average age of VILH was 37.6 and majorities were male (96%).

Overall, 64% (149/232) VILH had HIV/ARV medication history prior to their first visit to the clinic, significantly higher compared to 37% (35/95) for US-based and 33% (55/168) for migrants from elsewhere. 25.6% (61/238) had insurance (42% for US-based and 46% migrants from elsewhere). Viral suppression (viral load < 200 copies/ml) increased from 55% (127/232), to 89% (102/114), and then to 94% (194/206) for VILH, at first, second, and last clinical visits, respectively, compared to 23% (25/108), 82% (56/68), 93% (69/74) for US-based, and 27% (46/171), 84% (105/125), 92% (133/145) for migrants from elsewhere. HIV medication change was also high for VILH, at first 22% (40/225), second 15%

(32/219), and last 41% (83/202), respectively, compared to 13% (12/118), 12% (12/98), 37% (34/91) for US-based, and 4% (7/170), 10% (15/156), 43% (65/150) for migrants from elsewhere.

Conclusions: VILH had higher rates of both prior treatment and initial viral suppression, but all groups achieved high rates of suppression by the last visit. VILH did have a higher rate of medication change, which may indicate problems from prior treatment. The initially higher success rates of VILH may reflect the higher economic resources of those able to migrate to the US.

EPD348

The effect of internalized homophobia on social well-being among black sexual minority men living with HIV in the United States: the mediating roles of LGBT community connectedness and racial/sexual self-identity

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Background: Little is known about social well-being among people living with HIV, especially black sexual minority men living with HIV (BSMM+), a population with multiple minoritized identities. We explored factors associated with social well-being among a sample of BSMM+ and examined the impact of internalized homophobia and social well-being and explored the mediating roles of LGBT community connectedness and racial/sexual self-identity between this association.

Methods: Data were derived from a randomized comparison trial of a community-developed, web-based mobile app intervention that aimed to address the social work and legal needs of BSMM+ (n=102). Descriptive statistics were used to understand levels of internalized homophobia, social well-being, LGBT community connectedness, and racial/sexual self-identity. Multivariable linear regression was used to examine factors associated with social well-being.

In addition, we conducted mediation analyses to determine the effects of LGBT community connectedness and racial/sexual self-identity on the relationship between internalized homophobia and social well-being, adjusting for sociodemographic characteristics.

Results: The average age of our sample was 38.09 years, and more than half (51/0%) had an annual income of less than $12,000. One in three (34.3%) reported ever engaging in sex work and nearly all (92.2%) were receiving antiretroviral therapy.

Greater social well-being was associated with older age, having initiated ART, and ever engaging in sex work ($p<0.05$ for all). Greater social well-being was also associated with lower internalized homophobia, higher LGBT community connectedness, and a greater sense of racial/sexual self-identity ($p<0.01$for all).

Mediation analyses revealed that LGBT community connectedness and racial/sexual self-identity *fully* mediated the effect of internalized homophobia on social well-being ($p<0.01$ for both).

Conclusions: Efforts to reduce internalized homophobia may positively impact social well-being among BSMM+, a population that experiences intersectional minority stressors and multilevel stigma. LGBT communities can play a vital role in providing social support and developing identities among and a strong sense of racial/sexual self-identity could increase self-acceptance and self-esteem in sexual minority individuals, especially among communities of color.

Efforts to promote social well-being among BSMM+ by reducing internalized homophobia should consider developing and implementing community-level programs and interventions that promote self-affirmation and access to community resources and opportunities to foster social engagement.

EPD349

Surpassing the UNAIDS 3rd 95 goal through a peer led Adolescent-friendly HIV care at the largest HIV clinic in Uganda

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Background: Adolescents 10-19 years living with HIV need sustained antiretroviral therapy to achieve viral load-suppression and long term survival. In Uganda, the national HIV viral suppression rate for adolescents is suboptimal at 76%, way below the UNAIDS third 95 goal. The major contributors to the low viral load suppression among adolescents in Uganda include: loss to follow up and ART adherence related barriers such as stigma, discrimination,non-disclosure, travel and unfavorable waiting times at clinics. Peer led adolescent friendly services may provide an opportunity in facilitating sustained ART, good adherence and viral load suspension.

Methods: Over the last 3 year, Makerere University Joint AIDS Program has implemented a peer led model of adolescent friendly services at Mulago ISS, the largest HIV clinic in Uganda.ISS clinic provides ART to 16574 PLHIV, of whom 522 are adolescents. At baseline,the viralsuppression among adolescents at ISS clinic was low at 71%.

This prompted us to develop and implement a peer led model of adolescent friendly HIV services. The peer led model of adolescent friendly services include: planning for establishment and running of an adolescent corner with a peeradolescent present at all times to welcomeadolescents who come to the clinic, adedicated clinic day Wednesday for adolescents, a pool of healthcare providers toreview the adolescents all the time having established a working relationship, aspecial appointment book to track appointment for adolescents, follow up of missed appointment by an adolescent peer, viral load monitoring and demand creation by peers, intensive adherence

counseling for adolescent with non-suppressed viral load by peers, synchronizing appointments with school holiday, and adolescent friendly psychosocial support forums.

Results: The peerled model of adolescent friendly services has improved viralsuppression from71% to 91% in one year Jan 2021 to Jan 2022. This evidence suggests that addressing the barriers to viralsuppression among adolescents living with HIV requires an adolescent peerled approach. This approach should be tailored to the needs of adolescents while leveraging the available resources. In addition, peers are pivotal actors in ensuring that adolescents enroll and continue in HIV care.

Conclusions: Positive engagement of peers in the delivery of HIV services should be promoted for improved outcomes. Governments and other stakeholders in HIV endemic countries should have guidelines which include adolescent friendly peerled HIV service delivery models

EPD350

Prevalence estimates of disabilities, associated socioeconomic characteristics, and HIV status among men who have sex with men in Chicago

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Background: Persons living with disabilities experience increased socioeconomic challenges, affecting health outcomes. Data on men who have sex with (MSM), especially HIV-positive MSM, living with disabilities in the U.S. is lacking.

Our objective was to estimate prevalence of disability types, overall and by HIV status, and examine socioeconomic characteristics associated with any disability among MSM in Chicago.

Methods: Cross-sectional data were obtained from the Chicago National HIV Behavioral Surveillance, MSM cycle 5, that used venue-based sampling to interview and offer HIV testing to MSM in 2017. The following types of disabilities were assessed: hearing, vision, cognition, ambulation, self-care, errands, and any disability.

Any disability was defined as having reported any of the six disabilities. Frequencies and percentages were tabulated, with *p*-values calculated using Chi-square or Fisher's exact tests.

Results: Of 570 MSM (Table 1), 14.6% reported having any disability; those with any disability were more likely to be unemployed (27.7% vs. 16.6%, *p*=0.016), below the federal poverty level (24.7% vs. 14.5%, *p*=0.020), homeless (14.5% vs. 3.5%, *p*=0.0003), and experience same-sex discrimination (49.4% vs. 37.1%, *p*=0.034), than those without. Among HIV-positive MSM (Figure 1), 23.1% reported having any disability; cognition was the most prevalent (15.4%), followed by ambulation (8.7%), errands (6.7%), hearing (3.9%), vision (3.9%), and self-care (2.9%).

Characteristic	Total (N=570) N (%)	No disabilities (n=487) n (%)	Any disability[a] (n=83) n (%)	p^b
Age group (years)				0.347
18-29	162 (28.4)	139 (28.5)	23 (27.2)	
30-39	173 (30.4)	149 (30.6)	24 (28.9)	
40-49	116 (20.4)	103 (21.2)	13 (15.7)	
≥50	119 (20.9)	96 (19.7)	23 (27.7)	
Race/Ethnicity[c]				0.083
Hispanic	126 (22.2)	112 (23.1)	14 (16.9)	
Black	196 (34.6)	158 (32.6)	38 (45.8)	
White	211 (37.2)	182 (37.6)	29 (34.9)	
Other races	34 (6.0)	32 (6.6)	–	
Employment status				0.016
Not employed	104 (18.3)	81 (16.6)	23 (27.7)	
Employed full- or part-time	466 (81.8)	406 (83.4)	60 (72.3)	
Current health insurance coverage				0.284
No	76 (13.3)	68 (13.96)	8 (9.64)	
Yes	494 (86.7)	419 (86.04)	75 (90.36)	
Federal poverty level[d]				0.020
Above poverty level	475 (84.1)	414 (85.5)	61 (75.3)	
At or below poverty level	90 (15.9)	70 (14.5)	20 (24.7)	
Experienced homeless in the past 12 months				0.0003
No	541 (94.9)	470 (96.5)	71 (85.5)	
Yes	29 (5.1)	17 (3.5)	12 (14.5)	
Experienced same-sex discrimination in the past 12 months[e]				0.034
No	347 (61.1)	305 (62.9)	42 (50.6)	
Yes	221 (38.9)	180 (37.1)	41 (49.4)	

[a]Defined as having reported any of the six disability types: hearing, vision, cognition, ambulation, self-care, and errands.
[b]*p*-values were calculated using Chi-square or Fisher's exact tests.
[c]Other races included American Indian or Alaska Native, Native Hawaiian or Pacific Islander, and multiple races.
[d]Defined based on the 2017 U.S. Department of Health and Human Services guidelines. https://www.govinfo.gov/content/pkg/FR-2017-01-31/pdf/2017-02076.pdf
[e]Defined as having been called names or insulted; received poor service than other people in restaurants, stores, other businesses, or agencies; treated unfairly at work or school; denied or given lower quality health care; or physically attacked or injured because someone knew or assumed they were attracted to men, in the past 12 months.
Abbreviations: MSM, men who have sex with men; NHBS, National HIV Behavioral Surveillance.

Table 1.

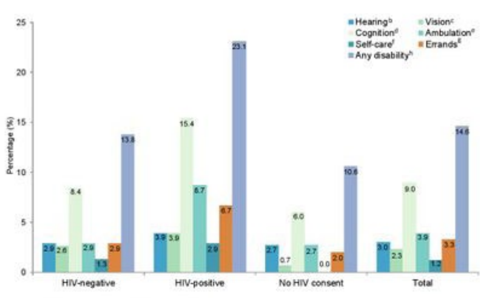

Figure 1. Prevalence estimates of disability types among MSM overall and by HIV status[a], Chicago NHBS, 2017

Conclusions: Disabilities were prevalent among MSM in Chicago, particularly among HIV-positive MSM. MSM with any disability tended to have low socioeconomic status

and experience same-sex discrimination. Future studies addressing socioeconomic challenges and improving social support and HIV care among MSM with disabilities are needed.

EPD351

Factors associated to HIV high risk behaviors among adolescents and youth living with disability in context of limited resources: evidence from a comparative study conducted in Bujumbura, Burundi

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Background: After many years of hesitation about HIV vulnerability among people with disabilities, there are growing evidences showing that people with disabilities are not only sexually active but that global action against AIDS continues to not be adapted or accessible to them which increases their vulnerability. This paper brings new evidence on factors associated to HIV high risk behaviors among adolescent and youth living with disability. The main objective of this paper is to elucidate factors associated to HIV high risk behaviors among adolescent and youth living with disability.

Methods: We used data from The HANDISSR project carried out by IFORD and its partners in Bujumbura from 2017 to 2018. The project collected data on the interactions between Disability and HIV infection. It is a randomized trial of a representative sample of 600 adolescent and young people including 300 people with disabilities and 300 control people.

The variable on HIV high risk behaviors was dichotomized by assigning the value 1 to each person who had several sexual partners during the last 12 months and who does not use a condom during sex with a casual partner and 0 for the rest.

Disability was operationalized using the Washington group standard questionnaire

Factors associated with very high risk sexual behaviors for HIV infection were determined using logistic regression.

Results: The results show that adolescents and young people with disabilities are more likely to engage in HIV hign risky sexual behavior due to the fact that they begin sexual intercourse earlier; they have less wealth and less knowledge in terms of HIV prevention and transmission methods.

Factors	Odds ratio	P-value
Age	1.062	0.520 ns
Sex	2.050	0.113 ns
Education	0.58	0.307 ns
Wealth index	0.31	0.031 **
Age at first sex	0.25	0.023 **
Knowledge of HIV prevention methods	0.23	0;021 **
Knowledge of HIV transmission ways	0.46	0.042 **
Disabily	3.012	0.022**

Table.

Conclusions: After several decades of responding to HIV, these evidence shows that strategies have not taken into account that PWDs require specific actions, especially in the context of limeted resources.

EPD352

The intersectionality of stigma, masculinity and the life-course in men's experiences of Pre-Exposure Prophylaxis (PrEP) in Eswatini and Antiretroviral Therapy (ART) in Malawi

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Background: Neglecting men who have sex with women (MSW) reduces their access to and engagement in HIV interventions. This study explores their views and experiences of antiretroviral drug-based HIV interventions in two high prevalence settings: in Blantyre, Malawi with antiretroviral treatment (ART) and in the Hhohho region of Eswatini with pre-exposure prophylaxis (PrEP).

Methods: We conducted 72 semi-structured in-depth interviews in Malawi (MSW on ART, stakeholders, and men from surrounding communities) and 70 in North-west Eswatini (MSW on PrEP, male stakeholders (SH), PrEP providers (PP) and local leaders (LL)). Interviews were audio-recorded, translated and analyzed in NVivo drawing on reflexive grounded theory.

Results: Stigma, masculinity and life-course intersected for MSW on ART and MSW on PrEP with societal views of older and younger MSW diverging.

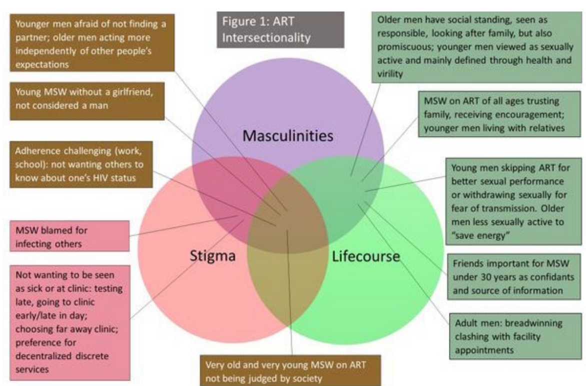

Figure 1. ART Intersectionality.

In Malawi, older and younger MSW feared being recognized as people living with HIV (PLHIV); for younger MSW on ART, anticipated stigma and concerns about reduced

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virility led to responses from social withdrawal to forgoing ART, while men with social standing could draw on more masculinity expressions, see figure 1.

MSW took PrEP to stay "clean" but feared being mistaken for PLHIV when taking pills. PrEP was linked to taking sexual opportunities, experiencing problems with condoms and living in serodifferent relationships. Older men were regarded as less sexually active and not in need of PrEP (Figure 2).

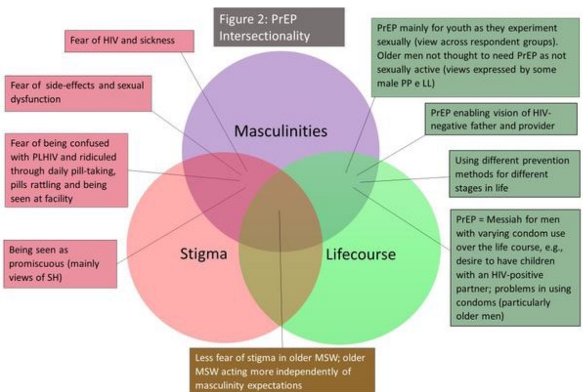

Figure 2. PrEP Intersectionality.

Conclusions: Masculinity, the life-course and stigma affect MSW's experience of ART and PrEP and should be considered when planning and implementing HIV interventions.

EPD353

Forgotten agenda: sexual and reproductive health and rights and young women with disabilities under COVID-19 in South Africa, a longitudinal cohort study

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Background: Research on the impact of the COVID-19 pandemic revealed that access to sexual reproductive health and rights (SRHR) services declined. Others also show a severe breakdown of support for people with disabilities, who lacked necessities such as food/nutrition and information on keeping safe. Some were forced to battle against significant barriers to receiving healthcare. The SRHR needs of women with disabilities were silent in all these reports.

Methods: We conducted a longitudinal cohort study with young women with (n=35) and without (n=37) disabilities aged 18-25. Following them through the COVID pandemic, we conducted a series of telephonic and face-to-face interviews with participants using validated scales, open-ended questions, and photovoice. We collected data on their experience with COVID-19; demographics; socio-economic and relationship status; food security and living conditions; mental health and coping; access to SRHR services/products; and exposure to and management of violence. We conducted descriptive and content analysis and developed case studies.

Results: Women with and without disabilities experienced mental health challenges, food or income insecurities, and less frequently accessed SRHR services.

However, this was exacerbated for women with disabilities, who lacked access to COVID information, were increasingly dependent on others at home, and were turned away from or did not dare to go to clinics and access SRHR services. The hard lockdown period saw a reduced reporting of intimate partner violence for all as participants did not live with their partners.

However, more household arguments were observed. Young women with disabilities reported communication challenges at home when their family members could not communicate with them. These challenges led to increased isolation, frustration, and abuse.

Conclusions: Emergency responses need to better integrate the needs of people with disabilities through accessible response services. Emergency healthcare has to include SRHR, and these services have to be accessible to all people with disabilities. Disability audits on healthcare services and disability inclusion measures and resource allocation in SRHR policies and strategic plans need to be developed and implemented urgently.

EPD354

Community mobilization to differentiated care clinics through a communication strategy focused on indigenous LGBTIQ communities in Guatemala for PrEP / PEP

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Background: In recent years, technology has made easier to find new effective Prophylaxismethods to prevent HIV, in some societies, the use of this methods has reduce considerably the new HIV infections, however, The inequality gap for access to information and treatment is still very large. in societies where the lack of sex education and actions by government entities are minimal and centralized as Guatemala, where 45% of the population is indigenous.

The new communication technologies are tools that bring innovation to the processes of comunicate at a time when the COVID-19 pandemic affects our life and complicates access to supplies for prevention and medical care

Description: Through the implementation of a comprehensive marketing and relevant communication strategy in Mayan languages, supported by UNAIDS, combined prevention services are offered that include advice and counselling, and the deliver of HIV prevention kits, wich includes condoms and lubricants, in addition to supplies for the prevention of COVID19 and the production of au-

diovisuals to bring information in Mayan languages of PrEP and PEP. mainly on Facebook, Instagram, Grindr and WhatsApp from November 2020 to January 2021
Lessons learned:
1. A communication strategy with an impact of 28,246 users.
2. Kits for the prevention of HIV and COVID 19 are delivered to homes during the quarantine period,
3. The goal of 300 kits for deliveries was exceeded and 800 kits. 43% of which were requested by women, including grandmother midwives, and 57% by men and diversity.
4. Prior to the communication strategy, Clínica Kabawil had aprox 20 visits per month. Medical care and prophylactic methods are currently provided to 463 patients from indigenous and diversity populations, of which 12% receive medical attention for PrEP and PEP since November 2021 and supplying 3,000 condoms and lubricants monthly .
Conclusions/Next steps: It is decisive to continue in the fight against HIV the elimination of inequality in access to information and supplies for prevention, especially to take in consideration the indigenous population.
The evolution of communication channels is essential. It is the responsibility of the organizations and society that work together to eradicate HIV to take in consideration interculturality and the decentralization of health services.

EPD355

Engaging trans community to prevent prevalence of sexually transmitted diseases: a qualitative study of Pakistani Hijra community

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Background: Hijra community also referred as transgender is one of the most vulnerable groups for the sexually transmitted infections (STIs) in Pakistan with 3% prevalence rate of HIV/AIDs. They are socially deprived, excluded, and isolated which limit their access to services including health. Resultant they live in isolation and commonly earn their livelihood by means of dancing, sex work, begging and alms collections. The prevailing pandemic situation has increased their vulnerabilities in term of accessing health services and livelihood.
Methods: This is a formative research based on exploratory research design to discover suitable means to engage hijra community for protection from STIs. This research was conducted from June to September 2021 in Karachi Pakistan by means of using IDIs (21) and FGDs (4) with the hijra people while expert interviews (7) were conducted with concerned stakeholders.
Results: This research reveals that most of the hijra respondents were aware that unprotected sex can transmit HIV/AIDS but not aware about the other STIs. However, majority among them were not sensitive about the protected sex due to client's pressure who used to pressurize for unprotected sex.
Moreover, transgenders were also reluctant to visit health service providers because of the past experiences of discrimination and disrespect. They were also fearful to undergo the medical tests which may reveal if they are already infected.
Study shows that the association, attachment, and rapport between hijra people and health service provider can play vital role in term of improving the access of hijra people to health services.
Similarly, reduced cost of traveling, instant access, privacy can also improve their health seeking behavior along with bringing the improvement in the traditional health services.
Conclusions: Transgender people are vulnerable to acquire and transmit STI because of engagement in prostitution, client's pressure and unprotected sex. While they face challenging situation to access the health services due to their health seeking behavior, past experiences with health services provider and financial constraints.
In the given context technology-based health intervention through mobile app in Urdu language not only improved their knowledge but can also connect health service provider with hijra community for access to services.

EPD356

The road to HIV Racial Justice Now!: Lessons for HIV advocacy and racial equity in the United States

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Background: Despite claiming to be a champion for HIV, a myriad of Trump's actions reinforced a hierarchy where the most marginalized were left in the shadows. As Trump's rhetoric of hate rang loudly, many organizations and conferences related to HIV stayed silent.
Enraged by this silence, in November 2017, a group of BIPOC HIV activists in the United States of America convened and strategized. In turn, the coalition, HIV Racial Justice Now! (HRJN) was born.
Description: HJRN emerged from an analysis that decades into the HIV epidemic, leadership and political priorities across the HIV response did not sufficiently reflect communities most impacted by the domestic HIV epidemic.
While there have been tremendous advancements in HIV prevention, treatment, research, and care, vast health disparities still exist across race and ethnicity. Efforts to dismantle white supremacy and to address racism within institutions have been underway in the HIV movement,

but through conversations, HRJN discovered the movement for racial justice in HIV felt disjointed and fragmented and therefore needed to consolidate our power.

Lessons learned: Using Emergent Strategy as the facilitation model, the group developed The Declaration of Liberation. The document, which was drafted and edited by over 20 HIV movement leaders of color from across the country, serves as a lens for analyzing racial equity in HIV and future implications of this approach. The document is designed to be used in a range of HIV organizations and spur organizing in philanthropy, HIV services, and advocacy. The framework argues a racially just lens in the HIV movement must:

1. Integrate racial justice into organizations and political strategies
2. Center communities most impacted
3. Push for increased accountability
4. Ensure equity in the allocation of resources (human, material and financial)
5. Transform and dismantle institutions embedded in White Supremacy.

Conclusions/Next steps: This presentation will provide a brief overview of HRJN's history, its membership, and recruitment strategies. Then, we will unpack the framework, revealing the concrete and tangible ways the framework can and should be used to achieve racial justice.

Finally, we offer implications and recommendations for mobilization, public policy, and public health.

Economic transitions and social and cultural changes affecting HIV and the HIV response

EPD357

From adolescent to adult HIV: a facility-based comparative analysis of determinants of successful transition from adolescent to adult HIV treatment, in Zambia

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Background: There is inadequate data on transition outcomes in Zambia that is focused on the decentralised facility-level type, facility Location and facility Ownership. The objective of this study was to assess facility-type based performance in the transition of adolescents to adult HIV care, as well as to determine the association between facility-based socio-demographic factors and successful transition to adult care.

Null Hypothesis: 3rd level facilities have a higher successful transition performance of adolescents to adult care compared to lower-level facilities.

Alternative Hypothesis: 3rd level facilities do not have a higher successful transition performance of adolescents to adult care than lower-level facilities.

Methods: A Retrospective descriptive cross-sectional study was carried out with a population of 7275 patient files that were successfully transitioned in 718 PEPFAR supported sites, across the 10 provinces. Data was extracted from the National Electronic Health Record (E.H.R) system, later uploaded into STATA_SE v-16 for analysis. Socio-demographic traits and facility-level based performance was calculated using descriptive statistics and expressed using frequency tables. Logistic regression was conducted to assess whether 3rd level facilities had a higher transition performance in relation to lower facilities. Chi-square was used to test the Association between Socio-demographic Traits and successful Transition Outcome, at 5% confidence level.

Results: A total of 43.2% (N=3145) had successfully transitioned to adult care, from (N=7275) individuals that were extracted from the E.H.R database, in 718 PEPFAR supported sites. The Mean Age of clients transitioned was 18.3, (SD-1.55). Health Posts had the highest transition performance of 57.3%. There was an association between transition outcome and the following socio-demographic variables; facility-type (Health Posts), ownership (Private), Location (Rural) and Province (Muchinga) with p-values of 0.0001, 0.01, 0.000 and 0.000, respectively. Logistic regression analysis found that there was an increase in higher successful transition performance from facility-level-health post (aOR, 1.599398, 95% CI,1.213436-2.108125, p=0.000).

Conclusions: The null hypothesis is rejected. There was a 59.9% increase in higher successful transition performance from a lower-level facility compared to 3rd level facility, at 95% Confidence Interval. Similarly, health posts had highest transition success at 57.3%.

EPD358

Reduction of precariousness among People Living with HIV (PLHIV) through a collaboration with the National Employment Fund (NEF), in the city of Douala, Cameroon

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Background: Alternatives Cameroun takes care of an active file of approximately 1000 people. In 2019, approximately 50% of these people were in a precarious situation due to the fact that they either do not have a job or have lost their job, both of which are directly related to their HIV status. Economic insecurity has a negative impact on their compliance and quality of life.

Alternative Cameroon set up a pilot project whose main objective was to improve the standard of living of our patients in precarious situations.

Description: In order to recruit the project's beneficiaries, a tool was created and set up to find out if the patients wanted to develop a commercial activity or find a job. We were thus able to have 200 people wishing either to be self-employed or to benefit FNE support.

A collaboration with the FNE was initiated and allowed counselors to accompany the patients without travelling for them and face unfamiliar environments and people. The FNE then set up a three-pronged support program: writing CVs, preparing for job interviews and creating income-generating activities.

Lessons learned: This project has enabled 50 people to find work and 80 people to become self-employed through the establishment of 8 savings and credit associations and the initiation of income-generating activities.

In addition, the project evaluation shows that 60% of the non-observant patients who benefited from these services say that their physical and mental health has improved.

Our project has highlighted the need to offer specific support to PLHIV for their socio-professional integration or reintegration. Also, autonomy favors the well-being of PLHIV. Once autonomous, more than half of the non-observant patients who benefited from the project saw their physical and mental health improve. Self-stigmatization remains a real obstacle to socio-professional integration for PLWHA.

Conclusions/Next steps: Alternatives Cameroon intend to accelerate the mobilization of people for this program and especially to extend this activity in all the cities where there are ALTERNATIVES Cameroon branches.

We also want to set up this kind of collaboration with companies directly so that we can refer our beneficiaries ourselves according to the needs of these companies.

EPD359

Economic livelihoods interventions as a strategy to reduce HIV vulnerability risks

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Background: The Global Fund grant NACOSA has piloted the Economic Strengthening Livelihoods (ESL) as part of the "My Journey Programme". ESL project is aimed at AGYW who are not in education, employment or training (NEETs) aged 15-24 and therefore marginalized and vulnerable. By providing socio-economic support and access to opportunities resulting in reduced HIV risk.

Description: The ESL project is implemented in urban, peri-urban and rural sub-districts in South Africa namely, Tshwane (Gauteng), Mbombela (Mpumalanga) and Nelson Mandela Bay (Eastern Cape) targeting 2000 NEETs. ESL provides a 6-day skills training and streaming to opportunities *(employment, education or entrepreneurship e.g. Learner Support Agents in schools, dressmaking, completion of grade 12)* and provision of support incentives. AGYW's are encouraged to save individually or in groups which has resulted in 435 NEETs receiving matched funding for savings. A condensed iteration ESL Light was implemented in the third year in Rustenburg (North West) and Mitchells Plain (Western Cape) due to uptake with ESL Pilot.

Lessons learned: After 18 months of implementation, 72% of the NEETs who received ESL skills training had completed their livelihood opportunities. These results have proven that mentoring support and relationship building from role-players have played a pivotal role in opening up livelihood opportunities for AGYWs.

Preliminary findings show that ESL participants are more likely to access HIV testing services and use PrEP compared to those NEETs who only received the core package of services (HTS: 36% compared to 26%; PrEP: 15% compared to 5%). Furthermore, ESL participants, if tested reactive, are more likely to be linked to care (75%) compared to non-ESL NEETs (69%).

In addition, when ESL is implemented in conjunction of other layered services it provides a holistic development opportunity for AGYWs. Two thirds of the ESL participants in Tshwane also completed a self-defense rape-prevention training.

Conclusions/Next steps: ESL Light will be scaled up to include adolescent boys and young men. Stakeholder engagement at community levels will be prioritized to obtain buy-in to the ESL project.

In addition, establishing a mentoring support structure at the community spaces for young people to become economically active whilst reducing risky behaviours.

Humanitarian crises and HIV

EPD360

Integration of HIV prevention and treatment services within primary health care humanitarian responses in conflict-affected settings of Africa: a systematic review

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Background: Globally, 8-10% of people living with HIV are affected by conflict (Hanson *et al*, 2010). However, HIV prevention and treatment services seldom reach internally displaced persons and refugees living in fragile and conflict settings and these populations are at risk of poor outcomes related to HIV. Different models of care are used to provide primary health care including HIV

services in humanitarian settings (McGowan *et al* 2020; Miller *et al* 2020), yet evidence on these delivery models by humanitarian organisations is limited.

We conducted a systematic review to synthesise currently available evidence on models of care used in conflict-affected settings in Africa to understand different modalities of service delivery which could be leveraged to optimize HIV services in conflict settings.

Methods: We conducted a systematic review using the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines. The protocol for this review was registered with the International Prospective Register of Systematic Reviews. We searched Embase, MEDLINE, PubMed, Global Health, Web of Science, Scopus, and EBSCOhost for manuscripts published from 1992 to December 2020. Quality assessment was conducted using the Critical Appraisal Skills Program and the Critical Appraisal Tool for Cross-Sectional Studies.

Results: A total of forty eight articles were included for analysis from which 33 were rated as good quality. The results showed that the models of primary care in place in these humanitarian settings include health facility based, community based interventions, mobile clinics, outreach and home visits. Twenty four articles reported the delivery of primary health care services using stand-alone (vertical) approaches.

Only 11 articles reported the delivery of HIV services from which 08 where integrated with other services. HIV services are provided by international and national non-governmental organisations, Governments, UN agencies, community-based organisations, faith-based organisations and academic institutions.

Conclusions: Few HIV services were reported in conflict settings, a concerning finding given the reality that many conflict-affected populations are living with HIV. A move towards integration of services should be considered by humanitarian organisations as this is an opportunity to consider increasing HIV service delivery. Rigorous assessments on integrated service delivery models in conflict settings should be conducted.

EPD361

Closing HIV case finding gaps amidst COVID, natural disasters, cross border migration, and socioeconomic challenges in Burundi

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Background: Burundi has recently endured COVID surges, floods, poor harvests, and substantial cross border migration, and additional epidemics including malaria and tuberculosis. These socioeconomic stressors have challenged the country's HIV achievements and progress.

The PEPFAR/Burundi program directly supports 95% of the national HIV treatment cohort across the country's 18 provinces, and PEPFAR/Burundi has an overarching goal to support the government to achieve and sustain equitable epidemic control. The program's HIV testing services are focused swiftly closing the 1st 95 gaps. The largest case finding gaps exist among children, adolescents, and young men ages 15-30 years.

Description: Despite limitations with in-person meetings, PEPFAR/Burundi leveraged virtual platforms to coordinate with the Ministry of Health, Global Fund, and implementing partners to support facility- and community-based HIV testing services. From October 2020 through September 2021, the program directly supported 15 testing modalities, and made a concerted effort to ensure standard of care HIV testing services were available in emergency departments, outpatient departments, inpatient wards, malnutrition units, STI clinics, TB clinics, PMTCT service delivery points, and in communities.

Additionally, efforts were made to offer safe and ethical index testing services to all people living with HIV. In-person and virtual mentorship and support visits were conducted as feasible. PEPFAR/Burundi conducted 117 site visits to support program quality assurance, and challenges related to testing services were identified and addressed.

Lessons learned: Analyzing routine PEPFAR program data, the PEPFAR/Burundi team achieved 143% (8,617/6,028) of the annual case finding target. Index testing contributed the most to case finding achievements for adult females and males (46% and 65% contribution, respectively) and children and young adolescents (82% contribution). Index testing services resulted in the highest testing positivity across all implemented testing modalities (12% for facility-based index testing, 13% for community-based index testing). Additionally, 99% (8,525/8,617) of diagnosed PLHIV were linked to treatment.

Conclusions/Next steps: Collaboration with Ministries of Health, implementing partners, and broader stakeholders is critical to program success. Increased attention to the implementation of person-centered HIV testing services continues to be necessary until the 1st 95 is achieved and maintained across age and sex bands, and geographies.

EPD362

Differentiated service delivery to mitigate the effect of Armed conflict on ART: lessons learned in Cameroon from 2018-2021

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Background: In 2016, a socio-political crisis started in two regions of North-west and South-west regions of Cameroon. The aggravation of the conflict in 2018, led to massive displacement of the population, and the closing of many services. Between 2017 and 2018, the number of patients on ARV declined from 60216 to 56383 in the two regions. To mitigate the impact of the crisis, a contingency plan for health has been developed and implemented by the programme.

Description: In 2018, a mitigation plan for the two regions was developed and implemented. The main interventions were:

1. Community ARV dispensation using health care providers;
2. Multi-month dispensation of ARV;
3. Opening of health facility just for a few hours in the most at-risk zone for treatment refill;
4. Use of reference card to link displaced patient on treatment in the host region.

To analyze the effect of the strategy, we examine tree indicators from the routine data reported by the ART program between 2018 and 2020. The number of patients on treatment, the number of patients maintained in care at 12 and 24 months after the initiation of ARV treatment.

Lessons learned: Data from 2018 to 2021 from the two regions show an improvement in the ARV treatment indicators compared to 2017. The number of patients maintained on ARV 12 months after the initiation, increases from 68% in 2019 to 80% in 2021 in the North-west region and from 71% to 78% in the South-west.

The retention in 24 months after initiation increases from 63% to 69% in the north-west and from 53% to 67% in the south-west. The total number of patients on treatment in the two regions increase from 33645 to 40469 in north -west and from 23775 to 30055 in the south-west between 2018 and 2021.

Conclusions/Next steps: The measures taken to mitigate the impact of the conflict have yielded significant results. The country needs to develop a broader plan to cover other aspects; such as viral load testing which is still difficult to provide to displaced patients and those living in red areas. Similar strategies can be undertaken for hard-to-reach patients in other settings.

EPD363

Adherence to two HIV programs in a conflict-affected setting: lessons learnt from CAR

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Background: Despite having the highest HIV prevalence in the region, 2.9% in adults, <50% of the people living with HIV (PLHIV) in CAR received antiretroviral therapy (ART) in 2020. Consequently, HIV remains one of the leading causes of mortality. Conflict is a well-known factor impacting adherence to HIV programs. MSF Spain in collaboration with the Ministry of Health (MoH) supports HIV diagnosis and care in Kabo and Batangafo hospitals since 2008. Batangafo has regularly been exposed to inter-community clashes between herders- and farmers-affiliated armed militias, but the MoH and other NGOs have managed to keep a presence in the area despite the repeated attacks. Kabo, closer to the border with Chad, has often been destabilized by episodes of banditry and cross-border smuggling due to the armed group heavy presence in the area.

The aim of this study was to identify the main demographic and clinical factors associated with HIV adherence in the two supported cohorts.

Methods: Descriptive and survival analyses were conducted on routinely collected programmatic data of HIV cohorts between 2017 and 2021 in Batangafo and 2020 in Kabo.

Results: While sex ratio and mean age at ART initiation were similar across projects (mean(SD) (32.3(10.4) in Batangafo vs. 33.2 (10.9) in Kabo), women tended to be younger in Kabo ($p<0.001$). PLHIV in the Kabo project presented with more advanced WHO stage at diagnosis ($p<0.001$), lower CD4 count ($p<0.001$) and lower body mass index (BMI) ($p<0.001$); loss-to-follow-up (LTFU) was also more common, hazard ratio 1.70[(CI 95%=1.1-2.5).

Combined project data revealed several factors associated with LTFU: male sex (HR=1.30, p=0.07), younger age (HR=1.45, p=0.05) and more advanced stage (stages 3-4 vs. 1-2 HR 1.4) (p=0.05), at initiation.

Conclusions: Despite similarities in care, those in Kabo presented with more advanced disease indicators and adhered less well. Greater stigma and cross-border movement may explain this. Targeted interventions should be put in place to combat stigma in the community and facilitate access to care in case of instability,

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including reinforcing health promotion and community engagement, decentralization and patient support, education and counselling, with special attention to patients at higher risk of abandon: males, younger PLHIV and patients with more advanced WHO status.

Intergenerational and/or transactional sex

EPD364
Pathways for women's engagement in transactional sex with a non-primary sex partner: the role of partner type

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Background: Transactional sex is a risk factor for HIV acquisition in women in sub-Saharan Africa. Little research into the longitudinal predictors of transactional sex has been undertaken.
This study aimed to quantitatively explore the pathways which contribute towards women's engagement in transactional sex in South Africa.
Methods: We used longitudinal data drawn from self-selecting respondents participating in a randomised controlled trial in informal settlements in eThekwini. Respondents were asked five questions on transactional sex with a *kwapheni*(an isiZulu term that translates as "side dish" and denotes a concurrent partner) or casual partners. Control in a main relationship was measured using the Sexual Relationship Power Scale and alcohol use using the Alcohol Use Disorders Identification Test (AUDIT).
We used multivariable regression and structural equation modelling (SEM) to assess associations and pathways longitudinally associated with transactional sex over two years.
Results: 677 women aged 18-35 years enrolled at baseline and 545 were followed up two years later. At follow-up, 45% of respondents reported past-year transactional sex with a casual partner or *kwapheni*. Women who reported being in more controlling main relationships had higher odds of engaging in transactional sex with a non-primary partner at follow-up (AOR=1.11, 95%CI 1.06-1.16). Accounting for baseline education, food security and transactional sex, three pathways were associated with endline transactional sex:
a. More controlling main relationships had strong effects on transactional sex with a *kwapheni* (d=0.6);
b. Hazardous drinking at baseline was moderately associated (d=0.45);
c. Increased food insecurity had small but significant effects (d=0.24).
The SEM fit the data well (RMSEA=0.03, 90%CI 0.02-0.04; CFI=0.97; TLI=0.96).
Conclusions: Nearly half of women engaged in past-year transactional sex with a non-primary partner in South African informal settlements. Being in a highly controlled main relationship is associated with transactional sex with a casual partner or *kwapheni*.
Women who are in main relationships with high degrees of control, may attempt to assert their agency by choosing with whom, and partially, what the terms are, for a transactional sexual relationship.

Media, cultural and religious representations of HIV and of key populations

EPD365
STUDIO DHANAK: a screen writing workshop to groom aspiring LGBTQ+ writers and filmmakers to tell their stories through short films and advocate HIV & LGBTQ+ rights in mainstream Indian media

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Background: The Humsafar Trust (HST) is community-based organization working on the health and human rights of the LGBTQ+ community since 1994. Identifying the lack of factual and empathetic visual content representing stories of people living with HIV (PLHIV) as well as other vulnerable groups, HST designed the STUDIO DHANAK (SD) (DHANAK means Rainbow in Urdu language) – A screen writing workshop for nurturing script writing and film-making capacities of aspiring LGBTQ+ identified scriptwriters and filmmakers from all over India.
Description: In October 2021, SD commissioned four successful media industry professionals as mentors/trainers to strengthen capacities of 20 LGBTQ+identified filmmakers on fictional and sensitive representation in regional languages over a 3-day screen-writing workshop. Various experienced professionals from entertainment industry also shared their experiences and approach to story writ-

ing with the participants. The workshop aimed to create content in different formats for promoting awareness/social acceptance toward LGBTQ+ and PLHIV via structured sessions on screenplay writing, storyboard creation, casting, direction, cinematography, editing and post-production procedures. Participants were trained to develop preliminary ideas via intra-group discussions, one-one guidance from mentors, and interactions with community leaders. Participants were also trained by mentors to develop their story ideas into a full-fledged screenplay over two months via online mentoring.

Lessons learned: It is essential to strengthen community voices as they are experience based, authentic and impactful. The initiative provided a platform to strengthen the voices of LGBTQ+ youth from rural and semi-urban India to express freely through the medium of screen writing. Effective mentoring and peer learning plays a significant role in enhancing the productivity of the participants to develop engaging scripts. The participants explored various themes including social acceptance, empowerment, health awareness and mental health issues. The completed scripts presented authentic personal feelings and real life experiences.

Conclusions/Next steps: With appropriate guidance, aspiring community filmmakers can be honed to create content that is sensitive and factually representative of lived experiences of PLHIV and LGBTQ+ individuals. 5 best scripts will be chosen and awarded STUDIO DHANAK FELLOWSHIPS to produce short films.

These films can be used as an efficient advocacy tool to mainstream the issues and promote social acceptance of PLHIV and LGBTQ+ population.

EPD366

#LiveAIDS – online concert in memory of AIDS victims as a way to destroy myths among the living

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Background: The Media analysis in Ukraine showed that 40% of HIV-related information was negative, reflected old prejudices. Reaching the people outside of HIV-sphere is a challenging communication. In 1992, the concert in memory of Freddie Mercury and all AIDS victims was held in London. Thirty years later, the HIV epidemic is still a challenge. We aimed to show the positive changes related to HIV by voices of PLWH. Using the pop icon image as well as the stories of real PLWH, we showed the positive side of HIV treatment and a modern view of the problem. The combined approach allowed us to reach the general population and communities.

Description: Before AIDS Memorial Day 2020, we conducted the concert in memory of #LiveAIDS - a tribute concert of Queen performed by a famous Ukrainian band. The concert was streamed on "100% Life's" and PIANOBOY's Facebook. HIV activists and partners were speaking between songs. Stories of PLWH living a full life were published under #LiveAIDS. The largest TV channel announced the concert and showed a story with a PLWH who dispelled myths about HIV. The title LiveAIDS is a reference to Live Aid, a charity music festival, where Queen performed in 1985.

Lessons learned: More than 18,000 users watched the video on Facebook. The indicators of views and involvement are statistically comparable to top bloggers, who are relevant according to subscribers; this shows the interest in the format and topic. The total coverage was almost 150,000. The appeal to the image of Freddie Mercury allowed us to place the audience in context without additional communication. The known Ukrainian artist with an active social position, attracted a wider audience.

The PLWH was presented in a positive modern connotation. The online concert proved to be a good tool for capturing a wider audience during COVID's restrictions.

Conclusions/Next steps: A creative approach to coverage of HIV-related issues allowed us to compete with the COVID19 news. The concert is freely available on Facebook and YouTube and the number of views continues to grow, achieving the main goal - to broadcast modern messages about HIV and reduce stigma against the PLWH.

EPD367

PrEP messaging in South Africa over time: a content analysis of PrEP-based digital news media from 2012-2021

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Background: Public discourse surroundingpre-exposure prophylaxis (PrEP) has increased globally in recent years. Messaging can play a vital role in promoting and inhibiting PrEP engagement among readers. We examined the evolution of South African news media representations of PrEP over the past decade to understand the content and tone of PrEP-related messaging.

Methods: English, isiZulu, and Afrikaans Newspapers in South Africa were screened based on distribution volume with the top twenty selected. Digital articles published between 2012-2021 containing at least one of four PrEP-related search terms were deemed eligible. A thematic coding approach was used; a qualitative codebook was

developed to classify information being conveyed. Articles were subsequently categorized according to theme and overall tone towards PrEP.

Results: 249 articles mentioning PrEP were identified and thematically coded. The tone of PrEP messaging was largely positive (n=130, 52%), though over 40% were neutral (n=92, 37%) or negative (n=27, 11%). Among PrEP-focused articles (n=125), PrEP messaging was most commonly related to PrEP as one of several HIV prevention options, awareness of what PrEP is, access to PrEP, and PrEP as an empowerment tool (Figure 1). Themes were largely consistent, with a greater emphasis on increasing awareness of what PrEP is over time. Key populations commonly mentioned as benefactors of PrEP were adolescent girls and young women (n=96), men who have sex with men (n=86), and female sex workers (n=77).

Conclusions: Digital media representation of PrEP was largely positive over the past decade, however, over 40% of articles had neutral or unfavourable representations of PrEP. Priority populations were frequently noted, potentially contributing to the unintentional stigmatization of PrEP. Efforts to generate demand for PrEP in media may be leveraged to improve PrEP uptake and decrease PrEP stigma. Focusing prevention campaigns on PrEP as a user-controlled HIV prevention option may further direct media attention and decrease PrEP stigma.

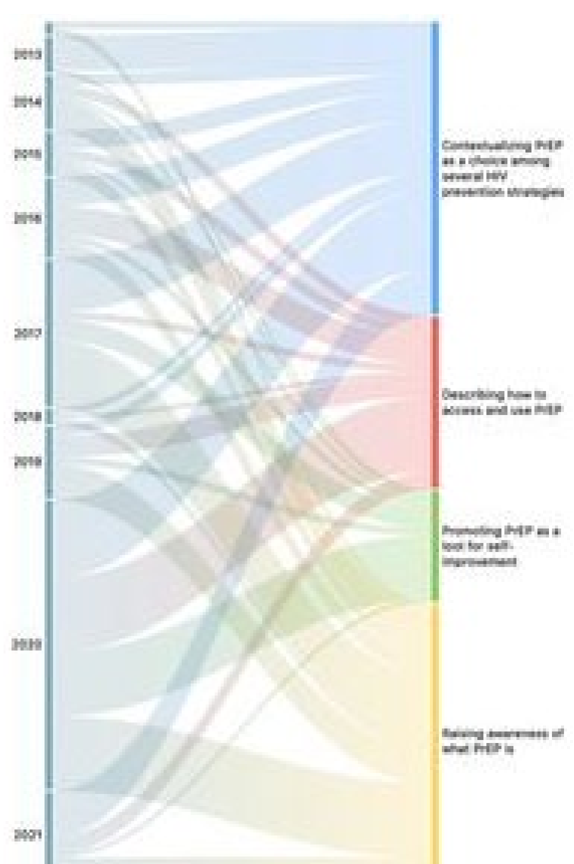

Figure 1. Sankey diagram depicting key messaging themes in PrEP-focused South African digital news media (2012-2021) (n=125)

Migration and HIV

EPD368

Addressing the migrant gap: maternal healthcare perspectives on utilizing prevention of mother to child transmission (PMTCT) services during the COVID-19 pandemic, South Africa

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Background: The COVID-19 pandemic has interrupted the South African prevention of mother-to-child transmission of HIV(PMTCT) programme. In 2020, the International Organization of Migration estimated there were 4 million cross-border migrants in South Africa, some of which are women living with HIV, are highly mobile, and located within peripheral and urban areas of the city of Johannesburg.

The impact of the COVID-19 pandemic on both, internal and cross-border migrants utilization of PMTCT services and, on how the changes to services may have effected adherence - is unknown.

The purpose of this research was to qualitatively explore the experiences of different typologies of migrant women accessing PMTCT services during the pandemic, at a public hospital located in a high mobility context of Johannesburg.

Methods: A qualitative approach was used, involving semi-structured interviews with 40 HIV positive and pregnant migrant women from June 2020-June 2021. Participants were recruited through purposive sampling at the antenatal and postnatal clinics in a public hospital in Johannesburg. A thematic approach was guided by The Utilization of PMTCT Healthcare Services Conceptual Framework to analyze interviews.

Results: Forty interviews were conducted with 22 cross-border and 18 internal migrants. Highly mobile women in cross-border migration patterns expressed more fear to utilize health services due to xenophobic attitudes from healthcare workers, were unable to receive ART with border closures during lockdown, and relied on SMS reminders to adhere to ART during the pandemic. All 40 women struggled to understand the importance of adherence post-delivery, because of the lack of counselling from support staff, too busy attending to the influx of COVID-19 hospital admissions.

The overburdened clinical environment lacked infrastructure to properly educate all women on breastfeeding because of social distancing protocols.

Conclusions: COVID-19 amplified existing challenges for cross-border migrant women to utilize PMTCT services. There needs to be explicit narrative when addressing the challenges and HIV health system response for highly mobile women during the pandemic.
Future pandemic preparedness should be addressed with differentiated service delivery models which include multi-month dispensing of ARVs, virtual educational care, and language sensitive information to assist in alleviating the burden on the healthcare system and migrant women.

EPD370

"I always imagined my future only here" - How the HIV residence ban affects international migrants in the Russian Federation

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Background: Russia has the highest HIV incidence in Eastern Europe and Central Asia.It is also one of only 19 countries that deports migrants living with HIV. In 2008, the United Nations announced that such discriminatory policies are unacceptable—they serve no public health interest and instead only make migrants living with HIV more vulnerable and less likely to access life-saving HIV care and other medical treatment.
This study examines the effects of Russia's HIV deportation policy on HIV+ migrants, especially undocumented migrants, to better understand how this policy is being implemented and how migrants cope with the challenges it creates in the Russian context.
Methods: Our analysis draws on in-depth interviews with 15 HIV-positive migrants, supplemented by 13 in-depth interviews with experts and caregivers providing HIV prevention and treatment services to migrants in Russia.
Results: Undocumented HIV+ migrants describe being doubly stigmatized for their migration status and their HIV status, both in Russia and in their home countries. This is especially exacerbating for migrants from key populations who endure the most serious stigma. They also describe facing double sets of barriers in Russia and their home countries. In Russia, migrants describe facing significant barriers to accessing prevention information and HIV testing and treatment services, as well as general medical services, contributing to high vulnerability.
On the other hand, migrants sometime fear to return home because of fear of stigma and uncertainty about availability of free HIV care back home. They also fear being placed on a ban list and being unable to return to Russia, where they have better economic opportunities than in their home countries. As a result, after learning their HIV status, many migrants prefer to remain in Russia undocumented, trying to obtain treatment using grassroots transnational networks or remain without treatment.
Conclusions: Twin fears of deportation and discrimination leave undocumented HIV+ migrants in Russia without any good choices. Consequently, many of them reside in limbo for years with little chance of obtaining ART.
Our principal recommendations are decriminalizing migrants with HIV in Russia and creating transborder agreements between migrants' sending countries and Russia to aid migrants in receiving treatment.

EPD371

Sexual health of migrant women attending French Red Cross Health Prevention Centers in French Guiana, in 2021

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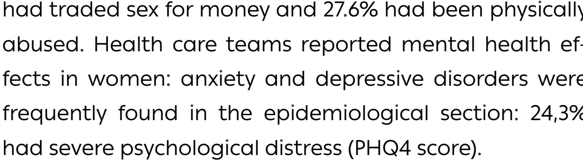
Background: French Guiana is experiencing significant demographic and migration challenges (38% of the current population is foreign born). It's the French region with the highest HIV prevalence (1.18 - 1.35% in 2016). In this context, women's health must be considered.
The main objective of the study is to describe situations of sexual vulnerability among migrant women in French Guiana.
Methods: A cross-sectional survey with a mixed methodology was conducted from April to August 2021 and includes :
- a descriptive cross-sectional epidemiological study, using questionnaires administered in French, Haitian Creole, Spanish or Portuguese, to a random sample of foreign-born women over 18 years old attending the Red Cross Health Prevention Centers in the two main cities.
- a qualitative exploratory study, through semi-directive interviews conducted with caregivers working in these centers.
Results: A total of 382 women were included, mainly from Haiti (80.4%), Suriname (8.9%) and the Dominican Republic (5.7%). Median age was 31 years and 71.2% were in an irregular situation. Twelve semi-directive interviews were performed among health workers of these prevention centers.
A significant exposure to sexual violence and transactional sex was reported. Among the 382 women interviewed, 19.9% reported rape at least once in their lifetime, 27.7%



had traded sex for money and 27.6% had been physically abused. Health care teams reported mental health effects in women: anxiety and depressive disorders were frequently found in the epidemiological section: 24,3% had severe psychological distress (PHQ4 score).
An important vulnerability was reported: 76.7% of the respondents described a difficult financial situation and 55.5% were exposed to severe hunger. Social isolation was also a major finding, as 72.5% of women said they had noone to shelter them in case of need.
Menstrual precariousness was also significant, as 73.7% of the women reported a lack of sanitary protections in the last few weeks.
Conclusions: Sexual vulnerability of migrant women in French Guiana is a cause of concern and appears to be linked to poverty. Emergency measures (food aid, free sanitary protection, etc.) and medium-term measures (social and community interventions to reduce sexual risks, psychological care) need to be reinforced.

EPD372
Sexual and reproductive health knowledge, attitudes and behaviors of migrant workers in concentrated latex factories and rubber plantations in Surat Thani Province, Thailand

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Background: Sexual reproductive health and rights (SRHR) problems remain a major health challenge among Thai and Myanmar workers. Those workers lack understanding of SRHR as well as access to sexual health and reproductive healthcare services due to illegal migration and language barriers.
The objectives of this study were to enable Thai and Myanmar workers in concentrated latex factories, rubber plantations and rubber plantation cooperatives to have accurate knowledge of SRHR including family planning, birth control and condom use to prevent STIs/HIV/AIDS and to increase their access to sexual and reproductive health services.
Methods: The project started from June 2020 to February 2021. The samples include 187 workers from 2 concentrated latex factories and 5 rubber plantations in Surat Thani Province selected by random through Probability Sampling method. The research instruments were consisted of questionnaires. The quantitative analysis referred to descriptive statistics to present individual data that compares the changes of knowledge, attitudes, and behaviors before and after trainings.
In addition, the qualitative data were collected through In-depth Interview, Participant Observation, Filed Note analyzed by Content analysis and Grounded Theory analysis.
Results: The sample group consists of 51.3% Thai and 48.7% Myanmar workers; 65.2% were females and 70.1% married. Mostly 40.6% of them had sexual intercourse for 1-2 times a month and 54% used natural methods of contraception. After SRHR trainings by PPAT, it was found that there were positively changes in knowledge, attitude and behavior levels from a low level to a high level.
Before the trainings, the mean of knowledge level (K) was 2.21 ± 1.23, the mean of attitude level (A) was 2.53 ± 1.15, and the mean of behavior level (B) was 2.14 ± 1.10.
After the trainings, the mean of knowledge level (K) was 3.22 ± 0.99, the mean of attitude level (A) was 3.22 ± 1.22 and the mean of behavior level (B) was 3.11 ± 0.70.
In addition, 12 models which were key success factors showing significant levels of positive changes in knowledge, attitudes, and behaviors.
Conclusions: The project was successful. It further strengthened volunteer mechanisms and expanded Drop-in centers to disseminate the knowledge and provide consultation on SRHR in factories and communities.

EPD373
Mobility is associated with ART interruptions among men in Malawi: a mixed-methods study

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Background: Frequent trips away from home, or "mobility," is common across sub-Saharan Africa. Mobile men in antiretroviral treatment (ART) programs may face unique challenges to accessing care. We sought to understand how mobility impacts HIV care for men living with HIV in Malawi.
Methods: This mixed methods study was embedded within two trials conducted with men from 20 health facilities in Malawi. Eligibility criteria were: ≥15 years; HIV+; and not currently on ART (never initiated or stopped treatment). Survey questions on mobility were conducted with all men at trial enrollment. In-depth interviews (n=32) were performed with a subset of 'highly mobile' men (defined as spending >14 nights away from home in last year). Interviews focused on reasons for travel and relationship between travel and ART interruption. Interviews were translated, transcribed, coded, and analyzed using grounded theory in Atlas.ti.
Results: Between August-December 2021, 651 men with treatment interruptions were enrolled in the trials. Median age was 38 years (IQR 31-45) with median 3.7 years since HIV diagnosis (IQR 1.1-10.5); 69% were married and 28% attended secondary school.

Of these men, 34% were highly mobile (median 60 nights away from home in past year [IQR 30-90]). Among them, 77% took long trips (≥14 consecutive days), of which 32% were international and 68% were for income generation. In-depth interviews revealed that men had limited control over travel dates and durations.

Most men experienced unplanned, "urgent" trips due to employer demands or familial deaths (24/32). While the majority brought ART during travel (28/32), most ran out of medication while away (23/28). Men understood the importance of adherence and made extensive efforts to adhere during travel, including having caregivers collect ART refills (11/32), accessing refills at alternate clinics (8/32), and returning home solely to collect ART (8/32), though efforts were often unsuccessful to prevent treatment interruption. Participants desired multi-month dispensing, rapid/flexible access to refills pre-travel, and the ability to refill at any facility in Malawi.

Conclusions: Mobile men were highly vulnerable to ART interruptions despite efforts to prioritize treatment. Mobile men may require multi-month dispensing and flexible ART refill locations and days of operation to achieve sustained retention.

EPD374

The role of residential mobility in recent methamphetamine use: a survey of young Black gay, bisexual and other men who have sex with men in Atlanta, Georgia, USA

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Background: Methamphetamine use, long recognized as a risk factor for HIV transmission as well as disengagement from HIV care, is increasing among young Black gay, bisexual and other men who have sex with men in Atlanta, Georgia, USA. We hypothesized that geographic mobility, including housing instability, incarceration, and migration from other cities, would be associated with increased risk for recent methamphetamine use.

Methods: We conducted a cross-sectional survey with N=100 YB-GBMSM recruited from clinical and community sites in Atlanta. Participants self-reported migration history, housing status, incarceration history, socioeconomic status, mental health indicators, and substance use behaviors using validated measures.

Recent methamphetamine use was defined as self-reported use within the past three months. Using SAS v.9.4 statistical software, we conducted bivariate and multivariable logistic regression to determine associations with recent methamphetamine use.

Results: Participants ranged in age from 18 to 35 years. The majority (82%) were living with HIV. Thirty-four percent (34%) reported ever using methamphetamines, and 27% reported recent use. In our multivariable analysis, factors significantly associated with recent methamphetamine use included homelessness in the past 12 months (aOR: 7.645, CI: 1.250-46.748), worry about housing stability in next 2 months (aOR: 6.642, CI: 1.260-35.030). Perceived difficulty in methamphetamine access was also associated with higher odds of recent use of methamphetamines (aOR: 0.058, CI: 0.004-0.756).

Other forms of mobility (migration, incarceration history) and mental health indicators (depression, trauma history) were not significantly associated with recent methamphetamine use.

Conclusions: Our findings highlight important associations of structural factors, and particularly housing concerns, with recent methamphetamine use among YB-GBMSM in Atlanta. Longitudinal studies are warranted to help determine the directionality of this association.

Additionally, programs for prevention and treatment of methamphetamine use and associated HIV-related sequelae may benefit from partnering with agencies that provide housing assistance.

EPD375

Knowledge of HIV pre-exposure prophylaxis and antiretrovirals preventive potential of among migrant women in French Guiana

N. Vignier[1,2], L. Alcouffe[1], A. Gonzalez[3], M. Volpellier[3], C. Marty[3], A. Lucarelli[4], G. Jean[4], A. Zephirin[4], P.M. Creton[3], F. Huber[3]

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Background: The use of antiretroviral drugs for prevention is a major progress in HIV prevention. French Guiana combines active immigration, precariousness and the highest HIV prevalence in France. We aimed to better understand the sexual health and knowledge of migrant women in French Guiana.

Methods: A cross sectional study was conducted with a random sample of women attending the French Red Cross centers. Multilingual mediators conducted the interviews. The descriptive statistics and the multivariate stepwise logistic regression were performed using Stata 15.0.

Results: Among the 429 women included, 69.6% were under 35 years of age, 71.6% were from Haiti and 56.3% did not know French well. Only 28.7% had ever heard of antiretroviral therapies, less often women from Haiti (19.9% vs 50.9%, p<0.001). Only 20.9% had ever heard of an emergency treatment that allows them to avoid catching HIV after unprotected sex (Post Exposure Treatment - PEP -), 13.6% among Haitian's women vs 39.2% among others (p<0.001). Only 15.4% knew what Pre-Exposure Prophylaxis for HIV - PrEP - was. Again, Haitian women had a lower level of information (9.3% vs 30.8%, p<0.001).

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Although few in number (n=22), the level of knowledge was significantly higher among women from the Dominican Republic, who were sex workers at 63.6%. Women (n=37) who self-identified as being at high risk for STIs were more aware of PrEP (52.8% vs. 11.9%, p<0.001). In the multivariate model, knowledge of prep was associated with sex work and high perceived risk of STIs, and was negatively associated with Haitian origin.

Only 4 women reported ever taking PrEP, and all discontinued due to adverse events or personal constraints. Once informed about PrEP, 18.3% said they were interested.

In addition, 13 women reported have ever used PEP. Finally, 54.4% were interested in receiving a sexual health consultation (or had already received), both Haitian and non Haitian women (54.4% and 48.7%, p=0,30)

Conclusions: The level of knowledge about the preventive effects of HIV antiretroviral therapies and PrEP is extremely low among migrant women in French Guiana. Haitian women are largely unaware of biomedical prevention tools despite reported sexual health needs and deserves targeted interventions.

EPD376

HIV- and homosexuality-related stigmas as barriers to accessing HIV-related services among gay and bisexual male migrants in Australia

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Background: In some high-income countries, including Australia, migrant gay and bisexual men (GBM) from low- and middle- income countries are disproportionately at risk of acquiring HIV. Stigma is a significant driving force behind these disparities, but its effects can manifest in complex ways.

Little research has explored the effects stigma has on how migrant GBM in Australia access HIV-related services, understand sexual identity, and practice HIV prevention, both pre- and post-migration.

Methods: We conducted qualitative interviews between October 2018 and December 2019 with 24 migrant GBM who were diagnosed with HIV in Australia HIV from 2017 onwards. Interviews were offered in English, Thai, Mandarin, Spanish, and Brazilian-Portuguese.

Results: Nine participants were born in Southeast Asia, eight in Latin America, five in Northeast Asia, and one each in South Asia and Eastern Europe. Stigma relating to HIV and homosexuality was deeply embedded into social, cultural, and institutional settings in participants' countries of origin. This stigma led to poor HIV knowledge and sexual health literacy, reluctance to access HIV-related services, and fears of being publicly exposed as gay/bisexual in countries of origin.

Some viewed migrating to Australia as an opportunity to explore sexual identity and connect to HIV-related services. However, underpinned by internalised stigma, many others remained reluctant to access services and had ongoing concern about being exposed as gay/bisexual after migration.

Barriers to accessing HIV-related services in Australia included: fears of HIV testing, particularly when apprehensive about a potential HIV-positive result and the consequent possibility of visa cancellation; concerns about confidentiality in HIV-related services; lack of confidence and support in navigating the Australian healthcare system, including how to access pre-exposure prophylaxis (PrEP); and not perceiving oneself as having engaged in enough HIV-risk to warrant accessing services.

Conclusions: Addressing these multifaceted but interconnected barriers to HIV testing and prevention among migrant GBM requires policies, systems and interventions that: increase health literacy about HIV testing, prevention, and treatment; build trust, confidence, and supportive networks when navigating Australian health services; and reduce HIV and sexual identity stigmas in migrants' countries of origin and how those stigmas influence their experiences in Australia.

EPD377

The perpetuation of HIV risk in Latinx Immigrants: a cross-national perspective

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Background: Past research has extensively documented the factors that exacerbate HIV risk among immigrants (Caballero-Hoyos et al., 2013; Magis-Rodriguez et al., 1999). However, past research has focused mostly on understanding the conditions that exacerbate risk once immigrants are settled in the final destination country.

There is agreement in the field that to develop a comprehensive theory of immigrant health, there is a need to apply a cross-national perspective and to document the experiences of immigrants temporarily residing in high-risk while in transit to their final destination, such as the US-Mexico border. Since 2019, approximately 6,000 immigrants from Cuba and Latin America have settled in Ciudad Juarez (CJ), a US-Mexico border city.

The purpose of the study is to understand the lived experience of immigrants who were temporarily residing in CJ awaiting the resolution of immigration petitions. We applied a cross-national perspective.

Methods: A snowball sampling approach was employed to recruit 30 immigrants to participate in in-depth interviews. Eligibility criteria included residing in CJ for at least 12 months, had used illegal drugs and engaged in sexual risk behavior. Participants were interviewed about their living situation while in their country of origin, their immigration journey experiences, and the context of engagement in HIV risk behaviors in CJ. Data was content coded using a grounded theory approach.

Results: Engagement in HIV risk behaviors occurred in a continuum. Trauma from violence and economic hardship precipitated substance use and sporadic engagement in sex for money exchanges in the sending country. Discrimination, severe economic hardship, hopelessness, and factors characteristic of a border setting such as high accessibility to illegal drugs exacerbated substance use and a highly active commercial sex industry facilitated entry into the sex work trade. Women and sexual minorities were more likely to experience severe violence and human rights abuses by law enforcement entities during the migration journey.

Conclusions: A cross-national perspective elucidated the dynamics of HIV risk in sending and receiving countries. Findings have implications for informing policy advocacy efforts for the provision of appropriate services to immigrants in countries facing an increase in the mobility of populations across the world.

EPD378

The prevalence HIV infection among regular migrants in France: data from STRADA study (2017-2020)

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Background: HIV infection disproportionately affects regions of the world, as well as mobile populations in high-income countries. This study aimed to initiate HIV screening and assess the prevalence of HIV infection among regular migrants who present for their medical examination in territorial directorates of the French Office for Immigration and Integration (OFII).

Methods: STRADA was a multicenter observational study, conducted between January 2017 and March 2020 in 21 OFII centers. This study included regular migrants admitted for medical examination as part of their administrative process to obtain their residence permit.

Migrants who consented to participate completed a validated self-administered risk assessment questionnaire followed by a HIV rapid screening test. Multivariable logistic regression model was fitted to identify factors associated with HIV infection.

Results: Among 21133 regular migrants seen in OFII centers, 15,118 (71.5%) were included in the study. The mean age of the participants was 35.6 years (SD± 11.1), 62.8% of them were women, and 17.9% originated from a medium or high endemic country. History of dental care (70.4%), surgery (32.1%), piercing and tattoo (30.9%), blood transfusion (3.7%), and psychoactive substance consumption (3.0%) were reported.

Regarding the sexual behaviors, 10.3% of migrants reported having had two or more sexual partners during the previous 12 months. 2.2% of the participants reported male-to-male sex (MSM).The overall prevalence of HIV was estimated at 0.33% (95% confidence interval (95%CI): 0.25-0.44).

In multivariable analysis, reporting MSM (Odds-ratio (OR): 4.88; 95%CI: 0.98-88.65), being from HIV medium endemic areas (OR: 7.03; 95%CI: 3.71-14.05), and history of blood transfusion (OR: 3.52; 95%CI: 1.42-7.47) were significant factors associated with a HIV positive result.

Conclusions: The STRADA study introduced HIV screening during medical visits at OFII and the showed HIV prevalence results among regular migrants in France. HIV prev-

alence was reflective of the fact that regular migrants generally have a higher socio-economic status such as when a spouse joins their husband, qualified workers, or students. The systematic screening proposal should be introduced also to more vulnerable groups with low socio-economic status such as asylum seekers.

Political and structural factors

EPD379

Where everybody knows your name: correlation between a stable and familiar professional structure and sustained HIV viral suppression in clients: a New Jersey, USA, community health center experience

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Background: NHSC, a private, non-profit urban community-based health center in Plainfield NJ, USA, provides HIV care/treatment to 364 patients under the umbrella of Early Intervention Services (EIS). Based on internal data and confirmed by independent clinical audits, in 2021 NHSC's viral suppression (VS) rate was 98% and sustained VS rate (over the period 2019-2021) was 95%. NHSC's VS rates are consistently in the top 5% of all NJ HIV providers. EIS is NHSC's most stable professional program from the standpoint of staff retention/employment longevity; staff tenure being 6-28 years of service.

Therefore, it is our hypothesis that there is correlation between stable professional team and sustained VS among its HIV patients.

Methods: EIS program designed/implemented a study to assess correlation between stable staff structure and sustained VS:

1. A ten-year look-back time period (2010-2020) was established to compare annual staff retention rates and VS rates.
2. *Staff Retention Self-Assessment* tool was designed/administered to all program staff to ascertain rationale/reasons/value for staying with the company and perceived benefit to HIV care.
3. Self-assessment responses were collected/analyzed and presented to EIS staff and leadership.
4. Assisted by Human Resources Department, individualized annual employee longevity rates were established for each clinical and support provider.
5. Patient VS rates were established, assessed/analyzed for each study year.
6. Annual employee longevity rates and VS rates were stratified, compared and analyzed.
7. Study data was compiled into a chart/graph format for presentation to EIS staff, leadership and patients.

Results: Based on the study findings review/analysis: In 2010 (first year of the look-back period) NHSC's baseline VS rate was 81% and employee retention index was 10.5. We observed steady annual increases in VS rates over the entire look—back period, directly correlated with employee retention rates, culminating in 2020 with 98% VS rate and 15.2 EIS employee retention rate.

Conclusions: There is direct correlation between stable professional structure and sustained VS. Patients tend to be more engaged in care, have a deeper vested interest in health outcomes with sustained VS when they are supported by a familiar, stable team of clinicians/support staff in a patient-centered medical home.

Sexual- and/or gender-based violence and exploitation (including in conflict settings)

EPD380

COVID-19 impacts on post-GBV care utilization at EGPAF-supported Health Facilities across nine African Countries

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Background: COVID-19 exacerbated the risks of gender-based violence (GBV). EGPAF provides post-GBV clinical care integrated within HIV, FP/SRH and TB platforms. In light of COVID-19, GBV-care was adapted including integrating virtual solutions for referrals, service delivery monitoring, capacity and training for HCWs and implementing community-based activities. We analyzed program data on utilization of post-GBV services comparing pre- and COVID-19 periods.

Methods: Routinely-reported PEPFAR-program data were analyzed across nine EGPAF-supported countries (Cameroon, CDI, DRC, Eswatini, Kenya, Lesotho, Malawi, Mozambique, Tanzania). GBV indicators included the number of individuals receiving post-GBV clinical care based on the minimum package, type of violence (physical/emotional and sexual), and post-exposure prophylaxis (PEP) uptake and completion.

Data were evaluated across timeframes; October2019-September2020 as the pre-COVID-19 period and October2020-September2021 as the COVID-19 timeframe. Data were disaggregated by country, sex, and age.

Results: A 47% increase in individuals utilizing post-GBV care comparing pre- and COVID-19 timeframes occurred; n=27,843 individuals sought care pre-COVID-19 compared

to n=40,858 individuals during COVID-19. A 20% increase in care sought for physical/emotional violence occurred between timeframes. A 15% increase in use of post-violence care (PVC) services resulting from sexual violence occurred with 6,943 individuals seeking care pre-COVID-19 and 7,989 individuals during COVID-19.

The proportion of women seeking PVC increased from 88% (n=6,117) pre-COVID to 93% (n=7,423) during COVID-19. The proportion of girls 15-19 years seeking PVC increased from 35% (n=2,453) to 39% (n=3,131) between periods. 10-24-year-olds consistently made up the majority of those seeking PVC with 65% (n=4,540) pre-COVID-19 and 67% (n=5,362) during COVID-19.

The proportion of young males (10-24) seeking post-GBV care between time periods decreased for sexual violence from 5% (n=362) to 3% (n=258) and for emotional/physical violence from 9% (n=1941) to 8% (n=2,475). Tanzania had the highest PVC utilization with over 4,000 receiving PVC during both pre-COVID-19 and COVID-19 periods.

Among survivors of sexual violence, PEP uptake decreased with 45% (n=3,114) completing PEP during pre-COVID-19 compared to 40% (n=3,201) during COVID-19.

Conclusions: The number of individuals receiving post-GBV clinical care increased comparing pre- and COVID-19 periods. The increase in utilization of post-GBV care particularly among women between pre and COVID-19 periods warrants additional review and response.

EPD381

Violence victimization among women by gender identity and HIV status in three multisite HIV cohorts in the United States

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Background: Women living with HIV and transgender women (TW) experience elevated prevalence of violence. Few studies of violence include diverse cohorts of women to allow for comparisons across race, gender identity, and HIV status.

Methods: 2019-2020 data from 3 cohorts of women ≥18 years old were combined for this study: LITE (mixed HIV serostatus TW), LITE Plus (Black and Latina TW living with HIV (TWLH)) and WIHS (mixed HIV serostatus cisgender women (CW)). Violence victimization was captured by self-report of experiencing ≥ 1 act of physical or sexual violence within the past 6 months. Multivariable logistic regression models estimated crude (OR) and adjusted (aOR) odds ratios and 95% confidence intervals (95%CI) associated with correlates of past 6-month physical and sexual violence victimization.

Results: The study sample included 113 TWLH, 1470 cisgender women living with HIV (CWLH), 819 HIV seronegative TW, and 621 HIV seronegative CW. TW were younger, more likely to rate their health as excellent and had the highest prevalence of exogenous hormone use. TWLH had lower prevalence of viral suppression (<200 copies/mL) than CWLH, but similar mean CD4 count. TWLH reported highest prevalence of physical violence (15%; CWLH: 1%; TW: 12%; CW: 1%); whereas TW had the highest prevalence (12%) of sexual violence followed by TWLH (5%), CWLH and CW (both 1%). Similarly, TW had highest prevalence (85%) of depression, followed by CWLH and CW (both 72%) and TWLH the lowest (60%).

In bivariate analyses, gender identity, race, hormone use, substance use, and depression were associated with both physical and sexual violence. In multivariable analyses, gender identity (reference=cisgender; aOR: 12.2;95%CI: 5.5-26.9) and substance use (aOR: 2.7;95%CI: 1.4-5.2) were associated with greater odds of physical violence victimization.

Likewise, gender identity (aOR: 5.8 95%CI: 2.2-15.4) and substance use (aOR: 7.0 95%CI: 2.3-20.2) were associated with higher odds of sexual violence victimization. Neither race nor HIV status remained significant.

Conclusions: Gender identity and substance use are key factors in violence victimization. Policies that reduce anti-transgender stigma may be important for reducing violence against TW. Interventions to reduce substance use may be important for women at risk for and impacted by violence.

EPD382

Women empowerment to enhance access SRMNCAH service in the in humanitarian setting. Lessons learnt by International Community of Women Living with HIV Eastern Africa (ICWEA) from Northern Uganda

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Background: Uganda is one of the countries with the highest number of refugees who are underserved with SRMNCAH services. ICWEA with support from UN Women implemented POWER project whose overall goal was to contribute to the impact that every woman, every child, every adolescent girl, everywhere demands her rights to

quality sexual, reproductive, maternal, new-born, child and adolescent health (SRMNCAH) services in the refugee camps and host communities in Ugandan.

Description: The 2 year project (2019 -2021) was implemented in the 4 refugee settlements in West Nile region targeting women and young women. ICWEA built capacity of 60 women leaders on SRMNCAH as transformational leaders.

Set up POWER and CARE clubs in each settlement for women to meet, learn and for economic empowerment activities. Held community literacy campaigns with religious, cultural and women leaders to challenge the unequal gender norms, and practices that perpetuated negative outcomes for women.

ICWEA identified male role models and nurtured positive attitudes, behaviors and practices towards women access to the SRMNCAH services Enhanced the knowledge of health care to integrate human rights and gender equality into their work to improve health outcomes for women, children and adolescents.

Lessons learned: Through the POWER and Care Clubs women discussed and sought solutions against negative gender norms and community myths related to access and utilization of SRH services. Multi-stakeholder coordination and engagement involving cultural, religious, women leaders, men, health workers, and women human rights defender led to a reduction of GBV and increased access to SRH services for women and girl. Empowered networks of women leaders s unconditionally supported other women across the settlements to access SRMNCAH services through active referrals and linked them to other services that were provided by other partners.

Conclusions/Next steps: Women empowerment is a critical component and is part of the strategies to achieve the development pillars of the comprehensive refugee response framework. There is need for continuous empowerment of the women and girls and engagement of all stake holders to challenge community level cultural norms and beliefs that deter women from accessing to SRMNCAH services. Need to introduce skilling of women and girls to diversify on their resources.

EPD383

Homoprejudiced violence experience, depression, and condomless sex among MSM in Zhuhai City, China: a mediation analysis

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Background: Homoprejudiced violence is a type of aggression against an individual or a group based on their actual or perceived sexual orientation. The minority stress theory argues that prejudice events (including homoprejudiced violence) may impact HIV risk via negatively impacting mental health outcomes. Few studies have attempted to validate this theory among Chinese men who have sex with men (MSM).

This study explores the association between homoprejudiced violence experience and condomless sex, and the potential mental health mediators.

Methods: Data were collected using a cross-sectional online survey among MSM through BlueD, a popular gay social networking platform, in January 2021, China. Standard instruments were used to collect data on depression severity (PHQ-9), ever experiencing homoprejudiced violence (12-item scale), and condomless sex with males in the last three months. These three measurements were all recoded to dichotomous variables. Mediation analysis was then conducted to explore associations between these variables using probit regression models.

Results: Among 1828 MSM enrolled in the survey, 73% (1327) identified as gay, 46% (847) ever experienced homoprejudiced violence (i.e., experienced any one of the 12 items). Nearly a quarter (427, 23%) reached a score that suggested moderate or more severe depression, 693 (48%) had condomless sex with male partners in the last three months. Over one-fifth (398, 22%) reported no sex with any male in the last three months and were excluded from mediation analysis.

We found that depression was a significant mediator: homoprejudiced violence experience would increase the predicted probability of depression by 0.15 (95%CI: 0.11~0.19), and depression would increase the predicted probability of condomless sex by 0.26 (95%CI: 0.12~0.40). The total effect of homoprejudiced violence experience on condomless sex with males was -0.09 (95%CI: -0.21~0.04), while the mediation effect through depression was 0.04 (95%CI: 0.02~0.07).

Conclusions: Experiencing homoprejudiced violence was not directly associated with condomless sex overall, but depression appeared to be an important mediator that added to the probability of condomless sex among MSM in China. The results indicated the importance of addressing homoprejudiced violence towards MSM and related mental health problems for reducing high-risk behaviors. Further longitudinal and qualitative studies are needed to understand psychological mechanisms.

EPD384

Changes in intimate partner violence among WLHIV in Tanzania before and during COVID-19

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Background: There is mounting evidence that intimate partner violence (IPV) has increased globally during the COVID-19 pandemic due to a myriad of socio-economic stressors. Women living with HIV (WLHIV) are disproportionately affected by IPV and violence has been shown to impede engagement and retention in HIV care.

We investigated the prevalence of IPV before and during COVID-19 among partnered WLHIV initiating antiretroviral therapy (ART).

Methods: We analyzed baseline data from two randomized controlled trials conducted with adults initiating ART in Shinyanga, Tanzania between April-December 2018 (pre-COVID-19 period, n=530) and May 2021-January 2022 (COVID-19 period, n=539), respectively. Past 6-month IPV was defined as physical, sexual, or emotional violence, and categorized as a binary variable. Generalized linear models with a binomial distribution and identity link were used to estimate prevalence differences (PD) comparing IPV across time periods. Adjusted estimates were generated using inverse probability of treatment weighting (IPTW) and 1:1 propensity score matching (PSM) with replacement to account for temporal differences.

Propensity scores were constructed with logistic regression, controlling for age, marital status, primary language, education, occupation, and work status.

Results: A subset of 332 partnered WLHIV were included in the analysis (n=182 pre-COVID-19; n=146 COVID-19). The prevalence of past 6-month IPV decreased from 34.6% in 2018 (pre-COVID-19) to 19.2% (COVID-19) (unadjusted PD: -0.15, 95% CI: -0.25, -0.06).

IPV remained higher during the pre-COVID period after matching and weighting, with both IPTW and PSM yielding similar results to the unadjusted and to each other (PSM adjusted PD: -0.14, 95% CI: -0.27, -0.01; IPTW adjusted PD: -0.14, 95% CI -0.21, -0.07).

Conclusions: We found a lower prevalence of IPV during COVID-19 compared to the pre-COVID-19 period among WLHIV initiating care in Shinyanga, Tanzania, contrary to existing evidence. There are several possible explanations for the decline in violence, including bias, however, these findings may also indicate that WLHIV most at risk of IPV have not initiated ART during COVID-19.

Further research is warranted to examine trends in IPV and barriers to care for women diagnosed with HIV during COVID-19.

EPD385

Predictors of gender-based violence among adolescent girls aged 15-17 years; an assessment of baseline data of girls enrolled in the DREAMS Afya Pwani project in Mombasa, Kenya

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Background: Gender-based violence (GBV) is a risk factor for HIV among vulnerable adolescent femalesThe lifetime risk of some form of GBV among women is 1 in 3. The 2019 Kenya Violence against Children (VAC) study revealed that 15.6% of females aged 18-24 years experienced sexual violence before 18.

Methods: With support from USAID, Pathfinder International (PI) implemented the Determined, Resilient, Empowered, AIDS-free, Mentored, and Safe (DREAMS) program in Mombasa, Kenya, from 2018 to 2021. During the project's life, the DREAMS program offered HIV prevention services to 28,047 Adolescent Girls and Young Women (AGYW) aged 9-24 years in Mombasa.

We used program monitoring data and included all girls (6354) aged 15-17 years enrolled in the project between May 2018 and March 2021 based on completeness in key sociodemographic variables and self-reported GBV vulnerability.

Analysis of social demographic data and self-reported GBV vulnerability data from the intake forms provided insight into the predictors of GBV among vulnerable adolescents in Mombasa, Kenya. In addition, the Chi-square test evaluated the association between sociodemographic variables and GBV experience.

Results: Sub-county of residence (X^2=58.72, p<0.001), not being in school ((X^2=39.2, p<0.001),) and ever having had sex ((X^2=75.22, p<0.001),) were strong predictors for experiencing GBV.

Food insecurity, condom promotion and having more than one sex partner were not associated with GBV experiences.

Predictors	GBV Case					
	Yes		No		Significance Test	COR (95% CI)
Sub County Name	*n=552*	*%*	*n=5802*	*%*		
Jomvu Kisauni Likoni Mvita Nyali	127 73 223 27 102	23% 13% 40% 5% 18%	997 1297 1830 629 1049	17% 22% 32% 11% 18%	χ² (4)=58.72, p=0.00	2.26 (1.68-3.05)** 1.05 (0.83-1.32) 2.97 (1.94-4.55)** 1.31 (1.00-1.72)*
Currently in School	*Yes (n=550)*	*%*	*No (n=5746)*	*%*		
Yes	459	83%	5259	92%	χ² (1)=39.21, p=0.00	
No	91	17%	487	8%		0.47 (0.37-0.60)**
Ever had sex	*Yes (n=547)*	*%*	*No (n=5660)*	*%*		
Yes	77	14%	283	5%	χ² (1)=75.22, p=0.00	
No	470	86%	5377	95%		3.11 (2.38-4.07)**

Conclusions: Inclusion of programs to delay sexual debut and keep girls in school are key considerations to address the drivers of GBV among vulnerable adolescent girls. We recommend a more comprehensive study on GBV among adolescent girls at county levels to inform future programming.

Societal stigma towards people living with HIV and key populations

EPD386
Intersectional stigma and the stigma identity management framework: a metasynthesis of qualitative reports from people living with HIV in sub-Saharan Africa

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Background: While stigma experienced by people living with HIV (PLWH) is well documented, intersectional stigma and additional stigmatized identities have not received similar attention. The purpose of this metasynthesis is to identify salient stigmatized intersections and their impact on health outcomes in PLWH in sub-Saharan Africa.

Methods: Using Sandelowski and Barroso's metasynthesis method, we searched four databases for peer-reviewed qualitative literature. Included studies

1. Explored personal experiences with intersecting stigmas,
2. Included ≥1 element of infectious disease stigma, and;
3. Were conducted in sub-Saharan Africa.

Our multinational team extracted, aggregated, interpreted, and synthesized the findings.

Results: From 455 screened abstracts, the 34 studies included in this metasynthesis reported perspectives of at least 1228 participants (282 men, 557 women, and 109 unspecified gender) and key informants. From these studies, gender and HIV was the most salient stigmatized intersection, with HIV testing avoidance and HIV-status denial seemingly more common among men to preserve traditional masculine identity. HIV did not threaten female identity in the same way with women more willing to test for HIV, but at the risk of abandonment and withdrawal of financial support. To guard against status loss, men and women used performative behaviors to highlight positive qualities or minimize perceived negative attributes. These identity management practices ultimately shaped health behaviors and outcomes. From this metasynthesis, the Stigma Identity Framework was devised for framing identity and stigma management, focusing on role expectation and fulfillment (Figure1).

This framework illustrates how PLWH create, minimize, or emphasize identity traits to safeguard against status loss and discrimination.

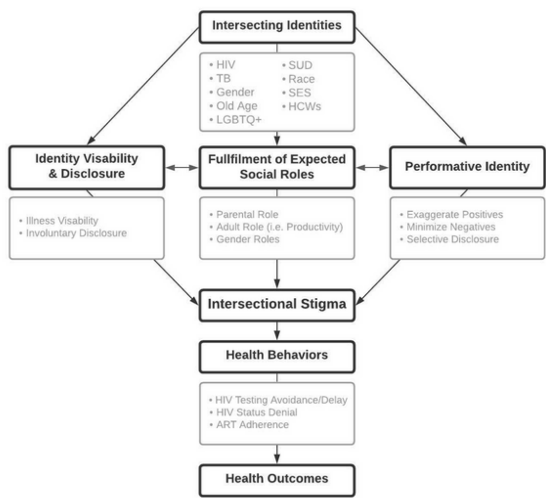

Figure 1. Stigma identity framework.
*Sub-themes are shown in gray

Conclusions: Providers must acknowledge how stigmatization disrupts PLWH's ability to fit into social schemas and tailor care to individuals' unique intersecting identities. Economic security and safety should be considered in women's HIV care, while highlighting antiretrovirals' role in preserving strength and virility may improve care engagement among men.

EPD387

Associations between HIV-related stigma and health-related quality of life among people living with HIV in Zambia and South Africa: cross-sectional analysis of data from the HPTN071 (PopART) study

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Background: While the life expectancy of people living with HIV (PLHIV) has increased considerably due to treatment access, PLHIV often report lower health-related quality of life (HRQoL) than people who are not living with HIV. Stigma related to HIV status may impede HRQoL, but little is known about the relationship between the two. We explored associations between four HIV stigma outcomes and HRQoL among PLHIV and examined which HRQoL domains were most affected.

Methods: We analysed data from HPTN 071 (PopART), a cluster randomised controlled trial in 21 urban and peri-urban communities in Zambia and South Africa. An open cohort of randomly selected adults (18-44 years) in randomly selected households was recruited and surveyed at baseline and 36-months. We used data from PLHIV in the cohort at 36-months (09/2017-07/2018) who self-reported living with HIV and had laboratory-confirmed status. HRQoL was measured using the EuroQol-5-dimensions-5-levels (EQ-5D-5L) questionnaire. PLHIV responded to 11 questions capturing four composite stigma outcomes: internalized stigma (three questions), stigma experienced in the community (five questions), stigma experienced in healthcare settings (three questions) and any stigma experienced (11 questions).

Binary variables captured whether PLHIV agreed with any statements in each composite stigma measure. Associations between HRQoL and stigma were examined using logistic regressions, adjusted for socio-economic confounders and with fixed effects for communities.

Results: Data from 3,991 PLHIV (88% women; 12% men) were examined. PLHIV who experienced stigma in the community (n=693), and those who reported internalised stigma (n=552), had higher odds of reporting problems in at least one HRQoL domain than those who had not (adjusted odds ratio:1.46, 95% confidence interval:1.12-1.89 and 1.84, 1.42-2.39, respectively). Experiencing stigma in a healthcare setting (n=158) was not associated with HRQoL (0.94, 0.57-1.50). Individuals who had experienced any stigma (n=1,034) had higher odds of reporting problems in the domains of mobility (1.97, 1.23-3.14), self-care (1.92, 1.06-3.44), performing daily activities (1.98, 1.29-3.00), pain/discomfort (1.85, 1.43-2.39), and anxiety/depression (2.73, 1.94-3.83) than those who had not.

Conclusions: Internalised stigma and stigma experienced in the community were associated with lower HRQoL. Improving HRQoL among PLHIV requires more than expanding service access, addressing stigma and similar structural drivers is also important.

EPD388

Longitudinal impacts of internalized, anticipated and enacted stigma on health-related quality of life among PLWH in Southeast China: a prospective cohort study

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Background: As we are approaching the accomplishment of "90-90-90" goal, improving health-related quality of life (HRQoL) becomes a critical component of HIV treatment and care continuum. Empirical studies showed the detrimental impact of HIV-related stigma on HRQoL. Recently, theoretical studies proposed that HIV-related stigma could be classified as internalized, anticipated, and enacted stigma, which may have differential impacts on health outcomes. Yet studies in this regard are scarce. Leveraging data derived from a prospective observational cohort, we aimed to uncover the associations of three HIV-related stigma with HRQoL.

Methods: A prospective observational cohort study was conducted in Guangxi, China among 1,198 people living with HIV (PLWH). Data at baseline, 6-, 12-, and 18-month

follow-ups were used for analysis. Hierarchical linear mixed effect model was used to examine the impacts of internalized, anticipated, and enacted stigma on HRQoL adjusting for psycho-behavioral variables (e.g., antiretroviral therapy [ART] self-efficacy, HIV symptom management self-efficacy, depression, anxiety, and ART adherence) and other covariates (e.g., age, socioeconomic status, transmission modes, and CD4 counts).

Results: The HRQoL of PLWH decreased significantly over time. Hierarchical regression revealed that the three HIV-related stigma could explain the variance in HRQoL beyond psycho-behavioral variables and covariates. Internalized (adjusted β= -0.78 [-1.07 ~ -0.49]), anticipated (adjusted β= -0.84 [-1.12 ~ -0.55]), and enacted stigma (adjusted β= -0.83 [-1.10 ~ -0.56]) could significantly reduce HRQoL.

Conclusions: Despite different manifestations, all three types of HIV-related stigma have similar impacts on HRQoL over time. Future studies are called for investigating the mechanisms of each HIV-related stigma on HRQoL. To improve HRQoL among PLWH effectively, interventions are warranted to not only reduce HIV-related stigma but also to promote resilience that could mitigate the negative effects of different types of stigma on HRQoL among PLWH.

EPD389

May stigma ba? (Is there stigma?) A qualitative investigation into HIV stigma in the Philippine context 2021

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Background: HIV stigma is a barrier to HIV awareness and testing for men who have sex with men and trans women. Stigma as a research construct, however, can be limited to understanding the intra-psychological states of individuals and ignore interpersonal processes.

This study explores HIV stigma using an interpersonal lens and its impact on talking about and getting tested for HIV.

Methods: The study conducted in-depth, semi-structured interviews of key populations and their parents between August and October 2021. Interviews lasted between 1 and 2 hours. Key population participants consisted of 19 men who have sex with men and 16 trans women. Of these, 19 were ages 18-29, and 16 were 40 years or older; 19 have tested and 16 have never been tested for HIV. Parent participants consisted of 8 fathers and 8 mothers who had at least one child that met key population criteria. Participants represented all macro-geographic regions of the Philippines. Interviews were audio-recorded, transcribed, translated, subjected to thematic analysis, and coded. An analytic model was produced through an iterative collaborative process and validated using coded data.

Results: Data suggest that the burden of HIV stigma in the Philippines should be understood in relation to its intersection with the stigma on LGBT identities. To counteract stigma on their identities, Philippine LGBT persons employ a range of behavioral strategies to enhance their social standing. Under normal circumstances, talking about and getting tested for HIV occur when doing so enhances or does not threaten social standing.

Conversely, talking about and getting tested for HIV appear not to occur under normal circumstances when doing so threatens social standing. An exception to this model is emergency situations when social standing as a concern becomes less salient.

Conclusions: This model can be useful for making sense of the effectiveness of current and future strategies for increasing HIV awareness and uptake of HIV testing in the Philippines.

It also points to the value of interventions for counteracting LGBT stigma as a way to alleviate the burden of HIV stigma on men who have sex with men and trans women in the Philippines.

EPD390

The role of internalized HIV stigma in disclosure of maternal HIV serostatus to perinatally HIV-exposed but uninfected children enrolled in a US Cohort study

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Background: Decisions to disclose HIV serostatus may be complicated by internalized HIV stigma, defined as incorporation of negative views of HIV into the self-concept. We evaluated the association of internalized HIV stigma in biological mothers living with HIV with disclosure of their serostatus to their perinatally exposed but uninfected (PHEU) children.

Methods: Mothers and their PHEU children were enrolled in the US-based Surveillance Monitoring for Antiretroviral Therapy (ART) Toxicities (SMARTT) study of the Pediatric HIV/AIDS Cohort Study (PHACS), a longitudinal study of outcomes among PHEU children exposed to HIV and ART.

Mothers who completed at least one stigma and disclosure assessment at the child's 11-, 13-, 15-, and/or 17-year study visits were eligible. Stigma was measured with the 28-item Internalized HIV Stigma Scale. Mean stigma scores were linearly transformed to a range of 0-100, with higher scores indicating greater levels of stigma.

Disclosure of maternal serostatus was defined as responding "yes" to "Is [child's name] aware of your HIV diagnosis?" Mothers were asked at what age the child became aware. The Kaplan-Meier estimator appraised the cumulative probability of disclosure at each child age.

Logistic regression models with generalized estimating equations to account for repeated measures were fit to examine the association between stigma and disclosure, controlling for relevant sociodemographic variables.

Results: Included were 576 children of 438 mothers (mean age 41.5, 60% US-born, 60% Black/African American, and 37% household income ≤$10,000). The prevalence of disclosure across all visits was 28.1%.

Mothers who had disclosed vs. not disclosed reported lower mean stigma scores (38.2 vs. 45.6 respectively).

The cumulative proportion of disclosure by age 11 was 0.184 (95% CI: 0.155, 0.218) and 0.410 by age 17 (95% CI: 0.352, 0.474). At all child ages, disclosure was higher among children of US-born vs. non-US-born mothers.

After adjusting for age, marital status, and years since HIV diagnosis, higher stigma scores were associated with lower odds of disclosure (OR=0.985, 95% CI: 0.975, 0.995).

Conclusions: Providing support to women as they make decisions about disclosure of their HIV serostatus to their children may entail addressing internalized HIV stigma and consideration of cultural factors, particularly for non-US-born mothers.

EPD391

Advancing community engaged research methods: experiences of MSM community in a novel HIV stigma study in China

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Background: Community engagement in sexual health among men who have sex with men (MSM) may reduce stigma about HIV/STIs, which could elevate the wellbeing of this community.

We have launched an assessment to measure the impact of HIV stigma, homophobia, and their intersection on healthcare setting in Guangzhou, China. Trained local MSM who play standardized patients (SP)present as incognito patients in real clinical settings with a standardized case.

In this qualitative research, we attempt to understand their experience of being SPs and how this project impact their community engagement and healthcare seeking.

Methods: From February to August 2021, MSM who have taken part in SP project were purposively recruited for two interviews: one is before clinic visit and the other is after clinic visit. Semi-structured interviews were designed to explore participants' sexual identity, SP experiences, community engagement and healthcare quality reflection.

A complementary focus group took place to spark discussions after the whole clinic visit. Both interviews and focus group discussion were audio-recorded, transcribed, and analyzed in Dedoose through a framework analysis.

Results: We conducted 25 interviews and one focus group with 12 SPs. The average age was 29, and all have high school and above education. 6 of these SPs had never participated any community activities or research projects. Three themes emerged from the data.

First, although SPs experienced stigma from healthcare providers, especially when their character was MSM or people who live with HIV (PLWH), they were not discouraged and expressed enthusiasm in the project.

Second, participants expressed high willingness to engage in community activities in the future.

Finally, some participants showed that through this project their sexual health awareness have been improved, including attitudes towards HIV/STI testing and facility-based healthcare seeking.

Conclusions: Our findings demonstrate that research project could potentially increase MSM community participation under high stigma social environment. MSM community can benefit from this approach which could be extended to other sexual minority related study.

We conclude with a call for efforts to expand community engagement in research projects towards MSM and PLWH.

EPD392

Social (re)production of spatial stigma and barriers to care in HIV-related healthcare settings: A qualitative study of people living with HIV in Singapore

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Background: Past literature on stigma have emphasized the role of institutions or groups of individuals in perpetuating stereotypes, prejudice, or discrimination towards people living with HIV. However, less attention has been

placed on how stigma is (re)produced in HIV-related healthcare settings, which consequently impact spatial practices and health-seeking behaviours among people living with HIV (PLHIV).

Methods: Semi-structured qualitative interviews were conducted with a total of 73 participants. These included 56 PLHIV (30 men who have sex with men, 23 heterosexual men, 3 women) and 17 stakeholders including healthcare workers, contact tracers, religious leaders, social workers, and volunteers. Interviews focused on both PLHIV and stakeholders' perspectives or experiences of HIV diagnosis, navigating healthcare, attitudes towards HIV, and impact of HIV on relationships. Data were analysed through inductive thematic analysis.

Results: Participants discussed how they negotiated stigma in a variety of healthcare settings, including HIV-related support groups and other healthcare institutions. Our analysis revealed that the (re)production of stigma across these settings was a dynamic process that drew on interactions between space-specific symbols or elements, and participants' own values or interpretations.

Examples of such interpretations included sociocultural factors such as perceptions of 'homonormativity' in support groups that provided safety for MSM but excluded heterosexual individuals; fear of disclosure around one's HIV status or sexual orientation in community-based and healthcare settings where greater visibility exists due to more 'open' spatial configurations or patient segregation; and perceptions of surveillance and state authority in local healthcare systems that have driven participants towards delaying their access to care out of fear of identification, or seeking care overseas instead.

As individual values and interpretations varied across participants, spaces were not intrinsically stigmatizing or comforting, but were constructed or socially produced as such.

Conclusions: Our findings nuance the idea of 'safe spaces' in the context of HIV, and further our understanding of the factors that exist beyond spaces themselves that (re) produce stigma and serves as barriers to access for HIV-related healthcare spaces.

Differentiated models of service delivery that address anticipated stigma that manifests through the social production of spaces are required to bridge gaps in access to care for all PLHIV.

EPD393
Risk factors and impacts of HIV stigma among adults living with HIV on Antiretroviral Therapy in the Asia-Pacific Region

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Background: People living with HIV (PLHIV) continue experiencing stigma in community, social and health care settings. They are at increased risk of depression and mental health-related disorders, manifesting in self-isolation and reduced uptake of healthcare services, compared to HIV-negative. Studies in the context of Asian HIV epidemics are limited. We aimed to investigate factors associated with HIV stigma among adult PLHIV in Asia-Pacific.

Methods: This cross-sectional study at five HIV clinical sites in Hong Kong SAR, Malaysia, the Philippines, South Korea, and Thailand, assessing stigma, substance use, depression and daily functioning among adult PLHIV was performed between July 2019 and June 2020. Stigma perceived by study participants was assessed using the 40-item HIV Stigma Scale (HSS) which has been validated across diverse populations, including Asian PLHIV.

The HSS questionnaire also measures the stigma subscale scores: personalized stigma, disclosure, negative self-image, and public attitudes. CD4 count and viral loads were available from medical records within 6 months prior to study entry. Multivariate linear regression was performed to evaluate factors associated with total HIV-related stigma and each subscale group.

Results: Among 864 PLHIV, 88% were male and their median age was 39 years. Of the 97% on ART; 6% had HIV viral load >1000 copies/mL. Mean total HSS score was 96.7±20.1 (97.5±19.9 for males and 90.7±20.8 for females).

Overall mean scores for each subscale were 40.5±11.0 for personalized stigma, 27.9±4.9 for disclosure, 29.9±6 for negative self-image and 48.9±11.6 for public attitudes.

In a multivariate model, older age (difference=5.3, 95% CI 1.9, 8.7, p=0.002 for 40-50 years; 3.1, 95%CI 3.1, 10.1, p=0.003 for >50 years vs. ≤30 years), female (-4.6, 95%CI -8.4, -0.8, p=0.018 vs. male), moderate to severe depression (14.3, 95%CI 10.9, 17.6, p<0.001 vs. no depression), disability (6.8,

95%CI 4.2, 9.4, p<0.001 vs. no disability) and HIV non-disclosure (21.2, 95%CI 14.9, 27.5, p<0.001 vs. full disclosure) were associated with higher total HSS scores.

Conclusions: This study highlights the need to expand stigma assessments within HIV clinical settings in Asia-Pacific region, and address associated factors such as concurrent mental health disorders.

EPD394

The wellbeing of Priority Populations in Mauritius: the roles of stigma, discrimination, and social exclusion and the impact on the quality of life

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Background: The purpose of this community-based study is to investigate the perceived well-being of priority populations (PPs - People Living With HIV/Aids, People Who Inject Drugs, sex workers, the LGBT community and Men Who Have Sex with Men) in Mauritius and the relationship to specific social factors: stigma, discrimination, and social exclusion.

More specifically, the objectives were to assess the quality of life of PPs, the nature of perceived discrimination and stigma, and understand determinants of psychological wellbeing amongst the target population.

Methods: Using a mixed-method approach, data were collected through an online questionnaire and face-to-face interviews among PPs in Mauritius for a period of 6 months. The scales measured life satisfaction, perceived well-being, group identification, preparation for bias, everyday discrimination and ostracism, social exclusion, and demographic information. This study was correlational in nature.

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Satisfaction	—										
2. Identification		—									
3. Secrecy			—								
4. Preparation			.216	—							
5. Ostracism			.193	.435	—						
6. Discrimination	−.181			.327	.642	—					
7. Exclusion				.200	.412	.312	—				
8. Psychological	.258			−.177	−.308	−.293	−.217	—			
9. Emotional	.187			−.223	−.445	−.430	−.319	.469	—		
10. Social	.213				−.312	−.260	−.201	.275	.289	—	
11. Physical	.248				−.310	−.276	−.267	.159	.242	.271	—

Table. Correlations for study variables.
Please note that only significant correlations are reported, p<.05

Results: Participants (N = 166; 90 males and 71 females; Mean age of 34.22 years and SD = 11.28) were representative of each PP group. The average scores for well-being were relatively high across the four dimensions of well-being; psychological, emotional, social, and physical. However, in contrast, the reported satisfaction with life (M = 3.36, SD = 1.92) was relatively low. PPs reported feeling excluded from Mauritian society, a sense of not being fully considered as a member of social and professional life. Correlational analysis revealed a domino effect between the measures of preparation for bias increasing ostracism, discrimination and social exclusion therein negatively impacting the levels of well-being among PPs.

Conclusions: This study is the first that examines determinants of wellbeing among PPs in Mauritius in contrast to documented barriers faced by such groups. This new perspective will enable the development of strategies for holistic health promotion of PPs, considering both physical and mental health for adequate treatment and care.

EPD395

A systematic review of biomarkers of stigma in people with HIV and HIV key populations

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Background: The biological processes associated with stigma manifested in people with or at risk for HIV are largely unknown. We conducted a systematic review of stigma biomarkers, i.e., quantifiable indicators related to stigma that influence or predict disease outcomes, in people with HIV (PWH) and HIV key populations.

Methods: This review (registered as PROSPERO CRD42021224383) included all study designs except case reports. PubMed, EMBASE, and PsychInfo were searched from August 2020 until November 2021.

We screened search results by title and abstract, performed a full-text review, searched for additional citations, and extracted data. The risk of bias was assessed using the U.S. National Institutes of Health tool for case-control and cohort studies.

Results: Out of the 978 studies screened by title and abstract and 96 by full-text review, 29 met the inclusion criteria. Published from 1996-2019, studies were conducted in North America (86%), Africa (3%), Asia (3%), and Europe (7%).

Studies recruited an average of 66% male and 34% female participants. Studies were cross-sectional (90%) and cohort (10%).

We assessed the quality of methods and found 52% of studies to be of good quality, 38% to be of fair quality, and 10% to be of poor quality.

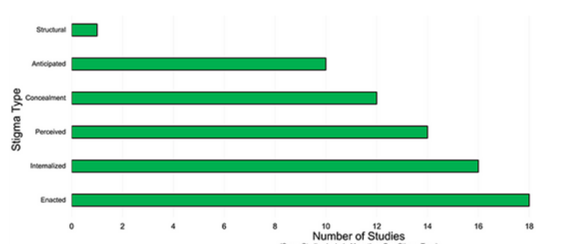

Figure. Stigma type across studies.

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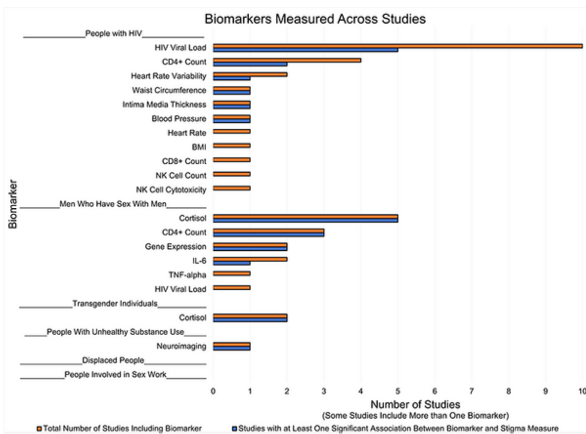

Figure. Biomarkers measured across studies.

Conclusions: Evidence on the biomarkers for the various stigmas manifesting in PWH and HIV key populations is circumscribed and based on limited cross-sectional and cohort designs. Better understanding the physiological mechanisms associated with stigma in these populations could inform mitigation strategies. Future stigma biomarker studies should include displaced people and people involved in sex work.

EPD396

"It's better to die than take medication". A qualitative study exploring the drivers of HIV-stigma at a community-level and the outcomes for people living with HIV in Zimbabwe

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Background: Despite investment in HIV control, HIV-stigma is documented to be a large barrier to programmatic success in Zimbabwe. Little research has conceptualised the development, and impact, of community-level HIV-stigma on people living with HIV (PLHIV). Frameworks have attempted to define and conceptualise HIV-stigma, and although consensus is lacking, the STRIVE framework provides a concise tool for its study.

Thus, this project utilises this framework to understand the manifestation of HIV-stigma at a community-level and its impact for PLHIV in Zimbabwe, gaining insights for informing future control programmes.

Methods: As part of a larger study investigating young-persons motivations to adhere to ART, PLHIV aged 18-35 were interviewed (n=12). From these interviews, members of the community considered influential to PLHIV were identified through a snowballing strategy and interviewed from the 7th-21st of December 2020. This cross-sectional study analyses drivers, and outcomes, of HIV-stigma at a community-level from in-depth, semi-structured interviews with influential individuals in the community (n=12 health care providers (HCPs)) (n=12 'other' influencers), across four regions of Zimbabwe.

This exploratory qualitative assessment utilised thematic analysis, adopting deductive methods (using the STRIVE framework as the analysis framework) and inductive methods, to allow new or emerging themes to develop.

Results: Influencers were geographically balanced across the four regions sampled but were not gender-balanced as 66.6% were women and 20.8% were men. Under the analysis framework of drivers and outcomes for PLHIV, social judgement, fear of transmission and responsibilisation were identified as key themes of actionable drivers of HIV-stigma at a community-level. These drivers were identified to facilitate the manifestation of perceived, anticipated, experienced, and internalised stigma, with intersecting stigmas playing an important role in mediating HIV-stigma at the community-level. This led to four primary outcomes for PLHIV: non-disclosure, psychological distress, defaulting and reluctance to test.

Conclusions: Findings identify misconceptions around HIV still persist. To date, Zimbabwe has taken a top-down approach, funnelling resources into improving ART acceptability and accessibility, however the value of local resources, i.e., community networks should be capitalised in programmes tackling actionable drivers of HIV-stigma, particularly focussing on reframing the narrative of an HIV infection to a chronic, but manageable infection.

EPD397

The force of HIV stigma: loops of negative feedback of social inequalities for women's access to HIV care in Chiapas, Mexico

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Background: Due to the low HIV prevalence in cis-gender women in Mexico (0.2%), they have not been considered a "key group" for public policy. However, the epidemic in women is rapidly advancing: the masculinity ratio has dropped from 12:1 men per woman in 1987, to 4:1 in 2019. Studies show that nearly 90% of woman living with HIV got it through unprotected sex with their male stable

partners. Since many of them declare unilateral monogamy, their infection could be more related to their partner's sex practices than theirs. As gender unequal relations thus interact with other social conditions of vulnerabilities and inequalities, women's situation regarding the HIV epidemic in Mexico takes a more complex dimension.

Methods: We conducted 32 in-depth interviews (Nov-Dec 2020) with woman living with HIV from a random sample of 216 participants aged 18-44 receiving care in any of 13 HIV care centers coordinated by the state HIV program.

The aim of the interviews was to explore the dynamics of women's positions within inequalities regarding care work, geographic mobility and gender violence, and their effect on their access to HIV care and to adherence to antiretroviral therapy.

Results: Narrative analysis of the interviews showed the force of HIV stigma in what we called "paradigmatic cases" where the diagnosis detonates violence, further load of care work and food insecurity with greater impact on women with breastfeeding children.

We identified *negative feedback loops* in as much as HIV acquired in circumstances of poverty and gender inequality itself intensified the social, subjective and economic precarity that participants faced before the diagnosis.

In one of the narratives, contrastingly, similar situations of inequality did not prevent the interviewee to produce a voice of her own and transform her HIV diagnosis into a force for activism.

Conclusions: HIV stigma for women who live in disadvantaged positions within unequal structures of class, gender, racialization and sexuality drives further poverty, violence, discrimination and exclusion. Integrated HIV healthcare demands non assistential programs that should include attention to inequalities through interinstitutional strategies to foster women's rights activism for a life free of violence, stigma and discrimination.

EPD398

Structural violence and trajectories of stigma and discrimination among women living with HIV in Vancouver, Canada

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Background: Women living with HIV and AIDS (WLWH) experience stigma and discrimination rooted in interlocking social-structural processes of oppression. Yet knowledge gaps remain regarding how and why HIV-related stigma and other forms of discrimination shift over time. We examined associations between social-structural factors (food/housing insecurity, violence, sexual minority identity) and HIV-related stigma and discrimination trajectories among WLWH.

Methods: We conducted a community-based open longitudinal cohort 'Sexual Health and HIV/AIDS: Longitudinal Women's Needs Assessment' (SHAWNA) with WLWH living in and/or accessing HIV care in Metro Vancouver, Canada. Using data from 2015-2019, semiannual averages in recent (past 6-month):

a. HIV-related stigma and

b. Everyday discrimination were plotted.

Latent Class Growth Analysis (LCGA) was then used to identify distinct trajectories of HIV-related stigma and discrimination, and baseline correlates of each trajectory were examined using multinomial logistic regression. Adjusted odds ratios (AORs) and 95% confidence intervals (95%CIs) are reported.

Results: The sample included 197 participants (trans women: 8.1%; Indigenous women: 62.4%; White women: 31.5%; African, Caribbean and/or Black women: 2.5%; other racialized women: 3.6%) with 985 observations over 4 years of follow-up.

Semiannual time trend plots showed little variation over time for stigma/discrimination. LCGA identified three distinct trajectories of HIV-related stigma and discrimination: sustained low, medium and high.

In multivariable analysis, recent (past 6-month) concurrent food and housing insecurity (CFHS) and physical/sexual violence were associated with higher odds of being in the sustained medium (CFHS: AOR=1.99, 95%CI=1.03-3.83; violence: AOR=1.96, 95%CI=0.88-4.39) and high (CFHS: AOR=6.93, 95%CI=2.00-24.04; violence: AOR=2.61, 95%CI=0.76-8.98) HIV-related stigma trajectories (vs. sustained low trajectory). Identifying as a sexual minority (AOR=2.18, 95%CI=1.10-4.31) and recent CFHS (AOR=2.15, 95%CI=1.05-4.40) were associated with higher odds of being in the sustained medium discrimination trajectory.

Recent physical/sexual violence (AOR=2.90, 95%CI=1.07-7.85), sexual minority identity (AOR=2.43, 95%CI=1.06-5.55), and recent CFHS (AOR=2.24, 95%CI=0.95-5.28) were associated with the sustained high discrimination trajectory.

Conclusions: Findings signal the role of social inequities (e.g., food/housing insecurity, violence) in sustaining, and the chronicity of, stigma and discrimination toward WLWH.

Multi-level strategies are required to address the structural violence embedded in socio-economic systems that elevate poverty and violence exposure and exacerbate stigma/discrimination in order to optimize health and rights among WLWH.

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EPD399
Stigma and HIV care engagement in the context of Treat All in Rwanda: a qualitative study

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Background: 'Treat All' policies recommending immediate antiretroviral therapy (ART) soon after HIV diagnosis for all people living with HIV (PLHIV) are now ubiquitous in sub-Saharan Africa. While early initiation of and retention on ART can reduce disease progression and onward transmission, evidence suggests that stigma remains a barrier to engagement in care.
This study aimed to understand the relationship between HIV stigma and engagement in care for PLHIV in Rwanda in the context of Treat All.
Methods: Between September 2018 and March 2019, we conducted semi-structured, qualitative interviews with adult PLHIV receiving care at two health centers in Kigali, Rwanda. After transcription and translation of interviews from Kinyarwanda to English, we simultaneously developed case-based and analytic memos alongside a codebook, which was iteratively applied to all transcripts.
We used a grounded theory approach for analysis, identifying emergent themes and higher order concepts related to HIV stigma and care engagement.
Results: Among 37 participants, 27 (73%) were women; median age was 31 years. Participants described how care engagement under Treat All, including taking medications and attending appointments, increased their visibility as PLHIV. This served to normalize HIV and use of ART but also led to anticipated stigma in the health center and community at early stages of treatment. Enacted stigma from family and community members and resultant internalized stigma acted as additional barriers to care engagement.
However, participants described how psychosocial support from care providers and family members helped them cope with stigma and promoted continued engagement in care.
Conclusions: Even though study participants faced multiple stigmas that negatively affected their engagement in care, personal and community support helped them utilize health services, particularly early in their treatment course. Developing interventions that leverage personal and community support can potentially reduce the negative impact of stigma and support Treat All goals.

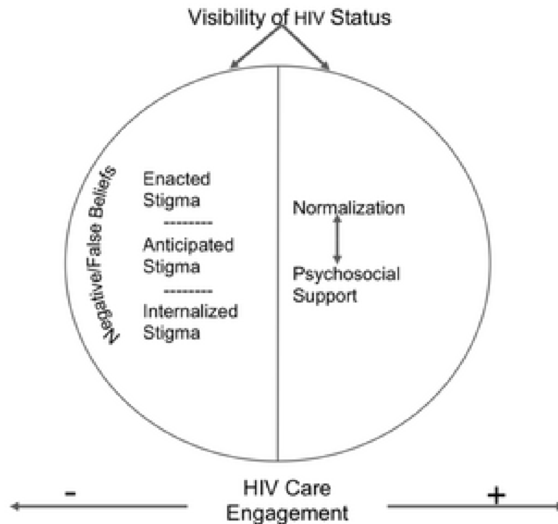

Figure 1. Model of HIV Care Engagement under Treat All

EPD400
Assessing PLHIV quality of care with HIV response outcomes

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Background: Alongside improvement ofPLHIV life expectancy noted over the last decade, health systems now focus on medicalandother determinants to improve PLHIVs quality of life.
Gaining insights into the PLHIV perspective on quality of care (QoC) will guide in developing strategies to improve engagement and retention in care and attainment of the 95-95-95 goals.
Methods: An observational, cross-sectional study, designed to assess the impact of QoC in PLHIV was conducted in Lagos, the sample population included 578 PLHIVon antiretroviral therapy (ART).
The levels of QoC were assessed against nine separate multi-item indices out of which four are included in this analysis: viral load suppression, age, key population, and gender. Chi-square tests were used to compare the QoC domains between different PLHIV subgroups.
Results: Chi-square analysis showed that higher QoC was associated with higher viral load suppression($p<0.00$). Higher QoC levels were also associated with age, [QoC decreased with increasing age], ($p<0.036$), key populations [higher QoC for KPs compared to general populations] ($p<0.00$), and gender [females had higher QoC compared to males]($p>0.036$).
QoC was also associated with higher retention in care among key populations($p<0.019$). Viral load suppression showed the same sub-population association trends as QoC.

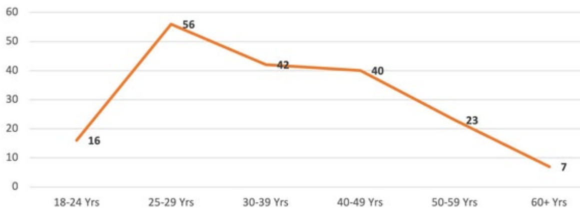

Figure. Perceived experience of good QoC

Conclusions: Decrease in QoC with increased age points to a need for improving quality of care for older populations. Higher levels of QoC in key populations compared to general population could be attributed to the scale up of the "One Stop Shop" service delivery system in Lagos. To attain the 95-95-95 targets, gaps in QoC across age, gender and population need to be addressed.

EPD401

"People thought I had HIV": PrEP stigma among Latina immigrant transgender women in the Washington DC metropolitan area

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Background: PrEP uptake among Latina transgender women has been slow, and PrEP stigma has been identified as an important barrier for uptake. This longitudinal mixed-methods research study investigated perceptions, expectations, and experiences of PrEP stigma among HIV-negative Latina immigrant transgender women. We also explored the relationship between PrEP stigma and PrEP-related intentions and behavior.

Methods: Participants were 37 HIV-negative Latina immigrant transgender women living in the DC metropolitan area. We conducted up to three in-depth, semi-structured mixed-methods interviews per participant. All interviews were conducted in Spanish. For qualitative data, we used a Rapid and Rigorous analysis (RADaR) technique to identify key themes. We analyzed quantitative data using descriptive and non-parametric statistics (e.g., Spearman correlations).

Results: Among PrEP-experienced participants, 60% (n=9) reported that they worried that others would think they were living with HIV by virtue of taking PrEP. This worry was associated with lower intentions to continue or re-uptake PrEP (r=-.59; p=.03). Participants reported two main reactions when an interlocutor thought they were living with HIV: Some used this as an opportunity to educate others about PrEP, whereas other participants concealed their PrEP use.

Many PrEP-naive participants anticipated that others would think they were living with HIV if they were to take PrEP.

However, few talked about this as a potential barrier for PrEP use, and this worry was unrelated to their intentions to initiate PrEP (r=-.26; p=.25).

Stigma related to risk compensation (i.e., increased number of sexual partners, condomless sex) was also evident in both the quantitative and qualitative data. Some participants also talked about intersectional stigma, where the stigma faced for being transgender was compounded with their experiences or expectations of PrEP-related stigma.

	Total (N = 37)	Ever used PrEP (n = 15)	Never used PrEP (n = 22)
Age Mean (SD)	34.5 (8.4)	32.6 (4.2)	35.6 (10.3)
Time in US Mean (SD)	10.5 (8.7)	8.8 (5.2)	11.6 (10.4)
Region of origin	Caribbean: 1; Central America: 28; North America (Mexico): 4; South America: 4	Central America: 14; North America (Mexico): 1;	Caribbean: 1; Central America: 14; North America (Mexico): 3; South America: 4
Worry that other people would think participant was living with HIV due to PrEP use - *"Not at all" or "A little"*	24 (64.9%)	9 (60%)	15 (68.2%)
"People who use PrEP have a lot of sexual partners" - *"Agree" or "Completely agree"*	16 (43.2%)	7 (46.7%)	9 (40.9%)
"People who use PrEP use it as an excuse to have sex without condoms" - *"Agree" or "Completely agree"*	16 (43.2%)	8 (53.3%)	8 (36.4%)

Table.

Conclusions: PrEP-related stigma is common among Latina transgender women and it can impact their PrEP use. Thus, interventions to reduce PrEP stigma are sorely needed. These interventions should not only target Latina transgender women, but must include the communities within which they live.

EPD402

Intersectional stigma among women who exchange sex and use drugs (WESUD) in Kazakhstan

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Background: Intersectional stigma is a major barrier to HIV prevention and treatment, including testing, PEP/PrEP uptake and treatment/care engagement in various global contexts. Various systems of oppression and stigmatized conditions overlap, potentiating their negative impact on HIV-related outcomes. In Kazakhstan, women who both exchange sex and use drugs (WESUD) experi-

ence dual and possibly intersecting stigmas, which reduce access to HIV prevention and care and thus are important to measure, characterize and address.

Methods: We administered a brief screening survey (N=48) and conducted in-depth interviews (N=30) with WESUD (March-July 2021).

The survey included an intersectional stigma scale where the respondent reported if they "might" (anticipated stigma subscale) or "did" (experienced stigma subscale) experience stigma or discrimination "based on who you are", which could include drug user or sex worker or another stigmatized status.

We examined bivariate associations between the measure and drug use and sex work status (full time sex work or for supplemental income).

Results: Participants who reported using drugs (injection or not) in the past 3 months had a significantly higher score on the experienced stigma subscale than those who did not report using drugs (19.95 vs 9.17; p<.05). Neither experienced nor anticipated stigma subscales differed significantly by sex work status. Qualitative in-depth interviews provided further insight into experiences of intersecting stigmas.

Participants reported stigmatization in health service settings based on both sex work and drug use ("The attitude is generally extremely bad, and if you inject drugs or provide some types of services, you are rubbish"), from community members ("People will be afraid of me and stop communicating") and self-imposed isolation/exclusion due to anticipation of stigma ("I left home, so as not to bother my relatives with my presence. Because I have such a way of life").

Conclusions: Social stigma is a major problem among WESUD in Kazakhstan, with deleterious consequences for self-esteem, social support, and service access. The association between recent substance use and experienced stigma suggests that women engaged in both sex work and substance use may be particularly stigmatized.

Our results suggest an urgent need for multilevel stigma-reduction interventions among this population.

EPD403

PLHIV and key populations avoid HIV-related services in India due to stigma

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Background: Stigma and discrimination can impede utilization of HIV services and lead to sub-optimal health outcomes. We characterize stigma among people living with HIV and key populations (KP) (female sex workers [FSW], men who have sex with me [MSM], people who inject drugs [PWID], and transgender people [TG]) across 7 districts in 2 Indian states.

Methods: We conducted interviewer-administered surveys Oct-Nov 2021 with a random sample of clients receiving ART at treatment centres and people registered with local KP-specific NGOs. Questions included enacted, anticipated, and self-stigma relative to HIV status (PLHIV) and KP identity. For enacted and anticipated stigma, participants were asked about stigma from healthcare workers at treatment centres (PLHIV) and HIV/STI testing centres (KP). Each domain was summarized by calculating an item average (range 0-3, 3=highest). For PLHIV and KP separately, we assessed the association of stigma with avoiding care (likely or very likely) using logistic regression.

Results: 189 PLHIV and 195 KP (61 FSW, 36 MSM, 50 PWID, and 48 TG) were interviewed. Across all populations, self-stigma was highest [Figure]. For PLHIV, MSM, and TG, anticipated stigma was higher than enacted stigma but equal for FSW and PWID. TG experienced the highest enacted and anticipated stigma (median=0.3 and 1.5, respectively); PWID had the highest self-stigma (median=2.2). KP more commonly reported avoiding health centres because they expected to be treated poorly (26%) compared to PLHIV (9%). All stigma domains were significantly associated with avoiding care. KPs with higher enacted stigma were nearly 20 times more likely to avoid care and PLHIV with higher anticipated stigma were nearly 20 times more likely to avoid care.

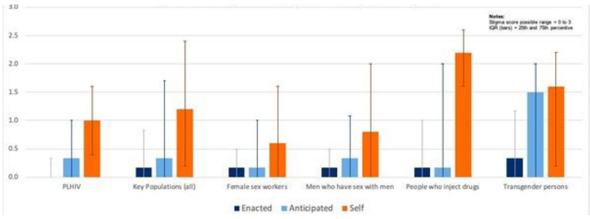

Figure. Median stigma scores, by domain and population group.

Conclusions: PLHIV and KP in India experience high levels of stigma which impact HIV care engagement, particularly among TG who report substantial anticipated and experienced stigma. Interventions to sensitize providers and KP-friendly clinics are needed.

EPD404
Differences in burden of Internalized HIV Stigma (IHS) by race/ethnicity among People with HIV (PWH) Living in the US

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Background: Previous US-based studies suggest that HIV stigma may negatively impact clinical outcomes among people with HIV (PWH). Fewer studies have examined which subgroups of PWH carry the greatest burden of HIV stigma, which may be important in targeting/tailoring interventions.

Methods: CFAR Network of Integrated Clinics System (CNICS) is a longitudinal, US-based, multisite, clinical care cohort of PWH. During routine healthcare visits, PWH completed tablet-based assessments including a 4-item, Likert scale (low 1-5 high) internalized HIV stigma (IHS) instrument. Initial responses to IHS questions were transformed into a score, theta, using Item Response Theory models. Differences in theta across PWH who responded to questions on IHS were examined by sociodemographic characteristics using multiple linear regression stratified by race/ethnicity.

Results: 10,825 PWH responded,with a mean age of 47 years, 79.8% cis-men, 18% cis-women, 39% Black and 14.6% Hispanic.High IHS scores (≥3 on every question) were reported by ~25% of PWH. The mean theta IHS score was 0.066 (median: 0.221; range: low -0.947 to 2.40 high).

While high IHS scores were reported in all subgroups, in regression models adjusted for age, gender, years in care, geographic location, and sexual orientation, greater IHS was reported by all heterosexual PWH, but only White and Black bisexual-identifying PWH, not Hispanic.

Both Hispanic and Black PWH reported less IHS in each older age group, however for White PWH, a lower IHS score was only observed for ≥60 years.

Among Hispanic and White PWH, IHS scores were lower for most groups in care longer, but for Black PWH lower IHS scores were only reported for those in care ≥7 years.

Among Black PWH, but not other racial/ethnic groups, cisgender women reported more IHS than cisgender men, as did those from the Western US compared to the North-east.

Conclusions: We found that IHS is prevalent among PWH, with some subgroups reporting greater IHS including differences by race/ethnicity. These findings highlight the benefits of routine screening for IHS and suggest the need for interventions to reduce IHS among PWH, which could be maximized by targeting/tailoring to subgroups reporting higher mean stigma and individuals with high IHS scores.

EPD405
The prevalence of physical and sexual violence in Nigeria: Gateway to HIV infection among MSM and transwomen

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Background: Sexual and gender-based violence (SGBV) against minority populations is a global public health problem with consequential effects on human health and development. It has been reported among gay men and transgender women in forms of verbal abuse, physical and sexual violence. Sexual violence often predisposes the victim to HIV infection and other psychological traumas. This study was carried out to assess the burden of SGBV and identify factors associated with its occurrence among MSM and TGF in Nigeria.

Methods: This is a cross-sectional study among MSM and transwomen residing in Nigeria. The snowballing method was used to recruit participants. A total of 382 eligible responses were received through an online questionnaire. Descriptive statistics and binary logistic regression were used to analyze the data with a significance set at 5%.

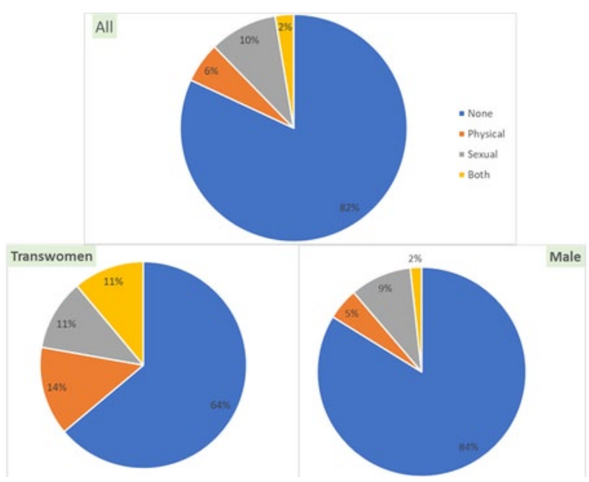

Figure.

Results: The mean (SD) age of respondents was 27(0.3) years. About 35 % (95%CI: 30.2-39.8) of all respondents had ever experienced sexual violence and 42.1 % (95%CI: 37.3-47.2) had ever experienced physical violence. The prevalence of sexual violence within one year preceding the study was 13.8% (95%CI: 10.8-17.5) while physical violence was 16.3% (95%CI: 13.0-20.2). Transwomen were about thrice (unadjusted odds ratio: 2.92, p<0.01). and 5.6

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times (unadjusted odds ratio: 5.60, p<0.001) more likely to experience sexual and physical violence respectively than MSM self-identified as males. One fifth (18.1%) of all respondents had ever experienced IPV and for transwomen, it was 1 in 3. Transwomen were also about 3 times more likely to experience IPV than MSM self-identified as males (unadjusted odds ratio: 2.92, p<0.01).

Conclusions: The prevalence of physical and sexual violence is high among MSM and transwomen in Nigeria. Implementing public health programmes that target modifying the background characteristics of MSM and transwomen which influence SGBV exposures may help reduce the prevalence of violence among MSM and the transwomen community.

EPD406

Health facility stigma: experiences of adolescent boys living with HIV in the Eastern Cape Province of South Africa

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Background: Adolescents and men are two populations that perform poorly within the HIV cascade of care and have poor AIDS-related outcomes. HIV-related stigma is a documented barrier to retention in HIV care and adherence globally. However, scant research has explored the stigma-related experiences and challenges of adolescent boys and young men living with HIV.

We explore the stigma experiences of adolescent boys living with perinatally-acquired HIV accessing public health services in the Eastern Cape Province of South Africa.

Methods: Life history narrative interviews, in-depth semi-structured interviews and analysis of health facility files of adolescent boys and young men living with vertically acquired HIV (n=35, ages 13-22) in the Eastern Cape Province of South Africa 2017 and 2018. In-depth semi structured interviews with biomedical and traditional health practitioners (n=14).

Results: Adolescent boys reported two stigma-related deterrents to retention in the HIV cascade of care:

1. Anticipated stigma from attending health facilities, where they feared being visibilised as living with HIV; and
2. Experiences and fears of enacted stigma by biomedical health workers in the form of yelling, mistreatment and gossip.

Findings suggest that as adolescent boys with perinatally acquired HIV become older, their experiences begin to reflect the stigma-related challenges reported by adult men living with HIV. This may become more pronounced when caregivers stop accompanying boys to the clinic, and within certain types of facilities and transitions. Intersectional stigma theory is applied to consider the multiple intersecting vulnerabilities of this group, and the ways that masculinity articulates to shape experiences of stigma across the life course of adolescents with perinatally-acquired HIV.

Conclusions: This study found considerable stigma-related challenges faced by adolescent boys and young men living with HIV that affect their retention in care. Further research to quantify relationships between stigma and health practices of adolescent boys and young men living with HIV, and the pathways through which such practices are shaped is needed.

EPD407

Stigma, Syndemics, and HIV risk among Transgender Women (TGW) in Mumbai, India: a qualitative investigation

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Background: Syndemics of psychosocial problems such as depression, problematic alcohol use and violence victimization have been shown to synergistically increase HIV risk among TGW in developed countries. However, scant research is available on Syndemics among Transgender Women (TGW) in India.

This qualitative study aimed to explore how stigma, psychosocial problems and HIV risk are connected among TGW in Mumbai, India.

Methods: In March–August 2019, we conducted four focus group discussions (FGDs, n=25) and six in-depth interviews (IDIs) with TGW, and four key informant interviews with health care providers and trans community leaders. Purposive sampling was used. Thematic analysis was conducted on the translated data from FGDs and interviews.

Results: TGW participants were younger (mean age - 23.8 in FGDs; mean age - 35 years in IDIs), about half (48%) reported inconsistent condom use in the past month, and about two-fifths reported part-time sex-work. Narratives indicated that TGW experienced depression, anxiety, and suicidal ideation primarily from lack of social acceptance. Substance and alcohol abuse, as a maladaptive coping mechanism, heightened HIV vulnerability especially for those in sex work.

Depression secondary to loss of family support and rejection by partners and harassment from police and general public seems to lead to fatalistic attitude among some TGW, in turn contributing to condom less sex.

Participants described incidents of discrimination within healthcare settings, although they reported that understanding about trans people in general is increasing. Fear

of discrimination in health care settings, based on their gender minority status or sex work status, posed a barrier to accessing and using health care services. TGW living with HIV faced discrimination from other trans community members, with consequent loss of emotional support and loss of livelihood, especially among those in sex work.

Conclusions: Stigmas related to gender minority status, sex work status and HIV status contribute to psychosocial problems and HIV risk. HIV interventions for TGW need to incorporate strategies to reduce multiple stigmas faced by TGW, promote acceptance of TGW living with HIV and offer integrated services to screen for and manage psychosocial problems, all of which can strengthen HIV prevention efforts.

EPD408

Association of stigma and adherence to treatment among People Living with HIV in Kilimanjaro region, Tanzania: *repeated cross-sectional studies*

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Background: Non-adherence to antiretroviral therapy is a common cause for treatment failure for People Living with HIV (PLHIV). As the Sub-Saharan African (SSA) region bears the biggest HIV burden, further research into adherence-enhancing interventions can be beneficial.

The lack of knowledge on the role of stigma on adherence in Tanzania, has brought us to the primary aim of this study: to assess whether an association of stigma and adherence among PLHIV in the Kilimanjaro region, Tanzania, exists. We hypothesize that stigma negatively influences adherence among PLHIV.

Methods: Cross-sectional assessments of stigma and adherence among 249 participants were conducted during a 48-week study period, at week 0 (visit 1), week 24 (visit 4), and week 48 (visit 7). Internalized and personalized stigma were measured with a 10-item abbreviated Berger HIV stigma questionnaire. Adherence was measured through Self-Report in the last week (SRweek) and last month (SRmonth), and Pharmacy refill counts (PR). Repeated cross-sectional bivariate logistic regression analyses were performed with continuous stigma scores and dichotomized adherence scores with levels below 95% being nonadherent. Sociodemographic factors were included in the final stepwise multivariate analysis if p-values <0.20 were reached in prior bivariate regression analysis on nonadherence.

Results: The annual mean internalized stigma score was 5.47 (±2.31) (min:4, max:16), and 10.10 (±4.76) for personalized stigma (min:6, max: 24). Annual mean adherence rates were 96.5% (SRweek), 97.9% (SRmonth), and 93.7% (PR). A significant association between internalized stigma and non-adherence was measured at visit 7 (OR: 1.29, CI 1.11-1.50, P <.001). Age (OR: 0.95, CI 0.92-0.99, P .005) and 'attending a Health Centre' as opposed to a referral hospital were significant covariates for non-adherence (OR:2.56, CI 1.12-5.85, P .026).

Conclusions: There was no dominantassociation between stigma and adherence measured.

Stigma scores were remarkably low and adherence levels fairly optimal. We must question the sensitivity of the Berger HIV stigma questionnaire to the Tanzanian context. Revalidation of the questionnaire in the local context together with qualitative research on stigma, is highly recommended for future studies.

Furthermore, more emphasis can be placed on improving the quality of HIV care among younger age groups and governmental health centres.

EPD409

An analysis of self-accounts of women living with HIV/AIDS in Indian Kashmir concerning their experiences of stigma and discrimination in local health care settings

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Background: A huge proportion of women in India confront adverse socio-economic situations, gender inequalities and inequities in accessing healthcare services. In Indian Kashmir the stigmatizing attitudes and regressive actions towards Women Living with HIV (WLHA) greatly hinder identification of undiagnosed WLHA or connecting them to quality health care services, and thus increasing the number of WLHA. The local government and other agencies often under-report the number of PLHA in the region. Significant estimations of independent practitioners argue that stigma and discrimination attached to HIV is primarily responsible for this under-reporting.

Disclosing HIV status is challenging and has many repercussions for an individual in family, neighborhood and other social or institutional settings. WLHA in the region tend not to disclose their status due to fear of stigma, victimization and isolation.

Methods: The study is located in Indian Kashmir, a South Asian Territory witnessing an armed conflict. Twenty one (21) WLHA, who have experienced immense suffering and stigma after being detected with HIV participated in the study in 2017-18. An Interpretative Phenomenological Analysis was used to study and interpret their narratives. The self-accounts of participants are not seen as revealing any generic 'truth', rather they are treated as stories whose meanings are situationally located and require to be discovered.

Results: The WLHA internalize stigma before experiencing it directly. They experience shock, guilt, anger, numbness while receiving their diagnosis and confront enormous levels of stigma and discrimination at diverse levels . Much of it is socially constructed having little medical or logical basis. These experiences in health institutions have

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been greatly dis-empowering. Verbal abuse, gossiping, expressing shock and disbelief upon receiving diagnosis, discriminatory attitudes like wearing multiple surgical gloves denial of care and treatment, disclosing their HIV positive status without their consent to their families and others have been learnt.

Conclusions: Gender stereotyping and prevailing inequalities in the region within local health care settings and discriminatory approach of health practitioners towards WLHA is a main barrier in accessing the services for HIV prevention, treatment and support services. WLHA not only experience physical deterioration of health but also mental health issues that greatly alter their everyday well-being.

EPD410

Investigating the development of perceptions and behavioural intentions towards people living with HIV (PLHIV) among pre-clinical medical students in the University of Malaya

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Background: People living with HIV (PLHIV) continue to face stigma and discrimination in various contexts including in the healthcare setting. Stigmatizing attitudes and behaviours by healthcare professionals towards PLHIV have resulted in poorer health outcomes for PLHIV, where they continue to face increasing mental health burden and end up practicing damaging health behaviours including HIV testing and treatment avoidance.

This study was conducted to explore the different stigmatizing perceptions and behavioural intentions of future medical doctors towards PLHIV, and how they develop over time.

Methods: Adopting a qualitative, case study design, six pre-clinical medical students were recruited using maximum variation sampling and underwent semi-structured, one to one online interviews on Zoom between March 2021 to April 2021. Their responses were transcribed verbatim and using inductive reasoning, were thematically-analysed.

Results: Two main themes emerged:

1. The manifestation of different perceptions and behavioural intentions towards PLHIV before and while in medical school;

2) The factors that influence them.

Early life perceptions of PLHIV were inherently negative due to misinformation, imposition of traditional religious and cultural beliefs and the criminalization of at-risk groups including drug users. These perceptions shifted in a positive direction as they enrolled in medical school, where they developed self-awareness and the initiative to re-educate themselves through the medical curriculum, HIV awareness campaigns, sex-positive conversations with friends and real-life encounters with PLHIV.

Conclusions: The ability to interact with non-discriminatory education materials and individuals who were either supportive of PLHIV or living with HIV themselves increased the level of cognitive and affective empathy among these students towards PLHIV. This in turn changed their perceptions and behavioural intentions towards PLHIV.

These results indicate that as a part of ensuring zero discrimination towards PLHIV in the medical fraternity in the future, necessary exposure should be provided beyond the classroom to medical students, where actual interactions with PLHIV can take place. Learning their stories beyond their medical condition can transform the way these future doctors treat and behave around their patients who live with HIV in the future.

Ultimately, this could increase confidence among PLHIV in getting testing and treatment, and staying on the latter throughout their lives.

EPD411

Forms and facilitators of HIV- and healthcare-related stigma in Kenya: an age-old persistent problem

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Background: Despite interventions to reduce HIV stigma in Kenya, people living with HIV and other persons affected by HIV still face internalized, anticipated, healthcare-related and structural stigma which are facilitated by a myriad of factors.

This abstract is part of the "*Getting to the Heart of Stigma"* multi-country study commissioned by the International AIDS Society aiming to connect evidence with action and better understand stigma reduction efforts at the individual, healthcare and legal/policy levels that may facilitate improvements at scale. In this abstract, we explore a) what are the different forms and facilitators of stigma that persons seeking HIV and SRHR services face.

Methods: 27 key informants (KI) were interviewed in March and April, 2021: 14 representatives from key populations (KP) and people living with HIV (PLHIV) organizations, 7 healthcare workers, and 6 policymakers. The interviews were semi-structured questionnaire, audio recorded, and analyzed thematically.

Results: While stigma is largely perceived to have reduced in Kenya, it persists amongst members of key populations. This stigma in the healthcare setting comes from several sources, including:

- *Internalized/Self-stigma:* challenges around disclosure of HIV status and/or social or sexual identity as a member of a KP (i.e. LGBTI, sex workers, person who injects drugs)
- *Violations in the health care setting (Enacted Stigma):* breaches of privacy/confidentiality, blatant discriminatory remarks, denial of service or appropriate referrals, or poor quality of service provided. Such stigma/ discrimination in the clinic setting is compounded by KP identities.
- *Anticipated stigma:* related to the anxieties people have in while coming out to families/children/ community, violence, housing challenges, stigma promoted by religious institutions.
- *Stigma perpetrated by laws / policies:* while well-articulated anti-discrimination laws and policies are in place in Kenya, they must be put into action through in-depth sensitization work with health care providers, and on-going information-sharing with government/donors to emphasize the value of financing stigma reduction programs.

Conclusions: The age-old perspectivethat HIV only affects "the immoral" in society (especially members of KP) persists, cascading into the culture of Kenyan institution, including the healthcare setting. Stigma in the provision of health services inhibit KPs and PLHIV from seeking health care services, thereby increasing their vulnerability to health risks.

EPD412

The mediating role of anxiety between perceived HIV stigma and depression among people living with HIV in Nigeria

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Background: Mental health disorders are concerning among people living with HIV (PLWH) and perceived HIV stigma has long been viewed as an inducement of anxiety and depression, two major mental health problems among PLWH. However, there is a lack of studies investigating the potential mediating role of anxiety in the relationship between perceived stigma and depression, especially in countries with significant HIV burdens, such as Nigeria. To address this knowledge gap, we examined the mediation model among perceived HIV stigma, anxiety, and depression using data from PLWH in Nigeria.

Methods: A total of 3770 PLWH aged 18 years and older in Nigeria was recruited into this study in 2021. Data were collected via an anonymous survey using a structured questionnaire including basic demographic characteristics, perceived HIV stigma (a 10-item adapted HIV stigma scale), anxiety (GAD-7 scale), and depression (PHQ-9 scale). Confirmatory factor analysis (CFA) was conducted to assess the goodness of fit of the measurement model for both exogenous and endogenous factors. Path analysis was performed to assess the hypothesized mediation model. All analyses were performed using "Psych", "Lavaan", and "semTools" package in R 4.0.3 software.

Results: The final path analyses model yielded a satisfactory model fit ($\chi2$ = 1758.17, $p < 0.001$, CFI = 0.960, TLI = 0.957, RMSEA = 0.037, SRMR = 0.038). According to the standardized regression coefficient, perceived stigma was positively associated with anxiety (b= 0.08, $p < 0.001$) and depression (b= 0.001, $p = 0.936$). The path from anxiety to depression was also positive (b= 0.91, $p < 0.001$).

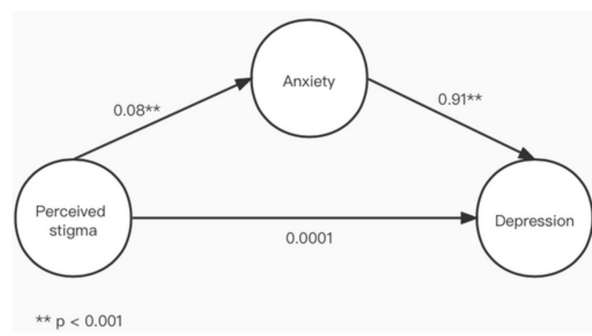

Figure. The final path model among perceived stigma, anxiety and depression.

Conclusions: Anxiety completely mediated the relationship between perceived HIV stigma and depression in this model. The interventions aim to decrease depression symptoms among PLWH in Nigeria may benefit more by incorporating strategies that address issues related to HIV-related anxiety.

Socioeconomic differences: Poverty, wealth and income inequalities

EPD413

Incorporating social determinants of health into the mathematical modeling of HIV/AIDS

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Background: HIV/AIDS is among the 10 leading causes of death, mostly among low- and lower-middle-income countries. Despite the effective intervention in the prevention and treatment, this reduction did not occur equally among populations. This difference in the occurrence of the disease is associated with the social determinants of health (SDH), which could affect the transmission and

maintenance of HIV. The development of mathematical models that incorporate these determinants could increase the accuracy and robustness of the modeling. This article proposes a theoretical and conceptual way of including SDH in the mathematical modeling of HIV/AIDS.

Methods: For the selection of SDH that were incorporated into the model, a narrative literature review was conducted. A total of 31 SDH were obtained in the review, divided into 4 groups: Individual Factors, Socioeconomic Factors, Social Participation, and Health Services. In the end, 4 determinants were selected for incorporation into the model: Education, Poverty, Use of Drugs and Alcohol abuse, and Condoms Use.

Results: For this study, we propose an extended model in which the population (N) is divided into Susceptible (S), HIV-positive (I), Individual with AIDS (A) and individual under treatment (T). Each social determinant of health had an approach to be included in the final model. Thus, the model with the inclusion of the social determinants mentioned here has the following form:

$$\frac{dS}{dt} = \kappa - \mu S - q(1-c)\beta(x_1, x_2)\,\frac{I}{N}S - \theta_1 S + \theta_2 R$$

$$\frac{dI}{dt} = q(1-c)\beta(x_1, x_2)\,\frac{I}{N}S + \alpha_1 T - \rho I - \gamma_1 I - \mu I$$

$$\frac{dA}{dt} = \rho I + \alpha_2 T - \gamma_2 A - \delta_1 A - \mu A$$

$$\frac{dT}{dt} = \gamma_1 I + \gamma_2 A - \delta_2 T - \alpha_1 T - \alpha_2 T - \mu T$$

$$\frac{dR}{dt} = \theta_1 S - \theta_2 R - \mu R$$

Conclusions: The equations presented with the chosen SDH exemplify some approaches that we can adopt when thinking about modeling social effects on the occurrence of HIV. The recognition of the importance of including the SDH in the modeling and studies on HIV/AIDS is evident, due to its complexity and multicausality.

Models that do not take into account in their structure, will probably miss a great part of the real trends, especially in periods, as the current on, of economic crisis and strong socioeconomic changes.

EPD414

The role of material security in the interruption of HIV treatment and prevention services among key populations during the COVID-19 pandemic in Malaysia

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Background: For key populations, continuous engagement in HIV services prevents HIV transmission and disease progression. The COVID-19 pandemic exacerbates pre-existing inequities and challenges including poverty among people at-risk of HIV/AIDS. Additionally, material security (e.g. housing, food and financial stability) may be disrupted by the pandemic and further limits access to health services.

This study sought to examine the validity and reliability of a material security scale, as a measurement of poverty, and examine the relation between material security and HIV service interruption among key populations during the pandemic.

Methods: Between August and November 2020, data were collected from people who use drugs, transgenders, sex workers and men who have sex with men registered with HIV service organizations across Malaysia.

Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were performed. In a sub-analysis, the outcome of interest was interruption of any HIV-related services during the pandemic, including needle and syringe exchange program, methadone treatment, condom provision and antiretroviral therapy.

The relationship between material security and the odds of HIV service interruption was analysed using multivariable generalized logistic regression.

Results: Two-hundred sixty-two individuals were included in the analyses, of whom 58 (22%) reported any service interruption. Of these individuals, 127 (48%) were males, 69 (26%) were females and 66 (25%) were transgenders. We identified a 9-item, three-factor structure from the EFA analysis that demonstrated excellent fit in CFA.

The material security score displayed good reliability measures, with Cronbach's alpha of 0.843, 0.826 and 0.818 for housing, economic resources and basic needs factors, respectively. In the adjusted model, housing and economic resources were not significantly associated with HIV service interruption.

Basic needs were the single factor that was significantly associated with HIV service interruption (Adjusted Odds Ratio= 0.89, 95% Confidence Interval: 0.82 – 0.97,*p*-value = 0.006).

Conclusions: There was an 11% decrease in the odds of HIV service interruption during the pandemic for each one point increase in the basic needs factor score. Findings from our study call for innovative social support strategies in protecting the basic needs of key populations, especially during a pandemic.

EPD415

Examining the association of financial vulnerability on injection and sexual HIV transmission risk among people who inject drugs in Kyrgyzstan: implications for intervention and policy

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Background: The world's most rapidly expanding HIV epidemic is in Eastern Europe and Central Asia, predominately concentrated among people who inject drugs (PWID). Financial vulnerability may contribute to HIV disparities among PWID in this region.
We aim to examine the contributions of financial vulnerability on injection and sexual HIV transmission risk among PWID in Kyrgyzstan to inform future interventions and policies.
Methods: We analyzed cross-sectional data from n=279 PWID living in Kyrgyzstan between April-October 2021. The predictor of interest is recent (i.e., past 6-month) financial vulnerability; operationalized as a single, cumulative score of items related to not having enough money to maintain housing stability, essential needs (i.e. food for at least 2 meals a day), and non-essential needs (i.e. money for entertainment).
Our binary outcomes of interest are recent injection risks (e.g., public injection), and sexual risks (e.g., condomless sex). Bivariate and multivariate logistic regression models estimated the impact of financial stability on injection and sexual HIV transmission risk outcomes controlling for age, gender, ethnicity, educational attainment, HIV status, and recruitment method.
Results: On average participants were 40.2 years old, the majority were men (75.3%), ethnically Russian (53.8%), with a high school degree or less (73.5%), and HIV negative (76.3%). In multivariate analyses, greater recent financial vulnerability was significantly associated with increased likelihood of recent injection risk behaviors, including public injection (aOR[CI]: 1.05[1.02,1.07]; p<0.001), preparation of drugs in unsafe water sources (aOR[CI]: 1.07[1.03, 1.10]; p<0.001), sharing of injection equipment (aOR[CI]: 1.05[1.02, 1.08]; p=0.002), and reuse of a cooker/filter (aOR[CI]: 1.03[1.00, 1.05]; p=0.037).
However, greater recent financial vulnerability was also significantly associated with decreased likelihood of recent sexual risk behaviors, including anal or vaginal sex (aOR[CI]: 0.95[0.92, 0.98]; p<0.001) and condomless sex (aOR[CI]: 0.97[0.95, 0.99]; p=0.012).
Conclusions: Results suggests that financial vulnerability may exacerbate injection HIV transmission risk, though sexual transmission risk remains a concern even in the presence of decreased financial vulnerability.
Results suggest efforts to bolster financial stability integrated into extant harm reduction services may enhance HIV prevention efforts in the region. Prioritizing sexual risk reduction among PWID remains a priority to prevent expanded transmission to the general population.

EPD416

Material-need insecurities and physical and mental health outcomes among women living with or at risk for HIV in the United States

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Background: Difficulty meeting basic material needs including financial, food, housing, and healthcare needs may exacerbate poor health among people living with or at risk for HIV. The associations between these material-need insecurities (MNI) and health remain unclear.
Methods: We used data from a 2015 sub-study of the Women's Interagency HIV Study, a multi-site prospective cohort study of women living with and at risk for HIV in

the US. We built an exploratory structural equation model (SEM) to examine associations between MNI and latent factors for mental and physical health derived from a latent factor analysis. We also tested the association between experiencing multiple MNI and the latent factors, using a count of MNI experienced by each participant. Both models were adjusted for HIV status, marital status, age, race/ethnicity, and education.

Results: Two factors were retained based on factor loading patterns and factors' interpretation. Physical function, role function, and pain indicators of the quality of life scale uniquely contributed to the first factor (defined as physical health), while depressive symptoms, emotional wellbeing, and anxiety showed highest loadings on the second factor (defined as mental health). The factors were strongly correlated (r=0.559, p<0.001).

In adjusted SEM analyses, physical health was poorer among women who reported food insecurity (B=-0.606, p<0.001), had annual income <$12,000 (B=-0.231, p<0.001), had public health insurance (versus private, B=-0.226, p<0.001), and experienced housing insecurity (B=-0.127, p=0.029).

Similarly, mental health was poorer among women who experienced food insecurity (B=-0.756, p<0.001), had annual income <$12,000 (B=-0.231, p<0.001), had public health insurance (B=-0.127, p=0.026), and experienced housing insecurity (B=-0.299, p<0.001). Greater number of MNI was associated with both lower physical and mental health (B=-0.265, p<0.001, and B=-0.286, p<0.001, respectively).

Conclusions: Food, financial, and housing insecurity were all independently associated with poorer mental and physical health among women living with and at risk for HIV in the US. Poorer health outcomes were more common among those with public (versus private) insurance. Understanding individuals' structural needs to connect them with appropriate resources while striving for a more robust public health system should be a key component to improve the health of women affected by HIV.

EPD417

Perceived social status and retention in care after antiretroviral therapy initiation in Tanzania

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Background: Perceived social status (PSS) is an individual's perception of their socioeconomic position among their community (i.e., how an individual internalizes their socioeconomic position). We investigated the association between PSS and retention in HIV care shortly after antiretroviral therapy (ART) initiation.

Methods: We conducted a secondary analysis of control arm participants in an ongoing cluster randomized controlled trial in Tanzania of adult ART initiates (<=30 days). PSS was measured in an in-person baseline survey from May-November 2021 using the MacArthur Scale of Subjective Social Status, which utilizes a ladder image with social status represented as 10 increasing "steps" of PSS on the ladder. Participants were categorized into quartiles of low, low-moderate, moderate, and high PSS, with the "low" group serving as a reference group for analysis. Medical record review indicated whether participants attended their first follow-up appointment after ART initiation. We used logistic regression to evaluate the relationship between PSS and attendance at the first follow-up visit, controlling for age, sex, education, occupation, and mental wellbeing.

Results: The analysis included 677 participants in the control arm of the study (304 male, 373 female). Mean PSS score was 4.16, with no differences by sex.

Overall, 77.7% of participants attended their first follow-up visit after ART initiation, with 23.5%, 24.8%, 28.5%, and 23.2% of participants returning in the low, low-moderate, moderate, and high PSS groups, respectively.

Low-moderate PSS was associated with 1.75 times the odds of attending the first follow-up compared to those with low PSS [95% CI: 1.02, 3.02], moderate PSS was associated with 1.32 times the odds of attending the first follow-up visit [95% CI: 0.80, 2.17], and high PSS was associated with 1.23 times the odds of attending the first follow-up visit compared to those with low PSS [95% CI: 0.72, 2.11].

Conclusions: People with the lowest PSS may be at higher risk of disengaging from care, especially in the early phases of treatment. These findings could potentially be used to identify and intervene on those most at risk for HIV care disengagement.

Violence and conflict: Political, social, structural, interpersonal and family-based

EPD418

Depression as a mediator between Intimate Partner Violence (IPV) and CD4 cell count among men who have sex with men (MSM) living with HIV in China

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Background: Intimate partner violence (IPV) is associated with adverse mental and physical outcomes among men who have sex with men (MSM) living with HIV. Few studies examined IPV as a multifaceted phenomenon, specifically psychological IPV. This study examined the strength of the associations between different forms of IPV and depression and CD4+ cell count, and whether depression mediates the association.

Methods: Data for these analyses were derived from a larger cross-sectional study (2014-2016) on HIV-HCV co-infection among MSM in Shanghai, China (N = 2628). The final sample size for analyses was 1623, excluding HIV-negative MSM and incomplete cases. Using multivariate analyses, we investigated the association between different forms of IPV and CD4+ cell count and depression. We used R package *mediation* to estimate the average causal mediation effects (ACME) and average direct effects (ADE) through three steps (see Table).

Steps	Models	Formulas
1	Mediator model	med.fit <- lm (depression ~ IPV + age + residential status + education + income + ethnicity, data)
2	Outcome model	out.fit <- glm (CD4+ cell count ~ depression + IPV + age + residential status + education + income + ethnicity, data, family = "binomial")
3	Mediation model	med.out <- mediate (med.fit, out.fit, treat = "IPV", mediator = "depression", boot = TRUE)

Results: About 16% of the participants reported some form of IPV experience, with the three most common form of IPV being forced sex (7%), verbal threat of harm (4.6%), and having things thrown at them (4.4%). Among all forms of IPV, verbal threat of harm had the strongest association with more depressive symptoms (β = 3.22, 95%CI [1.13,5.31]) and a CD4+ cell count < 350 (*OR*1.93, 95%CI [1.07, 3.54]). Depression fully mediated the association between verbal threat of harm and a CD4+ cell count < 350 (ACME = .02, 95%CI [.01, .04]; ADE = 0.11, 95%CI [-.01, .23]; Prop.Mediated = .19, 95%CI [0.05, 0.95]).

Conclusions: Verbal threat of harm as a form of psychological IPV appears to have the largest negative effect on depression and CD4+ cell counts among all forms of IPV. More research on psychological IPV is warranted to examine its health impacts.

Our finding suggested depression as a potential pathway between psychological IPV and worse HIV-related health outcomes. Mental health could be a potential focus of intervention to enhance HIV-related health outcomes among MSM with IPV experience.

EPD419

Police abuse, stigma and HIV care utilization in people with HIV who inject drugs in St. Petersburg, Russia

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Background: Various barriers limit care utilization of people with HIV who inject drugs in the Russian Federation (Russia). Police abuse's link with healthcare, stigma and health is not well understood.

This study examined police abuse reported by people with HIV who inject drugs, and assessed its association with HIV care utilization, stigma and mental health.

Methods: In a cross-sectional sample of 111 HIV-positive PWID recruited from October 2019 to September 2020 in Saint Petersburg, Russia, we examined the following outcomes: recent HIV care utilization (past 6 months), Berger HIV stigma Scale, Self-Stigma in Substance Abuse Scale, anxiety (GAD-7), and depressive symptoms (PHQ-9). We used logistic and linear regression to assess the association between each of these outcomes and recent police abuse (unjustified arrests, physical and verbal violence or sexual abuse in past six months). All models were adjusted for age, gender, HIV stigma (where not outcome), past incarceration, and willingness to begin ART (utilization model).

Results: Among 111 participants, 12(10.8%) reported experiencing any recent police abuse in the past 6 months, 4(4%) unjustified arrests, 9(8%) physical and verbal violence, and 1(1%) sexual abuse. Recent police abuse was not associated with recent HIV care utilization (adjusted

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odds ratio (AOR): 2.83, 95%CI:0.79 –10.92, p=0.113) nor with HIV stigma (adjusted mean difference (aMD): -0.10, 95%CI:-2.58 – 2.38, p=0.938). Recent police abuse was positively associated with substance use stigma (aMD:4.54, 95%CI: 0.06 – 9.03, p=0.047), moderate to severe depressive symptoms (AOR: 4.1, 95%CI:1.11 – 17.36, p=0.039) and moderate to severe anxiety symptoms (AOR: 5.15, 95%CI:1.24 – 21.12, p=0.021).

Characteristic	Overall n=111 (column%)	Police Abuse in the past 6 months - Yes n=99 (row%)	Police Abuse in the past 6 months - No n=99 (row%)	p-value
Age Mean (SD)	39 (5)	39 (5)	40 (4)	0.405
Sex Male Female	59 (53%) 52 (47%)	51 (86%) 48 (92%)	8 (14%) 4 (8%)	0.321
Ever Incarcerated No Yes	28 (25%) 83 (75%)	22 (79%) 77 (93%)	6 (21%) 6 (7%)	0.071
Health Care Utilization No Yes	72 (65%) 39 (35%)	67 (93%) 32 (82%)	5 (7%) 7 (18%)	0.108
ART Willingness Not willing Willing	35 (32%) 76 (68%)	31 (89%) 68 (89%)	4 (11%) 8 (11%)	>0.999
HIV Stigma Mean (SD)	24 (4)	24 (4)	25 (4)	0.574
Substance Use Stigma Mean (SD)	32 (7)	31 (7)	35 (7)	0.125
PHQ9 Minimal/Mild Moderate/Severe	70 (63%) 41 (37%)	66 (94%) 33 (80%)	4 (6%) 8 (20%)	0.031
GAD7 Minimal / Mild Moderate / Severe	94 (85%) 17 (15%)	87 (93%) 12 (71%)	7 (7%) 5 (29%)	0.019

Table. Demographics and Clinical Characteristics

Conclusions: People with HIV who inject drugs and report recent police abuse in Russia are likely to manifest higher substance use stigma and impaired mental health.
These findings call for stigma and mental health interventions, and for policy and practice changes regarding the oppressive policing of this HIV key population.

EPD420

Exploring differences in violence and abuse-related healthcare utilization and mortality among people living with and without HIV in British Columbia, Canada

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Background: The syndemic of HIV and violence is well documented, however the impact of violence/abuse among people with HIV (PWH) on healthcare utilization (e.g., hospitalization) and survival is unclear. Limited research has explored how experiences of violence/abuse appear in administrative health data and how this differs by HIV status.
This study seeks to characterize violence/abuse-related administrative health records and mortality among people with and without HIV in British Columbia (BC), Canada.

Methods: The Comparative Outcomes and Services Utilization Trends (COAST) study is a population-based longitudinal cohort examining health outcomes and healthcare utilization of all PWH in BC and a randomly selected 10% general population comparison sample.
We examined violence/abuse-related administrative health records (documented in practitioner [e.g., physicians, nurses] claims and hospitalization records, using abuse and assault-related ICD-9/ICD-9-CM [all practitioner claims; hospital data up until 2001]and ICD-10-CA [hospital data 2001-onward] codes) among people with (n=12,057) and without HIV (n=514,952) from April 1, 1996 to March 31,2013.
We examined differences in the prevalence of violence/abuse (with, without HIV) in administrative health records and, for those who with violence/abuse-related records, differences in all-cause and cause-specific mortality.

Results: Between 1996-2013, 5,668 (1.0%) participants in COAST had ≥1 occurrence of violence/abuse-related health record(s) (3.5% among PWH, and 1.0% among those without HIV). A quarter (124/493) of PWH with ≥1 violence/abuse-related record were female. Over the study period, 810 of the5,668 participantswho had a violence/abuse record died, including 33.9% and 12.4% of people with and without HIV, respectively.
Among 167 PWH who died, the most common cause of death was HIV-related (38.3%), whereas 12.6% died from assault, homicide, or injury-related causes (compared to 28.8%, among people without HIV).

Conclusions: Findings revealed higher violence/abuse-related healthcare utilization among PWH (vs. without HIV), and although the proportion of deaths among patients who had violence/abuse health records was higher among PWH, less PWH died of homicides, assault, or injury-related causes. High levels of mortality and violence/abuse-related healthcare utilization among PWH highlightsthe physical and social risk envrionments PWH are in, andthe need to integrate monitoring and holistic violence prevention and support services within HIV/AIDS care.

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EPD421

Prevalence of potentially traumatic events and symptoms of post-traumatic stress disorder, depression, and anxiety among people with HIV initiating HIV care in Cameroon

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Background: Exposure to potentially traumatic events (PTEs) is common among people with HIV (PWH) and can increase risk of mental health disorders. PTEs and mental health disorders can subsequently contribute to poor HIV treatment outcomes. However, evidence regarding the relationship between specific types of PTEs and symptoms of mental health disorders among PWH in sub-Saharan Africa remains limited.

Methods: We conducted structured interviews with 426 individuals aged ≥21 who were initiating HIV care at three clinics in Cameroon from June 2019-March 2020. Collected data included demographics, mental health symptoms, and lifetime exposure to PTEs. Multivariable log-binomial regression was used to estimate the association between exposure (yes/no) to six distinct PTE types (Table) and symptoms of depression (Patient Health Questionnaire-9 scores>9), anxiety (Generalized Anxiety Disorder-7 scale scores>9), and PTSD (PTSD Checklist for DSM-5 scores>30), separately.

Results: Approximately 20% (n=87) of study participants reported moderate to severe depressive symptoms, 13% (n=54) reported moderate to severe anxiety symptoms, and 16% (n=67) reported symptoms of probable PTSD.

Most participants (96%) reported exposure to at least one PTE with a median PTE exposure count of 4 (IQR: 2-5). The most commonly reported PTEs were seeing family members hitting/harming one another as a child (43%), physical assault/abuse from an intimate partner (42%), and witnessing physical assault/abuse (41%).

In multivariable analyses, the prevalence of PTSD symptoms was significantly higher among those who reported experiencing PTEs during childhood, violent PTEs during adulthood, and the death of a child (Table). No positive associations were observed between the PTEs explored and moderate to severe depressive or anxiety symptoms after adjustment (Table).

	PTSD uPR (95% CI)	aPR (95%CI)[b]	Depression uPR (95% CI)	aPR (95% CI)[b]	Anxiety[a] uPR (95% CI)	aPR (95% CI)[b]
PTE during childhood	**2.69 (1.59, 4.56)**	**1.96 (1.15, 3.33)**	**2.35 (1.52, 3.63)**	1.45 (0.95, 2.19)	**2.00 (1.15, 3.48)**	1.40 (0.81, 2.44)
Violent PTE (adulthood)	**2.05 (1.22, 3.43)**	**1.66 (1.01, 2.73)**	**1.73 (1.13, 2.64)**	1.34 (0.90, 1.98)	1.51 (0.88, 2.60)	1.24 (0.73, 2.10)
Witnessing violent PTE (adulthood)	**1.68 (1.02, 2.75)**	1.17 (0.71, 1.91)	1.33 (0.89, 1.98)	0.91 (0.62, 1.33)	1.57 (0.91, 2.73)	1.15 (0.66, 2.02)
Accident related PTE	1.06 (0.67, 1.67)	1.15 (0.75, 1.77)	1.32 (0.91, 1.92)	1.38 (0.99, 1.93)	1.23 (0.74, 2.04)	1.37 (0.84, 2.23)
Death of a child	1.28 (0.82, 2.00)	**1.63 (1.08, 2.46)**	0.90 (0.60, 1.35)	1.12 (0.77, 1.61)	0.80 (0.46, 1.39)	1.02 (0.59, 1.74)
War	**1.86 (1.20, 2.88)**	0.89 (0.54, 1.49)	1.35 (0.93, 1.97)	**0.67 (0.45, 0.99)**	1.52 (0.93, 2.51)	-

[a]missing anxiety n=2;[b]adjusted for gender and clinic
Abbreviations: PTE- potentially traumatic event; PTSD- post-traumatic stress disorder; uPR- unadjusted prevalence ratio; aPR- adjusted prevalence ratio; CI- confidence interval

Table. Associations between lifetime potentially traumatic events (PTEs) and mental health symptoms among 426 adults entering HIV care in Cameroon

Conclusions: PTEs were common among this sample of PWH initiating HIV care in Cameroon and associated with PTSD symptoms. Research is needed to foster the primary prevention of PTEs throughout the life course in PWH and to address the mental health sequelae of PTEs among PWH.

Risk compensation: Conceptualization, assessment and mitigation

EPD422

Moderating effect of pre-exposure prophylaxis use on the association between sexual behavior and HIV risk perception among Brazilian men who have sex with men

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Background: Pre-exposure prophylaxis (PrEP) is effective at preventing HIV infection in men who have sex with men (MSM). Few studies have explored the moderating effect of PrEP use on HIV risk perception, with risk perception typically measured via a single question. We utilized the Perceived Risk of HIV Scale (PRHS) to estimate the moderating effect of PrEP use on the relationship between sexual behavior and risk perception among Brazilian MSM.

Methods: A cross-sectional, online survey was completed by Brazilian *Hornet* application users ≥18 years old between February-March 2020. This analysis includes data from cis-men who reported sex with men in the previous six months. We evaluated the moderating effect of current PrEP use on the relationship between sexual behavior, measured by the HIV Incidence Risk Index for MSM (HIRI-MSM), and risk perception, measured by the PRHS. Higher HIRI-MSM (range 0-45) and PRHS scores (range 10-40) indicate greater behavioral risk and perceived risk of HIV infection, respectively. Both were standardized to z-scores for multivariable linear regression models.

Results: Among 4,344 sexually active, cis-gender MSM, 448 (10.3%) were currently taking PrEP. Mean HIRI-MSM and PRHS scores were 14.0 (standard deviation (SD) 8.5) and 25.8 (SD 4.9), respectively. Current PrEP users had a higher mean HIRI score (21.0 vs. 13.2, p<0.001) and a lower mean PRHS score (24.6 vs. 25.9, p<0.001) compared to those not taking PrEP. Greater HIRI-MSM scores significantly predicted increased PRHS scores in bivariate linear regression (β=0.19 [95% confidence interval 0.16 to 0.22], p<0.001). In the multivariable model, PrEP use moderated the association between HIRI-MSM and RPHS scores (p<0.001); among current PrEP users, higher HIRI-MSM scores did not predict increased PRHS scores (Figure).

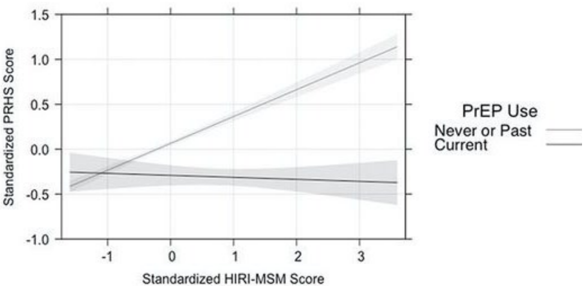

Figure. Graphical representation of the joint effect of sexual behavior (measured by HIRI-MSM) and current PrEP use on HIV risk perception (measured by PRHS). Models were adjusted for age, race, education, sexual orientation, HIV knowledge, steady partner, chemsex, transactional sex and timing of most recent HIV test.

Conclusions: Our results suggest current PrEP users have confidence in its effectiveness as an HIV prevention strategy. Frequent contact with health services required of PrEP users may influence their risk perception.

EPD423

Risk compensation in monogamy and testing: illusions of safety in 'ABCD'-premised HIV prevention communication strategies

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Background: 'Abstinence, Being faithful, Condom usage, and Detection' or ABCD have been considered pillars of behavioural intervention for self-protection and prevention of HIV transmission in Singapore. However, the approach has been rolled out uncritically and lacks sufficient attention to the interpretation and practice of each of these tenets among vulnerable populations.

This study examines the continued relevance and impact of these principles in empowering individuals in HIV prevention.

Methods: Semi-structured qualitative interviews were conducted with a total of 73 participants. These included 56 people living with HIV (PLHIV) of whom 30 were men who have sex with men and 26 were heterosexual men. The remaining 17 comprised healthcare professionals and allied workers. Interviews focused on participants' knowledge of HIV, HIV prevention practices, and sexual behaviour pre-diagnosis. Using an inductive approach data were thematically analysed.

Results: While adherence to ABCD either collectively or in combination is the theoretical gold standard for the prevention of HIV, in practice, singular individual tenets (B, monogamy alone; or D, only frequent testing) are often misinterpreted and conflated with HIV prevention.

Specifically, interview data reveal two forms of risk compensation behaviour: testing treated as a panacea and monogamy as a prophylactic against HIV.

Among participants, frequent testing was equated with safety and in fact, emboldened a continuation of sexual risk behaviours.

Critical for controlling transmission and accessing treatment, testing remains insufficient for (self) protection from infection.

Similarly, participants maintained a misconception that one's practice of monogamy is adequate to protect from infection. Interviewees often presumed condom use was unnecessary for self-protection in stable relationships and felt no need to ascertain their partners' HIV status.

Conclusions: Both practices of monogamy and frequent testing are necessary to reduce the risk of HIV transmission. However, poor communications around prevention messaging may lead to risk compensation in the context of ABCD-premised prevention communication strategies.
Policymakers and sexual healthcare providers should focus on clarifying such messaging and emphasise empowering individuals with a combination of prevention methods.
This is especially important given that novel HIV prevention modalities such as pre-exposure prophylaxis have yet to scale up in many settings, including Singapore.

Adolescents, sexuality and relationships

EPD424
HIV knowledge and risk behaviours among early adolescents aged 10-14 years in Nigeria

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Background: Adolescents remain at risk of HIV due to low risk-perception, poor HIV awareness and the socio-cultural environment. Yet, little is known about HIV knowledge and related risk behaviours among early adolescents in Nigeria. This study examined HIV knowledge and related risk behaviours among adolescents aged 10-14 years in Nigeria.
Methods: We analysed cross-sectional data from the 2018 Nigeria HIV/AIDS Indicator and Impact Survey, a nationally representative population-based two-stage cluster survey. Data on sociodemographic characteristics, risk behaviours, awareness (ever heard of HIV) and knowledge of HIV/AIDS were extracted for respondents aged 10-14 years. HIV knowledge was assessed based on correct responses to all five questions related to common myths and HIV prevention practices among those who ever heard of HIV. We reported weighted percentages and unweighted frequencies. Also, we conducted multivariable analyses to examine associations between HIV knowledge, and other selected variables.
Results: Data was available for 10,301 early adolescents with an average age of 12 years (SD ±1.4); 51.8% were boys and 87.5% were currently enrolled in school. Only 40.6% (4,166/10,301) ever heard of HIV, with teachers being their main source of HIV information.
Only 3.7% (138/4,157) of those aware of HIV correctly answered all the questions regarding HIV; 3.7% (135/4,014) among those currently enrolled in school and 2.6% (3/143) among unenrolled.
Furthermore, 6.9%% (173/2,289) reported ever having sex, 12.1% (1,268/10,171) ever taking alcohol, and 0.7% (65/10,137) ever engaged in illegal drug use. The odds of HIV knowledge were higher among adolescents aged 13 years (aOR: 2.7, 95%CI:1.4-5.4) and 14 years (aOR: 3.5, 95%CI: 1.8-6.9) compared to those aged 10 years. Girls (aOR: 0.6, 95%CI: 0.4-0.9) were less likely to correctly answer all questions regarding HIV compared to boys.
Also, adolescents who reported taking part in any HIV prevention programs had higher odds (aOR: 1.9, 95%CI: 1.2 – 3.0) of HIV knowledge than those who were not exposed to such a program.
Conclusions: Results indicate low comprehensive knowledge of HIV among early adolescents in 2018 in Nigeria. There is need for adolescent-friendly programs to focus on HIV prevention, education, and promote healthy sexual behaviours among early adolescents in and out of school.

EPD425
Charting the journey: shifting young women's HIV risk perception with journaling

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Background: Young women in South Africa, while being significantly more at-risk of acquiring HIV, are not focused on HIV prevention as a meaningful priority (AVAC, Upstream, Final Mile 2019). A successful HIV prevention strategy therefore means supporting young women in their journey to navigate healthy sexual behaviours and relationship management overall.
The My Journey Programme, funded by the Global Fund, developed a Journal to engage young women, support goal setting and planning and shift HIV risk perception.
Description: The journal was designed to inspire and inform: with key health messaging, aspirational quotes, prompt pages to guide reflection and planning, trackers and blank pages for doodling.
It was divided into thematic areas: Me, My body, My mind, My heart, My work, My money, My world, My power.
A local services directory was included in a pocket at the back of the journal. It was distributed to 240,798 young women between 15 and 24 from June 2020 to January 2022.

The content and design of the journal was informed at every stage of its development by validation workshops and feedback surveys.

Lessons learned: A feedback survey (n=300) found that almost 90% rated the journal either good, great or brilliant. Respondents said they read the information pages (72%) and 56% used it for planning and goal-setting. Use of the trackers (36%), the blank pages (35%) and finding services (29%) was evenly spread.

Qualitatively, the journal proved valuable in providing information in a creative, youth-friendly way and incentivised programme engagement. Respondents said it made them feel special, motivated and helped with planning and goal setting. Engaging young women in the process from the beginning through an iterative process, lead to a richer and more effective product.

Conclusions/Next steps: Vulnerable adolescent girls and young women are in need of motivation, inspiration and advice to shift their perception of HIV risk. The My Journey Journal will be made more widely available by digitising some content, adapting it for relevance for all young people, and possible distribution in schools.

Learnings will be applied to other programming with young people, where it will be used to incentivise programme sign-up and PrEP adherence.

EPD426

Co-creating a digital solution to engage out-of-school, low literacy girls in life skills and sexual health during the COVID-19 pandemic

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Background: The EAGLE (Empowering Adolescent Girls to Learn and Earn) project seeks to work with vulnerable, out-of-school, low literacy female adolescents in Mozambique to achieve greater economic and social independence. Activity includes enhancing their literacy and numeracy skills as well as increasing life skills knowledge.

To adapt to the new COVID-19 restrictions, and seeing an opportunity to try new approaches, the original project was significantly redesigned. The life skills component was redeveloped as a digital, individual, home-based learning solution, using low-cost tablets and bespoke, co-created apps.

Description: The EAGLE project is being implemented by VSO in partnership with Light for the World, with funding from Global Affairs Canada. The need to pivot the project due to COVID-19 led VSO to consider how they could make a digital solution relevant to low literacy communities in lower income contexts. VSO contracted Avert to develop a digital Life Skills app.

Continuous engagement of the adolescent girls through co-creation, testing and validation has been a consistent approach across content, branding, user interface, and user experience. This has ensured the app is relevant, culturally appropriate and meets users' needs. For example, the app uses only audio and visuals to ensure it is easy to navigate and intuitive for non-literate users and those with low digital literacy skills.

Lessons learned:

- Low literacy, digitally naive communities can be part of digital developments in health; but user-centred design, co-creation, and tailored infrastructure support will be vital to successful deployment
- Digital learning resources give greater scope for engaging learners and the wider household
- Pivoting to digital approaches could address issues of longer term sustainability and lasting change
- Large projects can pivot - and improve: using existing data, evidence and technical partners is essential
- Applications provided on low-cost tablets offer a significant opportunity to reach marginalised groups with key information that contributes to both empowerment and agency.

Conclusions/Next steps: Rapid adaptation to COVID-19 restrictions is possible by creating partnerships with organisations and communities with existing expertise and knowledge.

Technology can provide a COVID-safe learning environment and apps can be developed to reach non-literate populations using visual and oral narratives that are localised to the context.

EPD427

Sexual behaviour and HIV acquisition risk of female adolescents in high schools from Harare, Zimbabwe

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Background: HIV prevention modalities will need to be packaged appropriately in order to make them appealing to at risk adolescent girls. This study was conducted to identify the HIV acquisition risk and sexual behaviour of adolescent girls in high school in Zimbabwe.

Methods: This was a cross sectional study which was conducted in June 2021 at two high schools from Harare, Zimbabwe. A validated, de-identified, self-administered, face-to-face questionnaire was initially piloted and then rolled out to adolescents aged 13 to 16 years. The tool assessed sexual behaviours which would place participants at risk of acquiring HIV.

Sexually active was defined as penetrative vaginal or anal intercourse. Descriptive statistics are used to present the results of the study. The study was approved by the Medi-

cal Research Council of Zimbabwe (MRCZ/B/2097). Participation in the study required written, informed parental consent and informed participant assent.

Results: A total of 150 adolescent girls participated in this study with a mean age of 15 years (range 13 – 16). Forty-four (29%) of the participants reported that they were sexually active. The sexual practice characteristics of the sexually active participants are shown in the table below:

Variable	Frequency, N = 44
Age of sexual debut in years, n(%)	
13	4 (9)
14	9 (20)
15	19 (43)
16	12 (27)
Nature of sexual debut, n(%)	
Planned	25 (57)
Unplanned	19 (43)
Condom use during sexual debut, n(%)	
Yes	28 (63)
No	16 (37)
Ever practiced unprotected sexual intercourse, n(%)	
Yes	39 (87)
No	5 (13)
Condom use in the Last 12 months, n(%)	
Some of the time	38 (86)
All of the time	6 (14)
Total number of sexual partners since debut, n(%)	
1	29 (66)
2	11 (25)
3	4 (9)
Knowledge of personal HIV status, n(%)	
Yes	16 (36)
No	28 (64)
Knowledge of partner's HIV status, n(%)	
Yes	13 (30)
No	31 (70)

Table.

Thirty-two (72.7%) of the sexually active adolescents had their sexual debut before the age of 16 years (legal age for females to provide sexual consent in Zimbabwe).

Conclusions: Sexually active adolescents indulged in practices exposing them to risk of HIV acquisition. The proportion of sexually active adolescents aware of their HIV status was low. HIV acquisition risk was high in the sexually active adolescents due to the low condom use, unknown HIV status of sexual partners and low age of sexual debut. HIV prevention programmes need to strengthen interventions that educate adolescents on HIV acquisition risk.

EPD428

Adolescent girls and young women's experiences with disclosing oral or vaginal PrEP use: a multi-country analysis

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Background: Stigma and fear of disclosure are barriers to uptake and effective use of oral PrEP among adolescent girls and young women (AGYW) in sub-Saharan Africa. Little research has been conducted on AGYW's disclosure experiences with dapivirine vaginal ring use. Understanding their experiences with the ring compared to oral PrEP may inform strategies to motivate uptake and effective use of both products.

Methods: MTN-034/REACH, a randomized crossover trial, evaluated the safety of and adherence to the monthly ring and daily oral PrEP among AGYW (ages 16-21) in South Africa, Uganda, and Zimbabwe. In a nested qualitative component (N=119), trained social scientists facilitated 16 focus groups, 37 single in-depth interviews, and 3 serial IDIs with each of 24 participants.

All discussions used semi-structured interview guides addressing product use disclosure and subsequent reactions from key influencers.

Results: Participants most often disclosed their product use to family members, followed by sex partners and peers. In most cases, product disclosure resulted in support for study participation or product use, including reminders to take pills, encouragement to keep the ring inserted, or transportation for study visits.

Reasons for nondisclosure of both products included fear of being prohibited from study participation or product use by family and partners, overall discomfort discussing reproductive health matters with men, and fear of stigma and rumors, especially partners believing they are

being bewitched or that participants were being unfaithful. Ring use was disclosed less often than oral PrEP use, mainly because the ring could be used discreetly. Some participants also stated it was easier to disclose oral PrEP use because pills are common in their communities, while the ring was unfamiliar.

Importantly, many participants did not consider nondisclosure of ring use to be a barrier to adherence. However, despite the ring being more discreet, some participants indicated they had to disclose to partners in case partners felt it during sex.

Conclusions: Overall,disclosure of both products yielded positive support from key influencers and encouraged product adherence and study participation.

However, increased community awareness of the ring is essential before rollout to reduce perceived stigma and concerns about key influencer opposition.

EPD429

"It's a 50/50 thing you know": exploring the multileveled intersections of gender and power within the relationships of young South African men and women

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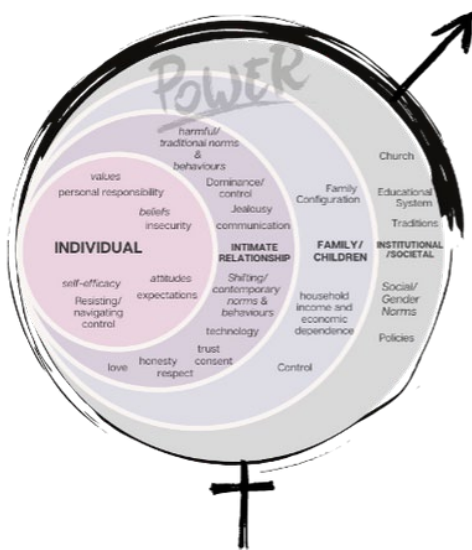
Background: In South Africa, greater understandings of youth intimate relationship dynamics are needed to improve and better measure gender transformative targets within behavioural interventions that have been largely unsuccessful at reducing high sustained HIV incidence among young women. This study explores how gender and power intersect to shape young South African women and men's relationship dynamics that impact HIV transmission in South Africa today.

Methods: Between October 2019 and March 2021, 38 (21 women and 17 men aged 21-30 from Durban and Soweto) previous participants of a longitudinal youth-engaged HIV prevention study (2014-2017) were recruited to participate in qualitative cognitive interviews. Reflecting on their primary intimate relationships, participants answered Strongly Agree to Strongly Disagree to a 4-point Likert-type 13-item sexual relationship power (SRP) scale, explained their answers, and discussed whether and how each item related to their relationship. Participants also discussed the influence of SRP on youth sexual decision-making. Data analysis was guided by Charmaz' constructivist grounded theory and constant comparative approaches. Results were organized using the socio-ecological model.

Results: Gender and power intersected at multiple levels to influence youth relationships (see Figure). This included individual-level gender attitudes, male partner expectations, and women's resistance to dominance; contemporary intimate relationship-level shifting power dynamics, consent, intimacy, and support; and family-level household configuration and parental monitoring of daughters.

Societal-level power inequities and traditional gender norms were resisted by some women through communication and rejection of inequitable relationships, however not by young mothers financially dependent on partners and/or parents. These gender norms were also resisted by some men, however most upheld inequitable power structures through institutional affiliation (e.g., church) and deep-rooted socialized beliefs and attitudes.



Conclusions: Findings provide guidance into how multi-leveled HIV prevention approaches should aim to address inequitable power dynamics at individual, intimate relationship, family, and societal-levels simultaneously.

EPD430

Harnessing the strength of the family to send young mothers back to school; the case for the re-entry policy in Zambia

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Background: Teenage pregnancy is one of the huge challenges facing teenage girls and has largely contributed to increased school drop-outs in Zambia. Recent studies suggest that over 120, 000 teenage pregnancies were reported between 2010 to 2017. This has contributed to the under development of women as many of them grow up not having the requisite education or skills to contribute to their own and national development.

To redress this problem, in 1997 the government introduced the school re-entry policy, targeting young mothers who had dropped out of school because of preg-

nancy. Since then, the government through the Ministry of General Education (MoGE), has allowed girls who fall pregnant to go on maternity leave and then continue with their education after delivery. However, Despite the re-entry policy, there is still a large number of girls who fall pregnant that shun to go back to school. A study by MoGE discovered that from the 15,497 girls that got pregnant in 2009 only 6,679 were readmitted to school.

Description: Family Development Initiatives working in partnership with UNESCO sought to uncover some of the factors contributing towards girls that fall pregnant not going back to school. A sample of 20 young mothers were purposefully sampled.

Lessons learned: Some parents/guardians still see their children as a means of livelihood and therefore prefer to marry them off in comparison to taking them back to school. Secondly, the inability for young mothers to go back to school cannot be entirely attributed to economic challenges. Even when the project was able to meet school requirements, some parents/guardians were still not willing to allow their young girls to go back to school. Finally, there is still a huge information gap regarding the re-entry policy, especially among parents/guardians.

Conclusions/Next steps: To conduct targeted sensitization outreaches on the re-entry policy being implemented targeting households with young mothers.

Additionally, there is a need to link programmes aimed at implementing the re-entry policy to livelihood/rural enterprise development programmes targeting parents/guardians of the affected young mothers. Lastly, create safe space programmes that address the stigma and discrimination targeted at young mothers when they return back to school.

EPD431

Reducing unintended pregnancies among in-school adolescents and young women through comprehensive sexuality education linked to accessible sexual and reproductive health services

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Background: Advancing the health of adolescents, in particular their sexual and reproductive health, including HIV prevention and care; and fully attaining their educational goals, are crucial to national development. However, adolescent girls and young women (AGYW) in much of sub-Saharan Africa, including Zambia, encounter challenges rooted in gender inequalities. Lack of empowerment, inaccurate knowledge on sexuality, and poor access to sexual and reproductive health (SRH) services, result in many AGYW failing to complete school due to early unintended pregnancy (EUP). Comprehensive sexuality education (CSE), integrated in the school curriculum, confers opportunities for imparting scientifically accurate information about SRH, and potential reduction in EUP and risk of HIV acquisition, but much less is known on accelerating reduction through health services linkages.

Description: We developed and tested a model that links provision of CSE to pre-sensitized, responsive SRH services in selected schools in Zambia. Schools where CSE was being routinely provided were randomized into a non-intervention arm (arm1), an intervention arm in which information on available SRH services was provided in schools by health workers to complement CSE, (arm 2), and arm 3 in which pupils receiving CSE were also supported to access pre-sensitized, receptive SRH services.

Lessons learned: Following 3 years of intervention exposure, findings showed a significant decline in in-school pregnancies amongst AGYW in both intervention arms, with arm two exhibiting a more significant decline ($p< 0.001$), having recorded only 0.74 percent pregnancies at endline ($p< 0.001$), as well as arm 3, which recorded 1.34 percent pregnancies ($p< 0.001$), with some schools achieving no pregnancies throughout an academic year. Trends in decline of pregnancies started to show by midline, and persisted in 2020, despite the increases noted in some none-intervention schools during the COVID-19 pandemic restrictions.

Conclusions/Next steps: A model linking CSE to SRH information and receptive health services is effective in reducing in-school pregnancies, and potentially risky sexual behaviors.

Gender issues and gendered relationships

EPD432

Sexual life of male migrant sex workers in Chiang Mai, Northern Thailand: a qualitative study

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Background: Recent studies indicate that increasing numbers of cross-border male migrants enter sex work in Northern Thailand. Limited research on the sexual life of this population restricts our understanding of their health risks and the effects of HIV prevention.

This study examines the sexual practices of this group.

Methods: This is a qualitative arm of a mixed methods study conducted among 198 male migrant sex workers in Chiang Mai, the capital city in Northern Thailand, between March-October 2019. A subgroup of 21 males were invited to participate in in-depth interviews. Recruitment was via NGO staff coordinating with owners/managers of 11 male sex work venues. Thematic analysis related to sexual practice during their work and private life.

Results: Participants were drawn to sex work by the income, a relatively comfortable job and flexible work, with the hope to seek a better life for themselves, and to support families back home. Many entered this work through friends, relatives and informal networks. Participants' clients were gay men, transgender women and heterosexual women. All participants perceived themselves as general men and preferred having vaginal sex with women. They performed assertive anal sex only with male-at-birth clients. Many used sex videos, alcohol and/or Viagra to boost sexual arousal when having sex with same-sex clients. Participants reported using condoms quite often with their clients, but rarely with regular female partners. The main reasons for the low condom use with regular partners were stigma and non-disclosure of sex work.

Quotes

Entering sex work

"I worked in the orange orchard in Fang [rural district] until I was 16 years old. Then, I moved to Chiang Mai and started a job at a super market. I was responsible to take care of fragile goods. I was very clumsy. So, I asked one of my friends if she knew where to find a new job. On the day we met, we looked for a job all day, but we couldn't find one. Then, she gave me a nice cloth and told me that maybe in the meantime I should try this job [in male karaoke bar]. She said I would still get paid for 300 Baht a day [basic rate per day for a laborer] even if I did not have any client." (IDI 06, 18 years old)

"For this job [sex work], I am doing it while I work in a construction site as a painter. I come here to do it [sex work] when I don't have a painting job. I have a friend working in a massage parlor. So, I joined him and have been here for 5-6 months already." (IDI 12, 22 years old)

Sexual practices

"I don't do receptive sex. I go out only with the clients I like. Some just ask me to do it externally [non-insertive sex]. Once, I had a try to have a receptive sex, but it didn't work as it was not my thing. I have sex with male clients because it's for work." (IDI 16, 20 years old)

"It is more fun to have sex with women because, when having sex with men, it's not lubricated as the way I do with women. When I have to have sex with gay or Katoey [transgendered women], I have no erection. I need to take the drug that I can buy at work. It's a small package of orange-flavored gel. If I don't take the drug, it will take very long for me to get erection." (IDI 11, 24 years old)

"People don't know what kind of job I am doing. They don't know how I feel about the clients. It's just my job. This is my work, but I am not gay. Other people may think that if I am not gay, why am I still working in this job? Many gay men don't do this job. But I am a man, and this is my work." (IDI 08, 24 years old)

Condom use

"For me, I protect myself when I have sex with anyone except my girlfriend, I will protect myself. I have confidence in my girlfriend because she has a normal life. She doesn't do the job like me." (IDI 14, 25 years old)

"I usually use condom with clients, but not with my girlfriend. I did not use condom because we both know each other. She is my girlfriend and I know that she does not have anyone else. (IDI 13, 23 years old)

"My girlfriend warns me to protect myself if I happen to have sex with other people. We don't use condom when we have sex. I try to protect myself every time I go out with the clients. So, I am confident that I am not getting any sexual transmitted diseases." (IDI 02, 20 years old)

Stigma and non-disclosure of sex work

"My girlfriend doesn't know I work in this bar. She only knows that I go out to drink with friends." (IDI 04, 20 years old)

"My girlfriend only knows that I work as a masseuse. She doesn't know other details. I think she may not be able to accept it. If she does know and not accept it, I have to let it be. It's her rights, right? I never use condom with her as she gets the pills." (IDI 21, 23 years old)

Conclusions: The study provides some insights into the attractions of sex work for male migrant sex workers and their risky sexual practices that reflected individual and cultural issues. Designing of effective policy implementation to prevent HIV transmission among this group needs to consider the gender issues and gendered relationships, along with the reality of their everyday lives.

EPD433

Mechanisms of a relationship-focused intervention to improve PrEP use among young women in western Kenya: a secondary analysis of the Tu'Washindi na PrEP pilot study

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Background: Pre-exposure prophylaxis (PrEP) is a highly effective biomedical tool to prevent HIV acquisition; however, inequitable gender dynamics continue to impede PrEP uptake and adherence among adolescent girls and young women (AGYW) in sub-Saharan Africa. Tu'Washindi na PrEP was an AGYW co-designed, multilevel intervention that targeted relationship dynamics and successfully increased PrEP uptake and adherence during a pilot randomized trial. This analysis examines potential mechanisms, operating at the individual, partnership, and community levels, through which the intervention may have improved PrEP use.

Methods: From April-December 2019, 6 DREAMS Safe Spaces (n=103 AGYW) in Siaya County, Kenya were randomized in a 1:1 ratio to receive either the intervention plus DREAMS standard of care (SOC) services or SOC services only over a 6-month period. Multivariable regression models were used to estimate the intervention effect on 8 proposed mechanisms of change (PrEP readiness, hope for the future, partner knowledge of PrEP, disclosure of PrEP interest or use to a partner, relationship self-efficacy, sexual relationship power, social assets, and PrEP stigma).

We then estimated the association between each mechanism and PrEP uptake within 6 months and PrEP adherence in the previous month. A fixed effect term was used to account for clustering; all analyses used alpha=0.10 given the pilot nature of the study (i.e., small sample size and short duration of follow-up).

Results: Intervention arm participants had significantly higher disclosure of PrEP interest or use to a partner (risk ratio (RR): 1.26, 90% confidence interval (CI): 1.05,1.52) and partner knowledge of PrEP (RR: 1.13, 90% CI: 1.02,1.25); there were no effects on other mechanisms.

While not statistically significant, disclosure of PrEP use/interest to a partner was associated with higher PrEP uptake (RR: 1.25, 90% CI: 0.54,2.92) and adherence (incidence rate ratio (IRR): 2.47, 90% CI: 0.49,12.46).

Conclusions: Findings support the hypothesis that increasing partner knowledge of PrEP and facilitating disclosure can bolster AGYW PrEP use in sub-Saharan Africa. However, the intervention did not affect many of the proposed mechanisms of change which suggests that other, unmeasured pathways may have driven improvements in PrEP uptake and adherence and that AGYW may still face substantial gender-based barriers to PrEP.

EPD434

Piloting community drop-in centres to increase HIV Testing among men who have sex with men in Kampala amidst Covid-19 first and second lockdowns: insights from AIDS Information Centre-Uganda

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Background: Men who have sex with men (MSM) accounted for 13% of new HIV infections in Uganda. MSM experienced homophobic stigma, discrimination, physical violence and negative reaction from healthcare workers forcing them to hide their identity and sexual orientation due to the 2021 Anti-homosexuality Act. Because of the laws which criminalize same-sex orientation, MSM stop accessing HIV services leading them to risk-behaviors that drive transmission.

Description: AIC used its Ministry of Health Accredited community-based drop-in-centers (DiCs) to provide MSM with a comfortable place to relax, rest, get information, receive program services, and interact with each other and with HIV prevention, care and treatment program staff. MSM received information on Health and HIV Prevention, care, treatment; were mobilized to take up services; gathered for events and activities; received psychosocial services and support and referral to other services; received condoms and lubricants; received HIV self-testing kits, exchange needles and syringes. The DiCs provide safe spaces to discuss, plan and respond to drug adherence challenges, discrimination, stigma, and violence from the community.

Lessons learned: Through May 2021, a total of 120 MSM Peer Leaders were identified and trained to educate their peers on HIV prevention including providing prevention commodities such as condoms and lubricants, campaigning for better access to services. Over 1,345 hotspots were mapped 11,234(11.2%) MSM received MSM-Friendly HIV Testing services. 512 eligible MSM who tested negative received PrEP services. Identified 1,021 HIV-positive members of MSM society who were linked to treatment (25%). Of the 1,021 MSM on treatment 991(97%) accessed viral load testing services and 811(82%) of those tested are virally suppressed.

Conclusions/Next steps: MSM in Kampala are at substantially higher risk for HIV than the general adult male population. It is important to target MSM with HIV prevention campaigns using DiCs.

EPD435

Developing interventions to improve ART initiation and retention among men living with HIV in Malawi: a qualitative study across the treatment cascade

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Background: Men in sub-Saharan Africa are underrepresented in both antiretroviral therapy (ART) initiation and retention, yet there are few interventions that reach men across the treatment cascade. Interventions across the cascade should be prioritized, as they may improve overall engagement and program scalability.

We examined similarities and differences in barriers and facilitators to men's engagement across ART initiation and retention in Malawi to identify which cross-continuum interventions may work for men.

Methods: In-depth interviews (IDIs) were conducted with HIV-positive men ≥18 years in 2016-2017. Medical chart reviews were used to identify potential participants from 10 health facilities in Central and Southern Malawi.

We interviewed two categories: men who have never initiated ART or who initiated ART late (≥14 days after testing HIV-positive); and men who initiated ART ≥ 6 months ago but were late for a recent ART appointment. Audio recordings were transcribed, translated to English, and coded using Atlas.ti v8.

We conducted a secondary analysis of data using constant comparison methods.

Results: Forty men living with HIV were interviewed—19 in the initiation category (never initiated or initiated late) and 21 in the retention category (on ART ≥6 months and late for an ART appointment). Mean age was 35 years, 87% were married, and 89% had children.

Long wait times, being required to attend multiple facility visits, lack of privacy at clinics, and fear of unwanted disclosure were major barriers to HIV care for both initiation and retention. Poor knowledge of ART was frequently discussed as a barrier to ART initiation, while unexpected or prolonged travel was primarily mentioned as a barrier to retention.

Key facilitators for both initiation and retention included previous positive experiences with health facilities and providers. Facilitators unique to initiation included having examples of men who successfully engaged in ART; unique facilitators for retention included having support from a spouse or male friends/relatives.

Conclusions: Men face similar barriers and facilitators for both ART initiation and retention. Holistic interventions that incorporate fast, convenient, and private service de-

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livery strategies, as well as positive patient-provider interactions and peer support, may effectively improve men's engagement across the treatment cascade.

EPD436

HIV-related risk behaviors among mak nyah (transwomen) sex workers in Malaysia

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Background: The Malaysian government reported high HIV prevalence among mak nayh. Also, few studies reported HIV risk behaviors in relation to discrimination and violence against mak nyah, arrests and harassment by police and religious authority, and human rights abuses.
This study aims to quantitatively describe HIV risk behaviors among mak nayh in relation to psychosocial factors.
Methods: Based on purposive sampling, 150 mak nyah were recruited in Kuala Lumpur. A structured survey questionnaire was administered to describe sexual risk and substance use behaviors in relation to psychosocial factors. Correlates of psychological conditions and risky sexual behaviors were examined using bivariate and multiple regression analyses.
Results: The participants who had engaged in sex work had higher levels of depression (CES-D scale) (p = .03) and lower levels of self-esteem (p = .09) than those who had not engaged in sex work; there were no significant group differences on transphobia and identity with mak nyah communities. Almost all sex workers (82.7%) reported having always used condoms for anal sex with customers in the past 30 days, but 27.9% reported not always using condoms when customers offered extra money.
A regression analysis revealed that unprotected anal sex with customers was significantly and independently correlated with unstable housing situations and higher levels of mak nyah community identity.
Conclusions: Mak nayhs' mental health issues, such as depression and self-esteem, must be addressed in relation to sex work and ethnicity or religious background.
Future study must investigate positive and negative influences of involvement in and identifying with mak nyah community. Importantly, sex workers' unstable housing and willingness to engage in condom-less sex for extra money must be addressed through individual counseling and support groups.
Because of the COVID-19 pandemic, public health resources were shifted to testing and treatment of COVID19-infected patients at large; however, mak nyah sex workers are further exposed to riskier health and social conditions due to their gender identity and expression. CBOs and government agencies must address HIV prevention and treatment for mak nyah in relation to COVID-related health issues.

EPD437

Trans women, HIV and the carceral system: a profile of trans women in San Francisco

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Background: Trans women are disproportionately represented in the carceral system, experiencing high rates of arrest and incarceration. Trans women also have among the highest prevalence of HIV of any population, estimated at 19.9% worldwide. Research has found that one fifth of trans women report ever being arrested and one in six trans women report being in prison, higher than the national average for cisgender women. Given these intersections, we examined the level of HIV services access among trans women while incarcerated.
Methods: Data are from the community-based, cross-sectional survey of trans women in the San Francisco site of the National HIV Behavioral Surveillance for Transgender Women (N=201). Trans women were recruited through respondent-driven sampling from July 2019 to February 2020. Eligibility criteria were self-identified women, trans women, or other gender and assigned male at birth; living in San Francisco; English or Spanish-speaking; and 18 years or older. Structured interviews collected demographics, history of arrest (12 months, ever), and HIV risk and status.
Results: Among 201 participants, over half identified as underrepresented minorities: Hispanic/Latina (37.3%), Black (20.9%). The average age was 44.5; 85% lived below the poverty limit, 79 (39.3%) reported being HIV-positive.
Overall, 135 (67.2%) participants reported being ever held or arrested, of whom 63 (46.7%) reported being HIV-positive. Ever being held or arrested was associated with being HIV-positive (p=0.002). Eighteen trans women (22.8% of those living with HIV) reported having their first HIV-positive test in jail or prison.
Of the 28 (13.9%) participants who reported being held or arrested in the past 12 months, 18 (64.3%) reported receiving an HIV test while being held or arrested, leaving more than one-third (35.7%) who had not received an HIV test while being held or arrested.
Conclusions: Trans women in this San Francisco-based study confirm the national profile of very high levels of incarceration and HIV. Given the high rates of trans women engaged in the carceral system, it is imperative for this system to address the unmet health needs of trans wom-

en. The carceral system may be a primary point of health care intervention for diagnosis and treatment initiation among trans women.

EPD438
Relationships between disclosure of sexual identity and PrEP-related sociobehavioral outcomes among youth in the United States: ATN protocol 142

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Background: Disclosing one's sexual and gender identities to family, friends, and clinical providers can be empowering for sexual and gender minority (SGM) youth and may facilitate access to preventative care, including HIV testing and pre-exposure prophylaxis (PrEP).
Simultaneously, psychosocial and structural processes including stigma and fear inhibit disclosure among SGM youth. Understanding demographic profiles and PrEP-related attitudes and beliefs of SGM toward disclosure could inform better tailoring of HIV prevention initiatives.
We conducted an exploratory analysis of three dimensions of disclosure to: parents, friends, and providers. Each dimension was evaluated to assess its relationship with PrEP indicators including but not limited to sociodemographics, stigma, confidence, and stereotypes.
Methods: The full-scale P3 (Prepared, Protected, emPowered) 3-arm randomized controlled trial was conducted under the NIH/NICHD-funded Adolescent Medicine Trials Network for HIV/AIDS Interventions (protocol 142). Data collection occurred across nine clinical sites in the United States from May 2019 to September 2021. Participants were young men who have sex with men and young transgender women who have sex with men, 16-24 years (N=264).
Results: Age was associated with disclosure (non-disclosure) of sexual identity to providers, potentially indicating a need for age stratified approaches in clinical settings to promote PrEP, as well as presence of age-related stigma in healthcare settings. PrEP confidence, PrEP stereotypes, and PrEP disapproval were associated with disclosure to family and peers, but not to providers. Anticipated HIV stigma was associated with disclosure to family, but not friends or providers. See Table 1 for statistical outcomes.
Conclusions: Many HIV-related social science studies focus on direct impacts of individual-level behaviors, such as disclosure, upon treatment and prevention continuums of care. However, evaluating the effects of disclosure as a mediator or potential precursor to care may offer important insights to improve service delivery and clinical care approaches, as well as identifying potential intervention targets and opportunities.

Measures/Scales	Disclosure | Family	Disclosure | Peers	Disclosure | Providers
PrEP Confidence Scale PrEP Difficulties Scale	**0.16*** -0.075	**0.16*** -0.12	-0.01 -0.03
PrEP User Stereotypes	**-0.19****	**-0.24****	-0.08
PrEP Disapproval by others	**-0.21****	**-0.39****	-0.12
PrEP Beliefs (Disinhibition)	0.00	0.06	**0.21****
PrEP Community Norms	**-0.15***	**-0.29****	-0.04
Anticipated HIV Stigma	**-0.18****	-0.03	-0.03
Perceived HIV Risk	-0.08	**-0.15***	**-0.17***
Age	0.02	0.07	**0.21***

Table 1: Associations between sexual identity disclosure and study variables

EPD439
A symbiotic relationship? Gender inequality in HIV prevention among key populations in Uganda

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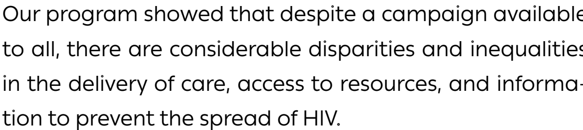
Background: HIV continues to afflict women and young girls disproportionately over the world, particularly in Sub-Saharan Africa. Women's ability to negotiate condom use and protect themselves from HIV is often hampered by financial inequities and intimate partner violence in relationships. Reduced access to sexual and reproductive health (SRH) services, including HIV testing and treatment, is closely linked to gender inequality in education and social autonomy among women.
Description: We launched the 'iKnow Kati' (meaning I know my status) HIV awareness and prevention edutainment campaign in five rural districts across Uganda. This method focused on tackling and eradicating the myriad disparities that continue to aid the spread of HIV.
The campaign activities included youth-friendly HIV awareness and prevention messages, community youth involvement drives and outreaches, door-to-door mobilization, and musical performances to mobilise people to receive integrated HIV and SRH information and services.
Lessons learned: While the campaign reached 47,600,000 people through online interaction for HIV awareness and prevention messaging, out of 707 people who received health outreach services, only 218 were female.
A total of 1869 health services were conducted, of which only 209 related to women's health services. The World AIDS Day event presented a nationwide advocacy opportunity for young people to campaign for access to SRHR information and HIV programming that is tailored to the needs of young people.



Our program showed that despite a campaign available to all, there are considerable disparities and inequalities in the delivery of care, access to resources, and information to prevent the spread of HIV.

Conclusions/Next steps: To eliminate AIDS as a public health issue by 2030, the battle against HIV must begin with individual responsibility to eliminate disparities. There are considerable disparities and inequalities in the delivery of care, access to resources, and information to prevent the spread of HIV. Increased service provision for adolescent girls and young women through tailored programming such as the evidence-based DREAMS (determined, resilient, empowered, AIDS-free, mentored and safe) intervention, aimed at reaching this key population will help to address inequalities.

Gender-transformative approaches

EPD440
Factors and priorities influencing satisfaction with care among women living with HIV in Canada: a Fuzzy Cognitive Mapping study

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Background: Engagement along the HIV care cascade in Canada is lower among women compared to men. Women living with HIV describe a lack of healthcare services that address their comprehensive care needs and priorities.

This study aimed to identify factors influencing satisfaction with HIV care, their causal pathways and relative importance to satisfaction with care from the perspective of women living with HIV.

Methods: We used Fuzzy Cognitive Mapping (FCM), a participatory research method to integrate existing literature and the experiential expertise of women living with HIV. A map of factors influencing satisfaction with HIV care was derived from a mixed-studies literature review. Between December 2020 and March 2021, Peer Research Associates conducted individual FCM interviews virtually with 23 women living with HIV in Canada.

Participants adjusted the literature-based map, adding and removing factors, specifying causal relationships, and assigning weights between -5 and +5 to indicate the strength and direction of influence on satisfaction.

Using content analysis and transitive closure, we synthesized individual maps into an aggregate map categorizing the factors influencing satisfaction with HIV care. The aggregate map was analyzed using network analysis to determine the most central considerations in women's satisfaction with HIV care.

Results: Ten categories influencing satisfaction with HIV care were identified. The most central and influential category was 'feeling safe and supported by clinics and healthcare providers,' followed by 'accessible and coordinated services' and 'healthcare provider expertise.'

The latter two of the top three categories closely reflected themes from the literature-based map, with factors expanded and redefined by participants.

Additional categories captured gendered social and health considerations not previously specified in the literature. These categories included 'healthcare that considers women's unique care needs and social contexts,' 'gynecologic and pregnancy care,' and 'family and partners included in care.'

Conclusions: Women living with HIV emphasized the importance of care approaches that increase their feelings of safety and support. The maps enabled us to capture stakeholder perspectives not reflected in the literature.

The findings also contribute to our understanding of how gender shapes care needs and priorities among women living with HIV.

EPD441
There is no word for that in my language: investigating modern masculinities through the lens of young men living in urban contexts

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Background: Men's masculinities have an impact on HIV transmission, as understandings of what it means to be a man influence condom use, HIV-testing, and HIV

treatment adherence. This study aims to understand the different types of masculinities and their underpinning perceptions on notions of power, decision-making and authority in relationships of young men in two South African contexts disproportionately affected by HIV and violence.

Methods: Between October 2019 and March 2021, 17 men aged 21-30 from Durban and Soweto participated in qualitative cognitive interviews in which they reflected on their primary intimate relationships to answer a 13-item sexual relationship power (SRP) scale with a 4-point Likert-type scale (Strongly Agree to Strongly Disagree).
Subsequently, participants elaborated on their answers, and explained how each item related to their relationship. Participants also discussed the influence of SRP on youth sexual decision-making. We conducted a thematic analysis of this data to explore different types of masculine identities within young men's intimate relationships.

Results: We found three main masculine identities within young men's intimate relationships:
1. Traditional,
2. Modern, and;
3. Mixed.

Traditional masculinities drew upon ideas of patriarchal gendered expectations, leading to control over partner's whereabouts and attire, and sexual and reproductive health (SRH) decision-making (e.g., contraceptive use).
Modern masculinities drew upon 'liberal' gendered expectations of equitable decision-making in the relationships, including around SRH. Men with 'Mixed masculinities' drew on elements of both 'modern' and 'traditional' masculinities in their relationships. The multiplicity of masculinities provides a way to understand where change is possible in different contexts.

Conclusions: Findings highlight the integral and complex connection between masculinity, SRP dynamics in youth relationships, and HIV risk behaviour (e.g., condomless sex, multiple concurrent sexual partnerships, and controlling partner's reproductive health choices). As such, critical efforts are needed to advance gender transformative initiatives that are relevant and context specific.

EPD442
Investing in adolescent girls and young women's leadership and voice in the HIV response

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Background: New HIV infection rates among adolescent girls and young women (AGYW) are staggeringly high in sub-Saharan Africa. Due to persistent unequal gender norms and gender inequalities, including violence against women, stigma and discrimination, denial around AGYW sexuality, young women face significant barriers in accessing HIV services. UN Women's programme focused on empowering AGYW to demand non-discriminatory HIV services and engage with women leaders and decision-makers to advocate for policy change that includes their voices and perspectives.

Description: Conducted across fifteen countries in sub-Saharan Africa over twelve months, this programme invested in the feminist leadership of over 250 AGYW while mobilizing decision-makers to commit to addressing gender-related barriers for successful HIV prevention among AGYW. This was achieved through a mentorship programme linking AGYW with women of power; a youth-led advocacy campaign to amplify AGYW's voices; creating platforms for AGYW to share their experiences; and calling global leaders to address barriers to AGYW's access to services while increasing their engagement in the HIV response.

Lessons learned: This programme used collaborative and youth-centered approaches to break through stigma and denial around AGYW sexuality, AGYW seeking HIV and sexual health services and gender norms. It demonstrated the importance of gender-responsive and empowerment-focused programming to strengthen AGYW's leadership skills to engage with key decision-makers and exercise their rights to advocate for policy change.
Bringing together various networks of AGYW leaders resulted in peer-to-peer learning and engagement, translating to the creation of a collective of AGYW utilizing their power and voice towards more inclusive HIV policies and programming.

Conclusions/Next steps: Focusing on transforming gender norms and improving the understanding of power in relationships, especially how they influence HIV risks, is critical to consider in national programmes. Programmes supporting AGYW through mentorship and advocacy creates a cadre of empowered, young leaders who can improve their communities while also holding existing women leaders in this space accountable for change.
Scaling up or replicating strategies utilized in this initiative will work towards transforming gender inequalities in the HIV response and improve access to HIV prevention, treatment and care services for AGYW.

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Sexual concurrency and sexual networks

EPD443
Sexual practices and sexually transmitted infections in heterosexual women and men who make sexualized use of drugs ("Chemsex")

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Background: The sexualized use of drugs (SUD), also known as chemsex, has been associated in recent years with the intentional use of substances to facilitate, maintain and/or enhance the sexual experience in men who have sex with men (Bourne et al., 2015). This use of substances to enhance the sexual experience can lead to risky sexual behaviors (Palamar et al., 2018) and to a higher risk of contracting sexually transmitted infections (STIs) (Gertzen et al., 2021), including HIV (Achterbergh et al., 2020). The evidence and information available is very scarce among heterosexual people (Heinsbroek et al., 2018).
We aim to analyse the prevalence and gender differences in risky sexual practices and STIs among heterosexual people who do SUD.

Methods: Cross-sectional study by anonymous self-administered online survey from February to May 2021. Participants: heterosexual women, men and non-binary persons aged 18 years or older, engaged through social networks messages, personal messages, and promotional posters. Statistical analysis by SPSS™ v.26

Results: The sample consisted of 1181 heterosexual persons between 18 and 78 years old (mean age = 24.4, SD = 7.4). Approximately 12% of the participants had been involved in the SUD. No differences were found in the prevalence of SUD between men and women. SUD was related to having more sexual partners, having penetrative sex without a condom, practicing a fetish, and having been diagnosed with an STI. Men involved in SUD reported more sexual partners (30.8% vs 10.8%). Women on SUD referred a constant use of condoms in their sexual intercourse more frequently (37.7% vs 21.7%).

	Total respondents		Non SUD		SUD		Stats (X_2)
	N	%	N	%	N	%	p
N of sexual partners (last 24 months) (N = 1167)							.000
None	360	30.8	30	20.5	330	32.3	
1 – 5	680	58.3	78	53.4	602	59.0	
6-10	88	7.5	26	17.8	62	6.1	
11-20	29	2.5	8	5.5	21	2.1	
>20	10	0.9	4	2.7	6	0.6	
Frequency of condom use (last 24 months)							0.000
Never	195	17.1	27	18.5	168	16.9	
Sometimes	165	14.4	33	22.6	132	13.2	
Half of times	97	8.5	17	11.7	80	8.0	
From time to time	87	7.6	16	11.0	71	7.1	
No sexual intercourse practice	206	18.0	13	8.9	193	19.4	
Fetish (n=1129)	160	14.2	37	27.0	123	12.4	0.000
BSDM* (n=1181)	91	8.0	21	14.3	73	7.1	0.002
Fisting (n=1181)	4	0.3	1	0.7	3	0.3	0.446
Barebacking (n=1181)	64	5.4	16	10.9	48	4.6	0.002
Serosorting (n=1181)	4	0.3	2	1.4	2	0.2	0.023
Others (n=1181)	28	2.4	7	4.8	21	2.0	0.042
Any STD (last 24 months) (n=1181)	63	5.3	17	11.6	46	4.4	0.000
Syphilis	2	0.2	2	1.4	0	0.0	0.000
Gonorrhoeae	2	0.2	0	0.0	2	0.2	0.594
Chlamydia	11	0.9	4	2.7	7	0.7	0.016
Hepatitis B	1	0.1	1	0.7	0	0.0	0.008
Hepatitis C	1	0.1	0	0.0	1	0.1	0.706
HIV	7	0.6	2	1.4	5	0.5	0.195
Other STIs	22	19	6	4.1	16	1.5	0.033

*Bondage, Discipline, Domination and Submission, and Sadism and Masochism

Table.

Conclusions: SUD has not been studied broadly enough among heterosexual people yet. SUD has been associated with health implications. It is necessary to design programs aimed at reducing the incidence of the health consequences of SUD, both in men and women, regardless of their sexual orientation.

Living with HIV

EPD444
HIV-related burdens among people living with HIV in mainland China: a mixed-methods study

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Background: HIV infection has become a manageable disease in the highly active antiretroviral therapy (HAART) era. In this context, we aimed to evaluate the HIV-related burdens among people living with HIV/AIDS (PLWHA) in mainland China.

Methods: A mixed-methods study was conducted among PLWHA in China April-December 2021. A telephone-based semi-structured interview of PLWHA was conducted to understand HIV-related burdens among PLWHA.
Thematic analysis was employed to qualitatively analyze potential themes and develop a questionnaire. An online survey among PLWHA was conducted to collect detailed information about HIV-related burdens.
We classified burdens into three categories: low (1-2 points), medium (3-5 points), and high burden (6-7 points) based on a 7-point Likert scale. Sociodemographic characteristics were compared using the Mann-Whitney U test and the Kruskal-Wallis test. Ordinal logistic regression was applied to examine the determinants of burden.

Results: We enrolled 30 PLWHA (gender: 83% male; age: median 34 years, IQR: 27-45) in the interviews and 904 PLWHA (gender: 91% male; age: 32 years, 27-38; time since HIV diagnosis: 3.2 years, 1.6-5.4; CD4 count: 47% were >500 per mm^3) in the online survey. 83% (n=25) of respondents reported HIV-related burdens at different aspects in the interviews. 91% (n=828) PLWHA reported living with a medium or high level of burdens in the online survey, and 93% (n=837) reported discrimination from society to be burdensome. T
he most prevalent emotional consequences were being worried about comorbidities (94%) and medication side effects (91%). PLWHA who scored higher on their health in terms of diet, sleep, and exercise were less affected by HIV burdens (odds ratio [OR], 0.29; 95% confidence interval [CI], 0.19-0.44). PLWHA who had no sex partner or had a HIV-negative partner were less burdensome (0.71; 0.51-0.97).

Burdens were higher among those with lower/unknown CD4 counts (1.53; 1.02-2.28). Participants with lower education had a lower disclosure burden (0.55; 0.40-0.75). The emotional burden was higher among those diagnosed with HIV within three years (2.35; 1.36-4.06) and those with low income (1.55; 1.04-2.30).

Conclusions: Our findings highlight high HIV-related burdens among PLWHA in China. Systematic measures that involve all stakeholders are urgently needed to reduce stigma and discrimination against PLWHA.

EPD445

Personality and adherence to ART in PLWHA: a clinical correlation study with outpatients in a specialized hospital in São Paulo, Brazil

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Background: Objective was to assess personality traits in patients living with HIV/AIDS (PLWHA), considering general patterns of behaviour and attitude, and to verify its association with the perceived social support, expectation of self-efficacy to follow antiretroviral treatment (ART) and the adherence by means of immunological markers.

Methods: Clinical, exploratory, descriptive, and cross-sectional study carried out in a specialized outpatient hospital in São Paulo, Brazil.

Results: Participants were PLWHA, approached randomly in the outpatient waiting room. Evaluation of socio-demographic variables, personality traits, perception of social support and self-efficacy expectations to follow ART; application of a structured questionnaire, HumanGuide Test, Scale of Perceived Social Support in HIV (PSS-HIV) and Scale of Self-efficacy Expectations of Adherence to Antiretroviral Treatment; review of medical records; descriptive and correlation data analysis.

Results: 66 PLWHA were included, 22 women and 44 men (65,8% HSM), mean age 50 years (*SD*=12.19). Differences in personality characteristics correlated significantly to positive perceived social support: sociability and optimism (*r*=0.393; *p*=0.001), ability to deal with changes (*r*=-0.284; *p*=0.024) and flexibility (*r*=-0.276; *p*=0.029).

Scores indicative of good prognosis on the PSS-HIV showed significant positive correlation with CD4+ T cell and viral load (X^2=9.721; *gl*=2; *p*=0.008). Low expectation of self-efficacy to follow ART correlated with dependence of social approval and recognition (*r*=-0.302; *p*=0.017), high expectations in the dimension Negative Emotional Experiences and Physical Conditions correlated with an increase in the CD4+ T cell count (*r*=0.286; *p*=0.023) and decrease of viral load (*r*=-0.305; *p*=0.015). High scores on sense of responsibility and care for life correlated with an increase in the CD4+ T cell count (*r*=0.297; *p*=0.019).

No correlations were found between sociodemographic variables (age, education, race, marital status) and self-report on adherence with perceived social support, expectation of self-efficacy and immunological markers. Anova Post Hoc showed no significant differences in the mean scores of personality traits between genders, except for the dimension Imagination, higher in MSM (*M*=2.93) compared to women (*M*=0.24) (*p*=0.006).

Conclusions: Personality may influence the adherence to ART by affecting psychosocial mediators such as perceived social support and self-efficacy expectations to follow ART, which affects the adherence to ART and, consequently, the individual's immune system.

Adaptation to living with HIV for individuals, families and communities

EPD446

Resilience of HIV-positive parents and their children within the family context in Bangladesh: A way of achieving 'self'

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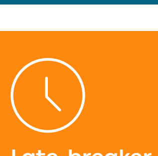
Background: Whilst HIV prevalence is low in Bangladesh, the number of HIV-positive parents and children is increasing. Despite this, HIV-affected families have, the focus of much research being 'risk' groups. This research examined the factors contributing to resilience of parents and children affected by HIV within the family context of Bangladesh.

Methods: A qualitative approach using grounded theory methodology was adopted for this research. Data was collected by in-depth interview with 19 HIV-positive parents and their 19 HIV-positive or -negative children as dyad, recruited with the support of two self-help groups of HIV positive people, in two settings, namely Khulna and Dhaka in Bangladesh.

Results: Finding worth, meaning and purpose in life enabled participants to make physical progress, as well as cope with thoughts of death. Thus, the opportunity of receiving support from self-help groups and extended family members helped them cope and adapt to living with HIV. The findings indicate that HIV-positive parents in Bangladesh were motivated to cope with their post-infection lives from an increased sense of familial responsibility especially for their children. They indicated that their children's presence increased their feelings of security and warmth for them. The findings of this research demonstrate that both the parental and child sense of obligation and sense of self and meaning increased after having diagnosed HIV within the family.

Conclusions: The findings of this study demonstrate that the provision of social support helped to minimize the magnitude of the participants' distress and enhanced their mental well-being to deal with their new sense of self in a more positive way.



EPD447
HIV-positive *Machos* in Colombia: silence, invisibility and vulnerability

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Background: The Colombian HIV prevention and treatment policies, known for their inclusiveness of diverse gender dynamics, have systematically excluded heterosexual men from prevention and healthcare, most profoundly impacting men living in poverty. In this context, self-identified heterosexual HIV-positive men are often forced to bear the intensity of HIV in silence and without institutionalized care. The absence of support for these men and the political blindness towards the suffering often makes their chronic diseases fatal.

Methods: Between 2013 and 2018, I visited Cali, Colombia, three times, completing 18 months of fieldwork. I conducted many hours of participant observation at clinics, hospitals, people's homes, NGOs, and public events from which I have fieldnotes. I conducted individual interviews with 36 HIV-positive men, 30 HIV-positive women, 3 HIV-positive couples, and 30 NGO and health care professionals. Interviews were transcribed, codified, and analyzed in Maxqda.

Results: Heterosexual men in Colombia are not "at-risk" populations for HIV, and thus they are ignored by prevention measures, treatment protocols, budgets, and policies. Within this context, the appearance of an HIV-positive diagnosis in the life of heterosexual men strikes them without accurate information, support, and care, leaving them ruminating on their questions and anxieties about how to live with HIV on their own and often refusing to take ART until they reach AIDS phases.

However, men's mothers and female partners are the ones that counterbalance the impact of the HIV-positive diagnosis through practices of care and love, allowing men to resituate and signify their existence and cope with the virus.

Conclusions: Heterosexual men in Colombia typically find out about their diagnosis when their immunological systems collapse or when their partners become pregnant.

This phenomenon speaks of an invisible group in Colombia's HIV/AIDS panorama, which needs recognition and tailored support. Leaving these men without proper care negatively affects women's and families' health and well-being and leaves Colombian HIV care policies outdated.

The HIV epidemic in Colombia and the region is changing. Understanding heterosexual men and their role in these changing dynamics is a unique opportunity to update our knowledge of HIV in Latin America today.

EPD448
Barriers, facilitators and recommendations for HIV care in a rural, low-prevalence state: findings from a state-wide needs assessment

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Background: Montana is a low-prevalence state for HIV. However, while rates of diagnosis have remained relatively stable, a higher proportion of people newly diagnosed with HIV in Montana receive a late diagnosis in comparison with national data. These data may indicate gaps in the HIV care continuum are driving delayed testing and care.

As part of a statewide needs assessment, this study explores barriers and facilitators to HIV care among people living with HIV (PLWH) in Montana.

Methods: Using a semi-structured interview guide based on the HIV care continuum model, we conducted qualitative interviews with 17 PLWH in Montana. Participants from nine counties were recruited via the state's Ryan White Program. Participants were predominantly white (82%), male (88%), and identified as gay, queer, or bisexual/pansexual (82%). Interviews were analyzed using a general inductive approach to identify barriers, facilitators, and recommendations for HIV care across the care continuum.

Results: Participants described barriers to HIV treatment in the state, including difficulties accessing HIV medications, the lack of available and accessible HIV specialty care providers, and lack of general provider knowledge about HIV testing and treatment. Facilitators of HIV treatment included being part of a community or social network with strong HIV awareness, connecting to HIV care via community-based organizations, and having social support to seek and maintain treatment.

Recommendations for improvement focused on three key areas:

1. Improving prevention by increasing HIV awareness campaigns and implementing "opt-out" HIV testing practices;
2. Increasing access to HIV specialty providers and improving general provider knowledge and training around HIV; and,
3. Improving system and care coordination between providers and facilities across the state.

Conclusions: Montanans living with HIV are not benefiting equally from advances in HIV prevention and treatment due to unique barriers to care related to both the low prevalence of HIV in the state and the challenges of rural health care provision. However, connections with HIV-aware individuals, communities, and organizations can help facilitate initiation and maintenance of HIV treatment. Public health interventions, health system-level change, and increased healthcare provider knowledge are necessary to strengthen HIV care for this rural population.

EPD449

Ageing well with HIV: Factors associated with improved quality of life for people living with HIV aged 50 years and over in Australia

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Background: In 2020, over half of the 26,457 people living with HIV (PLHIV) in Australia were estimated to be aged 50+. Despite this, there is limited data describing quality of life (QoL) in this population. Understanding the factors that influence QoL as PLHIV age is critical to ensuring that tailored health and support models are available and effectively targeted. We describe the QoL of a national sample of PLHIV aged 50+ years and identify health and social factors associated with QoL.

Methods: Data were collected between December 2018–May 2019 through the HIV Futures 9 survey, a national cross-sectional survey assessing the health and wellbeing of PLHIV. Surveys were self-completed through either an online or hard-copy form. QoL was measured using PozQoL, a validated QoL scale for PLHIV.

The primary outcome of quality of life was defined as a binary variable, with a PozQol score of three or higher indicating a "good" quality of life. Logistic regression estimated the association between selected factors and quality of life, adjusting for age, education level and gender.

Results: Among the 319 participants aged 50+ years, approximately two-thirds (64%) received a PozQoL score that indicated a good overall quality of life. The odds of a PozQoL score of three or more was higher among participants in a regular relationship (aOR:1.94;95%CI:1.13–1.37). The odds of a PozQoL score of three or more was lower among participants who often or sometimes ran out of food (aOR:0.40;95%CI:0.22–0.73), experienced financial stress in the previous 12 months (aOR:0.36;95%CI:0.22–0.61), were currently experiencing depression (aOR:0.37;95%CI:0.22–0.65), experienced stigma related to HIV in the previous 12 months (aOR:0.38;95%CI:0.23–0.63) and felt isolated from the HIV community (aOR:0.22;95%CI:0.12–0.39).

Conclusions: We found that lower QoL among older PLHIV is associated with reduced accessibility of social services, as well as personal stressors including poor social connectedness and financial precarity. Our findings provide novel data on QoL among the growing population of people ageing with HIV in Australia, and offer important insights for the development of policy and practice.

EPD450

The effects of aerobic exercise on flow-mediated vasodilation among older persons with HIV

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Background: Older persons with HIV (OPWH) are twice as likely to develop cardiovascular disease (CVD) approximately one decade younger than persons without HIV. Endothelial function measured with brachial artery flow-mediated vasodilation (FMD) is used to identify individuals at high risk for vascular dysfunction and CVD. Aerobic exercise has been shown to mitigate CVD risk by improving endothelial function in persons at high risk for developing CVD. The purpose of this study is to examine changes in FMD associated with exercise among PWH.

Methods: Intervention participants were randomized to an aerobic exercise intervention and walked at 60-70% of their maximal heart rate for 60 minutes per day, 4 days per week. Attention control participants performed stretching and flexing movements 5 days per week. Brachial artery FMD was performed at baseline and at 6-months. Reactive hyperemia was measured at 60-and 90-seconds post cuff deflation and maximum post-hyperemia diameter determined. Univariate analysis of covariance was performed to test differences between intervention and attention control groups for FMD measurements at 6-months adjusting for baseline.

Results: The majority (n=97) were male (n=55, 57%) and African American (n=84, 87%). Reactive hyperemia was improved in persons in the aerobic exercise intervention group compared to the attention control group at 60 ($F_{(1,94)}$=5.346, p=0.023) and 90 seconds ($F_{(1,94)}$=5.351, p=0.023).

Conclusions: This secondary analysis examining FMD changes with exercise showed that moderate intensity walking improved endothelial function in OPWH.

Aerobic exercise may be a cost-effective addition to usual care for OPWH that may improve vascular function and lower CVD risk in this population.

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EPD451

Improving access to ART& psychosocial support to reduce interruption of treatment among the Elderly with HIV in the highlands of South Western Uganda: lessons from Save and Heal Uganda (SAHU)

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Background: In Uganda, the HIV prevalence among the general population is at 6.2% (UPHIA 2017), whereas the prevalence among Elderly 55 yrs. and above is estimated to be increasing. Numerous factors impede the provision of HIV/AIDS care and prevention services among the Elderly in rural areas of Uganda, the major one being long distances from the care and treatment centers & lack of a clear policy on HIV programming among the Elderly. South west Uganda had the highest prevalence of HIV at 7.9% among adults 55yrs and above (UPHIA 2017).

Description: SAHU is a non-governmental organization working to improve the livelihoods of the rural based Elderly & their households. Our approach involves a close and friendly collaboration with the Elderly and their households through; provision of psychosocial support, health education, home visits, phone calls with help of our trained community volunteers. Partnering with HIV care and treatment centers in Kabale District, we establish appointment dates for ART pickups, Viral load bleeding, and other essential medicines such as anti-Hypertensive and anti-diabetic drugs.

We do pre appointment reminders through home visits and phone calls, we do home drug deliveries using motorbikes commonly referred to as "Boda Bodas", take vital parameters and viral load bleeding to our clients scattered in the Hilly parts of Kabale District. Clients who need medical attention are ferried to the Health facilities on our bodabodas, as well as providing transport in cash were necessary.

Lessons learned: Between March 2020 and December, 624 Elderly people were under our Livelihood program, 75/624 (12%) are HIV positive, 49 (65%) females & 26 (35%) males, 3/75 clients were virally non suppressed. The median age was 62 yrs.26/75 (34.6%) had other co infections,17/75 (11 females & 6 males) on anti-hypertensive drugs, 9/75 (4 Femalea & 5 Males) on anti-Diabetic drugs, whereas 16/26 (61%) were on both anti-hypertensive and anti diabetic drugs.187 drug refills were made, 24 home to hospital ferries were made, 210 psychosocial sessions conducted, 164 reminder calls made. None of the clients was hospitalized.

Conclusions/Next steps: Home care support and transport for people Aging with HIV in rural areas is key in improving treatment outcomes & psychosocial wellbeing.

EPD452

Community input to develop an online platform for older adults aging with HIV: preliminary results from potential users in three U.S. cities

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Background: Older people living with HIV (PLWH) face unique health challenges and social isolation exacerbated by the COVID-19 pandemic. Our study aims to create an online platform to connect older (aged 50+ years) PLWH with community resources, service providers, and social support.

To obtain a broad understanding of older PLWH's experiences during the COVID-19 pandemic and potential for the online platform, we surveyed potential users from three U.S. cities. Here, we report our preliminary findings.

Methods: During July-November 2021, we conducted online focus groups (n=9) and individual interviews (n=26) with PLWH age 50+ from three cities (Los Angeles, CA, Palm Springs, CA, and Tampa, FL) on the topic of creating an online platform. Participants completed a survey that gathered data on demographic characteristics, depressive symptoms (PHQ-2), and mental health experiences during the COVID-19 pandemic. Descriptive analyses of the data were performed.

Results: 84 PLWH aged 50-82 years (mean=60.8 years) participated. Most (n=67) identified as male. 47.6% (n=40) of participants identified as White; 33.3% (n=28) Black/African American; 15.5% (n=13) Hispanic/Latino/a/x. Nearly all (n=75) reported daily email/internet use and 66.7% (n=56) had ≥1 social media account or dating app. 22.6% (n=19) of PHQ-2 respondents screened positive for potential major depressive disorder. Participants in focus groups and interviews reported increased social isolation during the COVID-19 pandemic that negatively affected their mental health. When answering questions about what to include in the development of an online platform, one focus group participant said, "I think one of the major challenges for me during this whole pandemic has just been the isolation and trying to find something to do to even get through the day".

Conclusions: Social isolation and depressive symptoms were common among study participants. A high percentage of daily internet use suggests that an online platform holds promise as an intervention to improve social connection and depressive symptoms among older PLWH.

EPD453

Childhood sexual trauma and opioid use among older adults living with HIV

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Background: The prevalence of trauma, including childhood sexual trauma, is higher among populations living with HIV compared to the general population. Research estimates have shown the prevalence of trauma to range from 10 to 90% among PLWH. The opioid epidemic is currently affecting many areas in the US, and data has shown an increase in opioid use in the Southern US since the start of the COVID-19 pandemic.

Childhood sexual trauma has been linked to substance use, but research focusing on specific substances are lacking. In addition, studies examining this association among older adults living with HIV are scant.

Therefore, the aim of this study was to examine the relationship between childhood sexual abuse and opioid use among older adults living with HIV.

Methods: Data were obtained from 91 older adults living with HIV (age range: 50 – 80 years; mean (SD): 58.1 (6.7) years) from an HIV clinic population in South Carolina during the COVID-19 pandemic (April to June, 2021). Descriptive statistics were used to obtain prevalence estimates of childhood sexual abuse and opioid use.

Crude and multivariable logistic regression models, adjusting for age, gender, race, and education, were used to determine the association between childhood sexual abuse and opioid use.

Results: Approximately 32% of the study population reported childhood sexual abuse while 10% of the study population reported opioid use (once per month, two to four times per week, four or more times per week vs. never). The crude model showed that older adults living with HIV who reported childhood sexual abuse had eight times higher odds (OR: 8.05; 95% CI: 1.49 – 43.4) of reporting opioid use.

However, after adjusting for age, gender, race, and education, older adults living with HIV who reported childhood sexual abuse had 13 times higher odds (OR: 13.8; 95% CI: 1.33 – 144.3) of reporting opioid use.

Conclusions: Childhood sexual trauma was linked to opioid use among older adults living with HIV. Trauma-informed interventions addressing childhood sexual trauma may be warranted, which may help to attenuate opioid use among this population.

Future research should determine the relationship between childhood sexual abuse and other specific substances (e.g., alcohol and marijuana).

Confronting stigma: Lessons learned

EPD454

Experiences of intersecting stigma among young people living with HIV in Uganda

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Background: HIV/AIDS-related stigma is invoked as a persistent and pernicious problem standing in the way of implementation science. Although remarkable scientific gains have been made in the last 20 years in HIV treatment with effective tools, including antiretroviral therapy, pre-exposure prophylaxis, and post-exposure prophylaxis (PEP), more than half the people living with HIV (PLWHIV) worldwide do not access care. Demographics such as the youth and women still bear the brunt of HIV. It is a geo-fenced epidemic and highly concentrated in SSA (70%), with approximately 1.4 million HIV-positive people in Uganda. In 2018, 33% of children living with HIV in Uganda were not in care.

The purpose of the study was to identify the structural and community barriers that prevent young people living with HIV (YPLHIV) from seeking HIV care services in Uganda.

The study sought to answer the following research question: How does stigma impact care-seeking services among YPLHIV in Uganda?

Methods: The study was conducted through qualitative grounded theory methods and used semi-structured interviews and focus group discussions involving 31 YPLHIV, ages 18 and 25, recruited through urban HIV clinics and counseling facilities in Kampala between December 2020 and May 2021 (see table 1).

The interviews were recorded in English, transcribed verbatim, and analyzed using Dedoose, a cross-platform App for analyzing qualitative and mixed methods research data.

Results: The findings highlight the following themes under each barrier.

Theme 1: Structural barriers to HIV services, including governmental policies, social isolation, and normalization of stigma.

Theme 2: Stigma practices to include discrimination and prejudice, intersectional stigma, including internalized, perceived, and interpersonal. See figure 2: A multi-level framework of understanding stigma.

Conclusions: The findings inform HIV implementation that scientific gains could be curtailed if community stigma remains unaddressed.

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Significantly, it is critical to address the social determinants of health, including HIV stigma and related intersecting individual factors. Intentionally engaging communities to involve a synergy of government, private, and community-level initiatives will address societal stigma. Policy advocacy in sharing information is a recommended HIV management strategy.

EPD455

Digital storytelling to address stigma and discrimination in Uganda

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Background: The 2019 National People Living with HIV(PLHIV) stigma index study in Uganda indicated that HIV-related stigma and discrimination presents major barriers to HIV care and prevention programs. Largely stigma and discrimination hinders the uptake of HIV/AIDS testing, treatment and counseling services.

At community level, HIV-related stigma and discrimination is an obstacle to accessing and benefiting from effective prevention and treatment programs. Due to lack of disclosure therefore involving PLHIV in digital storytelling and engaging the community contributes to efforts directed at reducing HIV stigma.

Objectives: To increase awareness of the dangers of HIV/AIDs related stigma and impact on access to care and treatment at individual, household and community level.

Description: A total of 40 PLHIV champions were identified to shared their personal untold stories on stigma and discrimination the impact of stigma and made call to action to put to an end to stigma and discrimination through spreading love not hate towards people living with HIV.

The stories were popularised on NAFOPHANU whatsapp groups, Facebook, twitter, website and you tube on to create awareness at community.

A total of 30 key advocates including CSO leaders, artists, politicians, religious leaders and young people developed 2 minutes video clips with key messages on stigma reduction in different languages these were shared on social media (Facebook, twitter, you tube Tik Tok & whatsup) by 20 social media influencers and 10 tik tokers.

Lessons learned:

- Engagement of communities increased resilience to stigma & discrimination thus increased demand and utilization HIV/ SRHR services.
- Working artists, politicians, religious leaders and young people created awareness around stigma reduction thus commitment to challenge the vice were made.
- The short video clips prompted conversation HIV, stigma and discrimination thus giving smooth area for PLHIV either to disclosure or not.

Conclusions/Next steps: Digital storytelling to address stigma and discrimination in Uganda reached over 6,000,000 people through Facebook, twitter, you tube Tik Tok & whatsup.

This needs to be replicated in other countries for increased awareness on dangers of HIV/AIDs related stigma and impact on access of HIV prevention, treatment & support for individuals, household and community.

EPD456

Reducing self-stigma among HIV positive pregnant young women and adolescent girls living in slums of Kampala, Uganda: insights from Afrislum's expert clients' delivered cognitive behavioral therapy model in Uganda

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Background: Self-stigma is linked to HIV positive living; yet there is a gap in interventions addressing self-stigma especially in resource limited settings like Uganda where expert psychologists are few, and psycho-social interventions are barely present.

With support from VIIV Healthcare Postive Action, Afrislum Uganda is implementing an innovative psychosocial therapy model whereby HIV Expert Clients were trained to offer Cognitive-Behavioral Therapy (CBT) group sessions to HIV positive, pregnant Young Women and Adolescents Girls (YWAG) to facilitate change in their conception of HIV, sense of self-worth and to empower them with techniques to deal with Self-stigma.

Description: In Q4 October 2021, Afrislum rolled-out the Experts' client delivered CBT model at three public health facilities serving the urban-poor in Kampala-Uganda.

A total of 141 HIV positive pregnant YWAG were identified and enrolled into the monthly CBT group sessions. At each health facility, four HIV expert clients were identified, trained to deliver CBT group sessions. Each expert client was allocated a cohort of 8-12 participants to engage 10 times throughout their EMTCT journey.

This model has10 different but interrelated sessions delivered with-in 10 months. By Dec 2020, 124 beneficiaries had been engaged in the CBT group sessions. Through the one-hour monthly CBT sessions, beneficiaries are taught cognitive, coping and assertive skills in order to empower them to deal with negative thoughts, interpersonal problems and stigmatizing reactions.

CBT sessions are delivered in presence of expert psychologists who offer continuous support supervision and assessment of the expert clients as part of capacity development.

Lessons learned: Afrislum's CBT Model has created an opportunity for participants to freely share their HIV-related experiences with their peers. This has motivated participants not to miss their clinic days.

Through the CBT sessions, HIV pregnant YWAG have been empowered to control their thought processes-especially the negative thoughts. Some changes in norms and practices have also been noted i.e., openness and engaging with others, lessening in worrying about the future, and increased self-care, and self-confidence.

Conclusions/Next steps: Psycho-social interventions like Afrislum's CBT model that utilize lay-counselors, offer cost-effective alternatives to addressing stigma in resource limited settings where expert psychologists and psychological support services are scarce.

Experiences and impacts of antiretroviral therapy

EPD457

Relationship between Multi-Month ARVs Dispensing (MMD) and viral load suppression among PLHIVs accessing care in Nigeria: results from a retrospective study using 2000–2021 data

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Background: Multi-month dispensing (MMD), a differentiated service delivery model that provides PLHIV with 3 or 6 months of ART, aims to reduce barriers in accessing lifelong ART, improve retention in care, and improve viral load (VL) suppression among clinically stable clients.

We analyzed the relationship between various modes of MMD and VL suppression among clients on MMD in 16 USAID-supported states in Nigeria to inform continual implementation of differentiated model of care in HIV programming.

Methods: Data from USAID implementing partner electronic medical records in 16 states were analyzed cross-sectionally. Between September 2000 and September 2021, a total of 568,272 clients were on long-term ART. Clients who received 3–5 and 6 months plus of antiretroviral were classified as MMDs.

Only active clients were included in the analysis. Multivariate regression was used to examine the relationship between VL suppression and MMD status for all clients, controlling for age and sex.

Results: Of the total 568,272 active clients analyzed, 495,800 (87.2%) had a documented VL result; 4.5% (n=22,151) of clients with documented VL were on <3 months treatment (no MMD), 20.6% (n=102,059) were on 3–5 months MMD, and 74.9% (n=371,590) were on 6 months plus MMD. 95.6% (n=474,216) had viral suppression of <1000 c/ml as of September 30, 2021. 42.5.5% of clients on no MMD, 95% of clients on 3–5 months MMD and 99% of clients on 6 months plus MMD had suppressed VL. There were no sex differences in VL suppression across groups.

Clients on 3–5 months (AOR 25.7, 95% CI 24.7-26.7, P value 0.0002) and 6 months plus MMD (AOR 132, 95% CI 127-138, P value 0.0002) were more likely to be virally suppressed than clients on <3 months treatment.

Clients on 6 months plus MMD (AOR 4.82, 95% CI 4.62 - 5.04, P value 0.0002) were more likely to be virally suppressed than clients on 3–5 months MMD.

Conclusions: The study demonstrated high viral suppression among PLHIV on MMD compared to clients on no MMD. Clients on 6 months plus MMD showed better viral suppression than clients on 3–5months MMD.

Key words: PLHIV, MMD, Viral Suppression, Nigeria

EPD458

"Only if it was better": perspectives and preferences on long-acting injectable antiretroviral use among people living with HIV

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Background: In 2021, the Food and Drug Administration (FDA) approved long-acting injectable antiretroviral therapy (LAI-ART) for HIV treatment. LAI-ART will have two dose options for in-clinic administration: a four-week (FDA approved) and an eight-week dose (FDA approval pending). LAI-ART will provide people living with HIV (PLWH) more options in HIV treatment frequency and delivery, while also raising new questions and concerns.

The purpose of this study was to characterize LAI-ART perceptions and preferences among PLWH.

Methods: We conducted qualitative in-depth interviews with 71 PLWH receiving HIV care at three clinics in the eastern United States from December 2019 through April 2021 as part of the Shared Decisions when Choosing between Long-Acting Injecting or Oral Therapy (SELIGO) study. We purposively sampled participants by viral suppression, gender identity, ethnicity, and language preference. Per participant preference, we conducted interviews in English (n=40) and Spanish (n=31) using a semi-structured interview guide to elicit narratives of HIV care experiences, and LAI-ART perspectives and preferences. Interviews were transcribed verbatim and analyzed in their original language using narrative analysis, thematic coding in Dedoose, and matrices to compare findings across sites and participant characteristics.

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Results: Most participants were virally suppressed (n=52) and, on average, were aged 46 and traveled 44 minutes to their clinic. Most preferred the 8-week LAI-ART dose to reduce clinic visits. Compared to oral ART, potential LAI-ART benefits included reduced adherence burden and risk of unwanted HIV disclosure, and LAI-ART possibly being "better" or "stronger".

LAI-ART concerns included side-effects, effectiveness, safety, developing resistance due to missed doses, dislike of injections, cost, and inconveniences resulting from increased clinic visits. Desired support to facilitate LAI-ART use included transportation and financial assistance, appointment notifications, service bundling, fast injection visits, and more LAI-ART information.

Conclusions: Findings highlight the need to understand perceived LAI-ART benefits and concerns among PLWH to inform introduction and promote uptake of this treatment innovation.

Discussions about LAI-ART need to balance patient interest with concerns about safety, effectiveness, and logistics to help determine which HIV treatment will work best for their individual needs and circumstances. PLWH may also benefit from logistical support to facilitate access and optimize LAI-ART use.

EPD459

Poor HIV treatment adherence and barriers to medication management among adolescents in Western Kenya

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Background: HIV incidence in Kenya is declining in all age groups except in persons 15-24 years of age. HIV-related morbidity remains the leading cause of death among adolescents. For many, maintaining consistently high adherence to antiretroviral therapy (ART) is a major challenge.

The overarching purpose of this study was to better understand the situation of adolescents living with HIV (ALWHIV) in western Kenya to inform potential interventions to improve their ART adherence. The specific objectives were to:

1. Measure adherence levels among ALWHIV using electronic adherence monitors (EAM) and
2. Investigate individual, interpersonal, community, and structural level barriers to ART adherence in this population.

Methods: We conducted a mixed methods study from August to November 2018 at the comprehensive care center of Jaramogo Oginga Odinga Teaching and Referral Hospital in Kisumu, Kenya. Study participants included ALWHIV aged 15-19 years and three groups of key informants (KIs): teachers, caregivers, and healthcare providers.

We first measured adolescents' ART adherence via EAM for three months, and categorized their adherence by optimal (≥95%) or sub-optimal (<95%).

We then conducted individual in-depth interviews (IDIs) and focus group discussions (FGDs) with adolescents and KIs. IDIs and FGDs were analyzed in NVivo using a thematic approach.

Results: A total of 24 ALWHIV completed adherence monitoring and participated in IDIs along with five participants in each KI group (15 total). Two FGDs were conducted with adolescents and one FGD with each group of KIs (five total). Only two ALWHIV achieved optimal adherence; nearly half (11, 46%) had <80% adherence.

Qualitative data revealed that school-based challenges posed the most substantial barriers to effective medication management, including an unsupportive school environment and culture, lack of confidentiality, difficulty keeping friends, and fear of verbal and physical abuse by teachers and peers.

Additional adherence barriers included the size and taste of medicines, and noisy medicine containers. Political violence and economic hardship hindered service access. HIV-related stigma was a cross cutting theme at all levels.

Conclusions: We identified formidable barriers to ART adherence among ALWHIV in western Kenya, particularly in the school environment. School-based interventions are urgently needed for this vulnerable population

Growing up with HIV: Specific needs and interventions for children and adolescents

EPD460

Understanding needs of South African adolescents living with perinatally-acquired HIV to inform a smartphone app to improve social support and treatment adherence

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Background: Innovative interventions are needed to support adolescents living with perinatally-acquired HIV (APHIV). Our team is adapting an evidence-based smartphone app-delivered intervention co-created with youth in the United States to improve treatment adherence among APHIV in Cape Town, South Africa. The intervention is designed to foster social support, facilitate connection with peer mentors and health experts, offer tools for self-monitoring, and present users with engaging information.

We conducted this study to understand the health needs and preferences of APHIV in this setting to inform the adaptation process and the development of tailored content to meet their needs.

Methods: We conducted in-depth interviews with 15 APHIV (15-19 years) between January – March 2021. The interviews addressed APHIV's health-related challenges and unmet needs, including questions about the impact of the COVID-19 pandemic. Participants learned about potential app features and content topics and were asked to rank both according to their interests. Data were analyzed using applied thematic analysis using an interactive cycle of coding and consensus building.

Results: Most participants described the instrumental role of social support, though many reflected on the limitations of support provided by family, the limited opportunities for peer support given anticipated stigma and fear of disclosure, and the negative impact of COVID-19 on the frequency and quality of clinic-based support groups.

Consequently, participants were enthusiastic about the prospect of communicating with others in the app's forum, with many noting the benefits of doing so anonymously. Participants also discussed the importance of connection to health experts (both lay and professional) and rated the ask the expert features highly, reflecting their desire to receive individualized and timely feedback from health experts. Finally, participants reported informational gaps around prevention of mother-to-child transmission, PrEP, and treatment as prevention. Participants were enthusiastic about features of the app (e.g., activities and resources) that could address these unmet gaps.

Conclusions: Our findings highlight the needs of APHIV for additional social support and connection to health experts. The results support the inclusion of all existing app features and underscore the importance of customizing content to address informational gaps, tackle stigma, and support disclosure.

EPD461

Oral History of paediatric HIV in the UK: a participatory approach

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Background: The spoken history of HIV has been important in order to capture and preserve our past and to inform the present and the future. However, there are gaps in current historical records about HIV. Cutting edge, grassroots projects are still needed to capture the experiences of those most hidden from history. The voices of the young who grew up with HIV are currently missing from historical records.

Description: The on-going Positively Spoken Project gathers the life histories of 50 young people (now aged 16-30 years) who grew up with HIV in the UK (70% African).

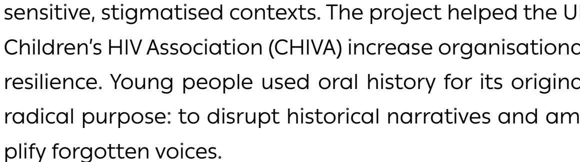
Young people had a leading paid role in planning, shaping and delivering this sensitive, peer-driven project in partnership with professional oral historians at the British Library and with psychological support. We archived the stories for the future.

We share our participative experiences of designing training, adapting methodology from trauma contexts and asserting youth agency over planning, procedures and archival products.

Lessons learned: By definition, the project posed privacy challenges by revealing mothers' HIV diagnoses. These paediatric stories were hence closed for 70 years under complex recording agreements. Young people helped devise protective procedures to use a limited amount of the data for current research outputs and to archive the remainder for systematic release at specified future times.

We developed new ethical practices, devised exciting supported batch peer interviewing techniques and challenged international oral history protocols for the future, working closely with specialist archivists.

Conclusions/Next steps: The outcomes are significant in making it possible to capture and preserve different experiences of perinatal HIV treatment and care through the eyes of a child. Peer interviewing gathered highly original insights and gave youth agency and ownership of the diverse life stories, often being shared for the first time in



sensitive, stigmatised contexts. The project helped the UK Children's HIV Association (CHIVA) increase organisational resilience. Young people used oral history for its original radical purpose: to disrupt historical narratives and amplify forgotten voices.

EPD462

Can an adolescent HIV psychosocial attrition risk assessment tool predict lost to follow up? Preliminary findings from Uganda

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Background: Retention in HIV care impacts medication adherence and viral suppression, and factors influencing attrition from HIV care are multifactorial for adolescents. To help identify adolescents at risk for loss-to-follow-up (LTFU) and more effectively target interventions to improve retention and viral load (VL) suppression, we are developing and evaluating an adolescent psychosocial attrition risk assessment (APARA) tool for predicting attrition from HIV care among adolescents in Uganda.

Methods: The APARA tool will be implemented from November 2021 through July 2022. 20 facilities were randomly selected for implementation, stratifying by region and urban/rural designation.

Adolescents living with HIV, aged 15-19 years, who are currently on antiretroviral therapy (ART) and active in care at the facility are eligible for enrollment. Healthcare workers will administer the APARA tool at enrollment and each standard-of-care visit for 6 months.

Patient data such as ART visit dates and most recent viral load are extracted from study participants' medical records. While LTFU status can't yet be analyzed, a stepwise backwards multivariate model was used to determine preliminary predictors of unsuppressed VL.

Results: By December 2021, 461 adolescents had been enrolled. Participants were on ART for an average of nine years; about 10% were on ART for less than one year. Of the 424 participants with VL results, 92% were virally suppressed.

An adolescent was more likely to be unsuppressed if they were initiated on ART at an advanced stage of HIV (Odds Ratio (OR): 11.13), on second line treatment (OR: 6.04), had fair or poor adherence (OR: 7.39), or if they had missed any of their previous three appointments (OR: 4.65).

An adolescent was more likely to be suppressed if they received an ARV refill for 60 or more days (OR: 0.07).

Conclusions: Early results have shown what risk factors are associated with unsuppressed VL. The study's final analysis will assess whether scoring the APARA tool and finding a specific cut-off point can accurately predict participants' LTFU status. The tool is expected to assist the program in identifying adolescents at risk of attrition early-on so appropriate or extra support can be provided to minimize LTFU.

EPD463

Enhancing lives of children in HIV-positive widow-headed households: A peer-led program in southern India

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Background: HIV-positive widows face the double burden of being husbandless and living with a stigmatizing illness. Karnataka state in southern India is home to 25,000 HIV-positive widow-headed households in 2018, likely an underestimate. Most reside in low-income communities with limited access to resources and poor HIV care access. Many face stigma, violence and discrimination, resulting in deep negative impact on their children's lives.

To reach these children and improve their quality of life, Sneha Charitable Trust (SCT)'s peer leader program worked closely to empower HIV-positive women-headed households. We present the preliminary outcomes after one year (January-December 2020) of this intervention.

Description: SCT peer leaders (HIV-positive youth with demonstrable leadership potential) identified 175 children and adolescents who resided in HIV positive widow-headed households.

The intervention had four components;

i. Family counseling on addressing stigma, HIV disclosure, ART adherence, continuing education of children, and sustainable livelihoods;

ii. Facilitating access to health services, including ART;

iii. Provision of essential nutrition supplies during the strict lockdown period; and,

iv. Establishing linkages with government schemes that can benefit the HIV positive widow-headed families.

The program promoted HIV-positive single mothers to be change agents in the community and helped them to reach out to other vulnerable women.

Lessons learned: The peer-led program enhanced the adherence to ART among HIV-positive single mothers to 94% and among children to 92%. 80%of HIV-positive single mothers expressed that they were able to disclose their HIV-positive status to their children.

Assistance with existing government schemes led to 55% women getting enrolled in the widow pension scheme and 60% women availed ration cards that would provide them access to basic household needs and nutritional supplies.

Prior to the program initiation, school drop-out rate was high among children of these women; however the peer leaders' engagement also encouraged the widowed mothers to pay attention to education, and over 90% of the children from HIV positive women-headed households got enrolled in school.

Conclusions/Next steps: The peer-led pilot program empowered HIV-positive single mothers by enhancing their self-confidence and self-efficacy that positively impacted their children's lives.

Further scale-up can have intergenerational effects which can contribute towards poverty alleviation measures.

	Female Peer Members				Response to "have experience with pregnancy" or "given birth at least once"			
	10 - 14	15 - 19	20 - 24	Total	10 - 14	15 - 19	20 - 24	Total
Makambako TC	60	74	167	301	4	69	73	146 (49%)
Njombe TC	48	58	51	157	0	13	15	28 (18%)
Njombe DC	33	43	43	119	3	1	4	8 (7%)
Ludewa DC	26	35	29	90	3	8	12	23 (26%)
Wanging'ombe DC	65	53	76	194	4	21	25	50 (26%)
Makete DC	52	50	28	130	1	10	11	22 (17%)
Subtotal	284	313	394		15 (5%)	122 (39%)	140 (36%)	
Total				991				277 (28%)

Table: Pregnancy and births data among female peer members in Njombe, Tanzania

Conclusions: This study demonstrates the large burden of pregnancy among adolescents and young women living with HIV and emphasizes the importance of including approaches to address adolescent pregnancy into general HIV programs. For programs in Tanzania, the study shows that there is a wealth of local resources to establish "Peer-to-Peer" programs, i.e., experienced adolescent mother mentors.

EPD464

Pregnancy and early motherhood among adolescent community ART networks in Tanzania

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Background: Adolescent pregnancy remains a major challenge in both developed and developing countries. Early and unintended pregnancies among adolescents are associated with multiple adverse health, educational, social, and economic outcomes.

Methods: We used community antiretroviral therapy (CART) registers from 33 established CART networks in Njombe region, Tanzania, to examine response trends associated with adolescent pregnancy.

Field teams collected data from CART registers of 991 female members who responded to have been pregnant or given birth. The analysis focused on a subsample of adolescents aged 10 to 14 years.

Results: Adolescent pregnancy and early motherhood in peer members is common in the districts of Njombe region, ranging from 7% among adolescents in Njombe DC to 49% in Makambako TC, with a total of 277 (28%) in all six districts combined (see table).

Although all six districts experienced a low number of adolescent pregnancies in the 10 to 14-year-olds, the numbers were variable. More than 70% (196/277) of the 15 to 19-year-old adolescents who experienced pregnancy and/or births in these districts were from Makambako TC and Wanging'ombe DC.

The analysis showed that more than half (140/277) of the adolescent and young mothers were in the 20 to 24-year-old age category but when looking at proportion of total peers members, the 15 to 19-year-old group had the highest amount at 39% (122/306).

EPD465

"Our children are coming to us with trauma and loss. Healthcare providers need to know that.": perspectives on accessing healthcare among parents of Internationally Adopted Children Living with HIV

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Background: The number of internationally adopted children living with HIV (IACH) in the U.S. has increased over the past decade. IACH are more likely to have neurocognitive deficits and behavioral/emotional challenges than non-IACH youth.

This qualitative project aims to understand parents' perspectives on their child's medical care.

Methods: Twenty-three parents of IACH from 14 U.S. states completed hour-long audio-recorded semi-structured phone interviews focused on parents' perspectives on their child(ren)'s experiences with health care during summer 2021. The purposive sample was recruited from two pediatric infectious disease clinics (n=5) and a private Facebook group (n=18). Drawing on analytic principles of constant comparison, transcripts were analyzed for emergent themes.

Results: Most parents identified as white (n=22/23), female (n=22/23), and Christian (n=22/23), (mean age = 42.7 years). All were married with private insurance. Some parents cared for several IACH. Of the 29 IACH (16 male, 13 female), all were virally suppressed. Sixteen were adopted from African countries (mean age at adoption = 5.5 years

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(range 0.5-15), current mean age= 12.7 years (range 1-24).
Results indicated parents had close connections with their pediatric infectious disease (PID) team: "they've been through every stage of her life." Several shared experiences of discrimination from providers outside the PID clinic environment. Families emphasized that healthcare providers needed to prioritize the developing parent-child relationship during all encounters.
For example, parents suggested that providers offer the opportunity for parents to privately share concerns that may be due to "trauma, attachment, and trust." Parents appreciated trauma-based care when available.
Accessing mental health clinicians with expertise in adoption-related trauma was noted as a significant challenge particularly since all IACH had histories of abandonment and loss. Further, parents underscored the importance of diversity within their healthcare providers as few Black IACH had providers of color.
Finally, most parents expressed apprehension about transitioning from pediatric to adult infectious disease care.
Conclusions: Medical management of HIV was not a high burden. Providers should recognize the important role the parent-child relationship plays in the overall wellbeing of the child particularly as they mature into adolescence. Access to trauma-informed medical and mental health care is essential to supporting this unique population.

HIV and the workplace: Policies, responding to stigma and/or discrimination, unemployment, return to work and rehabilitation

EPD466

Because she cares: Using spoken word films as a performance-educational tool to catalyze discussion around Canadian AASO employment as (un)caring work for African, Caribbean and Black women living with HIV

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Background: Employment in Canadian AIDS service and allied organizations (AASOs) can benefit African, Caribbean and Black women living with HIV (ACBWH) and realize their rights of greater involvement and meaningful engagement in HIV responses. Yet, concerns exist on how HIV disclosure, employment precarity, risks of burnout and the work's emotional labour can be harmful. Care concerns stemming from HIV service employment demands critical reflection to assure the health and well-being of ACBWH-employees.
Description: *Because She Cares* is a participatory performance narrative art project (poetry and spoken word performance) that uses educational-entertainment methods to translate and mobilize research findings into educational tools on AASO employment. Qualitative findings on the experiences of ACBWH-employees were translated into 12 short spoken word films, which were screened online, followed by post-performance dialogues (i.e., "kitchen table talks") amongst AASO employees in Ontario, Canada.
Lessons learned: In November 2021, we hosted three (3) screenings followed by six (6) facilitated kitchen table talks amongst 20 participants: immigrant ACBWH AASO employees and AASO allied employees. Participants welcomed the use of spoken word film to translate the lived experiences of immigrant ACBWH who work in AASOs. ACBWH-employees felt the film sufficiently captured their experiences of AASO employment.
The screenings, followed by kitchen table talks, aided AASO allied participants to develop a more empathetic understanding of intersecting forms of discrimination and institutional oppression that ACBWH-employees navigate within AASO workplaces including anti-Black racism and gendered, racialized and ethnocultural normative of caring work.
Uncaring work practices discussed included tokenism in AASO employment, credentialism and devaluation of experiential knowledge, inadvertent HIV disclosure through one's work, and balancing the "multiple hats" of caring as AASO workers, community leaders, mothers, partners, and transnational caregivers.
Conclusions/Next steps: Because She Cares offers an innovative way to translate and mobilize research findings as a performance-educational intervention. The piloted educational tool shows promise in catalyzing discussion around developing informal and formal support strategies that could better assure the care and well-being of ACBWH-employees in AASOs.
The next phase will develop a series of modules on ACBWH AASO employment for implementation in Canadian AASOs.

EPD467

Ending discrimination in the workplace

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Background: Workingpositively is an international program designed to fight discrimination related to HIV/AIDS in the workplace.

Description: Workingpositively was officially launched in June 2019 in Germany in cooperation with IBM, SAP, and the German Aidshilfe. From there it spread throughout the world and is now active in the USA, Latin America, Germany, Austria, Switzerland, Czech Republic, Australia, and New Zealand with over 250 signing organizations. Local NGOs design a pledge for companies to sign to become visible role models internally and externally in the fight against discrimination of employees with HIV in the workplace.

This project has shown us that people with HIV still suffer stigmatization and that knowledge about this infection has not improved significantly over the past years. Fundación Huésped is the lead organization for Latin America.

"Last year, Fundación Huésped received 20.000 inquiries, 25% of which referred to discrimination in the working place. The cases were related to pre-employment testing, violation of confidentiality, access to health insurance, and discrimination after diagnosis" emphasizes Leandro Cahn, Executive Director of Fundación Huésped.

Lessons learned: Our reach and awareness of this global initiative has proven that our mission deeply moves the community and that the societal need for projects like this is apparent. Together with HR and D&I partners of signatories, #workingpositively enhances the mental well-being of employees, raises awareness for HIV, and provides support structures for open and inclusive communication. Concretely, Fundación Huésped has introduced a virtual e-learning course for HIV in the workplace that is exemplary for how destigmatization and knowledge building are driven.

Furthermore, during the course of World AIDS Day 2021, an external event was held to reach maximum awareness for our fight against discrimination in the workplace, where over 76 Latin American companies were present.

Conclusions/Next steps: The aim is to launch this project in every country worldwide thus, significantly reducing the stigma and discrimination of employees living with HIV in the workplace.

We can conclude that over 250 supporting companies worldwide contribute, and we seek to enlarge this number to 300 by the end of 2022.

EPD468

Trade Unions contribute to the development of non-discriminatory workplace policies for workers living with HIV

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Background: HIV-related related discrimination continues to persist, including in the workplaces. 63% respondents in an ILO Gallup survey 2021, in Indonesia reported that people who have HIV should not be allowed to work with those who don't have HIV.

Trade unions took up the challenge of developing non-discriminatory HIV workplace policies working in close collaboration with employers.

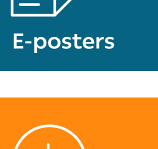
Description: During 2020 and 2021, ILO supported three union confederations in Indonesia (KSPN, KSPSI-AITUC and K-Sarbumusi) to advocate for the development of non-discriminatory policy for workers living with HIV. The PLHIV community, District Aids Commission and District Health Office were engaged in this process.

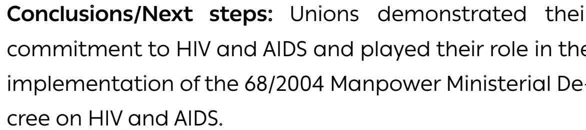
Three non-discriminatory policies were developed at national confederation level, district level and company level in prioritized sectors (land transport, sea farers and garment). 45 peer educators who were trained reached out to over 3,600 workers, IEC/campaign materials were developed and disseminated. HIV testing reached 267 male and 106 female workers.

KSPN has successfully negotiated a clause in the renewed collective bargaining agreement that covers the right of workers living with HIV to continue working and the regular implementation of a training on harassment, violence, and HIV awareness.

Lessons learned:

1. Strong leadership, a good relationship with top management and buyer representatives created a mutual collaboration between union organization and the company management on developing a non-discriminatory policy for PLHIV at the workplace.
2. Strong trade union leadership in certain sectors can play an important role in prioritizing those workplaces with workers who are more vulnerable for HIV infection, for example the transport, informal, seafarers and seaport crew sectors.
3. The trained HIV peer educator among union member, tailor-made campaign tools and IEC material that were sector specific increased more interest among union members to join the HIV prevention session both inside and outside the companies.





Conclusions/Next steps: Unions demonstrated their commitment to HIV and AIDS and played their role in the implementation of the 68/2004 Manpower Ministerial Decree on HIV and AIDS.
This strategic intervention was communicated to Ministry of Health and Ministry of Home Affairs as a model for replication and scaling up. K-Sarbumusi scheduled the replication to other companies in different district.

Living with HIV and co-infections and/or co-morbidities

EPD469
Old driver, new insight: the perspective of Spanish-speaking drug users on HIV and overdose prevention

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Background: Providing HIV services to Spanish-speaking immigrants is challenging especially when drug use is involved. Previous research marks low levels of engagement with harm reduction services among Spanish-speakers. Low engagement may be due to stigma, lack of services available in Spanish, lack of structural access, misconception of individual needs, and social determinants like economic instability and fear of interaction wit government agencies.
Methods: We conducted two qualitative studies exploring issues of access to HIV and overdose prevention services for Spanish-speaking drug users and homeless immigrant populations in the San Francisco Bay Area from 2019 to 2021. Both studies sought to increase and assess needs and provide HIV prevention and treatment among Spanish-speaking immigrants.
Recruitment was a multi-part, labor intensive process and resulted in new findings for both research recruitment and engagement with services. Bi-cultural recruiters, knowledgeable of both Spanish-speaking immigrant cultures and languages as well as with issues relating to homelessness and drug use approached individuals in diverse locations. Informational interviews were conducted with individuals to assess knowledge of services, interest in services, and needs specific to Spanish-speakers.
Analysis of interviews were conducted by a multi-disciplinary team to find common themes and information useful for identification and recruitment for services.
Results: We found that many participants would not refer or use terms in Spanish that describe themselves as a drug user. Furthermore, participants often thought they were taking medicine to treat fatigue or restlessness without understanding that family or friends had given them illicit drugs.
Overwhelmingly participants had little knowledge of how to treat an overdose but had some experience with overdoses and wanted to learn what they could do to help.
Conclusions: Building trust and rapport with participants required multiple points of contact and enticement through incentives and services, which highlights how easy it is for Spanish-speaking immigrants to fall through gaps of both recruitment and identification and not access harm reduction services. Basic knowledge of drug use, HIV prevention and use of naloxone were lacking among Spanish-speaking immigrants in San Francisco.
Service providers need to be Spanish-Latino-Centered, with specific drug users, and immigrant cultural foundations beyond just having the language skills.

EPD470
Self-care in the time of reduced in person consultations: experiences of patients' self-management of HIV, hypertension and diabetes

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Background: Globally Covid-19 has imposed constraints for in-person healthcare service delivery and utilization. This has placed self-care in the spotlight as being central to improving and/or maintaining good clinical outcomes, particularly from health policymakers and healthcare service providers.
Albeit not new, patient experiences of self-management as part of clinical care are not extensively documented in South Africa. Thus, initiatives to understand acceptability and practice of self-management from the patient perspective are required.
Methods: Semi-structured interviews were conducted with 46 patients living with HIV and hypertension and/or diabetes, during January to March 2021. Individuals were purposively recruited from four primary health clinics in Johannesburg, South Africa. Participants answered questions about their self-management practices and motivations, ability, and willingness to use monitoring devices, and the presence of support networks. Interviews were transcribed, translated, and thematically analyzed post quality assurance processes.
Results: Most of the participants were female, aged 35-70 years, from 11 ethnicities, and across three nationalities (majority South African, and the rest, Zimbabwean and Malawian). Patients reported their self-management practices as diet modification, stress management and medication adherence.
While patients did not mention self-monitoring devices as part of self-management, when prompted, the majority responded positively to the use of self-monitoring devices, provided they bear no personal cost. Of those who responded positively, all agreed they needed support for device use, which included, demonstration, device main-

tenance, interpretation of results, and knowing when to approach a healthcare service provider. Although, for several participants, family and work life cause stress and potentially negatively affect their conditions, participants also noted these structures as their main source of support in the management of diet and adherence to medication.

Conclusions: Self-care could play a significant role in healthcare systems because of patient acceptability of their current practices. Additional to the possible clinical successes, self-care can contribute to decreased service disruption, reduced waiting times, financial burden, and overall improvement in the utilization of healthcare resources.

Assessment of pandemic preparedness has heightened the value of self-care and its role for strengthening healthcare systems, highlighting the urgency for healthcare decision makers to fast-track self-monitoring and management programmes.

EPD471

The mental health of people living with HIV: prevalence and associations of depression, anxiety and stress

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Background: An important but less researched burden of HIV in sub-Saharan Africa includes the associated psychosocial and mental health outcomes of living with the virus.

This study aimed to estimate the prevalence of depression, anxiety, and stress and describe some of the socio-demographic associations among people living with HIV (PLHIV) presenting to a teaching hospital in Ghana.

Methods: Analytical cross-sectional research study was conducted at the Cape Coast Teaching Hospital, Ghana. Simple random sampling was used to recruit 395 PLHIV who access HIV related services from the antiretroviral therapy clinic. The Depression, Anxiety and Stress Scale - 21 (DASS-21) was used to assess prevalence of depression, anxiety and stress over the previous one week. Frequencies and percentages were used to estimate the prevalence and multivariable logistic regression was used to evaluate socio-demographic factors associated with depression, anxiety, and stress.

Results: The prevalence estimates of depression, anxiety and stress among PLHIV were 28.6% (95%CI 24.4-33.3), 40.8% (95%CI 36.0-45.8) and 10.6% (95%CI 7.9-14.1), respectively. Females experienced higher prevalence of depression 32.2% (95% CI 27.2-37.7), anxiety 44.0% (95% CI 38.4-49.6) and stress 12.6% (95% CI 9.4-17.0) compared to depression 17.5% (95% CI 11.1-26.4), anxiety 30.9% (95% CI 22.5-40.7) and stress 4.1% (95% CI 1.2-10.4) among males.

PLHIV without a regular partner were about 0.63 increased odds of experiencing anxiety compared to those with a regular partner (AOR= 0.63, 95% CI 0.40-1.00: p= 0.049). PLHIV without formal education were about 0.49 and 0.44 increased odds to experience anxiety and stress, respectively compared to those with tertiary education.

Among females, factors such as age, marital status, employment status, and educational level were not significantly associated with depression, anxiety, and stress. However, in males, educational level was associated with depression (AOR, 0.11, 95% CI 0.02-0.73:p= 0.02) and anxiety (AOR=0.18, 95% CI 0.04-0.86: p= 0.031).

Conclusions: The levels of stress, anxiety and depression are high, and females are disproportionately affected. Mental health assessment and management should be included in the HIV care guidelines.

Also, there should be capacity building for health care workers to offer differentiated service delivery based on mental health care needs of PLHIV.

EPD472

Prevalence and co-occurrence of symptoms of mental disorders and substance use among people with HIV aged ≥40 years in low- and middle-income countries in the Sentinel Research Network of IeDEA

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Background: Mental and substance use disorders (MSD) are commonly reported among people living with HIV (PLWH). Little is known about the prevalence and co-occurrence of MSD among older PLWH in low- and middle-income countries.

Methods: We analyzed cross-sectional baseline data from the International epidemiology Database to Evaluate AIDS (IeDEA) Sentinel Research Network (SRN) cohort of PLWH aged ≥40 years on antiretroviral therapy from six sentinel HIV clinics within the Asia-Pacific, the Caribbean, Central and South America, Central Africa, East Africa, Southern Africa, and West Africa IeDEA regions.

We documented the prevalence of symptoms of moderate to severe depression (PHQ-9 ≥10), anxiety (GAD-7 ≥10), or post-traumatic stress disorder (PTSD) (PCL-5 ≥33), hazardous or recent alcohol use (positive uEtG or AUDIT ≥7 for males, ≥8 for females), drug use (positive urine screen for amphetamines, benzodiazepines, cocaine, marijuana, or opioids or ASSIST >3 for cannabis, cocaine, amphetamines, inhalants, sedatives, hallucinogens, or opiates) and the co-occurrence of symptoms.

Results: Among 1,271 participants, the mean age was 50 (range: 40-84) and 59.6% were female. The prevalence of mental health symptoms or substance use ranged from 19.9% for unhealthy or recent alcohol use to 5.3% for PTSD and varied by region and sex (Table).

Among participants with mental health symptoms or substance use, 25.8% had symptoms of 2 or more disorders. The prevalence of symptoms of depression, anxiety, and PTSD was higher among females than males while the prevalence of hazardous or recent alcohol use and drug use was higher among males than females.

	Total	Sex		Region					
	n (%)	Male (N=514) n (%)	Female (N=757) n (%)	Asia-Pacific (N=200) n (%)	Central Africa (N=350) n (%)	Caribbean, Central and South America (N=30) n (%)	East Africa (N=200) n (%)	Southern Africa (N=191) n (%)	West Africa (N=300) n (%)
Depression	129 (10.2)	29 (5.7)	100 (13.2)	9 (4.5)	57 (16.3)	3 (10.0)	8 (4)	4 (2.1)	48 (16)
Anxiety	112 (8.8)	35 (6.8)	77 (10.2)	7 (3.5)	33 (9.4)	5 (16.7)	2 (1)	15 (7.9)	50 (16.7)
PTSD	67 (5.3)	20 (3.9)	47 (6.2)	1 (0.5)	21 (6.0)	3 (10.0)	3 (1.5)	17 (8.9)	22 (7.3)
Unhealthy or Recent Alcohol Use	253 (19.9)	163 (31.7)	90 (11.9)	5 (2.5)	106 (30.3)	2 (6.7)	19 (9.5)	69 (36.1)	52 (17.3)
Drug Use	74 (5.8)	40 (7.8)	34 (4.5)	3 (1.5)	12 (3.4)	10 (33.3)	22 (11.0)	11 (5.8)	16 (5.3)
2+ MSD	118 (9.3)	51 (9.9)	67 (8.9)	4 (2.0)	44 (12.6)	5 (16.7)	6 (3.0)	18 (9.4)	41 (13.7)
2+ MSD among ≥1 MSD	118 (25.8)	51 (23.6)	67 (27.8)	4 (20)	44 (28.2)	5 (35.7)	6 (12.8)	18 (19.1)	41 (32.5)

Table: Prevalence of Metal Health Symptoms and Substance Use

Conclusions: Mental health symptoms and substance use were commonly reported among PLWH aged ≥40 years in the IeDEA SRN. Integration of MSD screening and treatment into HIV care should be prioritized and may benefit older PLWH. Transdiagnostic interventions designed to address multiple MSD may be particularly relevant for this population.

EPD473

Household decision-making power and symptoms of depression, anxiety and PTSD among people with HIV in Cameroon

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Background: Household decision-making power (DMP), one measure of gender equity, may be an important driver of mental health among people with HIV (PWH), who are at higher risk for mental disorders. Little is known about the relationship between DMP and mental health among PWH.

Methods: Wesurveyed 426 PWH initiating HIV care in Cameroon between 2019-2020. DMP was assessed with the Household Decision-Making Scale consisting of questions about participation in decisions in three scenarios: major household purchases, daily household purchases, and visits to family.

For each scenario, individuals were categorized as having sole DMP (makes decision alone), shared DMP (makes decisions with partner), or no DMP (no participation in decision-making). Symptoms of moderate to severe depression (PHQ-9 >9), anxiety (GAD-7 >9), and PTSD (PCL-5 >30) were assessed.

Results: Most participants were female (59%) andreported the same type of DMP (sole, shared, none) across all scenarios (73%).

Overall, 46%, 8% and 19% consistently reported sole, shared, and no DMP across all scenarios, respectively, while 27% reported different types of DMP across scenarios.

Across all scenarios, compared to those with no or sole DMP, those with shared DMP were less likely to report symptoms of depression, anxiety, and PTSD. When stratified by gender, the association between DMP and mental health was particularly evident for men. Among men, across all scenarios, the prevalence of depression, anxiety, and PTSD was lowest among men who reported shared DMP. Among women, the prevalence of depression, anxiety, and PTSD was not meaningfully different across types of DMP.

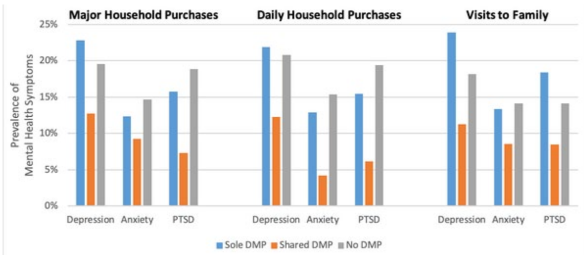

Table.

Conclusions: Shared DMP was associated with lower prevalence of depression, anxiety, and PTSD and appeared to be particularly beneficial for men. Research to examine mediators and moderators of the relationship between DMP and mental health among PWH is warranted. Gender-specific pathways between DMP and mental health should be explored.

EPD474

High risk behaviour and syphilis co-infection among people living with HIV in Mumbai, India – Need for comprehensive interventions

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Background: Risk-reduction strategies have been a part of targeted interventions in key population in India. Though there are isolated programs, focused risk-reduction interventions for sexual risk behaviours in HIV infected individuals are not a part of these programs.

The present study was designed to assess the sexual behaviours among People Living with HIV (PLHIV) diagnosed with syphilis co-infection.

Methods: Demographic information and data on sexual behaviours were collected from 425 HIV-Syphilis co-infected individuals registered for care at Antiretroviral Treatment (ART) centers in the city. We compared information on the type of partner, sexual behaviours, condom use, and other risk behaviours in the past three months.

Results: The mean (SD) age of this population was 38.5 (11.3) years; 339 (80%) were male, 67 (16%) were females, and 19 (4%) were TGH. Of these, 30 (7%) were migrants in Mumbai. Most of them had commercial (28%) and casual (25%) partners; 7% had regular partners. Anal sex and vaginal sex were the most common sexual practices with casual (60% and 39%) and commercial (32% and 68%) partners respectively.

Condom use was low with causal and commercial partners – 41% and 37% had rarely or never used condoms with them respectively. 31% had sex in exchange for money; the proportion was significantly higher in TGH (89%) com-

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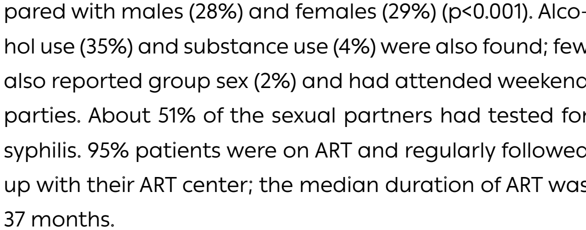

pared with males (28%) and females (29%) (p<0.001). Alcohol use (35%) and substance use (4%) were also found; few also reported group sex (2%) and had attended weekend parties. About 51% of the sexual partners had tested for syphilis. 95% patients were on ART and regularly followed up with their ART center; the median duration of ART was 37 months.

Conclusions: Unprotected sexual acts with casual and commercial partners were common in HIV infected individuals, even in individuals who are aware of their status and are on ART. Thus, regular risk-assessment and specific risk reduction programs for HIV Infected individuals is a priority for the AIDS program in India.

EPD475

Associations of mental health disorders and substance use with detectable viral load by sex among older adults with HIV from low- and middle-income countries, the Sentinel Research Network of IeDEA

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Background: Mental health disorders and substance use are among the most common comorbidities among people with HIV (PWH) and are associated with sub-optimal HIV treatment and transmission-risk outcomes. However, mental health disorders and substance use are rarely screened for within HIV care settings.

Methods: We analyzed cross-sectional data from the International Epidemiology Database to Evaluate AIDS (IeDEA) Sentinel Research Network (SRN) cohort of PWH aged ≥40 years from HIV clinics within the Asia-Pacific, Latin America, and Africa regions.

We report associations between symptoms of common mental disorders (CMD), including moderate to severe depressive symptoms, anxiety symptoms, probable post-traumatic stress disorder (PTSD); hazardous or recent alcohol use; and drug use (cannabis, cocaine, amphetamines, inhalants, sedatives, hallucinogens, or opiates) with HIV viral loads (VLs) measured within 90 days of screening; detectable VLs were defined as ≥60 copies/mL. Log binomial regression was used to estimate prevalence ratios for each CMD and substance use stratified by sex.

Results: Of 1,271 participants, 943 (74%) had available VLs. The mean age was 51 years (range: 40-84); 56% were female; and 43% had a detectable VLs. The prevalence of depressive symptoms, PTSD, any CMD, and hazardous or recent alcohol use was higher among those with detectable VLs than those with undetectable VLs.

Females with depressive symptoms (PR: 1.53; 95%CI: 1.26-1.85), PTSD (PR: 1.45; 95%CI: 1.13-1.86), and any CMD (PR: 1.35; 95%CI: 1.12-1.64) were more likely to have detectable VLs compared to those without the respective disorder.

Males with hazardous or recent alcohol use were more likely to have detectable VLs (PR: 1.48; 95%CI: 1.16-1.88).

Disorder	Total	Females	Males
Moderate to severe depression (PHQ-9 ≥ 10)	1.49 (1.25-1.78)	1.53 (1.26-1.85)	1.09 (0.65-1.83)
Anxiety (GAD-7 ≥ 10)	1.02 (0.79-1.31)	1.12 (0.86-1.46)	0.67 (0.35-1.29)
PTSD (PCL-5 ≥ 33)	1.44 (1.14-1.81)	1.45 (1.13-1.86)	1.26 (0.75-2.12)
Any common mental disorder	1.28 (1.08-1.52)	1.35 (1.12-1.64)	0.99 (0.67-1.46)
Hazardous or recent alcohol use*	1.21 (1.03-1.42)	1.13 (0.89-1.44)	1.48 (1.16-1.88)
Drug use**	0.79 (0.52-1.18)	0.91 (0.49-1.68)	0.79 (0.46-1.35)
>1 disorder	1.29 (1.05-1.58)	1.37 (1.08-1.74)	1.19 (0.83-1.71)

Table 1. Prevalence ratios (95% CI) of each mental health and substance use disorder on detectable viral oads by sex.

**positive uEtG or Alcohol Use Disorders Identification Test (AUDIT) ≥7 for females and ≥8 for males; **positive urine screen or Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) >3 for cannabis, cocaine, amphetamines, inhalants, sedatives, hallucinogens or opiates.*

Conclusions: Without routine screening, CMD and substance use among PWH aged ≥40 would remain undiagnosed and untreated, which could end in virological failure for both females and males. Implementation strategies for integrating routine screening and treatment must be explored to prevent an ongoing implementation gap.

Peer support: Lessons learned, access to services and health outcomes

EPD476

Jamaican Network of Seropositives (JN+) Community Facilitators' Deployment Programme (CFDP)

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Background: The Stigma Index 2.0 showed that (53%) of PLHIV reported that their HIV status made them feel guilty, embarrassed, useless, and/or unclean, and 44% of PLHIV delayed treatment, while 27% missed at least one ART dose because of S&D fears. Improvement was needed to reduce social vulnerability, battle S&D, improve quality of life, and reduce HIV/AIDS morbidity and mortality.

The whole-care and empowerment of PLHIV to receive and advocate for their own health rights, building their capacity and self-efficacy while enabling and providing opportunities for HIV-related discrimination, reporting and redress that holds everyone accountable was also crucial for a Community-led Response (CLR) and greater involvement of PLHIV through the CFDP.

Description: The CFDP began in 2018 and now covers 44% (20) of clinics in Jamaica. The programme uses Community Facilitators (CFs) who are PLHIV, virally suppressed and empowered to work with clinics to support other PLHIV directly through peer-to-peer support activities such as support groups, mentorship, capacity building sessions, linkage and referrals, care, and support services.

This type of support focuses on PLHIV dignity, treatment and care, and other positive health-related areas. The CFDP works closely with the Ministry of Health and Wellness, which supports increased retention and treatment outcomes.

Lessons learned: Despite the pandemic, the programme has managed to support and engage PLHIV for better health outcomes. See table below re the engagement.

Year	Number of CF In Programme	Peers Assigned	AGE RANGE					Gender Identity		Number of Peers Virally Suppressed
			10-19	20-29	30-39	40-49	50+	Man	Woman	
2018	8	87	2	15	21	25	24	36	51	38
2019	20	182	8	38	48	43	45	64	118	67
2020	32	338	29	67	70	96	76	122	216	89
2021	38	421	35	86	91	111	98	167	254	186

Table.

The CFDP utilizes as best practice, CFs paired with other PLHIV who share comparable experiences, age, gender, sexual orientation, and/or gender identity. The programme's impact saw a 44% viral suppression rate by the end of 2021; 7 peers were promoted to CFs and 3 CFs promoted to the post of Adherence Counsellor.

Conclusions/Next steps: The CFDP enhanced adherence and viral suppression among PLHIV assigned to CFs. JN+ aims to deploy at least one CF to HIV Treatment facilities in Jamaica by 2025 to increase reach and support for the national HIV response as we continue with the Greater Involvement of PLHIV.

EPD477

Acceptability and feasibility of a peer-support program for HIV-positive women in Gaza, Mozambique: a qualitative analysis

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Background: In 2016, the Elizabeth Glaser Pediatric AIDS Foundation launched the Mentor Mother Program (MMP) in Mozambique. Mentor Mothers (MMs) are HIV-positive women who successfully adhered to antiretroviral treatment (ART) throughout their pregnancy and provide mentoring and home visits to HIV-positive pregnant and breastfeeding women.

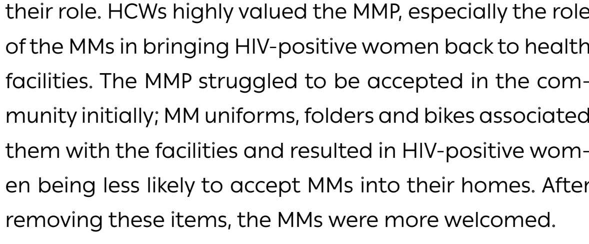
This study explored the acceptability and feasibility of the MMP among those providing and receiving services.

Methods: This qualitative study included in-depth interviews with 45 HIV-positive women enrolled in the MMP to receive mentor mothers (MMs), nine HIV-positive women who refused to enroll in the MMP, nine MM supervisors, 15 health care workers (HCWs) and 12 key informants.

Eight focus group discussions (FGDs) were conducted with MMs. MMs, MM supervisors, HCWs and key informants had been in their current positions for at least six months.

HIV-positive women included were pregnant or postpartum. Interviews and FGDs were held at nine study health facilities and audio recorded. Data were analyzed using thematic analysis, exploring perspectives by participant group. Transcripts were coded using MAXQDA software.

Results: The MMs reported that HIV-positive mothers who accepted the MMP asked basic questions to the MMs about ART scheduling and adherence that clearly indicated they had not received enough counseling and had remaining questions. MMs felt satisfaction in their job and felt 'less alone' regarding their own HIV status, but many limitations made their job more challenging. Challenges included insufficient travel stipend and cell phone credit, far travel distances, lack of communication regarding



their role. HCWs highly valued the MMP, especially the role of the MMs in bringing HIV-positive women back to health facilities. The MMP struggled to be accepted in the community initially; MM uniforms, folders and bikes associated them with the facilities and resulted in HIV-positive women being less likely to accept MMs into their homes. After removing these items, the MMs were more welcomed.

Conclusions: The MMP was highly valued by those who received services and those who provided services, however additional resources and training could help to strengthen the program and ensure sustainability.

EPD478

Exploring the feasibility of peer-delivered mental health support for young mothers living with HIV in four sub-Saharan African countries: evidence from peer supporters and their mentors

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Background: Young women aged 15-24 in sub-Saharan Africa are at high risk of HIV, unintended pregnancy and early motherhood. Experiencing HIV and pregnancy at a young age may lead to stigma and isolation, which can discourage care-seeking and adversely affect mental health and HIV outcomes during a pivotal life-stage. Peers may be a promising way to deliver non-stigmatizing support to young mothers living with HIV (YMHIV).

In 2018, Paediatric-Adolescent Treatment Africa co-developed the evidence-based Ask-Boost-Connect-Discuss (ABCD) model to holistically address YMHIV's mental health needs in a clinic-embedded group format.

However, evidence is needed to understand this approach's feasibility. Implementers themselves are well-placed to contribute to model refinement.

Methods: Multi-method programmatic data was collected from peer supporters (n=18) and their mentors (n=10) over two waves of programme implementation (April-September 2019, April-November 2021) in Malawi, Tanzania, Uganda, and Zambia. Data sources included focus group discussions, debriefing notes, individual telephonic interviews, and email correspondence. Data were transcribed and synthesized, systematically reviewed, and thematically coded in ATLAS.ti software.

Results: Respondents, as implementers and supervisors of ABCD across all four countries, identified ABCD as overall feasible to implement; however, they also identified gaps in its successful implementation.

Peer supporters described ABCD modules, which used cognitive-behavioural therapeutic approaches, as an effective way to communicate psychoeducation and practical coping strategies to YMHIV groups. Respondents also reflected on ABCD's appropriateness to age and life-stage, with content and delivery adaptations that resonated with YMHIV.

A number of implementation facilitators were noted. Consistent attendance was a challenge, as participating YMHIV often lacked funds for transportation or childcare arrangements during sessions. As ABCD was facility-linked and integrated with YMHIV's routine HIV visits, ensuring space for group sessions and maintaining adequate cross-referrals relied on strong relationships with facility staff, which varied by site.

Strong supervision and facility relationships supported smooth implementation, and ABCD's adaptability by context meant that peer supporter-mentor teams were able to exercise agency in fitting the programme to their facility's needs.

Conclusions: Peer-delivered programmes present promising and overall feasible vehicles for supporting YMHIV, but should be well-integrated into health facilities and cognisant of structural barriers facing participants.

EPD479

Importance of peer support in the lives of people living with HIV (PLHIV)

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Background: Post Covid19 lockdown in India where commuting became problem, many PLHIV had to vacate rented homes, lost jobs/income source, no ART pills, food nor work. It affected PLHIV Mental Health and ART Adherence

Objectives: To reach out to PLHIV in need through peer support & self help thereby create a sense of belongingness and improve quality of life through ART adherence and referrals.

Description: Peer intervention from March 2020 to January 2022 in Goa, India.

Post Covid lockdown where commuting became problem, Mobile phones kept us together. Through whatsapp group for PLHIV from different parts of India. We made contacts through facebook, NGOs, ART Centers, peers, and telephone calls. Helpless and lonely were added to our group with informed consent. Video calls were made for those in need through whatsapp and Zoom.

PLHIV who had their own bikes helped their peers get their ART pills from ART centers,provided food for those quarantined and at containment zones, lent money for needy. peer assistance also extended to those stranded from other states/Countries. Peers attended to phone call, provided peer counseling and referral services.

Lessons learned: Group members: 122, (65 female, 57 males) age 14 to 64 years. 34 were provided ART home deliveries, 71 (42 female, 29 male) peer counseling and guidance regularly, 11 found jobs, 12 found life partners, 22 referrals for other health emergencies, 34 received dry

ration. 15 (9 women, 6 male) lent money in need, 5 women received money as gift. 13 females started their own business. All are adhering to ART.
Through Peer support PLHIV overcome stigma & discrimination, make informed decisions, cope better with illnesses, overcome loneliness. Peers found jobs, life partners, accompany the sick to hospitals, lend money in need, give hope to live and increase self esteem.
Conclusions/Next steps: Our experiences proves that peer support plays very important role in PLHIV lives as it gives sense of belongingness, hope, increase self esteem, improves quality of life also prevent HIV treanmission.
Peers are always there like their own family as they empathize with each other with many similarities as to treatment adherence, side effects management, concerns, emotions and feelings.Peer led programs should be encouraged at all HIV programs.

EPD480

Task-shifting for viral suppression: piloting a provider-peer case management approach to support unsuppressed people living with HIV (PLHIV) at Wantanshi Health Center (CS) in the Democratic Republic of Congo (DRC)

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Background: DRC's estimated viral suppression rate is 87.4% (2020), highlighting the need to focus on viral suppression. However, limited facility personnel and weak monitoring mechanisms hamper delivery of comprehensive support for PLHIV to achieve viral suppression.
The USAID/PATH Integrated HIV/AIDS Project in Haut-Katanga (IHAP-HK) supported Wantanshi CS to introduce a collaborative case management system to better support PLHIV achieve suppression (<1000 copies/mL).
Description: IHAP-HK co-created a collaborative case management system with Wantanshi CS, PLHIV, and peer educators by:
1. Conducting empathy mapping to understand PLHIV pathways to viral suppression;
2. Defining a minimum service package with quality standards;
3. Advocating for task-shifting to peer educators; and,
4. Training providers on the service package and monitoring tools (unsuppressed PLHIV register; service monitoring dashboard).
A clinical provider-peer educator pair would contact PLHIV with unsuppressed viral load (VL) within seven days to develop and implement a customized plan, with enhanced adherence counseling tailored to self-identified barriers, close monitoring, and use of reminder systems.
We report viral suppression outcomes of 51 PLHIV who received detectable VL results between September 2019 and September 2021.
Lessons learned: Median age of these PLHIV was 37 years (IQR: 28–44), and 53% were female. Most common reasons cited for treatment nonadherence were forgetfulness (49%), competing priorities (24%), and travel (18%).
Among the 51 PLHIV, 44 (86%) received undetectable VL counts after four months of customized case management, and seven (14%) after 12 months. A defined service package and task-shifting to peers enabled consistent delivery of high-quality services, and led to earlier enrollment in the system (four days on average versus 1-3 months at their next clinical appointment).
Use of service monitoring dashboards also helped provider-peer educator pairs track service provision against established quality standards. By September 2021, 98% of PLHIV were on a dolutegravir-based regimen from 80% at initial VL sampling.
Conclusions/Next steps: Our results highlight the feasibility of using this collaborative case management system to improve viral suppression outcomes for unsuppressed PLHIV at Wantanshi CS. Scaling up collaborative approaches to support PLHIV is critical to maximizing use of existing resources to help people achieve optimal health outcomes and reach viral suppression targets.

Positive health, dignity, psychological well-being and mental health

EPD481

HIV Quality of Life Framework: conceptualisation and application of a tool that describes links between formal and informal service delivery and the needs of people living with HIV

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Background: Suppressed viral load is achievable in people living with HIV and life expectancy is similar to that of people without HIV. The 95-95 95 HIV targets aim to ensure that people living with HIV can be diagnosed, access, and be retained on HIV treatment but that is not enough. Those who do achieve viral suppression still face chronic multimorbidities; stigma and discrimination; and violence, all of which prevent basic foundational needs to be met.
Description: GNP+ convened the HIV Quality of Life Partnership (GNP+, STOPAIDS, NCD Alliance, Frontline AIDS, UNAIDS and WHO) in 2019 to link the needs of people living with HIV to the services that are provided in the formal and informal health sectors. They reviewed and updated

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Positive Health Dignity and Prevention and developed the HIV Quality of Life Framework to illustrate how services contribute to quality of life. This prepared members of the Partnership to participate in consultation processes in 2021, including the Global AIDS Strategy 2021-2026, the UN High Level Meeting on HIV/AIDS and the WHO Global Health Sector Strategies, which resulted in the incorporation of quality of life issues for people living with HIV, including emphasis on integrated services, NCD services and people-centred approaches.

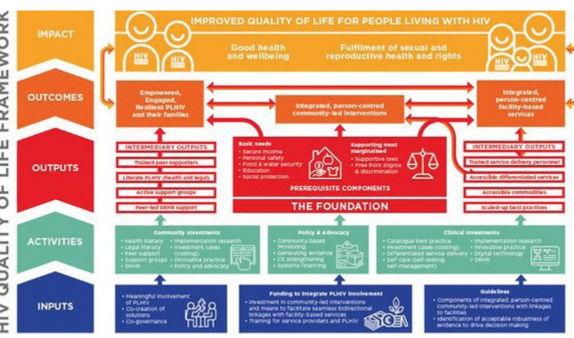

Figure. HIV Quality of Life Framework.

Lessons learned: The development of the Framework required an investment from all partners at a time when other issues, including the COVID-19 pandemic, took precedence. The Framework's ability to facilitate focussed discussions related to consultation processes and synergise beyond the HIV community ultimately provided a return on these initial investments.

Conclusions/Next steps: Members of the HIV Quality of Life Partnership created synergies and enhanced their own work related to quality of life. Co-creation of the Framework primed partners to collaborate on time-bound consultation processes that achieved success in promoting quality of life issues for people living with HIV.

EPD482

Prevalence of depression and its association to stigma and other psychosocial factors among women living with HIV in Tanzania

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Background: The study aim was to determine prevalence of depression and its association to HIV stigma and other psychosocial factors among women living with HIV (WLWH) in Tanzania. Despite documented prevalence of depression and HIV stigma among WLWH, there is limited data on the association between stigma and depression among WLWH in Tanzania.

Methods: A cross-sectional survey (n=211) with WLWH aged 18+ attending HIV care and treatment clinics in Dar-es-salaam (two) and Tanga (one) region, Tanzania. Systematic, non-proportionate stratified sampling ensured half the sample was aged 18-24, half 25+, with urban, peri-urban and rural representation.

Depression was measured with the PHQ-9 and analyzed as a bivariate variable; no depression (score of 0-4) versus at least some depression (5+). Psychosocial factors were assessed with the Rosenberg Self-Esteem, Coping Self-Efficacy and 28-item Sayles stigma scales.

A final 23-item, five factor stigma scale (experienced, anticipated, internalized, perceived, health-provider); alpha 0.93, ranged from 0-115, and was dichotomized into low (below the median of 53) and high stigma (53+).

Multiple logistic regression was applied to identify independently associated risk factors for depression, adjusted for age, marital status, education, and income. Variables with p-values of <0.05 were considered statistically significant.

Results: Among this sample, 37.9% of the women had depression and 50.7% had high stigma. WLWH who had high stigma compared to those who had low stigma were three times more likely to have depression. (AOR=3.11, CI =1.69-5.73; P=0.000)

Variable	Adjusted odds ratio AOR (95% CI)	P-value
Self-esteem (Reference category=High)		
Low	1.83 (0.59-5.76)	0.289
stigma (reference category =low)		
High[1]	3.11 (1.69- 5.73)	**0.000**
Coping self-efficacy (reference category =high)		
Low	0.60 (0.33-1.12)	0.109
Model adjusted for age, marital status, education, income (all statistically non-significant) P[1]=<0.05 significance		

Table 1: Multivariate results: Associations between depression and stigma, self-esteem, and coping self-efficacy

Conclusions: Depression is a critical health issue among WLWH. In this sample, HIV stigma is high and associated with depression. Addressing depression effectively among WLWH requires understanding and addressing the factors that influence depression, including HIV stigma.

Screening for depression at the CTC and early interventions for HIV stigma and depression at CTC clinics could improve WLWH's mental and physical health.

EPD483

From homeless to whole - creating a safe space to heal from societal hurts and support retention in care

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Background:
Established in April 2017, Larry Chang Centre's goal is to reduce the structural vulnerability of MSM and persons of Trans Experience through housing and other psychosocial support for improved treatment outcomes and equipping them with skills to be able to transition back into society as fully independent persons. Key programme activities are grounded on 4 key pillars:

- Safe Shelter; (group housing or semi- independent living)
- Improve Health Outcomes; individualised care plans; nutritious food to support diet plans; linkages with discrimination free healthcare, peer to peer support for retention and improved viral suppression.
- Psychosocial Support & Life Skills Training; counselling and empowerment sessions to reduce risky behaviours.
- Improve Employability; remedial educational programmes, employability workshops and readiness seminars & documentation such national identification

Description: The programme uses a client centered approach to address their individual needs. Other interventions carried out are:

- Case management as part of treatment monitoring to support increasing adherence not only through monitoring of Viral Load readings but case conferencing with treatment teams
- Ensure new clients are retained in care (attends clinic regularly) within first 4 months of programme
- Access to training around PHDP curriculum increasing dignity and positive prevention models
- Access to remedial educational programmes
- Provide access to education and skills training to capacitate individuals with needed skills to become employable
- Engage agencies for placement of skilled clients

Lessons learned: Lessons learned between 2020 & 2021 are:

- Providing a safe space and nutritional support has enabled persons to move to an undetectable status within 6 to 8 months.
- Peer to peer support significantly improved adherence in a shorter time.
- Reintegration requires more than providing persons with a skill to become employable.
- Many participants have deep trauma because of the many layers of discrimination experienced.

Conclusions/Next steps: A care farming component will be added to promote mental and physical health utilising hydroponics as a model which takes less land space. As well, the programme intends to expand this into an income generating project so that persons can earn from the project based on their input to reap the rewards of their labour and the skills are transferable when they transition.

EPD484

Exploring factors that drive mental health service utilization among young Black, gay, bisexual and other MSM living with HIV

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Background: HIV and mental health challenges disproportionately impact young Black gay, bisexual and other men who have sex with men (YB-GBMSM), yet this population is less likely to engage in HIV care or seek mental health care (MHC). Optimizing MHC holds promise as a strategy for improving both mental health and HIV outcomes for YB-GBMSM.

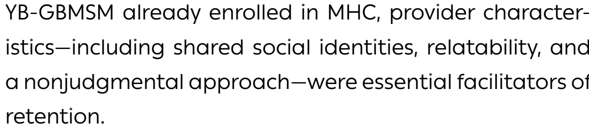
Methods: We conducted qualitative interviews (n=40) with YB-GBMSM living with HIV (ages 18-29) in Atlanta, USA. In collaboration with youth advisors, we developed a semi-structured guide informed by Andersen's Behavioral Model of Health Services Use (detailing the impact of predisposing factors, enabling factors, and psychiatric need on MHC utilization). We used thematic analysis to identify and describe barriers and facilitators to MHC utilization among participants.

Results: Participants discussed internal and external barriers to seeking MHC, as well as facilitators of MHC engagement.

Internal barriers: Participants described experiencing racism, homophobia, and HIV stigma. For many participants, these factors contributed to feelings of social isolation, hopelessness, fear, and consistent stress. In some cases, these stressors prevented YB-GBMSM from seeking MHC.

External barriers: Participants indicated that family and community ideals around resilience, masculinity, and strength promote managing mental health problems individually or with families and communities, instead of seeking MHC. Some participants described being perceived as weak for seeking MHC, worsening feelings of inadequacy, and rejection from their families and communities. Additionally, participants described logistical barriers to seeking MHC, including lack of awareness of resources, costs of care, and transportation challenges. These barriers exacerbated other internal and external barriers to seeking MHC.

Facilitators: Despite compounding barriers, HIV care engagement can facilitate linkage to MHC for YB-GBMSM. Several participants discussed positive experiences being connected to MHC through their HIV program. For



YB-GBMSM already enrolled in MHC, provider characteristics—including shared social identities, relatability, and a nonjudgmental approach—were essential facilitators of retention.

Conclusions: Our findings suggest that integrating MHC into HIV care enhances mental health service utilization among YB-GBMSM.

Additionally, non-traditional approaches, such as virtual platforms for MHC delivery and peer support groups, may address internal and external barriers by providing patients with social support, overcoming resource constraints, and enhancing MHC retention.

EPD485

Sexual orientation and health-related quality of life among people living with HIV/AIDS in Taiwan

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Background: Health-related quality of life (QOL) is a critical factor for assessing the well-being of people living with HIV/AIDS (PHA). Studies have found that heterosexual PHA had a lower QOL than gay/bisexual PHA.

The present study aimed to examine the correlates of QOL and whether the association varied between gay/bisexual and heterosexual PHA in Taiwan.

Methods: From June to September 2021, a cross-sectional online survey was conducted among a convenience sample of PHA recruited from community-based organizations across Taiwan. Survey items included socio-demographic characteristics, HIV-related characteristics (ART, CD4 count, adherence, and ART side-effects), syndemic conditions (physical and mental health needs, substance use), endorsement of receiving support from and disclosing HIV status to, family and friends, and experiences of discrimination.

Two multivariable logistic regression models were conducted to examine the association between potential correlates and the WHOQOL-HIV Brief as a dependent variable (poor/good) for gay/bisexual and heterosexual PHA separately, adjusting for socio-demographic characteristics and ART.

Results: Of all participants (n = 708), 71.8% identified as gay/bisexual men, 56.5% had a college degree or more, 74.4% had a religion, 63.4% were single, and 81.1% lived with someone. Using the median QOL score as a cut-off, 50.1% of gay/bisexual and 53.0% heterosexual PHA reported having good QOL.

For gay/bisexual PHA, good quality of life was associated with having a college degree or more (AOR=2.54, 95% CI=1.35–4.77), being in a relationship (AOR=2.35, 95% CI=1.22–4.54), reporting few ART side-effects (AOR=0.86, 95% CI=0.81–0.91), reporting no mental health needs (AOR=0.43, 95% CI=0.26–0.70), disclosing HIV status to partners (AOR=2.40, 95% CI=1.28–4.48), and receiving support from non-PHA friends (AOR=1.80, 95% CI=1.01–3.22). For heterosexual PHA, good QOL was associated with reporting few ART side-effects (AOR=0.81, 95% CI=0.69–0.94), and reporting never experiencing social rejection from others (AOR=0.17, 95% CI=0.03–0.96).

Conclusions: Our study provides evidence indicating that good QOL was associated with not only better physical and mental health, but also better social acceptance, among PHA in Taiwan. QOL among MSM may be further improved by addressing mental health awareness.

Further intervention for improving QOL among heterosexual PHA may focus on reducing ART side-effects.

EPD486

Say yes to physical fitness! The impact of a structured physical activity program on health outcomes amongst children and adolescents living with HIV in South India

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Background: Treatment-related increased life expectancy in HIV is accompanied by metabolic changes that have negative health outcomes. Regular physical activity is not only associated with improved immune function but also builds strength and promotes holistic development. These effects are not well studied among HIV-infected children and adolescents.

As part of children's routine care with nutrition, education, and medical support, Snehagram in India has integrated programs scientifically designed and guided by professional coaches and sports physiotherapists.

Description: From 2008-2019, 150 children from southern India who graduated from the Snehagram program participated in the structured physical fitness and sports program. Highlights included: an hour every morning for aerobic exercises to build strength and flexibility; running between 5-10kms twice a week to build endurance and speed; and evenings of field sports such as football, basketball, volleyball, and cricket:We conducted a survey to understand the impact of this program among graduates of this program.

Lessons learned: Average age of participants was 20.5yrs (range 16-23yrs), and 40% were female.Eighty percent were employed, 10% were pursuing studies full-time, and 10% were in transition. All were introduced to sports at an early age (8-10yrs). Barriers included self-perceptions of

weakness and ill-health due to underlying HIV (reported by 20%). A beneficial effect on physical and mental health was perceived by 82% and 65%, respectively.
Overall, 80% opined that participation in the sports program made them feel healthier in body and mind, reduced fatigue, decreased anxiety, improved sleep, and boosted self-confidence.
However, 82% felt that additional nutritional support and education on the biological effects of exercise on health would have enhanced their participation. After 1-2 years of graduation from Snehagram, 30% are involved in regular physical activity, while 90% recommended running should be included as a daily activity to their peers.
Conclusions/Next steps: Our results from examining the effect of ten years of the structured physical activity program at Snehagram indicate a perceived physical and psychological benefit for children living with HIV.
A greater emphasis on nutrition and education related to physical fitness, and incorporation of structured exercise into daily life would be important for sustainability and long-term benefits.

EPD487

HIV associated neurocognitive disorder screening and diagnosis pathways in Australia: a scoping review

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Background: HIV associated neurocognitive disorder (HAND) is complication of HIV characterised by cognitive decline. If detected early, interventions can slow further decline and help develop coping skills. However, there is uncertainty surrounding screening and diagnosis information in Australia. Therefore, the objective was to map screening and diagnosis information in Australia.
Methods: A scoping review examined academic literature, government policies, and non-government organisational information on HAND screening and diagnosis. The Joanna Briggs Institute guideline for scoping reviews was used.
The literature search includes EBSCOhost Megafile Ultimate and Medline (dates limited to 2015 to 2021), the .gov.au (all Australian government) and the .org.au (non-government organisation) domains, Google, and unpublished academic works. Items written by Australian authors or organisations about HAND screening, diagnosis and/or referral were included.
Results: Seventeen items met the inclusion criteria. The review located no specific government guidelines and several different diagnostic guidelines proposed by various HIV-related organisations. Most HAND research originated from Sydney, Australia. The most accessible information was from Dementia Australia, however some of it is inaccurate.
Conclusions: There is a concerning paucity of research or consumer information readily available to Australian clinicians or people living with HIV (PLHIV) regarding screening and diagnosis of HAND.
There is an urgent need to develop an accessible set of HAND screening and diagnosis standards for health professionals, PLHIV, and the general community. Without such resources, PLHIV are at risk of missed diagnosis, inadequate treatment, and consequent unnecessary cognitive decline.

EPD488

The relationship between depressed, minority stress and sexualized drug use men who have sex with men in Chengdu, China

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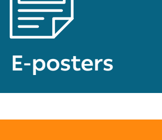
Background: Previous literatures have shown that sexualized drug use (SDU) was commonly found among men who have sex with men both world wide and in China, which impacted greatly on HIV related sexual behaviors and become an emerging public health concern.
The current study was to examined the SDU prevalence and depressed, minority stress - SDU pathways among Chinese MSM.
Methods: An anonymous, cross-sectional survey was conducted through a HIV Voluntary Counseling & Testing (VCT) service organization between December 2021 and January 2022 in Chengdu, China. Participants completed sociodemographic measures, Minority Stress Measure (including four dimensions, stigma towards homosexuality, identity concealment, rejection anticipation and internalized stigma), the Patient Health Questionnaire 9 (PHQ-9) and SDU experience during last six months. Multivariable logistic regression using SPSS 26.0 was used to compare MSM who engaged in SDU recently with those who did not.
Results: Of the 436 eligible participants included, 38.5% (168/436) reported SDU engagement., Higher PHQ-9 scores (aOR=1.05, 95%CI 1.01 to 1.09) and stigma towards homosexuality (aOR=1.07, 95%CI 1.01 to 1.14) were found associated with SDU after adjusted for monthly income, STI diagnosis and HIV status whereas identity concealment, rejection anticipation and internalized stigma were not found associated.
Conclusions: The results showed high prevalence of SDU among Chinese MSM in Chengdu, which was positively associated with depress and stigma towards homosexuality. Targeted psychological interventions and services



should be considered immediately to reduce the harm cause by minority stress and depressed to prevent SDU engagement.

EPD489

Understanding Self-care practices to live well with HIV: a phenomenological study to inform supportive technology design

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Background: This empirical study utilised a bespoke paper-based Self-care diary as a design prompt to facilitate discussions with four UK adults (from a sample of seven) living with the Human Immunodeficiency Virus (HIV). The aim was to understand Self-care practices through deployment of the diary in each participant's daily life for up to six months.

Supported by three semi-structured interviews with each participant, we investigated individual routines, experiences, needs and concerns for self-managing HIV, plus experiences of consultations with Healthcare Professionals (HCPs) to inform Self-care Information Communication Technology (ICT) design for living well with HIV, from a user-centred perspective.

Methods: Participants were recruited via HIV charitable organisations in England. A purposive sample of four participants were selected. Two identified as cis male, one as Trans man, and one as female. All identified as Caucasian and were aged between 20 and 68. Two male participants identified as Gay, one as Queer, and the female participant as heterosexual. Audio data were collected on three occasions: at study commencement; at interim stage; and at study deployment end. Data was transcribed verbatim producing transcripts which were analysed using Interpretative Phenomenological Analysis.

Results: The analysis generated three superordinate themes. The first, *Value in Diary Engagement,*provided participants with opportunities to self- reflect, self-record and to generate personal data which could be utilised in routine medical appointments. The second, *Trusted Communications*, highlighted patient-centred, collaborative engagement with HIV physicians in which participants felt acknowledged and listened to whilst receiving optimum care. The final theme, *Lack of Understanding,*highlighted experienceswith other HCPs in participants' network of care, including General Practitioners (GPs), in which stigma was prevalent along with feelings of being rushed and not being listened to.

Conclusions: Participant experiences highlight the personal value of using patient-generated data in the context of consultations with different HCPs in a multidisciplinary network of care.

Also illuminated is the need for effective communication in these consultations, providing the patient the time to convey their experiences in a non-judgmental environment whilst feeling listened to. This study evidences unmet communication needs in consultations with HCPs other than HIV physicians for supporting patient-centred health care consultations.

EPD490

Mental health and well-being of men who have sex with men within the context of HIV: a key role for social support in Ghana

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Background: Men who have sex with men (MSM) in Ghana have a high prevalence of HIV and experience stressors, such as stigma, that adversely impact their mental health and create barriers to HIV prevention and treatment. However, knowledge of protective factors that support mental health in the face of intersectional HIV, same-sex and gender non-conformity stigma in Ghana is limited, hence this study sought to explore these factors and their inter-relations.

Methods: Mixed-methods: In-depth interviews (n=8), focus group discussions (n=11), and baseline survey data (N=256) among MSM in a multi-level intersectional stigma-reduction intervention. in the Ashanti and Greater Accra Regions between October 2020 and August 2021. Surveys assessed depressive symptoms with the Patient Health Questionnaire-2 and self-reported HIV testing history and access to HIV testing, counseling, and treatment services. Narrative analyses were conducted on qualitative data, and frequency analyses were conducted on survey data. Findings were triangulated by examining the

associations between mental health, stigma, social support, and HIV care themes in qualitative and qualitative data.

Results: Qualitative findings suggested that accepting being gay/MSM was a difficult process with adverse implications for mental health and well-being.

Further, intersectional stigma – due to HIV, same-sex behavior and/or gender nonconformity – took its toll on mental and social well-being. Figure 1 depicts integration of the qualitative data about mental health, stigma, and social support and social support-related quantitative data.

Quantitative findings also suggest MSM may avoid necessary healthcare: only 52.4% of the sample reported receiving an HIV test in the previous 6 months, and 92.1% reported avoiding or delaying sexual health services they felt they needed.

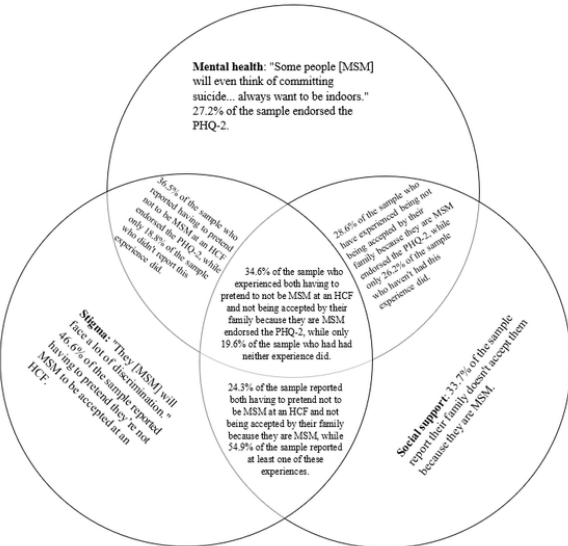

Figure 1. Interactions between mental health, stigma and social support.

Conclusions: Interventions to improve HIV prevention and treatment among key populations such as MSM and gender nonconforming men need to meet their mental health needs, address intersectional stigma and build protective factors that nurture social support.

Prevention interventions and their effects on the lives and relationships of people living with HIV

EPD491

To disclose or not? Experiences of HIV infected pregnant women in disclosing HIV status to their male sexual partners in Blantyre, Malawi

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Background: HIV status disclosure is one of the elements that enhance the success of the Prevention of Mother to Child Transmission of HIV (PMTCT) program. However, there are challenges that limit full disclosure. Literature shows that for pregnant women who have been diagnosed with HIV, only 16% to 86% in the developing countries disclose their status to their sexual partners.

This study explored the experiences of newly diagnosed HIV-infected pregnant women in disclosing HIV status to their male sexual partners in Blantyre, Malawi.

Methods: This was a qualitative explanatory multiple case study that was conducted from August 2018 to December 2019 using in-depth interviews and diaries as data collection tools. We recruited seven newly diagnosed HIV pregnant women who had not disclosed their status to their male sexual partners and were initiated on Option B+ strategy of the PMTCT of HIV at Limbe Health Centre (Malawi). The investigator had three contacts with each participant where in-depth interviews were conducted. The first contact was on the day of HIV testing, and the other two contacts were 6 weeks apart on the days the women came for their Antiretroviral (ARV) drugs refill. This study employed content analysis and used a within-case and across-case analysis.

Results: Women either used facilitated mutual disclosure or direct disclosure when disclosing HIV status to their male sexual partners. Women were motivated to disclose in order to have an HIV-free baby, to know the partners' status, and also to resolve the gap on how they got infected with HIV. Women were reluctant to disclose because they feared relationship dissolution. Privacy and soberness of the partner were important considerations during the process of disclosure.

Conclusions: Women accessing PMTCT services need guidance from health workers on how to yield positive feedback from their sexual partners so that there can be male support, an important element in the uptake of PMTCT services.

If health workers in developing countries know the motivation and discouragement factors of disclosure, it will enable them to counsel women to disclose, and how best they can do it in order to receive a positive feedback from their male sexual partner.

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EPD492

Effectiveness of couple-based interventions vs. individualized interventions in promoting HIV preventive behaviors in couples: a systematic review and meta-analysis of 11 randomized controlled trials

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Background: Despite existing evidence indicating that couple-based HIV interventions are more effective in promoting HIV preventive behaviors of couples than individual-level interventions, no study to date has exclusively synthesized the findings from randomized controlled trials (RCTs) and examined the quality of the original studies in terms of implementation and evaluation through rigorous quantitative criteria.
This systematic review and meta-analysis compared couple-based prevention interventions to individual-level interventions from RCTs and examined moderators of the intervention effect.

Methods: This systematic review and meta-analysis was registered in the PROSPERO database (CRD42020222819, https://www.crd.york.ac.uk/PROSPERO/). We searched five electronic databases (Web of Science, PubMed/Medline, PsycInfo, CINAHL, and clinicaltrials.gov) and other sources. Random-effects models were used to quantitatively synthesize the existing evidence.

Results: Eleven RCTs were included, comprising 3,555 couples in the intervention group and 7,125 individuals in the individual control group, mostly in heterosexual couples from the USA and Africa. Three studies were poorly designed and implemented.
The overall estimates of random-effects models showed that compared to individual-level interventions, couple-based interventions had a significant effect in promoting condom use (OR = 1.431, 95% CI 1.133-1.808, p = 0.003) and HIV testing (OR = 1.308, 95% CI 1.061-1.612, p = 0.012).

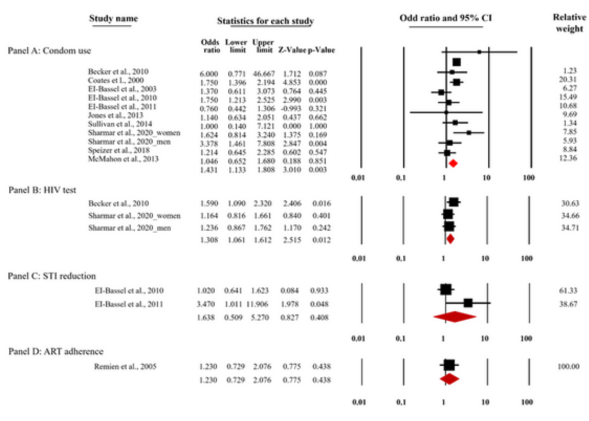

Figure.

The education level of high school or above was associated with a higher odds of condom use (Q(1) = 4.401, p = 0.036). Compared to skills-building, the intervention component incorporating HIV testing and counseling was marginally more effective in improving condom use (Q(1)= 3.275,p= 0.070).

Conclusions: Future research needs to standardize the trial design and implementation, strengthening the dyad-level theoretical underpinnings for intervention development, tailoring intervention contents according to participants' education level, adopting a combined intervention module with effective biobehavioral components, and assessing the long-term intervention effect.

EPD493

Managing HIV among male prison inmates in Nigeria: implication for spread

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Background: Managing HIV among male prison inmates in Nigeria is challenging.Using a census study, the project reviewed the access of male inmates of the Prison Special School Abakaliki (PSS Ai) in Ebonyi State of Nigeria to medical attention, psychotherapy, intervention programmes, sex orientation, as well as meaningful post incarceration life through the existing inclusive education.
The objectives were to find out the extent of HIV spread among male prison inmates at PSS Ai, to discover the possible mode of transmission and spread of HIV among the male prison inmates at PSS Ai, to determine the influence of penal principles on HIV management among male prison inmates at PSS Ai and to identify the possible reasons for the ineffective management of HIV among them.

Description: The long term project employed a triangulation approach which included the survey, interview and ethnography. The setting was a special school for prison inmates located inside the Ebonyi State Prisons Command, Abakaliki.

Lessons learned: The findings showed that the level of HIV spread among the male students was relatively high. The mode of transmission emanated from the sharing of sharp objects, drug abuse and the practice of men who have unprotected sex with men- a phenomenon which the study is struggling to establish its level of practice. The greatest challenge to HIV management within incarceration were the penal principles.
In view of global best practices, tolerance should be brought into the management of persons with HIV, particularly in relation to culture/sex orientation. The penal principles should be de-emphasized for rehabilitation principles to accord the incarcerated the opportunity to access intervention programmes.
The major significance is that these treatments promote stigmatization and the spread of HIV in the prison and outside world during post incarceration.

Conclusions/Next steps: The study concluded that the management of male prison inmates with HIV has not been effective in forestalling the spread of the virus within the prison and the larger society where these carriers spill into on release. Medical attention for HIV is also inadequate.
Again, these penal principles have not enabled the school to effectively practice inclusive education where counseling sessions are professionally utilized.

EPD494

Triple R project support for HIV Exposed Infants adherence to HIV interval testing until end of exposure

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Background: The Eswatini Ready, Resourceful, Risk Aware (Triple R) project, for orphaned and vulnerable children (OVC), Adolescent Girls, and Young Women (AGYW), aims to prevent new HIV infections and to reduce vulnerability among this target group in Eswatini. HIV Exposed Infants (HEIs) are part of the OVCs receiving follow-up and interval HIV testing per ministry of health guidelines at birth,6 weeks, 9,12,18 months until end of exposure.
Description: Caregivers provide consent for OVC enrollment and follow-up of these children. An electronic appointment tracker for HEIs due for interval testing, is maintained. Home Visitors (HVs) support caregivers by reviewing HEIs' health cards for appointment dates and adherence to interval testing. HEIs who missed clinic appointments are issued with referrals within 3 days, and new appointment dates are given.
HVs continues to call caregivers until appointments are honored and calls are documented on the follow-up log and tracker. HVs liaise with health facility Linkages Assistant (LAs) to confirm clinical appointments' adherence and further verify from child's card. The Department of Social Welfare is engaged to intervene where HEIs caregivers' miss appointments after five calls, as this is considered as an infringement of the right of the child to health care.
Lessons learned: Results: 100% of enrolled HEIs were reached between October 2020 - September 2021, 99% tested HIV negative and are on track with interval HIV testing and the 1% HIV+ are on ART. Active tracking of the HEIs ensured their scheduled clinic visit dates are honored by caregivers.

Figure. CI_HEI: # with documented HIV status-Reach VS Enrol-FY21 100% (1749/1749)

Conclusions/Next steps: Implementation of this integrated patient centered community model was effective in ensuring that HEIs adhered to interval HIV testing, throughout their exposure period. This effective model will be employed also for FY22.

EPD495

"You can get that person on ART but you can't give them back their social system". Qualitative insights of HIV voluntary assisted partner notification in marginalized populations

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Background: Voluntary Assisted Partner Notification (VAPN) is an important method for identifying HIV infections, sero-discordant couples, and to link partners of persons diagnosed with HIV to testing and care services. While the VAPN approach is seen as appropriate in many settings, little is known about VAPN in groups that experience marginalization and whether its use is suitable for referral to HIV care pathways.
Methods: From December 2019 to October 2020, we conducted a qualitative study using semi-structured in-depth interviews with purposively selected VAPN stakeholders at global (n=4), national (n=6) and community (n=4) levels regarding their perspectives and experiences with VAPN policy and implementation. Data were analyzed following a Reflexive Grounded Theory approach and managed using NVIVO Pro 12.
Results: Respondents highlighted flexibility in VAPN policy implementation and spoke extensively about patient centred approaches to support VAPN. However, respondents felt the scope of policy was not broad or nuanced enough for marginalized groups, especially women, Female Sex Workers (FSW), men who have sex with men (MSM) and children. Women were seen as vulnerable to violence following partner notification, and lacked access to adequate support. Age appropriate VAPN assistance was considered unavailable for sexually active children. Upon HIV status notification, FSW and MSM could face exclusion from important social networks leading to further marginalization, particularly - for MSM - in places where same-sex relationships are illegal. Strict funder driven VAPN targets were considered to reduce the quality of care and functioning of VAPN as health workers forego certain guidelines in order to reach adequate numbers of patients.
Conclusions: VAPN can be a useful tool for HIV testing and prevention but marginalized communities have complex care needs which current policy does not support. Embedding understandings of identity, belonging and safety

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into VAPN could address individual priorities and needs. Community support networks, tailored care for children and family orientated approaches to HIV notification may overcome issues relating to vulnerability and marginalization.

Sexual and reproductive health, fertility, family planning, pregnancy and abortion

EPD496

Amplifying the voices and experiences of parents living with HIV around breast/chestfeeding

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Background: Breast/chestfeeding is considered both the healthiest option for infant feeding for the general population and the standard of care for women and other birthing parentsliving with HIV in resource-limited settings. Limited research on breastfeeding and HIV in high-resource settings has resulted in a lack of education/clinical standards for providers in these areas to support informed decision-making among women living with HIV.

Description: The Well Project, a nonprofit whose mission is to change the course of the HIV pandemic through a unique and comprehensive focus on women and girls, advances efforts *to increase knowledge and expand access to information around breast/chestfeeding and HIV. The core of this programming elevates the experiences of women living with HIV to improve knowledge among healthcare providers and policy makers and build leadership capacity.*

Specific programming about breast/chestfeeding includes webinars, live-streaming events/videos, and fact sheets. To assess interest in breast/chestfeeding and HIV, we measured views of the resources.

Lessons learned: To date, two live-streamed events presenting these perspectives reached >14,000 (in 5 months). Fact sheets on infant-feeding choices (developed with women living with HIV) in English and Spanish reached 34,000 and 22,000, respectively (in 3 years). A webinar featuring two women living with HIV who breastfed reached 27,000 (in 3 years).

Conclusions/Next steps: There is a significant appetite for content about breast/chestfeeding and HIV that centers the experiences of women and other birthing parents living with HIV. Endeavors in this field are strengthened when providers/other stakeholders are responsive to the infant-feeding experiences of parents living with HIV, recognize their autonomy, and trust that they will make well-informed decisions. Including women and other birthing parents living with HIV in the development and execution of this programming will ensure that they can experience their fundamental right to make informed, uncoerced infant-feeding decisions, while also centering their voices and fostering leadership development.

EPD497

Homens trans gestantes atendidos em uma clínica pré-natal de um centro de referência em HIV/AIDS do estado de São Paulo - Brasil

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Background: Brazil has instituted the National Policy of Integral Health of Lesbians, Gays, Bisexuals, Transvestites and Transsexuals, since 2010, in the context of the country's health system, being universal and public.

The study presents the barriers identified in the experience of monitoring pregnant transgender men and describes the action plan developed for the improvement of care for this group.

Description: São Paulo, the 4th largest city in the world in terms of population, in 2009, implemented the 1st outpatient clinic for the health of the transgender population in the country and has been attending transgender men in pregnancy, starting to perform prenatal care. It is located in the headquarters of the State Program of STD/AIDS where there is an obstetrician, nurse, infectious disease specialist, psychologist, social worker and volunteer doula.

The barriers to accessing health services in general were identified as: difficulty in health services to accept them, where historically they attend cis women, fear of bodily changes, prejudice and discrimination, hormonal changes as a result of not using the male hormone, difficulty and acceptance of interaction with social environment (work, transportation, friends and families), fears and insecurity regarding delivery and baby care, and prejudice in health services in general.

The care plan foresaw: meetings with the health professional team and transversal areas to the service, preparation of standard operating procedures, articulation with the humanization team, agreements with the prenatal care and attention network, with reference maternity hospitals for delivery, puerperium, and care of the newborn, partnership with the public defender's office for legal guarantees, conversation circle with pregnant men, and workshops on care of the newborn.

Lessons learned: Importance of embracement as a way to guarantee reproductive rights; need for protagonism and improvements in the autonomy of pregnant trans men; teamwork guaranteed access for this population to the network of assistance for childbirth, newborn care, and paternity.

Conclusions/Next steps: It is essential to have a continuous learning process between health services and the population of trans men in order to overcome barriers to access. The action plan calls for changes in health services, facilitating institutional acceptance from the perspective of the reproductive rights.

EPD498

Barriers and facilitators to seeking sexual health services for LGBTQIA+ older adults: a global scoping review and qualitative evidence synthesis

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Background: The number of older adults identifying as lesbian, gay, bisexual, transgender and other sexual and gender diverse identities (LGBTQIA+) continues to grow as populations age and social environments becomes more accepting. This study uses a global evidence synthesis to understand perceived barriers and facilitators to sexual healthcare service access globally for older LGBTQIA+ adults.

Methods: We used a scoping review and qualitative evidence synthesis. Embase, PubMed and PsycInfo were searched with terms related to LGBTQIA+ populations, older adults, and sexual healthcare. We used the Cochrane Handbook and the review protocol was registered.

Primary and secondary textual data were coded and grouped into themes using PRISMA-SCR and the Minority Stress Model. The certainty of review findings was assessed using the GRADE-CERQual approach.

Results: The scoping review identified 19 studies and 15 were included in the qualitative evidence synthesis. All studies were from high-income countries. Heterocentricity and male-centricity of sexual health care services contributed to feelings of exclusion for older LGBTQIA+ adults (13 studies, moderate certainty of evidence).

Both anticipated and enacted stigma by healthcare providers resulted in older LGBTQIA+ adults, especially those with chronic conditions, avoiding health services (seven studies each, low certainty). Older LGBTQIA+ adults have unique sexual health needs and may feel their age empowers them to access appropriate care (four studies, low certainty).

Conclusions: This review highlights the need for additional research and interventions to improve sexual health services for older LGBTQIA+ adults. Practical strategies to make sexual health less heterocentric (e.g., gender neutral signage) may increase uptake of essential sexual health services.

EPD499

Impact of antiretroviral treatment and treatment duration on incident pregnancy among HIV-positive women: evidence from population-based HIV impact assessments

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Background: Pregnancy incidence was estimated in women living with HIV (WLHIV) in the era of universal test and treat (UTT) in comparison with HIV-negative women (HNW) to inform fertility estimates and plan for prevention of mother to child transmission (PMTCT) services.

Methods: Population-based HIV Impact Assessments (PHIAs) in Zambia, Malawi, Tanzania, and Eswatini (2015 – 2017) were analyzed. Female participants, 15-49 years, with a valid HIV test result were included in the analysis. Time to pregnancy during the period 45 months prior to the survey, corresponding to births occurring a maximum of 36 months prior to the survey, was modeled retrospectively using Cox proportional hazards regression. Observations were censored at conception for women with a pregnancy and at the survey date for women without a pregnancy.

Each participant's exposure time and pregnancy events were stratified into time-varying categories by HIV status, self-reported antiretroviral therapy (ART) status, and duration on ART. Analyses using survey weights compared pregnancy incidence rates estimated forHNW, WLHIV not on ART, and WLHIV on ART for ≤1 year and >1 year.

		Zambia	Malawi	Eswatini	Tanzania
HIV Negative Women	Pregnancy events/ Person-years[1] Incidence Rate (95% CI[1])	1,279,702/ 9,804,283 130.5 (124.8, 136.3)	1,299,457/ 10,340,975 125.7 (120.1, 131.2)	54,108/ 783,691 69.0 (64.4, 73.7)	4,711,357/ 36,971,132 127.4 (122.2, 132.7)
	Hazard Ratio (95% CI)	1.0	1.0	1.0	1.0
WLHIV not on ART	Pregnancy events/ Person-years Incidence Rate (95% CI)	12,588/ 168,188 74.8 (48.4, 101.3)	7,458/ 111,343 67.0 (13.9, 120.1)	4,126/ 45,747 90.2 (65.4, 115.0)	23,075/ 210,810 109.5 (67.3, 151.6)
	Hazard Ratio (95% CI)	0.6 (0.4, 0.9)	0.4 (0.2, 0.6)	1.2 (0.9, 1.6)	0.9 (0.6, 1.3)
WLHIV on ART ≤1 year	Pregnancy events/ Person-years Incidence Rate (95% CI)	11,638/ 84,376 137.9 (87.5, 188.4)	10,573/ 90,437 116.9 (55.8, 178.1)	3,384/ 30,284 111.7 (81.9, 141.6)	15,205/ 134,278 113.2 (36.9, 189.6)
	Hazard Ratio (95% CI)	1.5 (1.0, 2.2)	1.1 (0.6, 2.0)	1.7 (1.2, 2.5)	1.5 (0.7, 3.1)
WLHIV on ART > 1 year	Pregnancy events/ Person-years Incidence Rate (95% CI)	21,483/ 429,926 50.0 (37.2, 62.7)	33,940/ 486,509 69.8 (53.1, 86.4)	7,683/ 144,654 53.1 (42.6, 63.6)	40,853/ 602,307 67.8 (44.9, 90.7)
	Hazard Ratio (95% CI)	0.4 (0.3,0.5)	0.5 (0.4, 0.7)	0.8 (0.6, 1.0)	0.6 (0.4,0.8)

Table 1. Pregnancy incidence by HIV status and ART use in women, 15-49 years of age; Population-based HIV Impact Assessment surveys (Malawi (2015-16), Zimbabwe (2015-16), Zambia (2016), Eswatini (2016-17))
[1]Weighted pregnancy events and person-years of exposure are presented; [2]CI: Confidence Interval

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Results: Compared to HNW, hazard ratios for pregnancy in WLWH not on ART were 0.6, 0.4, 1.2 and 0.9 in Zambia, Malawi, Eswatini and Tanzania, respectively; 1.5, 1.1, 1.7, and 1.5, for WLHIV on ART for <1 year in Zambia, Malawi, Eswatini and Tanzania, respectively; 0.4, 0.5, 0.8, 0.6 in WLHIV on ART for >1 year in Zambia, Malawi, Eswatini and Tanzania, respectively (Table 1).

Conclusions: Pregnancy incidencediffers by duration on ART with greatest likelihood of pregnancy observed in WLWH who recently initiated ART. Further analysis will include age-adjusted models accounting for behavioral and biological factors which may impact pregnancy.

These updated estimates of pregnancy incidence will help to accurately estimate PMTCT rates and plan for adequate PMTCT service coverage and resource allocation.

EPD500

Reproductive decision-making autonomy is associated with contraceptive use among women living with HIV in Gaborone, Botswana

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Background: Unintended pregnancies may be related to low contraceptive use and raise concerns regarding potential HIV transmission risks from women living with HIV (WLHIV) to partners and infants. Unintended pregnancy is often related to a woman's lack of autonomy or power within her relationship. Relationship dynamics among WLHIV are understudied yet are important correlates of contraceptive use in sub-Saharan Africa.

Botswana has the fourth highest HIV prevalence in the world (18.2-22.1% among adults), and 43-50% of births are unintended. Using an adapted Reproductive Autonomy Scale, we sought to measure whether

a. Reproductive decision-making,

b. Freedom from coercion, and

c. Reproductive communication are associated with current contraceptive use among WLHIV in Botswana to assist in HIV and reproductive health program development.

Methods: We conducted a cross-sectional survey among 356 WLHIV in Gaborone, Botswana from June-December 2018 at six public sector clinics. Participants were 18-40 years, not currently pregnant, and desired future children or were unsure about their childbearing plans. Respondents reported current contraceptive usage including pill, injectable, implant, intrauterine device (IUD), male/female condoms, or sterilization. Separate multivariate logistic regression models examined the association of reproductive autonomy (full scale and sub-scales) with a dichotomous variable for contraceptive use adjusting for clinic and covariates.

Results: On average, WLHIV were 33.6 years and women reported a mean of 2.4 pregnancies. Current contraceptive use was reported by 95.5% (n=340) of WLHIV. The most commonly used methods were male/female condoms (88.2%) with just 21.6% reporting use of another method (6.2% pills, 12.4% injectable, 2.0% implants, 0.8% IUD, 0.3% sterilization).

In multivariable models, reproductive autonomy was associated with contraceptive use (aOR=1.12,95%CI: 1.01-1.24). In addition, higher reproductive decision-making autonomy was associated with contraceptive use (aOR=1.80,95%CI: 1.26-2.57) compared to those with lower decision-making autonomy. The reproductive autonomy freedom from coercion and communication sub-scales were not significantly associated with contraceptive use.

Conclusions: Reproductive autonomy, and specifically, decision-making autonomy, is associated with contraceptive use among WLHIV. Findings have implications for HIV programs and practice since reproductive autonomy is a modifiable factor that can be targeted in interventions to encourage gender-equitable relations and reduce unintended pregnancies and HIV transmission risks in Botswana.

EPD501

The impacts of COVID-19 social distancing measures on sexual and reproductive health services in Botswana, a high HIV prevalence setting

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Background: Universal access to effective contraception is a health and human right, and has a multitude of benefits, including reduced maternal mortality and vertical HIV transmission, by enabling safe pregnancy planning and spacing. In Botswana, 26.3% of women of reproductive age live with HIV; supporting them to access sexual and reproductive health (SRH) services to avoid unintended pregnancy and HIV transmission is essential.

We evaluated the effects of COVID-19 social distancing measures (SDMs) on SRH service access for people living with HIV (PLWH) in Botswana.

Methods: This observational, cross-sectional study was conducted in Botswana between 17th January and 22nd February 2021. Data were collected through a web-based questionnaire disseminated on social media as part of the International Sexual Health and REproductive Health (I-SHARE) Survey. Respondents answered questions on SRH and wellbeing, before and during Botswana's COVID-19 SDMs.

Results: Of the 409 survey respondents (female 82.2%, male 17.6%), 65 were PLWH (80% female, 20% male). Compared to the HIV-negative group, more PLWH used condoms as their primary contraceptive method (54.2% vs 48.0 %). Women living with HIV had lower use of long-acting reversible contraception (e.g. implant, intrauterine device, intrauterine system) (8.3% vs. 14.2%) and dual contraception (8.3% vs. 15.8%). PLWH were more likely to always use contraception (69.0% vs 50.6%) and less likely to never use contraception (17.2% vs 29.8%), than HIV-negative participants.

During SDMs, PLWH reported decreased condom use of 17.1% with steady and 19,0% with casual partners. Similar proportions in both groups encountered problems accessing condoms (23.8 % vs. 21.18%) and their regular form of contraception (16.67% vs. 15.08%). Those obtaining contraception from hospitals during SDMs increased by 66.7% in PLWH but decreased by 61.5% in people without HIV. 8.7% of PLWH obtained contraception from their HIV clinic, reducing to 0% during SDMs.

Conclusions: Our findings show COVID-19 SDMs disrupted access to contraception and SRH services for PLWH. Integrating SRH services with Botswana's well-developed HIV infrastructure, to deliver continuous access to highly-effective contraceptive methods, could improve health system capacity and resilience, and reduce unintended pregnancies and HIV transmission.

EPD502

Opportunities to leverage fatherhood goals and ideals among South African men to promote HIV testing, treatment, and prevention

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Background: Despite significant gains in HIV testing, treatment, and prevention in sub-Saharan Africa, low male engagement and retention in HIV care remain as challenges.

We aimed to understand how fatherhood goals and ideals of South African men could inform approaches to engage men and their partners in care and prevention.

Methods: We conducted in-depth interviews (n=25) between April and September 2021 with men with HIV (MWH) living in rural KwaZulu-Natal, South Africa. MWH ages 18 years and older were recruited from prior research participants who consented to be contacted for future projects. Interviews were audio-recorded, transcribed, translated, and analyzed thematically.

Results: Median age was 44 (range: 28 – 58) years. Majority were black South African men (96%), unemployed (60%), in a long-time relationship or with a legal spouse (84%), with at least some secondary school education (92%).

Men articulated the importance of having children and fulfilling fatherhood responsibilities at individual, couple, and community levels.

1. Men are motivated to remain healthy in order to father and support HIV-uninfected children. Promoting concepts around U=U and treatment as prevention may leverage individual-level motivations to promote testing, treatment, and retention in care.

2. Couple-level motivations to meet reproductive goals with partners, have HIV-uninfected children, and maintain a healthy partner to raise children may promote disclosure, and encourage men to support partners to access HIV prevention strategies such as PrEP.

3. Men want to be seen and respected as fathers who provide for their families in their communities. Aligned messages and peer support may promote engagement in care and viral suppression.

Conclusions: Men with HIV value and strive to achieve important reproductive and fatherhood goals. We describe opportunities to leverage these goals based on insights from MWH in order to promote HIV testing, treatment, and prevention. Clinic and community-based programs including peer support that address fatherhood goals and opportunities to achieve them may help MWH engage and remain in care and support their partners to access prevention.

EPD503

Reproductive health and parenthood among women living with HIV in the Ontario HIV Treatment Network (OHTN) Cohort Study (OCS)

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Background: In Ontario, Canada, almost half of women living with HIV (WLHIV) are of reproductive age and many intend to give birth in the future. The Birth Outcomes Registry Network reports 80-100 WLHIV give birth in Ontario every year. While on treatment and maintaining viral suppression, vertical transmission in utero or during birth is essentially eliminated. Ensuring reproductive health care and parental support services for WLHIV is critical. At the same time, WLHIV require social and financial supports to minimize parental stress.

Methods: The OCS is a longitudinal cohort of people receiving HIV care in Ontario, Canada. We analysed data from 398 women interviewed in 2021, including questions on reproductive health needs, parenthood, and parental stress.

Results: Respondents had a median age of 50 years, were 60% black, 28% white, 12% other races and tend to be low-income, (34% earned <20K CAD; 61% had difficulty paying for housing, and 54% were food insecure). 77% are mothers; 41% have children <18 years and 42% have children 18 years or older. 35% had children since their diagnosis and 12% considered, but have not had children.

37% reported that their provider did not support their decision/did not provide support/counseling on infant feeding. 86% report they have a provider with whom they can discuss reproductive needs. 17% are interested in becoming a parent, among whom 73% intending to become pregnant, 25% feel they will require fertility services, and 11% feel they will require adoption services.

WLHIV with children <18, enjoyed their children (97% strongly/somewhat agree), are satisfied with being a parent (93% strongly/somewhat agree), and find their children to be a source of affection (96% strongly/somewhat agree). However, children were a major source of stress (33% strongly/somewhat agree) and financial burden (16% strongly/somewhat agree), and some WLHIV are overwhelmed by parental responsibility (26% strongly/somewhat agree).

Conclusions: Optimal health for WLHIV includes reproductive health options and support in their role as a parent. Increasing support services for pregnancy planning should be considered by healthcare providers and policy makers. WLHIV require social, medical and financial supports in order to reduce parental stress and maintain optimal health.

EPD504

Desire for more children and postpartum contraceptive use patterns among women living with HIV in South Africa

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Background: Contraceptive use has numerous benefits, including preventing unintended pregnancy and vertical and horizontal transmission of HIV. Monitoring the desire for more children, which almost perfectly correlates with fertility, could create avenues to support women living with HIV to realize their fertility desire.

We examine the association between desire for more children and patterns of postpartum contraceptive use among women living with HIV in East Cape, South Africa.

Methods: We interviewed 485 postpartum women with HIV between January and May 2018 from the baseline database of the East London Prospective cohort study. This was a follow-up study of women previously recruited post-delivery into a PMTCT evaluation study between late 2015 and early 2016. All participants responded to questions on contraceptive use, methods type, and desire for more children. Adjusted and unadjusted logistic regression models were used to examine the association between the desire for more children and postpartum contraceptive use.

Results: The average age of women included in the study was 32.91 (SD 5.74) years. Contraceptive prevalence was 85.4% (n=485) at two years postpartum, a drop of 7.8 percentage points compared with immediate postpartum. Condoms and injectables were the commonly used contraceptives. The prevalence of dual contraceptives used was 35.3% (n=485). Only 5.2% (n=485) of women were using implant and IUCD. Most women were not using any contraceptive methods because they had no steady sexual partner (43.5, n=69) and suffered from contraceptive side effects (27.5%, n=69). Only 26.4% of study participants desire to have more children. After adjusting for the effect of age, education level, marital status, parity, employment status, HIV status disclosure to partner, and knowing partner's status, women who desired more children were 47% less likely to use any contraceptive methods than those who do not want more children. However, there was no significant association between desire for more children and long-acting contraceptive or dual contraceptive use.

Conclusions: Two-year postpartum contraceptive use was relatively high but slightly lower than the immediate postpartum period. Desire for more children is an important predictor of contraceptive use but long-acting or dual contraceptive use.

EPD505

Adverse pregnancy and infant outcomes in a trial of an intervention for PMTCT and family health in Southwestern Kenya

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Background: Adverse pregnancy/infant outcomes occur frequently in southwestern Kenya, even though antenatal care (ANC) and skilled maternity services are available in most health facilities. Many women face socio-cultural and financial barriers, which negatively impact their access to ANC and delivery with skilled birth attendants. This study examines serious adverse events (SAEs) by HIV status in a prevention of mother-to-child (PMTCT) trial in Kenya.

Methods: The Jamii Bora Study targets couples (HIV-positive and HIV-negative pregnant women and their male partners) accessing ANC at 24 health facilities in southwestern Kenya. Couples are randomized into one of three study arms, namely couple-based home visits, HIV self-test kits for couples, and standard care.

Results: As of December 1, 2021, 812 women (544 HIV-positive and 268 HIV-negative) were enrolled in the study and 660 couples had been randomized. We recorded 52 SAEs, including 7 miscarriages, 16 stillbirths, 13 neonatal deaths, 8 infant deaths, 2 child deaths, 1 maternal death and 5 participant deaths after 42 days postpartum. Differences by HIV status (HIV-positive vs. HIV-negative) were largest for neonatal death (12 vs. 1) and stillbirth (11 vs. 5). Although more HIV+ women experienced any SAE compared to HIV- women (39 vs. 13), the occurrence of any severe adverse outcome did not differ significantly by HIV status (7.2% vs. 4.9%, p=.20).

Conclusions: We identified a high burden of adverse pregnancy and infant outcomes in this population. Several patient-level factors may be related to these outcomes, including lack of regular ANC visits, non-adherence to recommendations of ANC providers, lack of funds for transportation, harmful traditional beliefs, and strenuous work during pregnancy. Facility-level factors contributing to this problem include understaffing, lack of systems for prompt referral of women/infants in emergency situations, inadequate tracing of women lost-to-follow up in ANC, and lack of psychosocial support services. Engagement of men in the process is crucial since much health-related decision-making is influenced by male partners.
We recommend strengthening MCH services and developing programs focused on awareness of healthy MCH practices in the community and clinic aimed at reducing adverse pregnancy/infant outcomes, with special attention to risks faced by HIV-positive pregnant women.

EPD506

Erectile dysfunction among men living with HIV: a cross-sectional prevalence study in a Turkish outpatient clinic setting

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Background: Understanding the sexual health-related issues of men living with HIV(MLWH) is one of the imperative factors in improving health outcomes across the continuum-of-HIV-care. Many MLWH express their concerns about unmet needs related to sexuality after being diagnosed. In contrast, sexual functioning is not adequately and systematically screened in clinic settings. Several studies revealed erectile dysfunction (ED) is the most frequent sexual problem and more significant in the MLWH.
Therefore, this study aimed to assess ED and associated factors in MLWH attending an outpatient-clinic in Turkey.

Methods: In the cross-sectional study settings, the participants answered an anonymous-self-responsive survey that consisted of sociodemographic-characteristics and the International-Index-of-Erectile-Function (IIEF) questionnaire to measure sexual-functioning. A blood-sample was taken to assess sexual-hormone-levels. Statistical-analysis was used to determine the prevalence and predictors of ED.

Results: A-total of 112MLWH were recruited.Eighty-five (75%) of the participants(mean age42.6±12.8 years, p:0.003) hadbeen diagnosed with ED (*Table.1*). The mean ED score of men aged 18-35 was 19.8±4.2, 17.9±4.3for those aged 36-54, and 13.1±5.6 for those aged 55-71 (p<0.001).

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A moderate, negative correlation was found between age and ED score (r: -0.440,p<0.001). The median of HIV diagnosis interval and the duration of the antiretroviral therapy in ED compared to non-ED patients was 43 vs 26.5 months (p:0.15), and 16 vs 18 months (p:0.81), respectively. The majority of the participants' sexual hormone levels were normal (*Table. 2*).

In the ED score prediction analysis, the age variable's unstandardised coefficient was -0.165 95% CI;-0.231 to-0.098), and the-unstandardised-coefficient for the duration of HIV-diagnosis was -0.015 (95% CI;-0.028to-0.001).

International Index of Erectile Function Scores	Erectile Dysfunction Severity	Number (Percentage) 112 (100%)
22-25	None	28 (25%)
17-21	Mild	44 (39.3%
12-16	Mild-Moderate	29 (25.9%)
8-11	Moderate	5 (4.5%)
5-7	Severe	6 (5.4%)

Table 1. Erectile dysfunction severity of MLWH.

	MLWH with ED number (%)	MLWH without ED number (%)	P Value
Marital Status			
Married	31 (73.8)	11 (26.2)	0.78
Single	51 (76.1)	16 (23.9)	
Education Status			
Primary School	49 (83.1)	10 (16.9)	0.09
Secondar School	17 (70.8)	7 (29.2)	(ptrend: 0.03)
University or Higher	16 (61.5)	10 (38.5)	
Age			
18-35	25 (61)	16 (39)	0.02
36-54	43 (79.6)	11 (20.4)	(ptrend: 0.006)
55-71	15 (93.8)	1 (6.3)	
Sexual Hormone Levels			
Follicle-stimulating hormone			
Normal	54 (73)	20 (27)	0.75
High	19 (76)	6 (24)	
Luteinising hormone			
Normal	53 (75.7)	17 (24.3)	0.48
High	20 (69)	9 (31)	
Prolactine			
Normal	32 (78)	9 (22)	0.96
High	11 (78.6)	3 (21.4)	
Testosterone			
Normal	55 (74.3)	19 (25.7)	0.94
High	18 (75)	6 (25)	

Table 2. Sociodemographic and clinic characteristics of MLWH

Conclusions: We found a-high-prevalence of ED in an outpatient cohort of MLWH in Turkey.The-ED-prevalence increases regarding lower education levels and higher age. Our findings suggest that HIV-outpatient-clinics should consider routine EDscreening to appropriate treatment for MLWH who score highly on validated measures to improve sexual-well-being in MLWH.

COVID-19 social distancing and curfews: Implications for access to HIV care

EPD507

Impact of the COVID19 crisis on HIV treatment uptake among MSM from urban and non-urban areas: *preliminary analysis from the EPIC community-based research program in Peru*

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Background: Crucial to reach and maintain viral suppression, HIV treatment access was affected worldwide during the COVID19 crisis due to limitations on mobility and logistic operations that restricted access to antiretrovirals. We sought to explore whether living in rural areas increased those effects.

Here we present preliminary data from Peruvian men who have sex with men living with HIV (MSM-LWH), who participated in the EPIC program in 2021.

Methods: EPIC is a multi-country community-based research project, coordinated by Coalition PLUS, which aims to collect data regarding the impact of COVID19 on key populations for HIV infection. In Peru, the online EPIC survey targeted MSM from March-July 2021. We analyzed data among MSM-LWH respondents, and used the Fisher's exact test to compare antiretroviral treatment (ART)-related outcomes according to area of residence (urban vs semiurban/rural area).

Results: Among 302 respondents, 110 were MSM-LWH (36%). Among the latter, median age was 31 years old (range:18-61), college/technical higher education was attained by 76%, and 94% lived in the Lima/Callao region. Ninety-four respondents (85%) lived in the urban area, and 16 (15%) in a semiurban/rural area. Being ever on ART was reported by 103 respondents (95%). Among them, 9 (9%) interrupted ART during the COVID19 crisis. Compared to residents from urban areas, respondents from semi-urban/rural areas had a higher frequency of interrupted ART (27% vs 6%), had decided to reduce ART intake (47% vs.

12%), and had difficulties taking ART because they were confined with people unaware of their HIV status (36% vs 10%) (Table 1). Common reasons to interrupt ART in semi-urban/rural areas were: being confined with people unaware of respondent's HIV status, fear of COVID, and ART out of stock (2/4 respondents in each case).

HIV treatment-related characteristics		Total n (%)	Urban area n (%)	Semiurban/ rural area n (%)	p-value
Interrupted ART		9/103 (9%)	5/88 (6%)	4/15 (27%)	0.024
Reduced ART (less medication)					0.005
	Yes, self-decided	16 (17%)	9 (12%)	7 (47%)	
	Yes, with health personal assistance	13 (14%)	11 (14%)	2 (13%)	
	No	64 (69%)	58 (74%)	6 (40%)	
Difficulties taking ART because respondent was confined with people unaware of his HIV status		13/96 (14%)	8/72 (10%)	5/14 (36%)	0.023

Table 1. HIV treatment-related characteristics by area of residence

Conclusions: ART uptake among MSM-LWH from semiurban/rural areas was impacted by the COVID19 crisis. Perceived lack of medication availability and stigma-related (undisclosed HIV status) reasons were commonly reported and need attention to maintain the continuum of care gains among MSM-LWH.

EPD508

Access to HIV Pre-exposure Prophylaxis (PrEP) during early COVID-19 pandemic in the Republic of Ireland

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Background: Covid-19 disrupted a lot of services worldwide (including health services) especially in the early phase of the pandemic. Ireland implemented its PrEP national scale-up in November 2019, just before the pandemic, exposing its fledgling PrEP program to a lot of Covid-19 related challenges.

Methods: We conducted 14 in-depth qualitative interviews with 4 PrEP activists, 3 PrEP healthcare providers, 3 PrEP researchers, 2 policymakers and 2 HIV NGO staff within a larger study investigating the role of health advocates in access to medicines in the Republic of Ireland. All interviews were conducted virtually on Zoom.

A rapid analysis was manually conducted to identify arising themes in preparation for a more robust analysis on Dedoose.

Results: The pandemic brought a lot of challenges and opportunities to the Irish PrEP program. The shortage of healthcare providers to support Covid-19 services saw their redeployment to pandemic-related services hence affecting sexual health services including PrEP to the level of closure for close to 15 months.

Due to the closure, PrEP refills for those who had started PrEP before the pandemic and new PrEP initiations were disrupted for a long time and sexual health clinics were only provided on an emergency basis. To bridge PrEP and other sexual health services access gaps during the pandemic, PrEP services were moved online on phone, and via post.

Perhaps more importantly, we saw PrEP users becoming innovators themselves by switching from daily oral to event-based PrEP for their supplies to last longer. Some shared pills with their peers who were at risk of HIV infection and had no PrEP supply. Users also adopted other prevention strategies both behavioral and biomedical.

Conclusions: Despite sexual health services' disruption, lessons learnt from innovations adopted during the pandemic such as offering PrEP services online, on phone, and through postal services demonstrate the feasibility of creating wider PrEP access through virtual services especially to those who may not be able to attend Physical PrEP clinics due to several barriers.

The study also illustrates how proactive patients become when health services are lacking due to contextual circumstances.

EPD509

Mitigating COVID 19 impact on HIV service delivery to key populations through community interventions in Uganda

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Background: On 21st March 2020, Uganda reported its first COVID-19 case and the government responded by instituting a seven months total lock down and other measures to prevent virus spread in all districts inclusive of Soroti and Kabarole districts. This led to disruptions in HIV prevention service delivery and supply chains for key prevention commodities, including condoms, lubricants, antiretrovirals and other medicines. During the lockdown Uganda registered 41% decline in HIV testing and 37% (Uganda AIDS Commission 2021) decline in referrals for diagnosis treatment due to the pandemic. However, the Spectrum Uganda Initiatives (SUI)- MSM Drop-in Centers (DIC) ensured continuity of treatment and ART adherence support systems among MSMs and other KPs living with HIV such as door to door ART delivery and community drug distribution points.

Description: In both Soroti and Kabarole districts, SUI adopted a community drug distribution points model with 45 peer leaders who delivered condoms, lubricants, PREP and ART refills at household level. Community led viral load testing was also adopted where blood samples were picked up and delivered to health facilities for confirmatory testing. Social network strategy was used to identify new clients and also make referrals for covid 19 contacts. Soroti DIC tested 1226 Female Sex Workers (FSW), 226 MSM and 15 People who Inject drugs (PWIDs).

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Among those tested 25 FSW and 4 MSMs tested HIV positive. The Kabarole Spectrum DIC tested 531 MSM and 23 were HIV positive. All the 52 HIV positive clients have since registered viral load suppression.227 MSM were enrolled on PREP in Kabarole while 125 enrolled in Soroti.

Lessons learned: Community drug distribution points model is a feasible approach to be included among the options for decentralized drug distribution especially when access to health services is disrupted. Support efforts to build wider referral networks and longer-term treatment regimens that enable KPs to collect or refill their medication.

Conclusions/Next steps: COVID-19 restrictions had a greater impact on access to HCT services, HIV viral load testing services and ART access. Without the aforementioned interventions, it is possible that many of these at-risk populations would not have been able to access HIV services during the COVID-19 lockdown.

EPD510

A home dispensing of antiretroviral therapy program as an affordable way to maintain access to treatment during COVID-19 pandemic in Guatemala

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Background: COVID-19 pandemic has impacted on healthcare systems. Lockdowns and measures adopted for reducing SARS-Cov-2 transmission affected access to health care attention for people living with HIV (PLHIV).

Here, we evaluate the capacity of a home dispensing program to provide access to antiretroviral therapy (ART) during COVID-19 pandemic for PLHIV in Guatemala.

Methods: The delivery ART program was implemented from June 2020 to December 2021 for ART stable patients who met the following criteria:

i. Viral load <1000 copies/mL,

ii. Taking ART for more than 6 months straight,

iii. And those not requiring face-to-face medical attention.

Patients that did not met these criteria and had financial constraints, were evaluated by each of the HIV Healthcare Facilities (HCFs) to provided economical support. Eight HCF agreed to participate in this program.

The information was collected in a web-based system. Statistical analyses were performed in R (version 4.1.2) at a 95% CI.

Results: This program benefited 4,557 patients. Of whom, 3,730 patients were supported only with ART delivery, 570 with economical support, and 257 with both. Mean age was 38.5 ± 15.1 and 2,585 (57%) were male. Overall, 3,987 patients received ART without taking risks of exposing to COVID-19. The average cost for each shipment was $5. Of those who met the inclusion criteria (7,298), 55% (3,987) were covered by the program. A total of 8,328 shipments were delivered countrywide with a coverage of 79% (271/341 municipalities). Of those shipments, 75 delivered substitutes of breastmilk formulas. The average economical support provided for each patient was $10.

Conclusions: In the dire situation of the COVID-19 pandemic, the home dispensing program has proved to be an affordable way to maintain the access to ART while reducing the risk of acquiring SARS-CoV2 and the associated negative outcomes.

Indirectly, these actions could help patients living far-off, saving them money and time invested in transport, and problems at their jobs due to *"no show"* or absence permit.

EPD511

HIV testing and diagnosis at the apex tertiary referral hospital of India: impact of two years of COVID-19 pandemic

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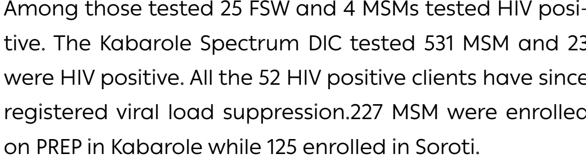
Background: Timely HIV testing and diagnosis is critically important to achieve an AIDS free world. Around 8.5% of global AIDS related deaths were estimated to be from India during 2019. Recognising the capability of COVID-19 pandemic related restrictions to impact HIV services, we collected and compared the data on HIV testing and diagnosis at the apex tertiary referral hospital of India in 2020 and 2021 with pre-COVID-19 years.

Methods: The documents/records on HIV testing and diagnosis from 01/01/2016 to 31/12/2021 was collected from integrated HIV counselling and testing centre attached to the apex tertiary referral hospital of India. It had individual identification number, age, gender, testing date, provider/client-initiated, risk behaviour,etc. Data was analyzed on Microsoft excel and GraphPad prism v5. Chi-square test was applied in analysis of all data sets (intra-group and inter-group) to calculate p values. P<0.05 was considered significant.

Results: During 2020, HIV testing declined by 56.9% [n=1182;2743] and hence new HIV cases declined by 54% [n=262;572] than average pre-COVID-19 years (2019-2016). During 2021, HIV testing saw just 3% [n=1217] improvement compared to 2020 [n=1182].

Although Client-initiated HIV testing saw considerable improvement [26.9%] in second year of COVID-19 pandemic compared to first year; provider-initiated HIV testing continued to be affected and got further reduced [by15.7%]. Provider-initiated testing used to constitute >2/3rdof total testing before pandemic [n=1922;2743].

New HIV cases and positivity rate increased in 2021 than 2020; but HIV diagnosis was still lower compared to pre-COVID-19 years by 43.7% due to low HIV testing. HIV testing in 15-34 years was significantly reduced than other



age groups. Transmission via infected syringe/needles and commercial partner significantly declined, however, transmissions via heterosexual regular partner/spouse and non-regular/casual/non-commercial partner significantly increased. There was 30.9% increase in HIV positive male despite <1% change in male HIV testing.

Conclusions: HIV testing and diagnosis was severely disrupted in two years of COVID-19 pandemic at our centre and the same could be true with other healthcare centres.

The world needs to adopt a modified strategy for HIV testing after assessing the existing one to compensate shortfalls during COVID-19 pandemic so that future rise in late-diagnosis/AIDS-related deaths could be prevented. This is particularly needed for provider-initiated testing.

EPD512
Access to HIV and sexual healthcare during COVID-19: gay and bisexual men's experiences during concurrent epidemics

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Background: The implementation of COVID-19 public health measures resulted in disruptions to sexual health services for many Canadians. We examined how disruptions affected access to sexual and mental health services and impacts on the health of gay, bisexual, and other men who have sex with men (GBM) living with HIV.

Methods: Engage-COVID-19 is a mixed-methods study examining the impact of COVID-19 on GBM living in Vancouver, Toronto, and Montreal. Using purposive sampling, we conducted two rounds of in-depth qualitative interviews (11/2020-02/2021 and 06/2021-10/2021) with 93 GBM; 20 were living with HIV. GBM discussed the impact of COVID-19 on their lives. Interviews were coded in NVivo software using thematic analysis.

Results: HIV-negative GBM described challenges in accessing HIV/STI testing during various waves of the COVID-19 pandemic. Some participants indicated less/no need for sexual health services since they were having less sex during the pandemic. Most GBM living with HIV accessed health services for HIV without disruption (e.g., prescription refills, bloodwork). There were some changes to in-person healthcare visits during COVID-19 such as masking and social distancing requirements, and extended prescriptions for HIV medications.

Although online healthcare appointments posed a challenge for some participants, most GBM living with HIV generally reported high levels of satisfaction with the care received. In contrast, some GBM living with HIV reported interruptions in access to care for mental health and substance use.

These participants, most of whom lived alone, also described feelings of loneliness and depression while public health restrictions were in place, as they were unable to see family and friends.

Conclusions: For GBM living with HIV and already linked to care, there appears to be stability and adaptability of the HIV care system in these Canadian cities. Nonetheless, GBM living with HIV experienced interruptions to mental health and substance use services, posing challenges to their overall health.

Our findings signal the need to expand our understanding of essential HIV care to include mental health and substance use supports.

EPD513
Community based organizations providing support for PLHIV during the COVID lockdown in Vietnam

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Background: The COVID response has been highly regarded for Vietnam's early intervention and control. However, from May – September 2021, the country had a significant wave of cases that led to restrictions on movement. People living with HIV (PLHIV) often have several social and economic barriers that impact their ability to access and maintain basic needs.

Recognizing this potential impact, community-based organizations (CBOs) were activated to mitigate the needs of clients during the lockdown period.

Description: Response to COVID was supported by CBOs but required advocacy to vaccinate its community health workers (CHWs). They were authorized to provide delivery of food packages and additional resources to help meet the needs of PLHIV unable to leave their homes.

In collaboration with CBOs and social influencers, LIFE helped organize virtual events to engage PLHIV who were alone or with limited engagement due to stay-at-home orders. This virtual community shared valuable information and discussion for people to feel connected.

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Lessons learned: During the lockdown period, just over a third of CHWs were fully vaccinated while the other nearly 2/3 received at least one dose. This step allowed CHWs some layer of protection, in addition to having personal protective equipment, as they delivered supplies and resources to clients and their families. CBOs identified 368 clients who were quarantined during the lockdown period in HCMC and Dong Nai provinces.
Utilizing the network of CBOs supporting these clients, CHWs delivered food aid to 2,000 people, beyond those immediate clients identified.
Additional support in the form of first aid kits (331), essential medicines (351), PPE (883) and other living expenses (1,919) were provided to 3,484 people. The virtual events conducted included topics on HIV, COVID-19, nutrition, stress management, and physical activities. Nearly 100 virtual events were conducted during the lockdown with thousands of views.
Conclusions/Next steps: The strict lockdown measures impacted many, particularly PLHIV. The activation of established CBOs and protecting their CHW, allowed aid and support to be promptly delivered. CBOs became an important resource to support and engage PLHIV, allowed for effective and efficient distribution of supplies/resources as well as maintaining supportive engagements.

EPD514
Differentiated barriers and preferences for receiving HIV care among Peruvian and Venezuelan men who have sex with men (MSM) in Peru

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Background: Retention in HIV care drops significantly during the second year and the COVID-19 pandemic has worsened this. This study explored barriers and facilitators for retention during COVID-19 curfew among HIV+ Peruvian and Venezuelan MSM. We also explored preferences for receiving care.
Methods: We performed an online survey in 2021 among 50 HIV+ MSM receiving treatment at a national hospital in Peru. We used closed and open-ended questions.
Results: Twenty-four percent of respondents were Venezuelan immigrants and 76% were Peruvians. The mean age was 32.7 years. 80% self-reported as homosexual and 20% as bisexual. 52% had college education or above, and 24% were unemployed. Regarding barriers to start treatment, Venezuelans reported lack of treatment in their country and lack of money to complete procedures; while Peruvians reported bureaucracy, poor health and denial. The main motivation to start treatment was to recover and maintain good health. In addition, Peruvians were motivated by their personal goals and families.
After starting treatment, participants set the goal of having healthier lifestyles and to reach viral suppression; also, Peruvians pursued emotional stability and advancement of education and work[BK1].
During the pandemic, the barriers to access care were lack of transportation, fear of going out and getting COVID-19, long waiting times, closure of the primary health system, and economic limitations; also, Peruvians complained about the lack of personnel and appointments, and lack of emotional support.
Regarding solutions to improve care, participants suggested enhancing telemonitoring including text messages as reminders; decreasing bureaucracy and decentralizing the delivery of treatment; providing treatment for longer periods.
Finally, topics of interest for receiving information were scientific news and monitoring of viral load/CD4. Peruvians were also interested in mental health, prevention of HIV and other sexually transmitted infections, and alcohol abuse; while Venezuelans, in nutrition and treatment literacy.
Conclusions: We could better retain Peruvian MSM and Venezuelan immigrants by addressing specific needs and preferences for receiving HIV care. Telemonitoring can help address this and barriers that have appeared during the pandemic. While mental health is a concern for Peruvians who are motivated by long-term goals, Venezuelans are focused on individual and short-term wellbeing.

EPD515
Pandemic impact and adaptations in delivering health care to people living with HIV without health insurance in Toronto, Ontario, Canada: the Blue Door Clinic experience

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Background: The Blue Door Clinic was established in 2019 as a partnership amongst ten HIV and health service organizations in Toronto, Canada. It provides short-term bridging health services and linkage to stable long-term treatment for people living with HIV (PLHIV) who do not have full health insurance coverage.
The clinic team consists of physicians, nurses, case managers and peer navigators. In-person drop-in services are provided asin-kind contribution by the partner agencies on a biweekly basis with phone support in between clinics.

Description: We used mixed methods to assess the effectiveness of clinic operation during the COVID-19 pandemic. Data collection included chart reviews of service use, focus groups, and individual interviews.

This presentation draws on the qualitative data from focus groups with internal and external service providers (N=32) who have engaged in the planning and delivery of services to Blue Door clinic.

Lessons learned: As a multisector partnered initiative, the Blue Door clinic faced compounded operational challenges during the pandemic due to a mixture of factors specific to the clients, service providers and institutions.

In addition to physical and mental distress that impact both service users and providers, precariously insured PLHIV experience additional challenges: increased barriers in accessing social, legal and government services; final hardship related to precarious work conditions; difficulties in accessing online care due to living condition and lack of privacy.

Provider were faced with increased workload, workplace re-deployment, and challenges in delivering virtual care. Institutional challenges included health and safety concerns and resource planning specific to PPE, physical distancing, staffing shortage and redeployment needs.

To address these challenges, Blue Door Clinic changed operation from drop-in to appointment based, increased clinic frequency to weekly, mobilized and trained new redeployed staff to take on provider roles, leveraged more community partner and peer navigator support, and increase virtual support by diversifying modes of communication with clients using text, email and what's app.

Conclusions/Next steps: COVID-19 presented unprecedented challenges to health care delivery and marginalized groups experienced disproportionate negative impact.

Proactive efforts in leveraging multisectoral collaboration and increased flexibility in service delivery are essential to address widening health inequities by vulnerable populations.

EPD516

Saving the ARV lifeline: continued outreach helped the PLHIV to continue with drug adherence during COVID lockdown: an experience from GFATM supported Ahana project in India

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Background: While country wide lockdown halted the spread of COVID spread, but it left a serious health impact on the general people, it was a double blow for the People living with HIV, for those ARV drug is the lifeline. It becomes even more critical considering pregnant women needsing continued ANC services along with ARV.

Ahana project supported by GFATM, puts up a fight to keep the lifeline of ARV continued for the HIV positive pregnant women and general PLHIV during COVID lockdown.

Description: Three staged approach has been adopted to keep the ARV life line going with:

A. Advocacy at the national, state and at the local level with Govt. so that passes can be issued for the outreach staff,

B. Desk based analysis of HIV positive pregnant women registered with the project to determine ARV requirement,

C. Coordination established with ART centres so that drugs can be issued against individual client in need of drugs,

D. Follow up with care and support for ART adherence as well as ANC related needs.

Lessons learned: Field workers carried ARV medicines from ART centres, as well Dry ration from the Govt. sources to deliver it in the homes of HIV positive pregnant women and general PLHIV. Combining both phases of outbreak a total of 36,700 general PLHIV, including 13,899 HIV positive pregnant women were delivered ARV medicines at home.

A total of 14,578 families were provided with dry ration through local NGO, Plan India sources or linked to Govt. rationing services. And 40,907 PLHIVs were provided with COVID related awareness messaging to remain safe from the infection being immunocompromised. Around 1,883 PLHIVs were supported to get vaccinated for dose-1 and 622 PLHIVs were supported to completing double dose during April- Sept 21.

Conclusions/Next steps: With curfews and lockdowns imposed and movement restrictions, meeting the requirement of ART adherence and other ANC needs became a great challenge. Ahana field workers put up an unputdownable effort to reach out to PPW and general PLHIVs with the ARV medicines to keep the lifeline continued and to ensure that the PMTCT needs are met appropriately and vertical transmission averted.

EPD517

Association between missing ART doses and economic hardships, difficulties to access healthcare and negative mental health outcomes among people living with HIV during the COVID-19 pandemic in Argentina

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Background: Since the outbreak of the COVID-19 pandemic successive lockdown and social distancing measures were implemented. This context negatively affected income, access to healthcare and quality of life of specific groups, such as people living with HIV (PLHIV), possibly impacting antiretroviral treatment (ART) adherence.

This study analyzes correlates of missing daily ART doses among PLHIV after 15 months of initiation of the COVID-19 pandemic in Argentina.

Methods: Eighty PLHIV completed an online survey, including the CES-D Depression Screen-Short Form and the Perceived Stress Scale (PSS-4), from June to September/2021. Median age was 39.50 years (IQR: 34-47.75), 74.7% self-identified as males and 25.3%, as females.

Most participants self-identified as gay or bisexual (70%). A dichotomous variable was constructed: participants who reported having missed at least one daily ART dose in the last 30 days (31.3%), vs. those who reported no missing daily doses (68.8%). Associations with missing ART daily doses were explored with chi-square tests for categorical variables, and with t-tests, for continuous variables.

Results: Having missed daily ART doses was associated with having requested/received unemployment insurance (OR=4.02; CI95%=1.28-12.67) and with difficulties to afford basic needs (e.g., food, hygiene products) (OR=2.66; CI95%=0.96-7.37), to attend healthcare facilities (OR=3.15; CI95%=1.14-8.69), to get transportation to get to a medical appointment (OR=6.66; CI95%=1.14-38.83), to get medication other than ART (OR=5.14; CI95%=1.34-19.77) and to continue affording health insurance (OR=3.00; CI95%=1.00-8.95).

Additionally, those who reported missing doses were more likely to report interruptions in mental health care (OR=1.60; CI95%=0.93-2.73) and exhibited more depressive symptoms and more perceived stress.

Conclusions: One third of participants missed at least one daily ART dose in the last month, which was significantly associated with socioeconomic hardships, difficulties to access healthcare and negative mental health indicators, during the COVID-19 pandemic. Public policies should prioritize PLHIV during pandemics to ensure access to basic needs and healthcare to maintain viral suppression and a good quality of life.

EPD518

Distribution of Opioid Substitution Therapy (OST) during COVID 19: experience of take-home dosage under National AIDS Control Programme in India

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Background: National AIDS Control Programme (NACP) provides Opioid Substitution Therapy (OST) under the comprehensive harm reduction package for People Who Inject Drugs (PWID) in India. The programme under the Ministry of Health and Family Welfare reaches out to 40,937 active clients across 32 states through 248 centres and 111 satellite centres.

The OST program is primarily provided as a directly observed treatment (DOTS) under trained medical supervision.

Description: Since early 2020, the COVID-19 outbreak had an immense impact on the PWIDs enrolled on OST due to a nation-wide lock down and subsequent containment zones in the different states. To address this problem of clients unable to present for daily dispensation, National AIDS Control Organisation (NACO) rolled out a policy on take home dosage for OST centres during COVID19 pandemic which included take home provision for upto 15 days for stable clients, fast-track induction of new clients, flexible timings, virtual counselling and COVID-19 prevention. Monitoring of the take home policy was done through an online questionnaire filled by medical doctors at the OST centres.

Lessons learned: NACO's take home policy immediately led to a reduction in direct physical interaction and required number of visits. OST clients received regular counselling to cope with the psychological distress of COVID and to ensure compliance with prescribed dosage regimens. Fast-Track induction reduced the waiting period and allowed for increased new registration (upto 29 percent).

Adherence on OST improved significantly (up to 82 percent) with no noteworthy instances of diversion. Flexible timings and travel pass issued to OST clients reduced access barriers during curfews. WhatsApp messaging groups for the Medical Doctors and PWIDs provided constant support.

In instances where returnee migrants were known to be PWIDs, a separate quarantine space was offered to assist them with withdrawals, detoxification and OST.

Conclusions/Next steps: NACO's take home policy helped to ensure uninterrupted service delivery and prevention of COVID among OST clients. This has resulted in better adherence and retention.

In the containment zones, take home dosage through outreach workers and virtual counselling was effective, however requires close monitoring. Virtual medical consultation was shown to be a feasible option for follow up and counselling.

EPD519

Impact of COVID-19 on HIV service delivery and access in U.S. Health Departments in two urban juridictions: findings from the Rapid Risk and Resilience Assessment (R3A)

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Background: The impact of the COVID-19 pandemic on HIV services in the U.S. has exacerbated inequities in delivery and access of HIV care. A distinct gap exists in the literature regarding how COVID-19 impacted delivery of and access to HIV prevention and treatment services among persons with and at risk for HIV. HealthHIV, (a U.S. national non-profit) in collaboration with DC Health and the Maryland Department of Health, conducted the CO-

VID-19 Rapid Risk and Resilience Assessment Project (R3A) to produce a deeper understanding of the experiences of HIV service providers and patients of HIV prevention and care services.

Methods: R3A utilized an exploratory sequential multiple methods approach including quantitative and qualitative instruments through a provider online survey (n=94), provider key informant interviews (n=48), and client focus groups (2 groups, n=17). Data collection was from June 2021 to September 2021. Quantitative survey data were assessed using regression analysis; qualitative data were organized in NVivo and thematically analyzed using theoretical saturation.

Results: Provider-reported challenges during COVID-19 reflected gaps in emergency response preparation and limitations in virtual healthcare infrastructure, delivery, and engagement. Organizations delivering care to racial/ethnic minorities (including racial/ethnic minority LGBTQ+ persons) were more likely to close or reduce services and experience service delivery challenges.

They had higher odds of patient psychosocial barriers due to COVID-19 (fear of infection, testing, vaccines, contact tracing, mental health, and stigma), compounding existing psychosocial barriers. Patient use of telehealth was associated with new engagement in care, financial hardship, and preference for virtual engagements.

Conclusions: R3A documented a COVID-19 eclipse that overshadowed the resources and needs around HIV prevention and care services for providers and clients.

The social and medical crises elicited by COVID-19 have intersected extant social determinants of the lived experiences of persons with and at risk for HIV in Washington, DC and Maryland, especially underserved populations.

COVID-19 has amplified the pandemic's impact, resulting in food and housing insecurity, insurance complications, unemployment, disrupted healthcare access due to insufficient technological and transportation resources, mental health challenges, and isolation.

EPD520

Assessing the impact of COVID-19 on event based testing activities in the Central Region, Ghana

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Background: Ghana has marked successes in responding to HIV and AIDS through integrated and multi-sectorial approaches. The Central Regional Technical Support Unit (TSU) of the Ghana AIDS Commission (GAC) takes advantage of public events and social gatherings to reach people with HIV testing service.

However, efforts to mitigate the spread of COVID19 placed a ban on public events and social gathering. The TSU assessed the impact of COVID 19 and its effect on Public HIV testing activities in the central region, Ghana.

Description: The TSU embarked on a program review and assessment on event based HIV activities specifically carried out in 2020. The assessment involved tracking all HIV activities that were carried out by the TSU at the regional level and Municipal District Assemblies (MDAs) at the District level. All HIV programs and implementation of interventions were measured at the regional and district through a program target and result analysis framework. The measure indicators covered number of public events organized, HIV activities carried out at events, number tested, number of condoms distributed, number tested positive and linkage to treatment, care and support.

Lessons learned: The result showed that organization of public event had reduced from 90% in 2019 to 20% 2020, event HIV testing had reduced by 70% with public condom distribution reducing by 60% Additionally, access to ART had reduced from 51.3% to 47% as a lot of persons living with HIV were scared to visit the health facility due to exposure to COVID 19. Public sensitization on stigma reduction and education on HIV prevention were not carried out as a result of the pandemic there by reducing the coverage of new HIV infection.

Conclusions/Next steps:

- The Ghana AIDS Commission must develop innovative approaches to provide public HIV testing services amidst COVID 19.
- The TSU must engage stakeholders in the implementation of a household centered HIV testing and referral.
- The TSU must continue to advocate for a comprehensive health coverage and delivery system.
- Increase education and create awareness on HIV self-testing.

Social and behavioural aspects and approaches to COVID-19

EPD521

Changes in sexual behavior among men who have sex with men during the spread of COVID-19 in China: results of an online survey

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Background: Sexual behavior can influence sexually transmitted infection uptake, especially HIV, among men who have sex with men (MSM).

This study aims to evaluate the different sexual behavior changed among MSM duringthe coronavirus disease 2019 (COVID-19) and find the associated factors of sexual behavior.

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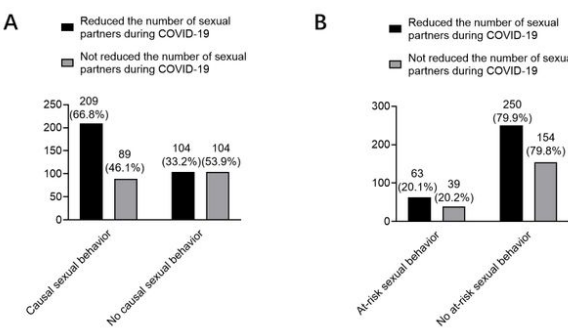
Methods: An online survey was conducted to collect sociodemographic, sexual behavioraland HIV testing information before and over COVID-19 epidemic.
We first divided MSM by reduce sexual partners or not during COVID-19, then compared the characteristic of the two groups;
Secondly, we compared the casual sexual behavior and at-risk sexual behavior change during the COVID-19 between the two groups of MSM;
Finally, we identified the factors associated with sexual behavior among MSM using bivariate and multivariable logistic regression.
Results: A total of 502 MSM participated in the online survey. Compared with participants who did not reduce number of sexual partners, participants who reduced sexual partners had higher values of multiple sexual partners, causal sexual partner, used a condom with causal sexual partner and seeking sexual partners using apps (all p< 0.05).
A higher proportion of participants who reduced the number of sexual partners compared to before COVID-19, reported have causal sexual behavior (66.77% vs 46.11%,c^2= 21.047, p< 0.001,). But at-risk behavior did not change significantly between the two group during COVID-19 (p>0.05). Multiple factors related to casual sexual behavior and at-risk sexual behavior.



Figures A & B.

Conclusions: During the COVID-19 pandemic, the lockdown measures of government can effectively reduce the number of sexual partners and casual sexual behavior among MSM, but it cannot affect the occurrence of at-risk sexual behavior in MSM. To prevent HIV, we should focus on MSM who have dangerous sexual behavior, and adopt a variety of methods.

EPD522

Experiences of the COVID-19 epidemic: a participatory qualitative study with people living and/or working with HIV in the UK

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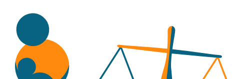
Background: We aimed to explore the experiences of HIV service providers (community- and clinic-based) and people living with HIV during the COVID-19 epidemic in the United Kingdom of how HIV services had adapted, the experience of these adaptations, and the wider implications of government restrictions and the pandemic itself on daily life, health, and wellbeing.
Methods: We conducted fieldwork in October-December 2020 (people working in HIV services) and June-August 2021 (people living with HIV), using the same qualitative method (online semi-structured interviews) with peer researchers participating in the second phase.
Participants were based in England or Wales and people living with HIV were sampled from the 2017 Positive Voices study. Interviews were conducted using Microsoft Teams, Zoom or by telephone. Data were managed using NVivo and analysed by thematic analysis. We triangulated findings from both studies and present these together.
Results: We interviewed 33 people: 19 people living with HIV, 9 community-based and 5 healthcare workers (some of whom were also living with HIV). Twenty-three identified as cisgender men and 10 as cisgender women and most were based in London (n=21).
We identified themes relating to the impact on relationships, government guidelines/restrictions and challenges specific to people living with HIV. For instance, issues surrounding confidentiality and sharing of HIV status were raised because of initial government advice for people living with HIV to 'shield'; some people had household members who were unaware of their status.
Services adapted quickly to provide remote support for people living with HIV which made them more accessible for some but created challenges for others who became more isolated.
Conclusions: Peer/social support and HIV charities remain essential resources for some of the most disadvantaged people living with HIV but have faced financial pressures due to the pandemic. We find that HIV services have generally adapted well to the pandemic with the changes being acceptable to most people living with HIV although most people prefer the idea of returning to pre-pandemic practices (e.g., face-to-face). Digital exclusion remains a barrier for research participation and accessing services. Additionally, there is an expected emotional toll on those providing services.



EPD523

Loneliness and sexual risk-taking among gay, bisexual and other men who have sex with men in the context of HIV and COVID-19, two ongoing pandemics

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Background: During the COVID-19 pandemic, social distancing and isolation measures have been imposed—however, both areassociated with increases in loneliness and decreases in social support. In the context of COVID-19, younger age has also been linked with increased loneliness and lower social support (Lisitsa et al., 2020; Groake et al., 2020).
According to the loneliness and sexual risk model, higher levels of loneliness should be associated with increased sexual risk-taking; however, it's unknown whether this held true during COVID-19, when most Canadians were ordered to isolate, nor how age might impact this association.
We examined these associations using data on gay, bisexual, and other men who have sex with men (GBM), living in Canada's three largest urban centers.
Methods: Participants (n=1134) were recruited (09/2020-04/2021) from an ongoing cohort study of GBM aged 16+ in Montreal, Toronto, and Vancouver.
We examined the associations of baseline perceived social support (SS) with emotional support (ES) during the early phase of the COVID-19 pandemic (March-May 2020).
We used linear regressions to examine the association of age with loneliness and ES during COVID-19.
We also examined whether age moderated associations between loneliness and sexual risk-taking (at least one episode of group sex, transactional sex, chemsex, or sex with anonymous or new casual partners). Analyses controlled for education, income, recruitment city, living alone, and HIV status.
Results: Partial correlation analysis indicated a significant positive correlation between SS at baseline and ES during COVID-19 ($r(1134)=.21$, $p<.001$). Linear regressions revealed a significant association between age and loneliness (beta=-.144, $p<.001$) and age and ES (beta=-.170, $p<.001$).
Further, age moderated the association between loneliness and the likelihood of reporting sexual risk-taking ($B=-.02$, $p=.003$, 95%CI: -0.04, -0.01), such that younger participants experiencing more loneliness were more likely to report engaging in sexual risk-taking.
Conclusions: GBM who began with higher levels of perceived social support pre-COVID-19 tended to be better able to access emotional support from family and friends during the early months of COVID-19.
Further, younger GBM were particularly impacted by loneliness and may benefit from additional support to reduce their risk of transmission for both HIV and COVID-19.

EPD524

How the COVID-19 pandemic is changing sexual relations and HIV risk practices in eastern Zimbabwe

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Background: The coronavirus disease 2019 (COVID-19) and necessary restrictive public health measures present numerous challenges for sexual health and HIV prevention. Whilst some work is beginning to document the sexuality-related effects of COVID-19, none has empirically examined how COVID-19 risk and prevention efforts come to affect sexual relations and HIV risk practices in a sub-Saharan African setting.
Methods: This article draws on qualitative data from the first four data collection points (involving phone interviews, group activities, and photography) of a WhatsApp-enabled qualitative longitudinal study to explore how the COVID-19 pandemic is changing sexualities in eastern Zimbabwe. Data was collected from 11 adolescent girls and young women, six of whom engage in transactional sex, and five men over a 5-month period (March-July 2021).
Results: Three themes – identifying six changes to sexual relations – arose from our thematic analysis:
i. More or less relationship sex;
ii. More or less casual sex; and,
iii. More or less transactional sex.
As we examine and illustrate these changes, we reveal how they appear to be contingent on, or mediated by, the way COVID-19 prevention measures affect participants and their sexual partners differently, personal fears of being infected by COVID-19, relationship status, COVID-19 induced poverty and access to HIV prevention methods.
Conclusions: Our findings paint a complex picture of how COVID-19 and associated prevention measures come to affect sexual relations and risk practices in different ways.
We draw on our findings to discuss how these changes may reduce HIV risk for some, but may also pose a considerable threat – across the HIV prevention cascade – for others.

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EPD525

Socioeconomic impact of the COVID-19 pandemic and typologies of COVID-19 preventive behaviors in an Indian megacity

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Background: There is limited population-representative data on typologies of COVID-19 preventive behaviours in low-and-middle-income countries where the barriers to adoption are substantial. India experienced the first and arguably most severe epidemic of the Delta variant.

We identify typologies of COVID-19 preventive behaviours and associated correlates before and during the Delta wave in Chennai, India.

Methods: From January-May 2021, we enrolled 4,657 individuals aged ›5 years from 2,610 unique households across 103 spatial locations in Chennai, India using a probability proportional to population density sampling approach. Participants underwent an interviewer-administered survey including COVID-19 impacts and nine preventive behaviours. Latent class analysis (LCA) was used to identify typologies of preventive behaviours among adult participants.

We assessed sociodemographic predictors of class membership using multinomial logistic regression with cluster-robust standard errors to account for household-level clustering.

Results: The median age was 38 years (IQR=26-51); 300 were children and 2,258 self-identified as female. Over two-thirds of households (68.1%) had a decrease in household-level income due to the pandemic; 52.9% of adults reported decreased wages or losing their jobs/businesses.

The most common preventive behaviours were washing hands or using hand sanitiser (55% of children; 87% of adults) and public mask use (38% of children; 76% of adults). Among adults, LCA identified a 3-class model of preventive behaviours characterized by low engagement (45.7%), high engagement in masking and disinfection practices (but not distancing, 29.2%), and high engagement in masking and social distancing practices (but not disinfection, 25.1%). In multivariable analysis, compared to the low engagement class, membership in the high masking/distancing class was significantly associated with female gender, older age, later recruitment and markers of higher socioeconomic status including higher educational attainment and home air conditioning.

Notably, those experiencing job or income loss were more likely to be in the high masking/disinfection class (aOR=2.92 [95%CI=1.65-4.84]) and less likely to be in the high masking/distancing class (aOR=0.12 [95%CI=0.09-0.15]), as compared to the low engagement class.

Conclusions: The COVID-19 pandemic resulted in a significant loss of socioeconomic stability, which was associated with engagement in COVID-19 preventive behaviours. Structural interventions and social protection schemes to financially support individuals may facilitate sustainable COVID-19 prevention efforts.

EPD526

An assessment of burnout and depression among health care workers providing HIV care during the COVID-19 epidemic in Malawi

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Background: Burnout and depression among health care workers (HCWs) may be more common than previously reported due to anxiety and increased work pressure during the COVID-19 epidemic. We assessed the prevalence of burnout, depression and associated factors among HCWs who provide HIV care in Malawi.

Methods: In April-May 2021, between the second and third Covid-19 waves, we randomly selected up to 14 HCWs per facility to participate in an anonymous survey, stratifying by HCW cadre. Thirty PEPFAR/USAID-supported health facilities were included in the study.

We used the World Health Organization Self Report Questionnaire for depression screening (a score of ≥8 indicating positive screen) and the Malslach Burnout Inventory tool for burnout screening (moderate or high burnout on Emotional Exhaustion and/or Depersonalization and/or Personal Accomplishment domains indicating positive screen). Burnout analyses excluded cadres that were not directly involved in patient care. Descriptive statistics and logistic regression models were used.

Results: We included 435 HCWs, median age 32 years (IQR 28-38), 54% female. Thirty-four percent were clinical cadres and 66% lay cadres. Prevalence of positive screen for depression was 28% and for burnout 29%. Co-prevalence of positive depression and burnout screen was 13%.

Controlling for age, sex, marital status and years of work, positive depression screen was associated with working in the southern region (aOR 2.3, 95%CI 1.4, 3.6), previous confirmed or suspected COVID-19 episode (aOR: 2.2, 95%CI: 1.2, 4.2), and feeling that one would probably or definitely get COVID-19 in the next 12 months (aOR 2.8, 95%CI 1.3, 5.9).

Being a clinical staff vs. lay health staff was associated with positive burnout screen (aOR 2.0 95%CI: 1.1, 3.5).

Finally, screening positive for burnout was strongly associated with positive depression screen (aOR 3.2, 95%CI 1.9-5.4).

Conclusions: HCWs screened positive for burnout and depression commonly but prevalence rates were not higher than reported before the Covid-19 epidemic.

Regular screening for both conditions should be encouraged given high prevalence, consequences for mental health and work performance and availability of feasible interventions for confirmed cases.

More research is needed on how prevalence of burnout and depression fluctuates during and after Covid-19 waves.

EPD527

Evaluating COVID-19 vaccine hesitancy among PrEP-eligible individuals living in Mississippi: a qualitative study

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Background: Mississippi has lagged behind other states in COVID-19 vaccination rates as well as the uptake of pre-exposure prophylaxis (PrEP). This is of special concern as the South has higher HIV rates and thus a larger proportion of immunocompromised individuals.

This study investigated COVID-19 vaccine and PrEP hesitancy to ascertain if concerns may be addressed similarly.

Methods: Semi-structured interviews were conducted between April 2021 and January 2022, which included the following content: vaccine/PrEP willingness, COVID-19 vaccination uptake barriers and facilitators, and sources of vaccine information. Coded data were entered into NVivo, and reflexive thematic analysis was conducted.

Results: Fifteen clinical staff and 37 PrEP-eligible patients living in Mississippi were interviewed. The patient sample was aged 23-66, 65% female and primarily Black (67%). Overall, 40% of patients were on PrEP or had previously taken PrEP, and 60% received the COVID-19 vaccine.

Among PrEP users, 72% had received the vaccine; similarly, 70% of those without a history of PrEP use were vaccinated. Participants reported similar hesitations regarding PrEP and the COVID-19 vaccine. These shared concerns included lack of trust in product efficacy, fear of side effects, and perceived lack of need. Participants also reported similar reasons for vaccine and PrEP uptake, which included taking control of their health and protecting themselves and others. Unique barriers for the vaccine included lack of knowledge and understanding of how the vaccine worked, distrust of the government, fear of vaccine side effects, and social pressure to stay unvaccinated.

Facilitators specific to the vaccine included high accessibility, the ability to protect oneself and vulnerable populations (children, those with pre-existing conditions, elderly), and avoiding future negative COVID-19 illness experiences. Participants reported that vaccine information should be provided by health organizations and familiar, respected individuals.

Conclusions: Results evidenced common motivational factors accounting for reluctance to utilize both preventive measures in populations that could benefit.

These findings will inform COVID-19 vaccination and PrEP uptake efforts and could increase overall immunization rates in Mississippi.

Future research sampling individuals at risk for, and living with HIV, could further assess shared barriers and facilitators to vaccine and PrEP uptake.

EPD528

Reaching communities in the context of COVID-19: lay workers improve HIV linkage at a health center in Kapchorwa district, Uganda

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Background: Kapchorwa district in Eastern Uganda has an HIV prevalence of 4.8%; less than two-thirds of persons newly diagnosed with HIV are successfully linked to care. Barriers to ART uptake are multifactorial, and frequently include patient denial surrounding their diagnosis, perceived stigma related to HIV, and fear of disclosure by health workers.

Myths and misconceptions regarding COVID-19 have further impeded HIV care linkage. In Kapchorwa, the USAID RHITES-E Activity led by IntraHealth International supported Kaserem Health Center III to engage lay workers in offering quality, integrated information and counseling to clients to improve ART linkage.

Description: In October 2020, RHITES-E engaged lay workers to intensify interpersonal communication to families with clients who tested HIV positive and were not on treatment through:

1. Home visits;
2. Home-based counseling; and,
3. Social behavior change communication around COVID-19 myths and misconceptions and fear of COVID-19 infection.

Lay workers were oriented on key components of community follow-up and given a line list of all clients not linked, including contact details and physical locations. Village health teams coordinated scheduling and assignments.

Lessons learned: Data show sustained improvement in ART linkage rates from 64% in December 2020 to 94% at end of September 2021.

Our approach targeted many of the psychosocial, social, cultural, and behavioral barriers related to HIV linkage and successfully engaged existing community structures to offer information and counseling that addressed myths and misconceptions surrounding COVID-19.

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Figure. Trend of linkage at Kasarem HCIII Oct 2020-Sep 2021

Conclusions/Next steps: Strengthening community engagement structures and systems for client tracing, counseling, referral, and linkage into care, including line-listing patients, reaching them at home, and providing home-based COVID 19-specific counseling, improved linkage to ART.

Scaling-up efforts to eliminate stigma and discrimination directed toward people living with HIV and other vulnerable groups in communities and health care settings is key to achieving global HIV eradication targets.

EPD529

Implementing a linked community- and school-based adolescent HIV and sexual and reproductive health program during the COVID pandemic: lessons learnt

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Background: Led by peer educators, SKILLZ Girl is a sports-based program offering in-school education on HIV and sexual and reproductive health (SRH) rights linked to community-based distribution of HIV and contraceptive products and facility-based treatment and services. Our study follows a cohort of schoolgirls (≥16 years) from 23 high density population areas in Lusaka, Zambia.

Although SKILLZ Girl was planned and piloted in 2018/2019, the cluster-randomized trial study, which aims to evaluate the programs impact on uptake of HIV testing and care and contraceptives, occurred during the COVID pandemic. Between February 2020 and December 2021, schoolgirls were invited to participate in SKILLZ Girl. Process data related experiences and lessons learnt were documented during implementation.

Description: After the first COVID-19 case emerged in Zambia (March 2020), the Government of Zambia closed all schools restricting large gatherings for an unknown period of time. Although schools were reopened in September 2020, COVID-related restrictions severely affected planned implementation of SKILLZ Girl. To continue offering critical HIV and SRH information and services, we adjusted SKILLZ Girl as follows:

- Revised the protocol to suit COVID related restrictions, including community sensitization outreach,obtaining verbal parental consent via phone and implementing program activities in smaller, socially-distanced groups.
- Through consultations with authorities and institutional partners, we obtained approval to continue implementing our revised project activities
- To improve service delivery, we worked with the Ministry of Health to train and certify coaches as community-based distributors to directly distribute HIV self-testing kits, condoms, emergency contraceptives, oral pills, and Sayana Press to participants.
- Trained staff on collecting data via phone.
- Due evidence of high moderate- and severe depression found during the pilot, we trained coaches in and implemented basic mental health screening, counselling, and referrals.
- Escorted referrals by coaches to facility appointments for SRH services not offered by coaches to ensure linkage while avoiding queuing.

Lessons learned: Provision of SRH services through a school-based program during the COVID pandemic required substantial delivery adaptations and additional financial and human resources.

Conclusions/Next steps: Despite myriad challenges, our experience show that, school-based HIV and SRH interventions are feasible during the pandemic if adjusted to fit within constraints.

EPD530

Improved viral load uptake and suppression among transgender persons with implementation of differentiated care adaptations during the COVID-19 pandemic

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Background: Enforcement of COVID-19 pandemic restrictions and curfews in Kenya greatly disrupted the provision of routine HIV services and created an urgent need to adapt existing HIV service delivery models to ensure continuity of access to essential HIV services.

We describe adaptations in HIV service delivery made to a Transgender HIV program implemented in Mombasa, Kenya between April 2020 and September 2020, and the impact of the adaptations on viral load uptake and suppression.

Description: In line with Ministry of Health Kenya directives for differentiated care antiretroviral therapy (ART) provision during the onset of the COVID-19 pandemic in March 2020, the program offered multi-month (>3 months) dispensing of ART to HIV positive transgender persons regardless of ART regimen, duration on ART or viral load status. This included implementation of community ART groups with service providers who were au-

thorized to move between restricted areas providing ART refills and viral load sample collection in the communities with the assistance of peer navigators. The program also strengthened mental health support and adherence counselling through provision of weekly telecounselling services to Transgender cohort on ART.

Lessons learned: There was improvement in viral load uptake and suppression among Transgender persons with the adaptation of community differentiated care models and weekly telecounselling support. Between October 2019 and March 2020 when 90% (26) of the cohort were dispensed to ART for 1 to 3 months and only 10% (3) were dispensed to ART for >3 months, the viral load uptake and suppression was 54% and 57% respectively.

However, with adaptation of differentiated care and telecounselling entailing provision of 92% (34) of the cohort with ART for 3 to 5 months and only 8% (3) of the cohort with ART for 1 to 3 months, the viral load uptake and suppression increased to 70% and 100% respectively. Service providers felt that these interventions helped them listen more to their clients while beneficiaries appreciated not having to travel far for ART and viral load sampling services.

Conclusions/Next steps: Adaptation of community differentiated care models is feasible and can be strengthened to optimize viral load uptake and suppression among Transgender persons.

EPD531
Digital campaign to influence the uptake of COVID-19 vaccination

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Background: COVID-19 vaccinations began in India in early 2021, within a year since the pandemic reached India. Vaccination drives were surrounded by mistrust, false information leading to a large number of trans men and -women who were at various stages of gender reaffirmation or were living with HIV to avoid Covid-19 vaccinations due to myths associated with side-effects, impact on HIV, or interactions with ART/hormones.

To mitigate this the Humsafar Trust implemented the second phase of our digital campaign *Samajh* (Understanding) II to address misconceptions, vaccine hesitancy, and improve vaccine uptake.

Description: Phase II of the Samajh digital campaign began with a series of community vaccine belief consultation to formulate strategies addressing urgent health communication needs and highlighting focus on improving vaccine uptake among LGBTQ+. The campaign emphasized on transgender communities dealing with isolation, misinformation and those facing discrimination at vaccination centres. The digital campaign developed IEC that aimed to also help communities navigate 2nd wave of the COVID-19 delta variant by motivating independence, positive mental health, and adherence to recommended COVID-19/ART guidelines. The campaign also supported information for revving the HIV program to incorporate COVID-19 care.

Lessons learned: We have learnt that in scenarios of constrained time and resources for community research, community consultations are helpful in understanding ground situations to inform behaviour-change campaigns. Focus on mental health with COVID-19 information is vital as continues to be a concern in the ongoing pandemic. Campaign needs to empower individuals to cope with isolation, living with unaccepting families and away from offline peer support. Hence practical information and tips need to be shared to strengthen resilience. HIV services needed to be reimagined to incorporate virtual delivery of services to retain focus on testing and linkage to treatment/care.

Conclusions/Next steps: The 2nd edition of the campaign Samajh was successful in herding community focus on vaccine uptake, resilience to COVID-19, individual coping skills, HIV/STI services, mental health and individual empowerment which was the need of a community that experienced pandemic at multiple, intersecting level.

EPD532
Virtual monitoring, evaluation and learning on HIV service accessibility during COVID 19: learnings & best practices

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Background: The Ready, Resourceful, Risk-Aware (Triple-R) project is supporting the government of Eswatini to prevent new HIV infections and reducing the HIV vulnerability for orphans and vulnerable children, adolescent girls and young women. Robust practices of MEL are the best tools to monitor and measure the success and performance of projects. COVID 19 restrictions however presented challenges in traditional ways of conducting data collection and program monitoring through site visits and physical interactions. This called for new strategies to ensure that people continue receiving quality services and documentation is done properly.

The purpose of the study is to measure service delivery with the new incorporated MEL systems during the COVID 19 pandemic.

Description: *Challenges in implementing MEL during the pandemic*

Due to COVID 19 pandemic restrictions, there were some data loss and gathering referral completion data became difficult.

Adapted MEL practices during the pandemic

- Data management systems were digitized and expanded to virtual platforms like CommCare, Power Apps.
- Integrating Pact and Dreams clinical service providers electronic database for referral completion data collection.

- Beneficiary feedback through phone calls incorporated into monthly project activities. Follow-ups on services received were made and calls documented using Power App and stored on secure, locally hosted SQL servers for analysis and validation.

Lessons learned: On average 97% of verified clients indicated to have received services in year 2021. About 20,765 referrals issued in 2020 where completion rate was 86% and 113% referrals completion rate in 2021.

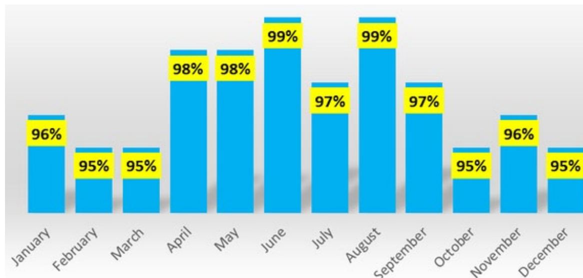

Figure. Monthly service delivery rate in 2021-power app verified

MEL changes improved partner collaborations, strengthen staff skills in mobile application use and remote working tools. Automated processes improved results production and data quality.

Conclusions/Next steps: Strengthened technological capacities and innovative skills for M&E staff bolster effective response mechanisms and real time monitoring of HIV programs resulting in improved data outcomes.

Keywords: MEL: Monitoring, Evaluation and Learning.

EPD533

Let's talk! Harnessing the power and influence of the media to accelerate COVID-19 vaccination in Zambia

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Background: With a vaccination coverage of 12.5% (30 November 2021), the Zambian government introduced new COVID-19 vaccination guidelines, including requiring COVID-19 vaccination for public-sector workers and proof of vaccination for individuals wishing to gain access to public buildings, unleashing a storm of protest from anti-vaxxers.

This happened at the beginning of a national COVID-19 December Drive, intended to rally the country to achieve two million doses-in-arms by year-end.

Description: To mitigate the growing anti-vax push, the JSI-implemented USAID DISCOVER-Health Project supported the Zambian President's COVID-19 Advisor (COVID-Czar) to date the media in all ten provincial capitals to explain government policy, answer media questions, and address public concerns. In a marathon tour, the COVID-Czar and senior MOH staff explained GRZ vaccination policy, addressed concerns about the Omicron variant and vaccine effectiveness, and urged Zambia to get vaccinated.

In addition to engagements with the media, in each locality, the team went on local radio/television stations, engaging directly with citizens about vaccines. They responded to questions about vaccine safety, addressed myths/misconceptions, and visited vaccination-points to observe/learn about service-delivery experiences.

The COVID-Czar directly engaged 650 people during the tour, including 90% of media houses nationwide, in addition to religious, traditional and civic leaders. His radio and TV appearances were replayed nationally, reinforcing community-level vaccination efforts and significantly increasing vaccine uptake.

Lessons learned:

- An informed and supportive media is a powerful tool in public health interventions that require public buy-in and participation.
- Public health officials must connect directly with the public in order to understand vaccine rollout challenges and effectively/speedily address them.
- Direct engagement with civic, religious and traditional leaders harnesses their influence for increased vaccination uptake.

Conclusions/Next steps: Quick and comprehensive interventions by technical experts, including through engaging and obtaining the buy-in of the media and influential leaders, are a highly effective way to address people's concerns about COVID-19 vaccines and inform and reassure the public about government measures to protect them, their loved ones, and the country.

This intervention neutralized the anti-vax voice helping the country to reach its target of vaccinating 2 million people by December 2021.

EPD534

COVID-19 vaccine hesitancy and uptake among PLHIV in Lagos Nigeria

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Background: Globally, there has been concern about increased mortality of COVID 19 in PLHIV compared to people without HIV infection. Covid-19 vaccines are safe for use among PLHIV regardless of the viral load or CD4 count.

This study explores vaccine hesitancy and uptake among PLHIV accessing services in HIV treatment sites in Lagos.

Methods: A cross-sectional study was conducted among PLHIV enrolled for a treatment programme at an HIV treatment site in Lagos. A structured questionnaire was administered to 50 PLHIV, to assess vaccine knowledge, uptake, and hesitancy. FGD was held for qualitative data on vaccine hesitancy between November and December 2021.

Results: Most of the respondents (76%) knew COVID -19 can be contacted through cough/sneeze droplet, and 72% knew a COVID -19 positive can be contagious yet asymptomatic. More than half of the respondents perceived themselves as being at mild, low, or no risk of COVID-19. The majority (74%) noted that COVID -19 vaccine is useful; it will protect them from getting COVID 19.

However, about 20% identified the vaccine as neither useful nor useless but 6% noted the vaccine is useless. About one quarter (24%) of the respondents had a shot of the COVID -19 vaccines. Slightly more than half of the respondents (58%) noted they are unlikely or neutral to get a shot of the vaccine in the near future.

Concern raised includes fear of vaccine interaction with other drugs, not easily accessible in the community, negative social media reports. The factors identified for ease of access include making it available in HIV, TB treatment centers, proper education and counseling on covid 19 to addressing misinformation, and family support.

Conclusions: *S*afety concern as it relates to vaccine interaction with ART and its effect on the already compromised immune system is a major driver of hesitancy. PLHIV education on vaccine safety and effectiveness will promote COVID -19 vaccine uptake.

EPD535
Skill-based training to nurture Community Health Workers in LGBTQ+ community in India: outcomes of a virtual COVID-19 Volunteer Training Program

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Background: The access to public health services has been exponentially compromised during COVID-19 pandemic. This has necessitated the need to widen the net of support with the help of trained community volunteers. This abstract reports the impact of a pilot skill-based virtual training to deliver COVID-19 services through community volunteers in India.

Description: We designed a skill-based training program to nurture volunteers from LGBTQ+ community for providing various health and social support services. The volunteers were trained through 5-weekly virtual sessions on topics related to basics of COVID-19 (prevention, diagnosis & treatment), home-based management of mild-to-moderate cases, management of HIV and other co-morbidities prevalent in the community. The training involved sessions on addressing myths & misconceptions related to ART, hormone therapy and substance abuse associated with COVID-19 vaccination. Practical training was given on effective usage of devices used in home-based monitoring of COVID-19 patients.

This online training was conducted in August – September 2021 and the volunteers were evaluated through various home and online assessments. Trained volunteers were followed for COVID-related services provided to the community as a post-training evaluation.

Lessons learned: The training was successfully completed by 13 out 15 volunteers. These volunteers are now providing COVID-19 relief services to LGBTQ+ communities in 7 states across India. The volunteers are now looking after the emergency needs of the community members in their area.

A total number of 617 packets of dry ration and 4585 masks were distributed within their community. 3102 individuals were provided various counselling and home-based care services through e-consultations.

40 persons were supported for COVID-19 testing; 14 were supported with referral services and 6 were provided medicinal support for hospital-based COVID care.

A total number of 192 individuals were supported to get vaccination services by these community health workers up to December 2021.

Conclusions/Next steps: Skill-based virtual training is an effective approach to nurture community health volunteers (CHVs). These CHVs can significantly improve the access of COVID-19 and public health services by LGBTQ+ community in current crisis. These low cost capacity strengthening initiatives can be scaled up to address the needs and vulnerabilities specific to LGBTQ+ community.

EPD536
It is not vaccine hesitancy; it is lack of access: increasing access accelerates COVID-19 vaccination in a Zambian district

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Background: COVID-19 vaccine hesitancy has been blamed for low vaccination rates in Zambia, a credible assumption given the high prevalence of misinformation/myths. In December 2021, the USAID DISCOVER-Health Project, implemented by JSI, supported the Ministry of Health (MOH) to increase demand for and uptake of COVID-19 vaccination through the national COVID-19 Vaccination Drive.

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The nation planned to vaccinate 2 million people and each district was assigned a target according to its population. The Project opted to provide full cascade support to 22 districts, including Kalulushi District.

Description: The Project's support to Kalulushi district included:

- Entire cascade support, from micro-plans to service delivery.
- Pairing community sensitisation with vaccination service delivery, missing no opportunity to vaccinate.
- Taking vaccination into communities, door-to-door, in markets, schools and churches, taking services where people are.
- Implementing a full in-facility coverage model, from the highest to the lowest level facilities, integrating into existing service delivery.
- Hiring out-of-work healthcare workers to undertake supervised vaccination outreach.

As a result of the Project's support to the Kalulushi District COVID-19 Drive, the district achieved 116% of its December vaccination target compared to the 21% average district achievement, out-performing all the other 115 districts. Overall from the beginning of vaccination (April 2021), the December Drive contributed 55% of the people ever vaccinated in Kalulushi in one month.

Lessons learned:

- Supporting the full-service delivery cascade ensures optimum effectiveness with no missed vaccination opportunities.
- District ownership from leading planning meetings to coordinating rollout is key to success.
- Orientation of leaders (traditional, civic and religious) ensured buy-in, consistent messaging and showcased them leading by example encouraging constituents to get vaccinated.
- Hiring extra out-of-work staff safeguarded other ongoing health services, such as the HIV programme, and ensured quality provision of all health services.

Conclusions/Next steps: Vaccine hesitancy does not fully account for the low vaccination rates in Zambia. When the full vaccination cascade is supported and outreach is facilitated, people will get vaccinated in order to protect themselves and their loved ones.

Success in Kalulushi was achieved through MOH, Project staff and others working together at every stage, building on their collective strengths.

EPD537

Online COVID-19 prevention workshops within a sexual health and HIV/STI prevention program with a vulnerability and human-rights approach based on Freire's pedagogy in public schools in São Paulo, Brazil

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Background: COVID-19 crisis impacted the development of a program focused on sexual health and HIV/STI prevention among youth that actively incorporates teens as agents of research, a key principle in the multicultural approach of human rights. The program remained virtual while schools returned to face-to-face in August 2021 fostering some anxiety. Considering the perspective of integrated prevention, workshops were developed for the prevention of COVID-19 in schools.

Description: Three online workshops with two meetings each took place from Sept.-Dec., 2021 each with 4-11 participants (15-18yrs old) in three sites. Its development emphasized youth's participation, provisional scientific knowledge, fostering youth's skills of evaluating daily risk-exposure and how to reduce them, accepting possible errors. An eleven-question questionnaire on COVID-19 prevention was conducted before and after to dimension youth's knowledge and the feasibility of the workshops.

During the first meeting, participants were asked to imagine scenarios of SARS-CoV-2 exposure, experienced, or witnessed. One scenario was chosen to be thoroughly debated, enabling discussion on prevention and provision of information to expand their repertoire.

In the second meeting, participants played online the Gartic Phone, creating phrases and illustrations about preventative measures in schools. The material produced was displayed on a virtual mural and discussed. Later, participants created jointly memes to encourage adherence to COVID-19 preventative measures.

Lessons learned: Young people improved their understanding of the daily challenges of prevention, developed collective strategies to face risk situations in schools, expanded knowledge about prevention, and discussed anxieties related to COVID and resumption of face-to-face school activities. Still, the virtual nature of the workshops posed connectivity and communication difficulties, hampering the participation of some young people.

Workshop participants already had a lot of information on COVID-19 prevention but were introduced to the importance of ventilation and more effective masks on prevention.

Conclusions/Next steps: Building online COVID-19 prevention workshops with youth was feasible and well accepted, raising awareness on situations faced by young people in the school context. Next steps demand conversation with those responsible for schools to improve conditions for safe school attendance. Considering the synergistic interaction of HIV/AIDS and COVID epidemics, these workshops may help HIV prevention efforts with youth.

EPD538

Harnessing influence: accelerating COVID-19 vaccination in Zambia through engagement and involvement of local leaders

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Background: The USAID DISCOVER-Health Project, implemented by JSI Research & Training Institute Inc. (JSI), supports the Ministry of Health (MOH) to increase demand and uptake for COVID-19 vaccines. In December 2021, the Project supported MOH with a national COVID-19 Vaccination Drive harnessing local civic, traditional and religious leadership. These trusted custodians of Zambian society are well placed to encourage their people to make the safe and smart choice to get vaccinated.

Description:

The Project supported the campaign in the Copperbelt and Central provinces in all 22 districts and it involved:

- Engagement and involvement of leaders to reassure beneficiaries of their support for vaccines, with outreach service delivery (door-to-door, schools, workplaces and other congregate settings) to reach beneficiaries within their communities.
- User-informed targeted Risk Communication Community Engagement (RCCE), especially interpersonal communication (IPC), through community mobilisers and fully-oriented leaders.
- Sensitisation with members of the media to equip them to share timely and accurate information, and to facilitate provision of radio/TV platforms for leaders to promote vaccination.
- Human resource for health (HRH) and logistical support to ensure availability of HR and other resources required for effective service delivery, including outreach vaccination services.

As a result of the Project's support to the campaign, 216,480 people were vaccinated against COVID-19 in Copperbelt and Central provinces during December 2021.

The two provinces (out of the 10 provinces) contributed 31% to the total national December Drive achievement of 701,000. Copperbelt Province is the best performing province in the country, recording the highest vaccination coverage.

Lessons learned: Harnessing the influence of respected civic, traditional, religious and other leaders, in addition to taking COVID-19 vaccination services door-to-door and in congregate settings close to where people live, decreases barriers to vaccine access and significantly increases uptake.

Conclusions/Next steps: Ensuring all components of the vaccination cascade were supported, equipping leaders with accurate information to support COVID-19 vaccination and expanding access to vaccines through outreach services enabled more people in Copperbelt and Central Province to get vaccinated. This model can be used to effectively scale-up COVID-19 vaccination in Zambia.

EPD539

COVID-19 vaccine intention and hesitancy among HIV research study staff in southwestern Kenya

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Background: Vaccine hesitancy has been declared one of the ten most important threats to global health. COVID-19 vaccine hesitancy is exacerbated by the novelty of the virus and vaccine. COVID-19 vaccine uptake is essential in southwestern Kenya, a region disproportionately affected by HIV and other conditions that pose a significant risk for severe COVID-19 presentation.

Methods: We conducted a cross-sectional survey among 200 HIV prevention and treatment research staff in southwestern Kenya in September-November 2021. Grounded in the Health Belief Model (HBM) framework, we explored COVID-19 vaccine uptake and intent to vaccinate in this population. We conducted bivariate comparisons between these outcomes, selected individual characteristics, and HBM constructs (perceived susceptibility and severity); and used content analysis to explore verbatim responses to open-ended questions.

Results: Of 200 respondents (125 women, 73 men, 2 unknown gender), the majority (85%) had been vaccinated for COVID-19. The unvaccinated were more likely to be

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women (21% vs. 6% men, p=0.004) and those who expressed high perceived susceptibility to COVID-19 (24% vs. 13%, p=0.041). Perceived severity of COVID-19 was not associated with vaccination status (p=0.674). Of those unvaccinated, main reasons for not vaccinating included fear of side effects/pain and delaying vaccination "to see what happens to those who have been vaccinated."

The most common rumors mentioned included that the vaccine causes decreased libido, impotency, infertility, and blood clots/death; and was developed to "reduce the world population."

About 27% of unvaccinated participants expressed that they do not intend to get vaccinated. Motivators to get vaccinated among all respondents included reducing risk, severity, and transmission of COVID-19; being able to socialize/live a "normal" life; and job-related mandates.

Perceived facilitators to vaccine uptake included access to free vaccines and a choice of vaccine brand. Perceived barriers included insufficient public education, mistrust of facility/vaccine distributors, fear of unknown side effects, health status, and advice from medical professionals to not vaccinate.

Conclusions: The results of this study show the need for interventions addressing COVID-19 vaccine hesitancy in a highly HIV-affected region. Interventions should include community education emphasizing vaccine benefits and messages from trusted sources addressing fear of side effects and common rumors.

EPD540

COVID-19 and HIV in the Philippines: a baseline assessment of the pandemic's impact on socioeconomic and mental well-being of Filipino PLHIV

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Background: Among 71,077 people living with HIV (PLHIV) in the Philippines, approximately 40% are not on antiretroviral therapy (ART) as of December 2019 and the COVID-19 crisis adds to the barriers towards UNAIDS 2020 90-90-90 target. This investigation aims to augment the dearth in evidence of COVID-19 impact on social determinants of health among Filipino PLHIVs.

Methods: A cross-sectional online survey was administered among Filipino PLHIV from July 1-4, 2020. *Google Form* was used for the questionnaire and was posted in social media. The instrument focused on the pandemic's impact to four main socioeconomic factors:

a. Perceived decrease in monthly income,

b. Job loss,

c. Residential displacement, and;

d. Social support received from the government, and mental well-being was assessed using PHQ-2 and GAD-2 questionnaires.

Descriptive statistics was used for data summary, and logistic regression analysis was performed to determine the association between socioeconomic impact and mental well-being of the respondents.

Results: From the total of 164 PLHIV respondents, there were 127/164 (77%) between 18 to 35 years old; 46% were living in Metro Manila. Majority (93%) self-identified as either gay or bisexual and 7% self-identified as heterosexual men who have sex with other men (hMSM). Results on socioeconomic impact of COVID-19 includes 125/164 (76%) with a decrease in monthly income, 63/164 (38%) unemployment, 21/164 (13%) residential displacement, and 126/164 (77%) without social support from the government. 48% had GAD-2 scores (as having anxiety-related symptoms), 40% had PHQ-2 scores (having depression-related symptoms). Regression analysis showed jobless PLHIV were 2.43 times likely to experience anxiety-related symptoms [Odds Ratio (OR)=2.4296, 95%Confidence Interval (CI)=1.2501-4.722, p=0.009]. After controlling respondents' age groups and location, there's a very strong evidence showing likelihood of experiencing depression-related symptoms is associated with job loss due to the pandemic, younger PLHIV group (18-35 years old), and those living in Metro Manila (OR=2.3360, 95%CI=1.1640-4.6880, p=0.017).

Conclusions: This investigation showed COVID-19 crisis affected both socioeconomic and mental well-being of Filipino PLHIV. Health programs in mitigating COVID19 effects should include socioeconomic and psychosocial support.

Study revealed the need to explore underlying political, structural, sociocultural, and individual factors to innovate and improve HIV services quality during COVID19.

EPD541

Longitudinal mixed-methods assessment of COVID-19 impact on the food insecurity of people living with HIV/AIDS in Uganda

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Background: Early qualitative evidence from Uganda suggests the COVID-19 pandemic and related lockdowns contributed to increases in food insecurity (FI) among people living with HIV/AIDS (PLWH). We longitudinally assessed the influence of COVID-19 on FI to better understand how it impacted PLWH over the course of the ongoing pandemic in Uganda.

Methods: HIV patients completed bi-annual surveys measuring FI (assessed via the FI Experience Scale) between March 2018 and September 2021 (n=297 quantitative respondents with a subsample of n=52 qualitative interviews). We used interrupted time series models to estimate the change in FI likelihood from before to after the pandemic started, adjusting for the pre-existing

trend in FI. Qualitative interview data (focused on factors driving FI, the impact of FI on ART medication adherence, and coping strategies to counter FI) were recorded, transcribed, dually coded (kappa 0.98) and then analyzed, with attention to subgroup differences based on sociodemographics and experiences with FI over time.

Results: The quantitative results showed FI rose by approximately 40% just within a few months of the COVID-19-related lockdowns in Uganda, and almost a year later, it increased by more than 80% compared to before the pandemic. The qualitative results show the factors driving FI appeared closely tied to the pandemic (e.g., job loss) and were exaggerated over time.

Except for those who reported FI both before and after the start of the pandemic, almost all other participants reported continuing taking their ART medication regardless of the pandemic.

Participants noted the use of several coping mechanisms to deal with and avoid FI, including minimizing their food intake. Mothers often said they would forgo food to so that their children could eat. Across all participants, support networks were of critical importance.

Conclusions: These results illustrate how the COVID-19 pandemic has exaggerated FI for PLWH over time. Qualitative results highlighted the unique vulnerability of those who experienced FI before the pandemic began and suggests that the lack of a social support network may be particularly problematic.

Going forward, programs, policies and research should consider if and how social networks of support can be leveraged to address FI.

EPD542

COVID-19 vaccine hesitancy among pregnant and postpartum women enrolled in a PrEP study in Western Kenya

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Background: COVID-19 is associated with increased maternal morbidity and mortality, making preventive measures in pregnancy critical. COVID-19 vaccines lower the risk of severe illness and death. However, vaccine hesitancy can hamper uptake of COVID-19 vaccination.

Evaluating current COVID-19 vaccine hesitancy among pregnant and postpartum Kenyan women could help guide vaccine introduction strategies for this population.

Methods: We utilized data from HIV-negative pregnant and postpartum women enrolled in an ongoing evaluation of perinatal PrEP use at 4 public sector maternal child health (MCH) clinics in Western Kenya. From October 2020-January 2022, study nurses assessed COVID-19 experiences, including vaccine hesitancy, defined as reporting "unlikely" or "very unlikely" to the question, "If a vaccine for COVID-19 were available today, what is the likelihood that you would get vaccinated?". We identified correlates of vaccine hesitancy using Poisson regression models, clustered by facility.

Results: Among 790 women (140 pregnant, 650 postpartum), median age was 28 years (IQR: 24-33 years), 94% were married, and 60% had ≥12 years of education. Overall, 21% of women were currently on PrEP; among those 25% reported interruptions to PrEP access related to COVID-19.

Over half (57%) of women reported vaccine hesitancy. Women who perceived worsened MCH services during the pandemic had higher frequency of vaccine hesitancy than women reporting no change in quality (83% vs. 47%, prevalence ratio [PR]=1.79: 95% CI:1.68-2.73, p=0.0071).

Women who did not perceive masks as effective protection against COVID-19 had higher frequency of vaccine hesitancy than those who did (69% vs. 48%, PR=1.44, 95% CI:1.09-1.92, p=0.011).

Vaccine hesitancy was similar among pregnant and postpartum women (59% vs. 57%, p=0.536) and among women on PrEP and those not on PrEP (55% vs. 57%, p=0.37). Vaccine hesitancy was not associated with age, education, marital status, or perceived risk of COVID-19.

Conclusions: Among Kenyan pregnant and postpartum women, COVID-19 vaccine hesitancy was common and more frequent among those reporting worsened MCH care quality during the pandemic and those who felt masks were not effective for prevention.

It will be important to optimize vaccine information within MCH and to address vaccine hesitancy among pregnant and postpartum women attending MCH services.

EPD543

Improving collaboration on national level advocacy through differentiated models and interventions to address COVID-19 and PLHIV

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Background: As the world continues to focus on Ending AIDS by 2030, the Turks and Caicos Islands (TCI) Health Promotion and Advocacy Unit (HPAU), within the Ministry of Health and Human Services (MHHS) with support from the Caribbean Regional Network of People Living with HIV (CRN+) and consultants has engaged in alternative models of intervention to continue reaching PLHIV and even more since the onset of COVID-19.

Description: Through alternative models of intervention for HIV, TCI has been able to strengthen healthcare access and human rights advocacy to PLHIV. This also created

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avenues to address COVID-19 through social distancing activities which promotes working between sectors, support synergies for action, and to engage communities in an easily understandable way.

Lessons learned: In 2019 we developed an Advocacy Strategy (to support treatment adherence relating to HIV, NCDs and COVID-19). This strategy today continues to address access to health care – HIV, NCDs, COVID-19 and 5250 persons have been reached with health services and improvement in continued access to medication; emergency responses and referrals; increased collaboration (including communication) with Private Health Facilities, Social-Support Services, NGOs and Private Sector Businesses are to be credited.

These strategies provided an alternative avenue for the collection of much needed data, especially for COVID-19 and people living with HIV. Increased communication-on PLHIV, COVID-19 and NCDs – encouraging being safe and getting vaccinated for COVID-19; Establishment of a Peer Support Programme that supports adherence to HIV medication virtually via SMS, WhatsApp, Zoom, etc; involvement of young people in the discussions around covid-19 and HIV through school debates and peer education sessions.

Conclusions/Next steps: The alternative models of intervention that have been implemented to continue reaching PLHIV even more during this COVID-19 period has made much needed headway in reaching clients; this has enhanced the response and allowed for synergies between sectors. These strategies aim to reduce the burden on clients and health-care providers in this present pandemic.

Crises can also be opportunities and the impending COVID-19 crisis pressed us to find innovative solutions. The next steps are to amplify efforts to continue implementing alternative models in an effort to reach more clients.

EPD544

The COVID-19 lockdown: increased cases of Gender Based Violence & Violence Against Women & Girls trigger in Uganda! The International Community of Women Living with HIV Eastern Africa (ICWEA)'s Experiences

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Background: Gender Based Violence (GBV) and Violence Against Women/Girls (VAW/G), is a global challenge thataffects 1 in 3 women in their lifetime including married partners more so in developing countries Uganda inclusive. Before the COVID-19 pandemic hit, globally, 243 million women and girls were abused by their intimate partners in the past year.In Uganda, 56% of ever-married women have experienced spousal violence and 22% women aged 15-49 have experienced sexual violence (Uganda Demographic Survey 2016). Before COVID-19, 593 girls reported being victims of sexual violence, 73 reported teen pregnancies, compared with 880 and 117 respectively during the lockdown.

Description: With that background, International Community of Women Living with HIV Eastern Africa (ICWEA) with support from Global Fund through The AIDS Support organisation (TASO) carried out Community Dialogues with the objective of assessing the impact of COVID-19 lockdown including GBV which became a very challenging turmoil on women and girls in the districts of Mubende, Jinja, Nebbi, Gulu, Wakiso, Kiryandongo, Lira & Namutumba. ICWEA, carried out Community Dialogues in 8 districts.70 Community Dialogues were conducted bringing together 3500 participants from networks and organisations of women and girls.

Lessons learned: GBV and VAW/G became more pervasive during the COVID-19 lockdown because many women lost their jobs, partners and co-habitants were locked up together and had no money to cater for their families.

Many women were physically assaulted by their spouses and this resulted into significant costs in order to seek for medical attention, 80 women were subjected to sexual violence by their partners, 120 young women aged 15-19 experienced forced sex, 60 testified that they forced into marriage leading to teenage pregnancies.

The lockdown impacted on mental health and limited access to health care services and exacerbated the pre-existing barriers to women's access to health and interrupted access to SRH services.

Conclusions/Next steps: To end GBV and VAW/G, we need sensitization and teamwork. We must encourage survivors to break the GBV cycle, ensure that women, men and children understand their roles in ending it.

The government should implement strong laws to protect women and awareness on GBV cases through radio and television.

EPD545

The unintended consequences of protecting learners from COVID-19: accounts from schools in South Africa

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Background: The impact of the coronavirus 2019 (COVID-19) pandemic on South African schooling is significant, with learners unable to attend school as a result of national lockdowns, temporary school closures and the implementation of school rotation to minimise numbers. National lockdowns had simultaneously resulted in the downturn of economic activity with resultant job losses. Households and the learners face the dual challenge of economic hardship and limited access to schooling.

Description: In September 2021, researchers from the University of KwaZulu-Natal visited 10 schools in the Johannesburg West district in Gauteng and the Bohlabela district in Mpumalanga. These visits were part of an evaluation of the delivery of comprehensive sexuality education (CSE). Given the timing of the evaluation and the context, the scope of the evaluation extended to the impact of COVID-19 on learners, their households, and schooling. A total of 12 focus group discussions (FGD's) were conducted with grade 10 and 11 girl learners.
A total of ten FGDs were conducted with parents. Key informant interviews (KIIs) were conducted with 7 learner support agents (LSA's) and 2 educators who were members of school-based support teams (SBST).
Lessons learned: A lack of access to schools resulted in increased food insecurity, with many learners relying on school feeding programs for their daily meals. Learners have been forced to assist in income generation for the household, with some engaging in criminal activity or transactional sex, whilst many learners had dropped out of school.
The COVID-19 pandemic and the lockdown has also led to a spike in GBV and femicide in South Africa. Some homes have been and become enclaves of cruelty, with female learners reporting rape and violence for women and girls trapped with abusive family members.
Conclusions/Next steps: Schools need to take assertive steps in identifying vulnerable learners, with the expectation that they could facilitate access to social partners who can engage with affected learners and families, hopefully reducing the negative consequences of COVID-19 and specifically reducing the incidence of school drop-out. The DBE needs to ensure learners lost over this period are tracked and facilitated back into schools.

EPD546
Taking the HIV response into the digital ecosystem of young people

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Background: Statistics in national studies noted challenges that include a decline in young women (15 -24 years) who tested for HIV and know their results from 84.5% in 2014 to 69.3% in 2019 as well as a decline in young men (15 -24 years) who tested for HIV and know their results from 58.9% in 2014 to 55.4% in 2019.
Description: Due to the COVID-19 pandemic in March 2022, the Students And Youth Working on reproductive Health Action Team (SAYWHAT) has expanded its digital programming.
Emerging evidence shows that the model has strong potential to optimize generation and sharing of HIV, TB, Sexuality and GBV information to more adolescents and young people. Programming has expanded the digital engagement to complement physical interactions on young people's HIV related issues. Interventions include Virtual Resource Centres, Call Centre and a Production and Broadcasting Studio all of which are mediums for young people to access HIV, sexuality information and education.
Furthermore, young people are taking a leading role in the development and creation of content for such platforms.
Lessons learned: Since 2020, there has been increased reach to adolescents and young people through the use of digital platforms**.** Reaching out to young people through physical engagements has been in many instances disrupted due to the nature of the pandemic.
Through the Studio of Choice, SAYWHAT has managed to keep young people informed on HIV Treatment and related sexual and reproductive health information and services as well as gender based violence and mental health issues.
However, SAYWHAT has also learnt that digital messaging is to some extent exclusionary because some rural communities do not have internet infrastructure to access health information services on virtual spaces.
Conclusions/Next steps: SAYWHAT aims to strengthen the linkages between information and knowledge management with access to HIV treatment and related SRH services among young people.
Furthermore there is an aim to strengthen the capacity of young people living with HIV so that they are able to contribute effectively to information generation and content creation. This include imparting advocacy skills to the young people for them to stand up and make their voice heard.

EPD547
Availability of contingency planning for key population HIV services in countries = HIV service continuity

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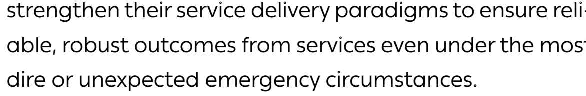
Background: With concurrent HIV epidemics, all highly concentrated amongst key populations, all countries shared one thing in common: the need for a robust COVID-19 response threatened to derail progress made in containing HIV transmission and supporting the health and well-being of people living with HIV.
Therefore, within the framework of the SoS project, a Guide for Contingency Planning for Key Population HIV Services during COVID-19 and Other Emergencies was developed. https://aph.org.ua/en/covid
Description: The following Guide to Contingency Planning for Key Population HIV Services provides a framework by which countries in EECA – or elsewhere – can examine the lessons of the COVID-19 pandemic and systematically



strengthen their service delivery paradigms to ensure reliable, robust outcomes from services even under the most dire or unexpected emergency circumstances.

This Guide adopts a framework which outlines essential health interventions for key populations:

1. HIV prevention;
2. HIV testing and linkage to care;
3. HIV treatment and care;
4. Prevention and Management of Coinfection and Co-morbidities;
5. General Care (including sexual and reproductive health, nutrition).

Lessons learned: Outreach services can be adapted to the new and changing realities of emergencies to maintain or even expand client outreach. Critical services typically provided in health care facilities can be made more accessible by moving them to the community level, and partnerships between the public and nongovernmental sectors can also be expanded.

New approaches and technologies for testing and monitoring treatment can expand access and optimize the use of limited health care resources by putting more power in the hands.

Conclusions/Next steps: Contingency planning and commitment from the community level all the way up through the political level, contingency planning for continuity of key population services during emergencies has the power to be a significant driver of change.

It is our hope that this Guide supports stakeholders in seizing the opportunity to create more accessible, equitable and sustainable systems of service for the populations who need it the most.

National action plans are currently being developed in 13 countries in the EECA region to help change national HIV strategies and develop national HIV plans to provide cost-effective services in situations related to or similar to COVID-19.

COVID-19: Associated mental health challenges for people living with HIV

EPD548

The role of carers in assisting OPWH with receiving HIV and non-HIV care during COVID-19 pandemic in Ukraine

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Background: To understand how older people with HIV (OPWH, defined as ≥50 years) cope during the Covid-19 pandemic when they need support with activities of daily living and HIV and non-HIV care, we explored experiences of both OPWH and their carers living in Kyiv.

Methods: In April-May 2021, we conducted 22 qualitative phone interviews with 11 pairs of OPWH and their carers. HIV psychologist at Kyiv AIDS center, referred eligible OPWH to the researcher. Our purposive sample included diverse OPWH by gender, sexuality, comorbidities (e.g., substance use disorder (SUD)), and their carers type. Recruited OPWH referred us to the person they considered their main carer (family member, friend or healthcare professional).

Participants within pairs were interviewed separately, with questions for OPWH mirroring questions for their carers. Interviews were audio-recorded, transcribed verbatim, and analyzed for themes using NVivo software.

Results: Among 11 pairs, there were mother-daughter (2), mother-son (1), sisters (1), girlfriends (1), heterosexual married couple (1), grandmother–grandson (1), and OPWH patient (including two gay men) and social worker (4). Age ranged from 50 to 77 for OPWH and from 25 to 72 for carers. Care relationship averaged 8 years, ranging from 1 to 17 years. Four key themes were highlighted in both OPWH and carers interviews:

1. The fear of HIV status disclosure stems from HIV identity rejection and restricts OPWH's intimate relationships and access to healthcare for comorbidities, including Covid-19 infection.

2. OPWH are primarily seeking companionship in carers with psychological support more important than any other help.

3. Burned-out relatives resented OPWH's HIV status when OPWH needed more assistance with HIV and SUD care during Covid-19 pandemic. Therefore, when carers also received support from OPWH they undervalued it.

4. Considering HIV a "shameful" diagnosis, OPWH often do not disclose it to children, instead looking for help in friends or social workers.

Conclusions: There is a need for interventions to help OPWH accept their HIV status and, make informed decisions about disclosing it to the closest people to continue

living fully. Interventions should be bilateral, simultaneously focusing on both OPWH and their carers to prevent burnout.

EPD549

Longitudinal changes in anxiety and depression among Ukrainian older people with HIV (OPWH) during the COVID -19 pandemic

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Background: The COVID-19 pandemic amplified mental health challenges especially anxiety and depression. We sought to understand longitudinally how Covid-19 impacted the mental health of older people with HIV (OPWH) living in Ukraine.

Methods: We surveyed OPWH living in Kyiv, Ukraine by phone first between April-June 2020 (Wave 1) and again from December 2020-February 2021 (Wave 2).

The primary outcomes were depressive symptoms and anxiety symptoms, defined as scores on the Patient Health Questionnaire-9 (PHQ-9) ≥5 and scores on Generalized Anxiety Disorder-7 scale (GAD-7) ≥5, respectively. Participants PHQ-9 and GAD-7 scores were compared between Wave 1 and 2 to assess for changes in depressive and anxiety symptoms.

Other variables of interest were: age, gender, history of a substance use disorder (SUD) and/or alcohol use disorder (AUD), living situation (living alone, not living alone), and employment. Differences were assessed with chi-square and t-tests.

Results: Of the 110 OPWH who completed both Wave 1 and Wave 2 surveys, 55 (50.9%) were women and average age was 55.4y (SD=6.45). Nearly half (47.3%) had a history of a SUD and/or AUD. During Wave 1, 51 participants (46.4%) reported symptoms of depression and 39 (35.5%) reported symptoms of anxiety. During Wave 2, the prevalence of depressive and anxiety symptoms was 40.9% and 22.7%, respectively. At the individual level, 27 (24.5%) participants had decreased depressive symptoms, whereas sixteen (14.5%) had increased symptoms. Twenty-five (22.7%) participants had decreased anxiety and eleven (10.0%) had increased anxiety. Individuals without full time employment were more likely to have increased depressive symptoms than individuals with full time employment (p=0.01). Younger age (p<0.01) and a history of an AUD or SUD (p=0.01) were associated with increased anxiety symptoms between Wave 1 and Wave 2. Gender and living situation were not associated with changes in depressive or anxiety symptoms.

Conclusions: Among OPWH in Kyiv, prevalence of depressive and anxiety symptoms have remained substantial but have not increased during Covid-19. OPWH with comorbid addiction experienced increased anxiety symptoms. Targeted interventions to address mental health, such as peer-support, are warranted.

EPD550

COVID-19 lockdown and suicide risks: findings from a 5-year prospective cohort study of young MSM living with HIV in Bangkok

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Background: Suicide rates are disproportionately higher among groups like men who have sex with men (MSM)—where in Bangkok, 1 in 3 MSM are living with HIV (YMSM+). Since COVID-19 lockdown in April 2020, daily life in Bangkok has been severely disrupted.

In this paper, we used data from 2018 to 2021, covering pre- and post-COVID lockdown, to examine suicide risks among Bangkok YMSM+.

Methods: With guidance of a community advisory board and community partners, 199 YMSM+ age 18-29 years residing in Bangkok were recruited via online methods into an online prospective cohort study that assessed demographics, sexual and drug risks, suicide risks, and access to HIV care and treatment between 2018-2021 (6 data points). The *Suicide Behaviors Questionnaire-Revised (SBQ-R)* was used to assess suicide risks.

After testing to ensure significant variability in the slopes and intercepts; Nagin's semi-parametric, group-based approach was used to identify distinct groups of trajectories in suicide risks over time.

Results: During the six data points between 2018-2021, the COVID-19 lockdown happened between third and fourth assessments with mean suicide prevalence pre lockdown 12.7% (range: 10.6%-14.8%) and post lockdown 13.1% (range: 11.4%-14.8%).

Group-based trajectory analyses yielded a three groups solution over time: increasing suicide risks (13.1%, P= 0.003), decreasing suicide risks (13.6%, P <0.001), and consistently low suicide risks (73.4%, P =0.399) (see figure 1).

Characteristics of these trends will be discussed, particularly access to HIV medications, social isolation, and fear of COVID-19.

Conclusions: We found a significantly increasing trend of suicide risks following the COVID-19 lockdown. However, we also found stable low suicide risks group and a decreasing suicide risks group, suggesting that these groups

may indeed be resilient to the lockdown. Suicide prevention programs need to be better at identifying at-risk groups so that prevention measures can be effectively tailored to their needs.

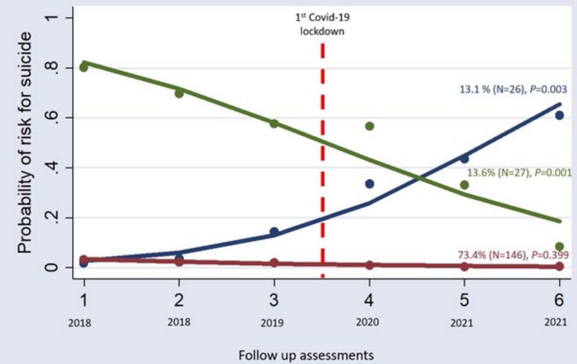

Figure 1. Trajectories of risk for suicide among MSM living with HIV from 2018 to 2021 in Bangkok, Thailand.

EPD551

Changes in depression after COVID-19 lockdown: Findings from a 4-year longitudinal study of young MSM living with HIV in Bangkok

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Background: One-third of Bangkok men who have sex with men (MSM) are living with HIV and experiencing difficulties accessing HIV care and treatment. During the COVID-19 lockdown, young MSM living with HIV (YMSM+) were asked to refrain from visiting hospitals/clinics, except for emergency services. This study examines depression trajectories among YMSM+ that included the April 2020 lockdown.

Methods: Working with a local YMSM+ community-based organization, we recruited 199 YMSM+ age 18-29 years via online methods into an online prospective cohort that assessed demographics, sexual and drug risks, depression, and access to HIV care and treatment between 2018-2021 (6 data points). Depression was accessed using the validated Center for the Epidemiological Studies of Depression Short Form (CES-D-10) over a four-year period. After testing to ensure significant variability in the slopes and intercepts; Nagin's semi-parametric, group-based approach was used to identify distinct groups of trajectories in depression slopes over time.

Results: Group-based trajectory analyses yielded three distinct groups: consistently high-depression symptoms (27.4%), consistently intermediate-depression symptoms (35.7%), and an increasing from low-depression to intermediate-depression symptoms after COVID-19 lockdown (37.1%) (see Figure 1).

What was remarkable was the change of the low to intermediate depression group due to COVID-19 lockdown (i.e., depression rates increased over time). Characteristics of these stable and increasing trends will be discussed, particularly with respect to stigma, discrimination and breach of HIV status confidentiality from health care providers (*P*=0.033, 0.036 and 0.006, respectively); HIV status disclosure among sex partners (*P*=0.001), sex without condoms (*P*=0.041), and experiencing bullying (*P*=0.002).

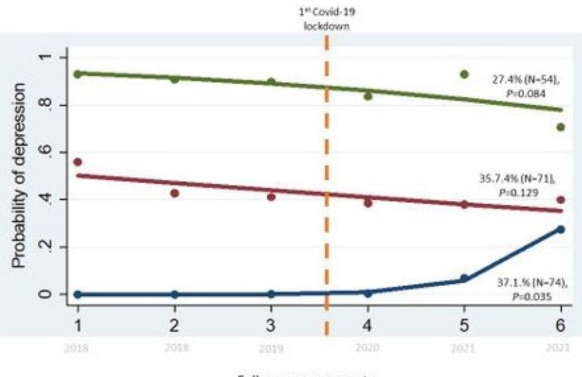

Figure 1.

Conclusions: Conclusion: We found high prevalence of depression among YMSM+ and those with low depression symptoms to intermediate depression symptoms showed a significant increase, suggesting that COVID-19 lockdown indeed had a significant impact on experiencing depression symptoms.

Participants reporting increased stigma and discrimination experiences by healthcare providers may have resulted from COVID-19 policies.

Effects of the COVID-19 on key populations

EPD552

Intersection of STI testing and positivity with COVID-19 among bathhouse clientele

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Background: The COVID-19 pandemic has significantly disrupted the management of sexually transmitted infections (STIs) and delivery of comprehensive sexual health care, especially for men who have sex with men (MSM).

We examined sex behaviors, COVID-19 protection practices, as well as STIs and SARS-COV2 testing and positivity of clienteles of Steamworks, a bathhouse and collective sex venue.

Methods: An anonymous, web-based survey was sent to the Steamworks newsletter list-serve to assess demographics, COVID-19 protection practices, sexual behaviors, as well as self-reported STIs and SARS-CoV2 testing/results. Adjusted prevalence rate ratios (aPRR) and 95% confidence intervals (CI) were calculated using multivariable Poisson regression with robust variance estimation to examine factors associated with STI/SARS-CoV2 testing and positivity.

Results: From July 19, 2021 through August 19, 2021, 515 surveys were completed. Black race, age 35-45, and greater number (≥4) of sex partners were associated with increased STI testing during this period. Self-reported STI positivity was increased for all individuals aged < 45 years old, and highest in those aged 18-24 years (aPRR=3.75, p=0.012).Self-reported STI positivity was also higher in those who reported ≥6 sex partners in the past 3 months (aPRR=4.10, p=0.001), those meeting new partners online (aPRR=1.72, p=0.027), or stating that social distancing did not have any effect on sexual behavior (aPRR=1.70, p=0.043).The latter group was also more likely to self-report testing positive for SARS-CoV2 (aPRR=3.22, p<0.001).
Nearly 40% of all respondents reported no STI testing during the pandemic, the majority (89%) citing lack of STI symptoms and low self-perceived risk (80%), though 34% of those without STI testing had 3 or more sex partners in the past 3 months.

Conclusions: As regional re-opening strategies continue to change based on COVID-19 metrics and vaccine uptake, challenges remain in understanding how new phases of the pandemic impact sexual behaviors.
Factors associated with STI testing and positivity mainly were in keeping with expectations; however those whose sexual practices were not affected by COVID-19 were found to be at risk for SARS-CoV2 and STIs, highlighting needs for further exploration.
These findings can help adapt and augment city-wide sexual health services in real-time during this pivotal public health period.

EPD553

Impacts of the COVID-19 Pandemic on HIV Testing and Condom Use among Two-Spirit, gay, bisexual, and queer (2SGBQ+) men in Manitoba, Canada

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Background: This study examined the impacts of the COVID-19 pandemic on access to HIV testing and condom use among Two-Spirit, gay, bisexual, and queer (2SGBQ+) men in Manitoba.

Methods: Data were drawn from a community-based cross-sectional online survey (July–October 2021) among 2SGBQ+ men in Manitoba. Logistic regression analyses assessed the relationship between socio-demographics/social determinants of health (age, ethnicity, sexual orientation, gender identity, education, geographic location, relationship status) and the impact of COVID-19 on access to HIV testing and use of condoms (when bottoming with another partner who is living with HIV and/or whose HIV status or HIV viral load is unknown).

Results: Of 347 participants, 17.3% self-reported as living with HIV. Among those who answered a question on testing (n = 282), 27.7% reported that COVID-19 affected their access to HIV testing in Manitoba. In multivariate analyses, living in Brandon, medium size city of 30,000 to 49,000 people (*AOR*=11.58, *95%CI*= 3.48 - 38.48) and living in rural and remote areas with less than 1,000 people (*AOR*=25.19, *95%CI*= 1.98 - 32.01) compared to living in Winnipeg, were both associated with higher odds of reporting a reduced access to HIV testing during the COVID-19 pandemic.
Participants who were dating (compared to those who were married or partnered) were also significantly more likely to report a reduced access to HIV testing (*AOR*=6.07, *95%CI:*2.06-14.95). Among those who answered questions on condom use (n = 327), 48.6% reported that since the COVID-19 pandemic they have decreased their use of condoms when bottoming. In multivariate analyses, younger people were more likely to report decreased use of condoms due to the COVID-19 pandemic *(AOR =0.93, 95%CI = 0.88 – 0.99).*
As compared to participants who were married or partnered, participants who were dating were significantly less likely to report decreased use of condoms *(AOR =0.27, 95%CI = 0.13 – 0.54).*

Conclusions: Service providers must be prepared to respond to the impact of COVID-19 on HIV testing and sexual risk practices among younger, sexually active 2SGBQ+ men, as well as 2SGBQ+ men who live in medium size cities or rural and remote areas in Manitoba.

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EPD554

Self-perceived impact of changes in sexual activity on MSM's quality of (sex) lives in times of COVID in Peru: EPIC community-based research program

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Background: In 2020, COVID19-related lockdowns led to severe restrictions that affected men who have sex with men (MSM)'s sexual experience, perceived quality of life (PQOL) and perceived quality of sex life (PQOSL) in diverse ways. We assessed PQOL and PQOSL, and their relationship with reported changes in sexual experience among MSM in Peru.

Methods: EPIC is a international community-based research program coordinated by Coalition PLUS, assessing the impact of COVID19 on HIV key populations. In Peru, this study, conducted between March and July 2021, targeted MSM. Data was collected on changes in sexual experience, and questions on whether PQOL and PQOSL had improved, stayed unchanged, or worsened during lockdowns. Fisher's exact test was used to assess the relationship between reported changes in sexual experience, and both PQOL and PQOSL.

Results: When asked if their PQOL had changed during lockdowns, the 302 respondents stated that it was better, the same, or worse in equal proportions. Conversely, when asked about their PQOSL, 42% considered it had worsened, 20% felt it had improved, and 38% considered it had not changed. Reporting no opportunities for sex was the only sexual experience associated with a worse PQOL (44% vs.29%,p=0.039); it was also associated with a worse PQOSL (69% vs.31%,p<0.001), together with postponing dates (66% vs.33%,p<0.001) and reporting fewer new partners (68% vs.28%,p<0.001). PQOSL was not associated with frequency of sex with live-in partners, virtual sex, or HIV prevention during sex (Table 1).

Sexual Experiences		Much / a little better n (%)	Almost the same n (%)	Much / a little Worse n (%)	Total n (%)	P-value (bold = p<0.05)
No opportunities for sex	No	45 (24%)	85 (45%)	60 (31%)	190 (100%)	**<0.001**
	Yes	7 (9%)	17 (22%)	52 (69%)	76 (100%)	
Postpone dates	No	45 (23%)	85 (44%)	65 (33%)	195 (100%)	**<0.001**
	Yes	7 (10%)	17 (24%)	47 (66%)	71 (100%)	
Less sex with new partners	No	44 (26%)	80 (46%)	48 (28%)	172 (100%)	**<0.001**
	Yes	8 (9%)	22 (23%)	64 (68%)	94 (100%)	
More sex with live-in partner	No	46 (19%)	94 (38%)	107 (43%)	247 (100%)	0.233
	Yes	6 (32%)	8 (42%)	5 (26%)	19 (100%)	
More virtual sexual activities	No	42 (20%)	84 (41%)	80 (39%)	206 (100%)	0.135
	Yes	10 (17%)	18 (30%)	32 (75%)	60 (100%)	
Less protection during sex	No	47 (19%)	98 (39%)	103 (42%)	248 (100%)	0.286
	Yes	5 (28%)	4 (22%)	9 (50%)	18 (100%)	

Table 1. Changes in perceived quality of sex life (PQOSL) during the COVID19 crisis, according to sexual experiences.

Conclusions: Due to COVID restrictions in Peru, MSM's PQOL changed in both directions, while PQOSL worsened, as correlated with their reporting lack of sex, postponing dates or having fewer new partners, but not with less sex with live-in companions, or less HIV prevention during sex. COVID changes provide an opportunity for gay men to understand what they value most in sex, and to decide whether or not it is what they want for themselves.

EPD555

Pervasive COVID-19 pandemic impacts on access to HIV prevention and sexual and reproductive health services, mental health and substance use among racialized sexual and gender minority people in Toronto (#SafeHandsSafeHearts)

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Background: Due to ongoing marginalization, racialized sexual and gender minority populations experience adverse social determinants of health and resulting health disparities, which increase vulnerability amid the COVID-19 pandemic. Nevertheless, pandemic response preparedness and public health measures typically operate from Eurocentric, heteronormative and cis-normative perspectives that fail to address marginalization. We assessed impacts of the COVID-19 pandemic on access to HIV prevention, sexual and reproductive health services, mental health, and substance use among racialized LGBTQ+ individuals in the Greater Toronto Area.

Methods: Sexual and gender minority, predominantly racialized, people ≥18-years were recruited online from March to November 2021 through community-based or-

ganization, community health center and LGBTQ+ listservs and social media. A 40-minute, mobile-optimized online survey assessed COVID-19 pandemic impacts on HIV prevention and sexual and reproductive healthcare access, mental health (PHQ-2, GAD-2), and alcohol (AUDIT)/substance use. Gender- and sex-based analyses identified subgroup differences.

Results: Participants (n=199) (median age: 27 [IQR: 23-32]) identified as African/Caribbean/Black (29.6%), South/East/Southeast Asian (27.2%), Latinx/Hispanic (9.0%), white (20.1%), and other (14.1%).

Half (53.8%) identified as cisgender lesbian/bisexual/women who have sex with women (LBWSW), 29.6% cisgender gay/bisexual/men who have sex with men (GBMSM), and 19.6% transgender/gender-nonbinary people (TG/GNP).

Overall, participants reported pandemic-related decreases in access to HIV testing (10.5%), STI testing (19.1%), PrEP (13.6%), condoms (13.6%), other reproductive health products (15.1%; 20.6%* for LBWSW), and gender-affirming hormones (15.4%) among transgender people.

Depression and anxiety symptoms were pervasive, and significantly more prevalent among LBWSW (63.6%* / 73.8%*) and TG/GNP (66.7% / 71.8%) compared to GBMSM (43.4%* / 54.7%*; *p<.05).

Overall, 44.2% indicated hazardous drinking and 37.0% increased alcohol use since COVID-19. Among those indicating illicit drug use, the proportion reporting pandemic-related increases differed by ethnicity (38.1% white; 26.7% Black; 11.0% other POC) and sexuality/gender identity (42.9% LBWSW; 30.0% GBMSM; 17.6% TG/GNP).

Conclusions: Widespread pandemic-related decreases in access to HIV and sexual and reproductive health services, increases in illicit drug and problematic alcohol use, and pervasive mental health issues indicate an urgent need for innovation in key population-specific HIV prevention/sexual health (i.e., HIV/STI self-testing) and mental health services (i.e., telehealth/teleconsultation) for racialized, sexual and gender minority populations in response to future waves of COVID-19 and other pandemics and emergency situations.

EPD556

For us, by us: community-led/based approaches to reduce the vulnerability of COVID-19 pandemic on LGBTQ+ community in India - #humsafarfightscovid19 initiative

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Background: It is now over two years that the COVID-19 pandemic waves continue to pose challenges and threats to the lives of millions of individuals in the world. Due to pandemic and resulting stringent lockdown measures, LGBTQ+ communities in India were further invisibilized and marginalized increasing their vulnerability to violence, mental health challenge, and issues related to HIV, STIs, and access to treatment.

Description: The Humsafar Trust (HST) is a community-based organization (CBO) working for the health and rights of LGBTQ+ communities for over 27 years. HST anticipated the impact of stringent lockdown measures on LGBTQ+ communities and soon after the first lockdown, we started getting distress calls from LGBTQ+ seeking support. HST set up #humsafarfightscovid19 initiative in April 2020 in the form of a community-led service delivery mechanism in partnership with community-based organizations across India.

HST staff contributed 5% of their salaries; In addition, financial and in-kind-aid received from >185 individuals and 15 corporate; government; and semi-government agencies contributed to us providing emergency sustenance, health consultations costs, medical supplies including providing access to HIV treatment over 52,000+ individuals in 19 Indian states.

A helpline was established to cater to community members requesting emergency support. Within 7 hours, we received 700+ support requests and 90+ distress calls. We delivered essential sustenance, ART, other medicines via in-person delivery following COVID-19 safety protocols; requests for financial aid were supported on a case-to-case basis via e-payment options. In instances of outstation support, payments were directly made to vendors.

Lessons learned: Despite government efforts to manage the COVID-19 pandemic, LGBTQ+ remain in hindsight. Economic disenfranchisement and social unacceptance have compounded the challenges of LGBTQ+ in the pandemic. Forced confinement with abusive families/partners and lack of access to safe spaces/peer support exposed LGBTQ+ to increased domestic violence and harassment.

Our lessons indicate mental health, interrupted medical care, and economic disenfranchisement as key issues impacting LGBTQ+ during this pandemic.

Conclusions/Next steps: The larger responsibility of ensuring the safety of LGBTQ+ communities during lockdown was undertaken by local community-based groups. Community ownership played a vital role in responding to COVID-19 emergencies and were key in mitigating COVID-19 adversities faced by LGBTQ+ communities.

EPD557

Smoking behavior during the COVID-19 pandemic among people living with HIV

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Background: There is no clear understanding regarding the impact of the COVID-19 pandemic on cigarette smoking behavior among people living with HIV (PLWH) in the United States (US). Smoking has been shown to impose a high burden of morbidity and mortality among PLWH, and it could further have a tremendous and negative impact exacerbated by the intersectionality of race/ethnicity, financial burden, and social stressors prompted by the COVID-19 pandemic.

Methods: Data were collected using a cross-sectional survey assessing smoking behavior (12/2020 to 06/2021) during the COVID-19 pandemic among individuals (n=124) seeking care at an HIV-specialized urban health center in Houston, Texas. Current smokers were classified as individuals who smoked ≥100 cigarettes in their lifetime and reported smoking every day or some days. Relevant demographic, behavioral, and psychosocial factors for current smoking were evaluated using multivariable logistic regression.

Results: Among study participants, 60% self-identify as male, 37% female, and 3% non-binary. The majority were 35-54 years old (46%) and Latinx (49%). The prevalence of current cigarette smoking during the pandemic among PLWH participating in our study sample was 31%.

During the pandemic, PLWH were more likely to self-report current smoking if they were Latinx (OR=2.99; 95% CI: 1.236-7.070; p=0.013) or experienced the death of a loved one (OR=4.33; 95% CI: 1.187-15.799; p=0.027).

Conclusions: These findings suggest intersectional inequalities in smoking behavior among PLWH during the COVID-19 pandemic. The need for culturally specific, tailored, and/or competent smoking cessation interventions targeting marginalized groups such as Latinx communities living with HIV are warranted, considering the burden posed by the COVID-19 pandemic in this population.

EPD558

Impact of COVID-19 on women who exchange sex and use drugs in Kazakhstan and their risks for HIV

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Background: The COVID-19 pandemic has affected workers across multiple industries, with public-facing workers particularly impacted. Impacts on women who exchange sex and use drugs (WESUD) have not been well-characterized, despite the potential negative health effects of engaging in sex work during the COVID-19 pandemic and the potential negative impacts of COVID-19 on delivering critical HIV care continuum services to WESUD.

Methods: Between March and July 2021, we surveyed 48 WESUD in Kazakhstan and conducted online in-depth interviews and focus groups with 30 and 18 WESUD, respectively. Representatives from local non-profit sex worker advocacy/service organizations recruited and interviewed participants.

The survey collected data on sociodemographics, HIV-related factors, sexual behavior, substance use, and the impact of the COVID-19 pandemic on sex work. The qualitative interviews also explored this issue. Survey data was analyzed descriptively and qualitative data was recorded, transcribed, analyzed using a pragmatic analytic approach.

Results: One-fifth of participants reported temporarily stopping and over 50% reported decreasing sex work during the pandemic; 5-6% reported starting or increasing drugs sales or sex without condoms, respectively.

Nearly one-third of women self-treated for health concerns during the pandemic and 6% did not seek care due to fear of COVID-19 infection. WESUD expanded on the negative effects of COVID-19 in interviews and focus groups: "There was less work, it became more difficult to earn money...there were fewer clients...venues closed."

Some described using more drugs due to psychological distress during the pandemic. Some turned to internet-based sex work but found it difficult: "For me it's kind of distant." Other women had difficulty with daily living expenses: "I asked for help, I needed money...no one helped." Another woman said "In COVID-19 you find out who is your friend and who is your enemy...It decreased [my drug use]...practically I did not eat."

Conclusions: WESUD lost income and faced severe precarity due to COVID-19, depending on friends, family and sometimes clients. WESUD need significant support to reduce negative, syndemic impacts of COVID-19 and HIV. NGOs have an important role to play in mitigating impacts among key populations, providing medications, food, and preventive/social services and should be supported.

EPD559

COVID-19-related changes in sexual activity, condomless anal sex, HIV testing, and PrEP use among men who have sex with men (MSM) in Thailand. When the pandemic compounds pre-COVID-19 challenges

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Background: The COVID-19 pandemic has impacted MSM's sexual activity and access to sexual health services in various countries, potentially influencing the dynamics of HIV epidemics. We therefore assessed COVID-19-related changes in sexual activity, condomless anal intercourse (CAI), HIV testing, and PrEP use among MSM in Thailand from January 2020 to mid-February 2021.

Methods: MSM were recruited in March-June 2021 via social media to complete an online survey. Eligibility criteria were being at least 15 years old, born male and having had sex with men or transgender women.

Of the 1017 eligible respondents who started the survey, 586 (58%) provided data on their sexual behaviour, HIV testing and PrEP use in five periods: pre-lockdown (T1, 1 Jan.–19 Mar. 2020), first lockdown (T2, 20 Mar.–14 Jun. 2020), relaxation of restrictions (T3, 15 Jun.–14 Sep. 2020), normalisation (T4, 15 Sep.–16 Dec. 2020), and second lockdown (T5, 17 Dec. 2020–14 Feb. 2021). Between-period differences in behaviour were assessed.

Results: Respondents' mean age was 29.4 years, and 74% identified as gay. 42% tested for HIV in the past 12 months; 66% ever tested, of which 10% had HIV. The sexual activity rate decreased between T1 and T2 (from 70% to 61%; -13%, p<.001) but did not significantly differ between baseline and T3-T5. CAI decreased from 27% at T1 to 22% at T2 (-19%, p=.001) and rebounded thereafter. 48% of CAI occurred without knowledge of partners' HIV status.

Only 7.5% of respondents used PrEP at T1 and 59% of these stopped using PrEP at some point due to COVID-19. 14% of MSM had not been able to test for HIV at some point because of COVID-19; 50% of these tested for HIV later. Reasons for delayed testing included confinement (53%), testing services disruptions (31%), fear of COVID-19 infection (21%), and cost (19%), including COVID-19-related hardship.

Conclusions: MSM's sexual activity and CAI were somewhat reduced during the first lockdown. In subsequent periods, CAI appeared similar to before the first lockdown. In view of the observed ongoing HIV risk behaviours, COVID-19-related disruptions in HIV testing and PrEP use are worrying, as they compound pre-COVID-19 challenges.

EPD560

Characterization of the microbiome in breast cancer patients diagnosed with COVID-19

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Background: The severe acute respiratory syndrome COVID-19 still represents an extreme concern given the peculiar and imprecise features of this disease. Although severe cases and deaths have been observed in clinically healthy people, patients with an exacerbated chronic immunosuppressive status, such as cancer patients, are more vulnerable to the development of COVID-19 severe form. However, the interplay between endogenous factors and COVID-19 and their role on infection progression in cancer patients is unknown.

We aim to characterize and compare the nasal/oropharyngeal microbiome from breast cancer (BC+) patients diagnosed with (CV+) or without (CV-) COVID-19, through ribosomal 16S metagenomic analysis.

Methods: The nasal/oropharyngeal swabs were collected for COVID- diagnosis between April and May 2020. Breast cancer cases were patients from the National Cancer Institute, Brazil, and non-breast cancer cases healthcare professionals from the same institution. DNA from nasal/oropharyngeal swab of 89 patients were collected, being: 36 patients with breast cancer and diagnosed with COVID-19 (BC+/CV+), 13 patients with breast cancer (BC+/CV-), 32 patients diagnosed with COVID-19 (CV+/BC-), and eight healthy controls (CV-/BC-). The V3-V4 region from 16S rRNA gene was PCR-amplified, DNA libraries were prepared and sequenced in MiSEQ Illumina platform. Bacterial taxa were identified using SILVA database in QIIME2. Differential bacterial abundance was analyzed using DESEQ2 and bacteria with adjusted p-values <0.05 and absolute log2FoldChange >1.5 were considered upregulated or downregulated in the samples.

Results: We found 75 bacterial taxa with differential relative abundance between BC+/CV+ and BC-/CV+ patients; and 42 between BC+/CV+ and BC+/CV-. Seventeen and 25

taxa were overrepresented in BC+/CV- and BC+/CV+, respectively. In addition, we also compared the bacterial microbiota between BC-/CV+ and BC-/CV- samples and six taxa were overrepresented in BC-/CV+ patients.
We also compared the relative abundance between cohorts. BC+/CV+ vs BC+/CV-, BC+/CV+ vs BC-/CV+ and BC+/CV- vs BC-/CV- showed 47, 41 and nine taxa with significant differential relative abundance. Interestingly, *Alicycliphilus* was overrepresented in COVID-19 patients, independently of cancer status.
Conclusions: Our data showed that specific bacterial taxa were differentially represented in nasal/oropharyngeal region with respect to status of COVID-19 and breast cancer.

EPD561

Impact of the COVID-19 pandemic on access to sexually transmitted and bloodborne infections (STBBI) prevention, treatment and testing services in African, Caribbean and Black (ACB) communities across Canada

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Background: African, Caribbean, and Black (ACB) communities in Canada have been disproportionately impacted by the pandemic, but there is limited research on how much the pandemic has impacted access to STBBI related services in these communities. From existing research, it is known that racialized people face barriers to accessing healthcare. With the negative impact of COVID-19 on the delivery of non-essential health services, including STBBI-related services, ACB communities may face worse access to these services.
This paper presents results from a national survey that examined the impact of the pandemic response on access to STBBI-related services in ACB communities across Canada.
Methods: A national online self-administered anonymous cross-sectional survey co-led by Public Health Agency of Canada (PHAC), the University of Ottawa and, an ACB National Expert Working Group (NEWG) and informed by the tenets of community-based participatory research (CBPR).
Results: 1,556 participants completed the survey, and they were diverse in age (11.4% were <25 years, 73% were 25-54, and 15.6% were 55+), gender (cis-gender (97%), transgender (3%)), and sexual orientation (11.9% identified as LGBTQ).
The study revealed that among participants who accessed or considered accessing STBBI-related services, the most common barrier reported was difficulty getting an appointment (43.0% of participants). In addition, 70.8% of these participants were not always able to access mental health counselling and referral services.
Among ACB community members living with HIV (10.3%), 38.1% experienced difficulties accessing HIV care providers and clinics since the start of the pandemic. 48.9% of participants living with HIV reported COVID-19 related public health measures as a barrier to accessing HIV-related services.
Conclusions: These findings are consistent with those related to healthcare access for ACB people in general. The pandemic has negatively impacted Canada's ACB communities in many ways. The reduced access to HIV and other STBBI services has negative impacts on population health for ACB communities.
There is a need for health equity and system-wide lenses when developing and implementing policies to curtail the spread of COVID-19. Further, these findings highlight the need to compensate for lost ground with regards to HIV and STBBI prevention and care.

EPD562

A synergy of plagues and interventions: challenges of COVID-19 and increasing gender inequality in a HIV prevention program among high school students at impoverished territories in São Paulo State, Brazil

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Background: Brazil's Federal Government combined backlash to sexual and reproductive health promotion policies with denial of the COVID-19 pandemic. While blocking programs that promote gender equality and sex education, the president stated that domestic violence was an inevitable consequence of men being "stuck at home" because of local social distancing/lockdown policies.
We aimed to understand how experiences and everyday lives of adolescents who participate in an HIV/AIDS intervention-research project were impacted by governmental responses to the COVID and HIV epidemics.
Methods: During 2020-2021, we followed the everyday lives of high school students, distributed over 9 public high schools in impoverished territories of 3 cities in the state of São Paulo. Approximately 150 students were educated as research collaborators and peer-educators and participated in weekly meetings.

Through a gender lens, we analyze the transcripts from in-person meetings and workshops, as well as of meetings and workshops that were virtual during the longest period of remote learning.

Results: From the outset of the pandemic and suspension of in-person learning, boys experienced boredom/idleness and increased videogame playing. Their biggest anxieties came from not being able to continue their education and losing their employability. The growing need to work outside the home to help family was notable and the leading cause of interrupting participation in the project.

Girls complained about not having time for leisure or study and shared grievances about domestic work and care of other children being unequally distributed and intensified. Adults used prevention of COVID-19 to reprimand only girls when going out for romantic or sexual encounters. Until the beginning of vaccine distribution, fear and guilt of causing illness and death of family members raised the psychosocial suffering of girls – nothing equivalent among boys.

Conclusions: Conservative discourses that linked advisable preventive measures against COVID-19 – "stay home" – and gender norms that favor confinement of women at home and to caregiving exemplify the impacts of the COVID context that change gender inequality dynamics, which has been addressed in our prevention program.

Designing a comprehensive approach with student collaborations termed "Integral prevention", integrating HIV/AIDS, COVID, and mental health, an equity-based health promotion and prevention program was innovational.

EPD563

The impact of the COVID-19 pandemic on young people living with HIV in Latin America

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Background: The objective of this study was to learn about the effects of the COVID-19 pandemic on young people living with HIV in selected countries in Latin America.

Methods: This was a qualitative and exploratory study conducted between June and August 2021. 25 young people (aged between 20-30) from Argentina, Chile, Perú, Brazil and Venezuela, participated in focus groups which were conducted online through Zoom. A total of 7 focus groups were conducted. The collection and analysis of data was done through Grounded Theory using the Atlas.ti software.

Results: The findings show that young people living with HIV in Latin America had numerous barriers accessing healthcare services related to HIV, including their HIV treatment, due to the COVID-19 pandemic. Fear of COVID-19 infection, overcrowded hospitals, lack of COVID-19 safety measures in hospitals and appointment cancelations were some of the difficulties that young people faced in order to access HIV related services and treatment. The pandemic also had a negative impact on the finances of young people, as many were fired from their jobs and were forced to take a pay cut.

Concerns about the lack of information regarding the impact of COVID-19 on people living with HIV, the fear of illness and death, difficulty accessing medication and HIV treatment as well as social distancing measures, like mandatory confinements, had negative effects on the mental health of young people living with HIV, including experiences with anxiety and depression.

Due to the difficulties to access HIV treatment and HIV related services, and to mental health problems caused by social distancing measures, many young people interrupted their HIV treatment or stopped taking them entirely.

Conclusions: Addressing these problems would improve the wellbeing, quality of life and health of young people living with HIV, by ensuring that young people have access to HIV related services, access to their medication and a better HIV treatment adherence.

The COVID-19 pandemic is not over and the threat of future variants require intersectoral work and the participation of young people living with HIV in all decision making processes in order to guarantee that their needs and rights are being properly fulfilled.

EPD564

The early impacts of COVID-19 on LGBTQ+ persons in Guyana: a quantitative analysis

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Background: The COVID-19 pandemic has led to social, health, economic and political upheavals throughout the world but these problems are greater in some communities than others. This study explores the experiences of LGBTQ+ communities in Guyana during the early stages of the pandemic, prior to the availability of vaccines and the normalization of COVID-19 testing.

Methods: A cross-sectional, self-administrated survey was conducted among LGBTQ+ communities in Guyana in May 2020. Access to the study was through social media messages and platforms of LGBTQ+ organizations, and snowball strategy.

On passing the screening questions (residence, sexuality, age >=18 years), participant read and accepted the consent sheet, and completed the survey. Information on COVID-19 knowledge, attitudes and beliefs, access to services during periods of lockdown, sexual and gender violence, among other variables were requested. Mental health status was measured with the PHQ4 scale. Data analysis

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included descriptive statistics in SPSS® v26. This study received research ethics approval from the University of the West Indies (Cave Hill) (IRB No. 200409-B).
Results: Of the 285 who initiated the survey, 257 provided valid survey data. Participants self-identified as 44.5% men, 32.6% women, 12.3% transgender and 10.6% non-binary persons. This mostly urban (59.2%), university graduate (48.2%) group reported high job loss (70.8%) during the early phases of the pandemic. And 1 in 5 had less than one month savings to live on, yet 56.3% of participants were the main breadwinners. While 63.7% reported very good/fairly good heath, 28.4% had severe and 24.9% had moderate depression. Less than 1/3 of the sample responded to the question on sexual or domestic violence of which, 18.8% reported abuse.
Conclusions: The economic hardships created by the pandemic had a pernicious effect on LBGTQ+ persons in Guyana. This group has had to deal with sexuality-based discrimination and the appearance of resilience, based on their general health outcomes, may mask high levels of anxiety and depression.
This leads us to ponder why few participants completed the question on sexual, physical and emotional abuse (although there are high levels among the respondents). There is a need to further explore the mental health needs of this group.

EPD565

Effect of COVID-19 on risky behaviours of female sex workers in Ga South Municipal of Ghana and its wider implications: evidence from a qualitative study

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Background: The government of Ghana in response to reducing the spread of covid-19 enforced physical distancing measures, banned social gatherings, closed down nightclubs and hospitality centres etc. Vulnerable groups such as Female Sex Workers (FSWs) who were already suffering from poverty were amongst those hardest hit. The close contact nature of sex work and the closure of nightclubs, pubs and hospitality centres which are hotspots for sex work suggested that FSWs will be affected.
Given that there is a positive relationship between income from sex work and unprotected sex, FSW may adopt risky sexual behaviours as means to cope with this pandemic. Thus, evidence on whether the pandemic has the potential to increase the transmission of HIV and other STIs among FSWs is crucial.
Methods: We elicited respondents' perception of the effect of covid-19 on FSWs and their sexual behaviours from April through to September 2020. Thirty (30) semi-structured in-depth interviews were conducted with FSWs within Ga South Municipal.
The inclusion criteria for FSWs to participate in this study were if they were; aged 18 years or older; engaged in sex for money or gift within the last six months. Audio recordings were coded and analysed using a thematic analytical framework.
Results: The majority of FSWs reported a reduction in the number of clients seen within a week. FSW reported that the ban on social gatherings and the closure of nightclubs had negatively affected their earnings. FSW reported that they were less likely to demand a client to use a condom given the decline in earnings over the past few months.
Although the reduced number of clients may offset the transmission of HIV and STIs, the use of unprotected sex as a means to cope with the financial effects of the pandemic may have an impact on the transmission of HIV and STIs.
Conclusions: Demand for use of condoms by FSWs has declined as a means to cope with the financial burden brought on by covid-19. To reduce risk and vulnerability as a result of financial challenges, policy objectives should target FSWs to dampen the adverse financial impact of the covid-19 pandemic.

EPD566

Livelihood challenges and pathways to sustainable earning for male sex workers and transgender women: Anthropological exploration in the context of COVID-19 in Bangladesh

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Background: The COVID-19 pandemic has engendered global economic fallout. Socioeconomic adversities are particularly pronounced among vulnerable and marginalized populations such as male sex workers (MSW) and transgender women (TG). During the pandemic in Bangladesh, these populations received some food relief, albeit as a temporary solution for alleviating immediate hunger.
This underscores the need for sustainable pathways to financial gateway, a relatively unexplored domain. Therefore, we aimed to understand the livelihood challenges and mitigation strategies among these populations.
Methods: We undertook a rapid anthropological assessment of MSW and TG enrolled in HIV prevention services in major divisional cities of Bangladesh. We chose this specific methodology as it can quickly elicit in-depth, intimate perspectives. Given their emotional fragility in the COVID-19 context, we did not create a conventional research environment.
Rather, we had one-to-one informal conversations and mini-group discussions with a total of 100 participants, while maintaining COVID-19 health guidelines. As this assessment generated qualitative findings, we applied thematic analysis conventions.

Results: The participants relied on transient sources of income or humanitarian aid, which ultimately could not safeguard their livelihood. The pandemic made them realize that they would ultimately need to achieve self-sufficiency by generating a stable earning source through exhibiting their diligence and persistence.

However, they believed that attaining a sustainable livelihood would require them to receive vocational training and employment opportunities with minimal academic education and technical expertise. Although participants were interested in socially and legally acceptable occupations, they opined that socio-structural impediments need to be addressed first by government and non-government initiatives.

Specifically, participants emphasized that the government needs to invest efforts in increasing their social acceptability. They perceived that involving these populations in the mainstream workforce would perpetuate a positive ripple effect, thus encouraging other job providers of private and public sectors to accommodate these populations.

Conclusions: The findings reflected participants' avid desires to pursue alternative income-generating pathways influenced by COVID-19 constraints. However, if sustainable income-generating avenues are not ensured with a supportive mainstream population culture, it would not be possible to achieve long-term outcomes.

This assessment recommends the piloting of some interventions in this line before adopting any large-scale intervention.

EPD567

The lock-down dilemma; innovative COVID-19 adaptation strategies for antiretroviral therapy adherence and retention among key populations living with HIV in Masaka, Uganda

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Background: Key populations (KPs) in Uganda share a disproportionate HIV burden. Access to HIV services is obscured by repressive health policies, criminalization and homophobia. High levels of adherence to antiretroviral therapy (ART) can dramatically improve treatment outcomes for persons living with HIV and reduce risk of HIV transmission.

In June 2020, Community Health Empowerment and Relief Agency (CHEDRA) was supported by Uganda Cares to address non adherence to ART targeting KPsimpacted by COVID 19 restrictions.

Description: Using medical records, we identified viral load (VL) non- suppressing KPs in our monthly ART refill cohort. Movement waivers were obtained from the district for front-line clinicians and counselors. Using a snowball approach and faith-based illustrations that demonstrate equality of mankind and therefore equal access to prevention services, we penetrated KP networks. We conducted VL bleeding at clients' convenient time and location, ART refills, personalized intensive adherence counseling, STI screening and treatment, condom and lubricant distribution. Data were collected using an interview guided questionnaire and analyzed using STATA 14.

Lessons learned: Through December 2021, we conducted 80 trips reaching 517 clients. Of these, 331 (64%) were Female sex workers while 186 (36%) were Men having sex with men (MSM).196 (38%) were below 29 years compared to 321 (62%) who were above 30 years. Of the 501(97%) that bleed for VL, 306 (61%) were virally suppressed while 195 (39%) were non suppressors.

Overall, ART adherence levels increased from 58% in June 2020 to 84% in December 2022 irrespective of gender. Compassion (55%), client preferred location and time (23%), use of peer leaders (13%) and use of holy scriptures (9%), were cited as primary reasons for improved ART adherence.

Conclusions/Next steps: Nontraditional, client centered and innovative approaches addressing structural, social and psychological barriers that could have an impact even in the precarious policy environment need to be tested.

EPD568

Impacts of Methadone Maintenance Therapy and Covid19 (HIV prevention among injecting drug users)

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Background: Almost four decades of war have had a devastating-impact on Afghanistan. Only 18% of the population over the age of 25 has received formal-education resulting in staggering illiteracy rates of 57% for males and 81% for females. Afghanistan is facing a concentrated-epidemic predominantly among PWID but also affecting other key populations. HIV rates in the general-population are under 0.1% while HIV among PWID/PLHIV is under 5%. There are 25,000 IDUs in the country (ANPASH Population Size Estimation for KPs, 2019), 1,291 people who inject drugs are under methadone-maintenance-therapy in 5 provinces Kabul, Herat, Balkh, Nangarhar and Konduz in community and prison settings (2021).

The ANPASH is now planning the scale up of methadone-maintenance-therapy for three other provinces with the support of Global Fund program that will run from 2021 to 2023.

Description: The high levels of stigma-discrimination against PWID affect access and retention in the OST-services. The clients on methadone have shown improvement in their social conduct including better family-relations, social-integration, and fewer criminal activities. The program has been able to achieve its objectives. OST is

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feasible and cost-benefit and extremely-necessary for the country. Interestingly some National-NGOs are now having experience of the-implementation of OST-program. lack of shelter-services, vocational-training programs for OST-clients and psychosocial-support have been key challenges to the implementation of OST-programs in the country.

Lessons learned: On lockdown, based on program-SOP circumstances MMT-clients were provided home-take-dose weekly and quarterly basis in combination with psychosocial-support, for stable-patients. To facilitate better coverage and better adherence to treatment, and to allow them flexibility in their social and economic-life during covid19.

Very less of OST-clients were dropped-out of the maintenance but most of them were prevented from-covid19. Human-resources were recruited to follow MMT and MMT+PLHIV clients for their both treatments at home and site.

Conclusions/Next steps: There is a need to scale up the MMT services. The community consultation highlighted the desire of MMT clients to self-organize and ANPASH with the support of Global Fund will develop a national MMT client network in the community.

In-addition, provision of shelter, vocational-training, psychological-interventions which are globally accepted, and enhancement of capacity-building of OST services providers should be considered.

EPD569

Barriers of access to healthcare services due to C19 interruptions of HIV service delivery points

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Background: Kenya as many parts of the world was affected by COVID pandemic with restrictions affecting service delivery in all sectors of the economy. Kenya Red Cross through the GF grant implementers supported communities with necessary personal protective equipment's as well as community education.

Methods: The assessment employed a mixed-method approach consisting comprehensive document reviews, analysis of routine data from Kenya's health information system (KHIS) and primary data collected through qualitative and quantitative methods.

Qualitative methods consisted of focus group discussions (FGDs), in-depth interviews (IDIs) and key informant interviews (KIIs). Quantitative data consisted of KHIS data and three other surveys.

The assessment was conducted within 30 counties clustered in five geographic clusters. All the counties with a HIV prevalence of under 3.0% and very low HIV incidence were excluded from the potential counties for selection. Four counties were randomly selected per cluster using the online randomizer.

Results: The onset of COVID 19 has negatively affected service delivery for the three programs, across prevention, treatment, and client support.

Health Facility Survey outcome	Main causes of service disruption reported by the facilities
49.3% of facilities reported that their service delivery was very much disrupted	Providers' fear of contracting COVID 19 (85.9%)
42.4% reported services were disrupted to some extend and only the remainder were not affected at all	Lack of handwashing facilities at service points (61.1%)
Majority (72.3%) of facilities reported reduction of client numbers	Providers experiencing stigma from the communities they reside (32.2%)
Staff missing work (17.7%)	
conversion to COVID 19 isolation centers (7.5%)	
Only 19.5% of facilities reported an increase in clientele, mostly due to receiving increased traffic when adjacent facilities were converted to isolation facilities.	

Table.

Other important reasons were increased workload (22.9%), lack of adequate commodities (18.8%) and delayed salaries (14.5%).

Conclusions: At the Health facilities continuing adaptations are proving that a rebound to normalcy is attainable. However, integrated service delivery systems for COVID-19 diagnosis, treatment and the HIV, TB and malaria programs in high-volume health facilities is unable to shoulder the programs from the consequences of service disruption which are commencing to be experienced at health facilities. Financing, human resource capacity, supply chain and data systems are not strong enough to ensure programs remain resilient against any future COVID-19 waves.

Further, demand-side barriers such as fear of acquiring COVID-19, fear of symptoms being conflated with COVID-19 and high transport costs are preventing clients from seeking services. Hence the need for a differentiated service delivery model to safe guard the investments and gains made for HIV programs.

EPD570

It's in Your Power to act: best practice and stories of confronting the COVID-19 pandemic and HIV/AIDS in Eastern Europe and Central Asia and Balkans region

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Background: During the lockdown, the countries of the EECA region faced a double epidemic: HIV and covid-19. During the lockdown period (April-May 2020), vital HIV services were under threat. Since the start of the COVID-19 pandemic, HIV testing and detection rates have declined. In Russia (Jan-June) the increase in patients on ART decreased by 4 times - from 88,000 in 2019 to 22,000 in 2020, in Belarus "-57%", Moldova "-61%"' Georgia "-41".

Description: The team of the ICF_Alliance_for_Public_Health, having regional resources, expertise and contacts #SoS_project, decided to contribute as much as possible to maintaining the sustainability of HIV services.

During the pandemic and total isolation, it is important to demonstrate the strength of the communities in the region, to inspire and motivate them to action, prompt ideas. It was important to come up with an easy and accessible format for presenting stories.

In a short time, the best practices from the countries of the region on maintaining the sustainability of HIV services were collected and published on the Official website with further promo campaign of this experience.

Lessons learned: The online initiative including of an interactive online map of 19 countries of Eastern Europe and Central Asia, the Baltic region and the Balkans, which presents about 60 best practice and stories about how sustainability of services for people from key populations was created during the pandemic and who are people behind it. Coverage of a promotional video with the presentation of a interactive map составил порядка 46 thousand on Facebook during one week.

Heroes of the site's stories, partners from NGOs and civil society during the period of severe restrictions in April-May provided support and assistance to at least 30 thousand people.

Conclusions/Next steps: Key populations and people living with HIV have shown their ability to self-organize, quickly and efficiently solve vital issues, and work effectively with the state. Thanks to the exchange of experience on pandemic time the lock down rallied the world community, activists and doctors more and more: patents revoked, personal protective supplies for doctors and lung ventilators are quickly procured, mobile teams for medications delivery between and within countries are organized.

EPD571
Effects of COVID-19 to access for services affecting MSMs in Mombasa, Kenya

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Background: During Covid19 , health services delivered by CHVs and Peer Educators were predominantly affected by reduced training opportunities (60.9%), fear of COVID-19 infection (52.9%), lack of adequate PPE (49.6%), reduction of monthly supervision meetings (35.4%), stigma from the community (32.5%); a lack of CHV/ PE kits (314%), reduced support from donors(29.8%), poor referral mechanisms (28.8%) and limited working duration due to night curfews (24.9%).

Description: From the HIV survey, attendance to support group sessions (38.5%), refills for septrin and other opportunistic infection drugs (34.8%) and ARVs (29.8%) were the most predominant HIV services that HIV positive clients were unable to access due to COVID 19. Other services that clients were unable to access include viral load testing (16.6%), attendance for clinic appointments (14.3%), adherence counselling (12.8%). Importantly, access to PrEP for their HIV negative partner was reported by 4.3% of respondents. When these services were unavailable, half (50.7%) of clients reported that they gave it to fate, 26.6% bought septrin from chemists, A few bought ARVs from local shops/vendors and 11.6% shared drugs with their friends. A small proportion (9.8%) sought religious interventions or traditional remedies (1.3%). Key Population especially MSM were greatly affected.

Lessons learned: HAPA Kenya resorted into taking services and prevention commodities in the hotspots. Nutritional supplies and cash transfers was applied to MSM on ARVs and at risk of defaulting due to economic crisis as a result of COVID 19. virtual mental health counselling by the Mental health counsellor. The Drop in Center operating on appointment basis for the MSM to continue accessing services. Paralegal were provided with additional airtime and transport to actively follow up SGBV cases.

Conclusions/Next steps: Service delivery to MSM was greatly disrupted, however continuing adaptation are proving that a rebound to normalcy is attainable. Nutritional support and cash transfers are key intervention to address economic impact to C19 to Key population including MSM.

There is progressive awareness of the COVID-19 mitigation measures among MSM reached in the DIC. Peer Educators have played a vital role in awareness creation. There is need for programs to invest more on behavior change interventions.

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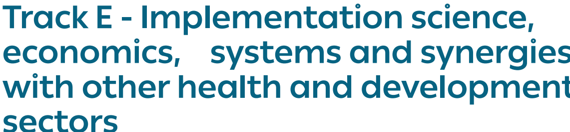

Track E - Implementation science, economics, systems and synergies with other health and development sectors

Implementation science of scaling up prevention (including PrEP)

EPE001

Acceptability of various HIV pre-exposure prophylaxis modalities among people who inject drugs (PWID): findings from a qualitative study in San Diego County, CA, USA

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Background: People who inject drugs (PWID) in the United States experience elevated HIV risk but have low knowledge of HIV pre-exposure prophylaxis (PrEP). Understanding PWID interest in and willingness to use PrEP is imperative as long-acting modalities are in various stages of development and implementation.
Long-acting PrEP modalities hold promise for HIV prevention among PWID, necessitating an improved understanding of PrEP acceptability across new modalities.
Methods: From September - November 2021, we conducted in-depth interviews with HIV-negative adults (≥18 yrs) PWID in San Diego County to explore perspectives on daily oral PrEP pills and longer-acting PrEP injections, implants, intravaginal rings, and broadly neutralizing antibodies (bnAbs).
Prior to open-ended questions, we explained modalities using standard scripts. Thematic analysis identified PrEP modality interest and acceptability.
Results: Among 28 participants, median age was 40 years (IQR: 32-53); 18 (64%) identified as male (10 [36%] as female), and 18 (64%) identified as Hispanic/Latinx.
Participants had generally low PrEP knowledge and only moderate interest, primarily due to low perceived HIV risk and concerns about potential side effects.
When asked about various PrEP modalities, most preferred injectable PrEP. Three key acceptability considerations emerged: convenienceof use,invasiveness, and familiarity (based on past experience).
For example, while participants deemed daily oral pills to benon-invasive and highly familiar, they viewed oral PrEP as inconvenient. In contrast, PrEP injections were highly convenient, familiar, and generally non-invasive.
Reactions to PrEP implants were largely negative (unfamiliarity, invasiveness), but some equated implants' long duration with greater convenience.
Reactions to bnAbs were similar, though they were viewed as slightly less invasive than implants. Despite familiarity with intravaginal ring technologies, female participants generally viewed intravaginal PrEPringsas inconvenient and invasive.
Conclusions: PrEP modality preferences varied among PWID we interviewed according to perceivedconvenience, invasiveness, and familiarity. This suggests that a range of PrEP options are needed to help meet the HIV prevention needs of this population.
While injectable PrEP was the most acceptable modality in this sample, and extended-release injectable cabotegra virwas recently approved for use in the United States, efforts are needed to improve "next generation" PrEP knowledge, motivation, and delivery to PWID.

EPE002

Implementation strategy package improves PrEP implementation for pregnant women in antenatal care clinics in western Kenya

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Background: Pre-exposure prophylaxis (PrEP) is safe and effective during pregnancy and postpartum and recommended by the WHO and Kenyan Ministry of Health. Integration of PrEP into antenatal care is promising, but gaps exist in resource-limited settings.
Methods: Between June-December 2021, we conducted a difference-in-differences study (3 months pre and post intervention; 4 intervention & 4 comparison facilities) in Western Kenya. We tested 3 implementation strategies – video-based PrEP information, HIV self-testing, and dispensing PrEP in antenatal care rooms – together to improve PrEP delivery.
We compared absolute changes in: proportion of antenatal attendees screened for PrEP (PrEP penetration), proportion receiving all PrEP steps (HIV testing, risk screening, PrEP counseling) (PrEP fidelity), client PrEP knowledge, client satisfaction, and waiting time and service time (*a priori* outcomes); *post hoc* we compared the proportion offered PrEP and receiving HIV testing. We measured provider perceptions of acceptability and appropriateness.
Results: Overall, 1,919 women were assessed for PrEP outcomes (960 in intervention and 958 in comparison) and 768 for service timings.
PrEP penetration (+5 percentage points; p=0.010), PrEP fidelity (+7 percentage points; p=0.073), and PrEP offer (+4 percentage points; p=0.004) changes were higher in intervention versus comparison facilities.

Client PrEP knowledge (+1.8/6 total points; p<0.001) and client satisfaction (+0.7/30 total points; p=0.003) changes were higher in intervention versus comparison facilities.
Provider perceptions of implementation strategies was favorable (median acceptability: 20/20; median appropriateness: 19.5/20).
We observed no differences in service time (+0.9 minutes; p=0.328) or HIV testing (-5 percentage points, p=0.46), and a small increase in waiting time (+1.4 minutes; p=0.009).
However, absolute levels in the PrEP cascade remained suboptimal; no step besides HIV testing exceeded 33% coverage.

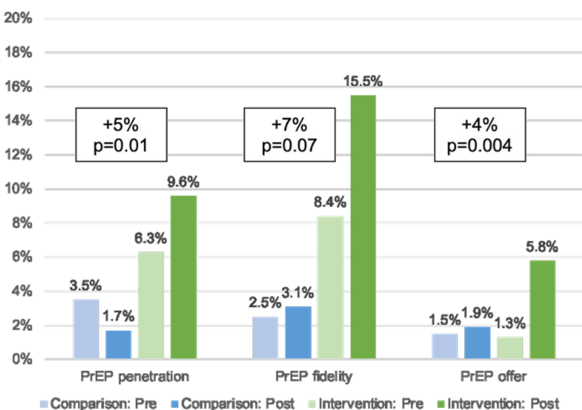

Figure.

Conclusions: This implementation strategy package may be useful to integrate PrEP provision into antenatal clinics. It enhanced PrEP delivery across implementation outcomes and client satisfaction without meaningfully increasing wait time or decreasing provider-client time.

EPE004
Introducing a comprehensive approach to implementing, scaling up, and strengthening HIV pre-exposure prophylaxis (PrEP) service delivery in Ukraine

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Background: The WHO recommends the use of antiretroviral drugs by HIV-negative individuals to reduce HIV acquisition. In 2018, Ukraine adopted this recommendation by launching PrEP on a limited scale, with a primary focus of reaching men who have sex with men (MSM).
Ukraine's national goal is to cover 10% of key populations, or >60,000 people, with PrEP services, including people who inject drugs, MSM, sex workers, and partners of people living with HIV. In 2019, only 1,735 individuals received PrEP in Ukraine.
Description: To scale up and strengthen PrEP delivery in Ukraine, the International Training and Education Center for Health (I-TECH) initiated a technical assistance program for PrEP. The program aimed to establish PrEP provision as a standard of care in 39 public-sector healthcare facilities (HCFs). Baseline needs assessment showed a lack of standardization in PrEP provision and demand for comprehensive PrEP training among healthcare workers (HCWs). I-TECH developed guidelines for daily and event-driven PrEP delivery and conducted two training sessions for HCWs. PrEP clients in the program received free creatinine and HBV testing. I-TECH also supported PrEP information campaign.
Lessons learned: From October 2020 to September 2021, 39 HCFs engaged in program, including 19 clinics new to PrEP delivery. During the program year, 1,540 clients received PrEP at least once, this exceeded anticipated annual client target (n=891). Two-thirds were males in their thirties, 39% (n=451) of ART-naïve clients who started PrEP were referred from the I-TECH-supported HIV assisted partner testing program implemented at participating clinics. Coverage of key populations increased significantly (Figure 1).

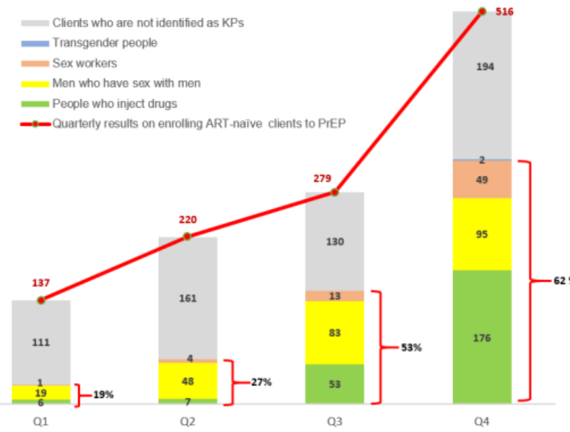

Figure 1. Quarterly results on enrolling new clients and coverage of key populations over first year of PrEP program span in 39 public-sector health facilities in Ukraine.

Conclusions/Next steps: The first-year program results demonstrated increasing demand for PrEP among clients of public-sector HCFs. The program also identified positive synergies of HIV partner testing and PrEP in engaging new PrEP clients. In 2021-2022, I-TECH is expanding its technical assistance to 89 HCFs to increase access and ultimately client enrollment.

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EPE005
PrEP awareness and factors associated with PrEP interest among adults in Malawi: results from the MPHIA 2020

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Background: The World Health Organization recommends Pre-Exposure Prophylaxis (PrEP) for all populations at substantial risk of HIV infection. Understanding PrEP awareness and interest is crucial for designing PrEP programs; however, data are lacking in sub-Saharan Africa. In Malawi, PrEP was rolled out nationally in December 2020.
We analyzed data from the 2020 Malawi Population-based HIV Impact Assessment (MPHIA) to assess PrEP awareness and factors associated with PrEP interest in Malawi.
Methods: MPHIA 2020 was a national cross-sectional, two-stage,cluster sample household-based survey targeting adults aged 15+ years. PrEP was first described to the survey participants as a process of taking a daily pill to reduce the chance of getting HIV. To assess awareness, participants were asked if they had ever heard of PrEP and to assess interest, were asked if they would take PrEP to prevent HIV, regardless of previous PrEP knowledge.
Only HIV-negative participants are included in this analysis. We used multivariable logistic regression to assess sociodemographic factors associated with PrEP interest. All results were weighted.
Results: We included 20,089 HIV-negative participants; median age was 28 years old (interquartile range: 20-40). Overall, 14.6% (95% confidence interval (CI): 13.8-15.4) of participants were aware of PrEP. A higher proportion of male (17.3% (95% CI: 16.2-18.4)), those with post-secondary education (42.8% (95% CI: 37.6-48.1)) and urban (22.1% (95% CI: 19.7-24.6)) participants were aware of PrEP than female (12.1% (95% CI: 11.3-12.8), those with no education (10.0% (95% CI: 8.6-11.4)) and rural (13.1% (95% CI: 12.4-13.8)) participants, respectively. Of those aware of PrEP, 8.3% (95% CI: 7.2-9.5) had been offered PrEP and of those, 33.8% (95% CI: 27.1-40.5) had ever used it.
Overall, 70.0% (95% CI: 68.9-71.0) of participants were interested in using PrEP. Younger age, being male, primary education, rural and northern zone participants and being divorced/separated were associated with PrEP interest in multivariable logistic regression analyses.
Conclusions: In this survey, prior PrEP knowledge and use were low while PrEP interest was high. Additional research is needed to understand and address low uptake of PrEP. Strategies to increase PrEP awareness and access targeting subpopulations at HIV risk with low knowledge can help to reduce HIV transmission.

EPE006
High demand for HIV pre-exposure prophylaxis (PrEP) services amongst key populations in Sierra Leone: early lessons from the country's first PrEP program

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Background: HIV pre-exposure prophylaxis (PrEP), recommended since 2015 by WHO for high-risk groups, including key populations (KPs), has been unavailable in Sierra Leone (SL), a low-income country with limited data on KP population size and HIV prevalence. In 2021, the SL Ministry of Health and Sanitation (MoHS) and National AIDS Secretariat partnered with ICAP at Columbia University (ICAP) to launch the country's first PrEP program with support from the U.S. Health Resources and Services Administration (HRSA).
Description: Following stakeholder consultation, ICAP partnered with nine KP-led community-based organizations to design and implement PrEP services with a goal of initiating PrEP for 800 clients within six months. Eight KP-led drop-in centers (DICs) were supported to provide PrEP and linked to four public-sector health facilities (HFs) to manage clients testing positive for HIV.
Guidelines, training materials, job aids, monitoring and evaluation (M&E) systems, and safety monitoring protocols were developed. PrEP medications were procured with HRSA support, DICs were refurbished, and 24 healthcare workers were trained. DIC staff provided information, eligibility screening, PrEP prescriptions, condoms, lubricants and other commodities, adherence support, and side effect monitoring.
Peer educators generated demand for PrEP via their social and sexual networks. Blood samples were collected at DICs, and screening tests were performed at accredited laboratories. ICAP staff provided supportive supervision, mentorship, and M&E support.

Lessons learned: Between May and September 2021, 1450 KPs were assessed; 1308 (90.2%) initiated PrEP. 83.4% of the clients enrolled on PrEP were female, the median age was 23 years (range 14-71 years), 83% were sex workers, 10% injected drugs, and 7% were men who have sex with men.

Of the 142 ineligible for PrEP, 111 were HIV-positive at screening, and all were linked to care. Suspected acute HIV infection (30) and abnormal creatinine (14) delayed PrEP initiation for others. No PrEP-related side effects were reported, and 5-month retention was 97.1% (1270/1308).

Conclusions/Next steps: Demand creation and delivery of PrEP via KP-led DICs supported by public-sector HFs and an implementing partner facilitated rapid PrEP roll out to a high-risk population. Close monitoring as the program matures will be important as MoHS and its partners scale up PrEP in SL.

EPE007

Delivery of HIV self-testing and pre-exposure prophylaxis through private retail pharmacies in Kenya: a mixed methods evaluation

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Background: Private retail pharmacies (community pharmacies) present a highly accessible channel through which HIV prevention interventions can be delivered. Interest to include this sector in scaling up interventions is growing rapidly.

In Kenya, two HIV policies launched in 2017 (HIV self-testing services [HIVST] and pre-exposure prophylaxis [PrEP]) formally recognized pharmacy-based delivery as a key implementation strategy. We carried out an in-depth evaluation of the two policies in the pharmacy sector, aiming to:

i. Enhance implementation by feeding back findings to implementers and

ii. Provide insights for future implementation of similar polices.

Methods: We used a mixed-methods approach consisting a cross-sectional questionnaire survey at randomly selected pharmacies (November-December 2019), a simulated client (mystery shopper) survey at pharmacies that were providing HIVST and or PrEP (Feb-March 2020), in-depth interviews with stakeholders involved in implementation (2019-2021), and review of relevant program documents (2019-2021).

Results: Of 195 pharmacies included, 107 (55%; 95% CI [42-68 %]) were providing HIVST test kits, but none had performed a HIV test within the pharmacy in the last week. The Table below summarizes the level of service and integration of HIVST services in the pharmacy sector.

Implementation parameter (n% [95% CI])	All counties combined (n=107)	Kisumu county (n=31)	Mombasa county (n=42)	Nairobi County (n=63)
Staff trained on HIVST service delivery	84 (79% [70-86] %)	18 (58% [48-67%])	39 (93% [87-97])	27 (79% [70-87])
HIVST kits added stock management system	77 (72% [63 - 80%])	19 (61% [51 - 70%])	26 (62% [52 - 71%])	32 (94% [89 - 98%])
HIVST kits in stock in the last one month	101 (94% [89 - 98%]	27 (87% [80- 93%)	42 (100% [100 - 100%])	32 (94% [89 - 98%])
Sold at least one HIVST kit in the last one week	72 (67% [58 - 76%])	16 (52% [41- 61%])	30 (71% [62- 80%])	26 (77% [68- 84%]
HIVST discussed in staff meetings (only pharmacies that hold regular meetings)	19 (30% [20- 38%])	6 (35% [26 - 44%])	6 (31% [22 - 40%])	7 (25% [16- 33%])

Table.

Only 6 (3%) of pharmacies were providing PrEP. Reasons for this low adoption level included lack of a proper program to get PrEP supplies, lack of demand from clients and lack of knowledge.

With regard to structures and resources, 37% of pharmacies had a consultation room, 62% had a computerized stock management system, 83% had a HIV testing centre <1km away, and 70% opened 7 days a week.

Conclusions: Approximately three years after policy launch, HIVST services had been adopted by the majority of pharmacies. Adequate structures and resources exist in the private pharmacy sector for the delivery of HIV prevention interventions. Forthcoming qualitative data from the project will provide insights into the barriers hindering adoption of PrEP services.

EPE008

"PrEP Discussion Paradox" at primary care settings: perspectives regarding PrEP care from patients and healthcare providers

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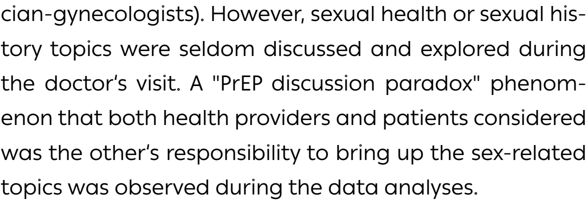
Background: To facilitate PrEP provision, Nunn and colleagues proposed a "PrEP implementation cascade" model, which suggests that progression along stages of the cascade must involve interaction and engagement among patients and health providers in the system. Primary care providers (PCPs) are considered the ideal PrEP providers as they usually encounter more HIV-negative patients with indications for PrEP use. However, PrEP care is generally underperformed in primary care settings. We explored potential factors that may hinder the PrEP initiation using a qualitative study design in the current study.

Methods: In the current study, we employed a semi-structured in-depth interview to collect information about factors related to PrEP care implementation at primary care settings among 18 PCPs and 25 PrEP- eligible patients in New York State. The grounded theory was used to code and integrate main themes.

Results: Overall, recruited women reported a trusted and reliable relationship with their PCPs (e.g., family medicine practitioners, internal medicine practitioners, obstetri-



cian-gynecologists). However, sexual health or sexual history topics were seldom discussed and explored during the doctor's visit. A "PrEP discussion paradox" phenomenon that both health providers and patients considered was the other's responsibility to bring up the sex-related topics was observed during the data analyses.
Besides, HIV/PrEP related stigma, low perceived HIV risk, and low priority for PrEP use were reported by some patients. PCP reported heavy workload, embarrassment for sex-related discussions, and lack of navigation as the major reasons for not offering PrEP care in primary care settings.
Conclusions: Our study is one of the first to identify that the "PrEP discussion paradox" may hinder the PrEP care implementation. As an icebreaker of the "paradox", a pre-screening tool for sexual history/behaviors before the visit or a PrEP navigator onsite might facilitate PrEP care during the healthcare visits.
Future studies are urgently needed to explore the efficacy and effectiveness of these potential tools to facilitate the PrEP discussion at primary care settings to engage critical stakeholders along the PrEP implementation cascade.

EPE009
Gamification of peer mobilizers to increase pre-exposure prophylaxis uptake among transgender women

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Background: Transgender women (trans women) are disproportionately affected by HIV and would benefit from additional prevention options; however, fewer than 10% of HIV-negative trans women at community clinics in Thailand access free HIV pre-exposure prophylaxis (PrEP) services.
We introduced a "gamified" peer-driven model, encouraging influential community members to competitively recruit transwomen to increase PrEP uptake.
Description: The Mae Koe ("community leader") project was implemented by Mplus Foundation, a community-based organization in Chiang Mai. Influential community "leaders", including trans women, were purposively selected, trained about HIV prevention, and tasked with promoting HIV services in their community and via Facebook Live sessions, and recruiting trans women to initiate PrEP. Each leader was given a unique, trackable link to an online reservation platform.
The leader earned one point for each referred client who either initiated PrEP or tested HIV positive. No monetary incentives were provided — competitors were motivated by social recognition. The competition was promoted via a beauty pageant. Mplus reported point totals to each of the "leaders" on a weekly basis, though clinic staff were reminded to follow protocols to protect client confidentiality. In the final red-carpet event, the leader who earned the most points was crowned the winner, and a special award was given to the leader referring the most trans-women clients.
Lessons learned: Between August and September 2021, 21 community leaders recruited 219 clients for HIV testing (including 96 trans women). The mean number of new clients recruited per leader was 2.81. There were 143 new PrEP users, including 65 trans women.
Of the HIV-negative trans women participants, 71% initiated PrEP, accounting for 41.38% of Mplus' annual PrEP service delivery among this population. In just one month, the Mae Koe competition contributed 60% of annual PrEP uptake among trans women aged 15–19, and 48% among those aged 30–34; these groups had the highest HIV prevalence in program data over the most recent 12-month period (20% and 27%, respectively). Four trans women tested HIV positive.
Conclusions/Next steps: This gamified peer-driven recruitment model is a promising strategy for initiating trans women on PrEP while managing privacy concerns and warrants further implementation and evaluation.

EPE010
PrEP Prescription from Nurses: strategy to scale up access to HIV prophylaxis in Brazil

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Background: Prevention strategies have always played a prominent role in Brazilian HIV/AIDS epidemic response, resulting from combined action of Brazilian government, health workers and social movements. Considering the need to reduce HIV epidemic, MoH Brazil is focusing on improving and qualifying HIV prevention strategies, including new prevention technologies, especially those structured from the use of antiretrovirals, such as PrEP.
After 3 years of PrEP implementation, Brazil is now in an expansion of PrEP access. Nurse prescription was one of strategies implemented. The MoH Brazil articulated with the Federal Council of Nursing (COFEN) to enable nurses to start prescribing prophylaxis. This abstract aims to evaluate the impact of beginning Nurse PrEP prescription in expanding access to prophylaxis in Brazil.
Description:
In Brazil, PrEP prescriptions are directly related to other activities already developed by Nurses, such as carrying out rapid tests, pre-test and post-test counseling for HIV, Syphilis and Viral Hepatitis diagnosis or requesting tests for diagnostic confirmation.
Nurse PrEP Prescription started with publication of a technical document by COFEN in August 2020. MoH adapted the Medication Logistic Control System (SICLOM) to vali-

date Nurses prescriptions, held training and Webinars for these professionals and included Nurse prescriptions in National Protocols. The charts below demonstrate the expansion of Nurse PrEP prescriptions from August 2020 to December 2021 across the country.

The chart presents a linear regression by the Prais-Winsten (1954) model and calculates average monthly growth rate for the entire series. Data included the confidence interval and R squared.

Figure. PrEP prescription from nurses.
MoH Brazil (2022)

Lessons learned: Data show that beginning Nurse PrEP prescriptions had an important impact on expanding PrEP access in Brazil, representing a growth rate of 10,68% (CI 95%: 9,09-12,30); R Squared (0,934) in relation to total prescriptions made.

Conclusions/Next steps: Next steps involve making possible for other health professionals prescribing prophylaxis and supporting training process professionals.

EPE011

Evaluating the future use of the dapivirine ring: qualitative key informant interviews with Kenyan policymakers, health managers, and HIV advocates

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Background: Women in Kenya are disproportionately affected by HIV. However, the reduction of HIV infections in Kenya has slowed in recent years. Achieving greater gains may require new strategies and/or technologies for reaching women. The monthly dapivirine vaginal ring (pre-exposure prophylaxis [PrEP] ring or "the ring") is one such technology. The ring eliminates the need to consistently take pills, has minimal side effects, and is not noticeable during sex. Women can self-insert the ring discreetly, with minimal visits to a health facility.

To inform its rollout in Kenya, LVCT Health carried out a qualitative study to explore stakeholders' perspectives on the ring, available national policies and guidelines, and ring service delivery and financing.

Methods: LVCT Health conducted one-on-one online interviews with 15 purposively sampled key informants from May to July 2021. Those interviewed included Ministry of Health officials at the national and county levels, HIV advocates from civil society, and health managers representing nongovernmental organizations (NGOs) and the private health sector. A thematic analysis was conducted using NVivo 12 qualitative software.

Results: Overall, stakeholders thought the ring would benefit women by expanding choice and complementing available HIV prevention methods. Stakeholders believed that existing health providers could offer the ring at the health facility level. Stakeholders also pointed out that integration of HIV prevention and family planning services could reach more HIV-negative women. Some stakeholders discussed the possibility of providing ring services at pharmacies, noting that health providers in pharmacies are already offering antiretroviral therapy, HIV self-testing, and family planning. Stakeholders also identified concerns, including the level of efficacy and cost of the ring, the need for a potential funder for scale-up, and the potential social impact of its use. They also wondered if clients accessing services through the public and NGO sectors might expect free ring services.

Conclusions: Interviews with stakeholders revealed overall support for the ring as a long-acting, discreet, and woman-led intervention. Considerations to be addressed through further research include the ring's price and relative efficacy, possibilities of social impact, and the best service delivery channels to reach potential clients.

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EPE012

Not just about knowledge and money: most Taiwanese sexual health physicians require standard operating procedure and non-physician professionals' support to deliver PrEP services

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Background: Taiwan's government-verified Sexually-Transmitted-Infection-friendly Physicians (STIPs) could maximise PrEP service capacity/accessibility and expedite PrEP roll-out, but fewer than 5% of STIPs currently deliver PrEP.

We present findings from a theory-informed questionnaire to explain the limited engagement by measuring the unmet needs of STIPs for PrEP service delivery.

Methods: All 1361 STIPs verified by the Taiwan Centers for Disease Control were invited to a self-administered online questionnaire via post and onsite events, from August to October 2021. We used a 52-item Traditional Chinese questionnaire applying all 14 domains of the Theoretical Domains Framework. Items measured STIPs' PrEP knowledge, service provision needs and demographics. We defined the key unmet needs as domains requested by ≥50% of survey respondents while ensuring each domain was measured by ≥2 items.

Results: Of 212 respondents, most (72%) self-identified as men and almost half (47%) practised outside the hospital. 14% were unaware of PrEP, 44% felt incompetent to provide PrEP services and 88% had never prescribed it. Regarding STIPs' PrEP knowledge, three-quarters (74%) recognised that PrEP prevents HIV infection, 58% knew about daily PrEP and 51% knew about event-driven PrEP.

The extent of unmet PrEP prescribing needs ranged widely from 3% to 86%. The most commonly unmet needs concerned provider-friendly standard operating procedures and clinical support from non-physician professionals (e.g., nurses) to deliver PrEP care (85%). Other key unmet needs included (Figure): remembering how to prescribe it (78%); adequate financial reimbursement from governments (65%); initiating PrEP conversations with patients (63%); tackling the time-consuming process of PrEP service and the costs of drug procurement and stocking (both 63%).

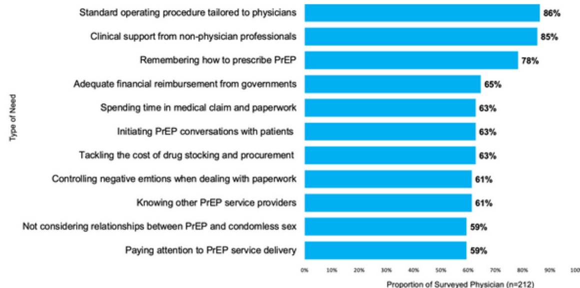

Figure. Key unmet needs of Taiwanese sexual health physicians for PrEP delivery.

Conclusions: Taiwanese sexual health physicians most commonly identified procedural regulation and interprofessional support as their unmet needs for PrEP service delivery. Interventions aiming to increase physicians' PrEP prescribing should consider creating streamlined standard operating procedures for PrEP and/or fostering collaborative clinical teamwork.

EPE013

What motivated men to start PrEP? A cross-section of men starting PrEP in Buffalo City Municipality, South Africa, want convenient, tailored platforms

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Background: Compared to women, men in South Africa are less likely to know their HIV status (78% vs 89%), have suppressed viral loads (82% vs 90%), or engage in HIV prevention services. To achieve epidemic control in high disease burden settings, gender responsive interventions to improve the uptake of testing and retention in HIV care, treatment and prevention services must also target cisgendered, heterosexual men.

Unfortunately, there is limited understanding of these men's needs and wants, especially with regards to the uptake of pre-exposure prophylaxis (PrEP).

Methods: Adult men accessing HIV testing at a community-based testing site, and who received a negative HIV test result, were offered same-day PrEP initiation, and consented to participate in a study investigating PrEP uptake, adherence, and HIV prevention needs.

A trained research assistant interviewed participants. Interview guides were developed using the Network-Individual-Resources model. The interview explored men's

perceived HIV acquisition risk, prevention needs, and preferences for PrEP uptake. Interviews were audio-recorded, transcribed, double-coded by two researchers, and analyzed using a constant comparison approach.

Results: Twenty-two men (mean age=28 years; IQR: 20-35) were enrolled and interviewed. Men reported elevated HIV acquisition risk associated with alcohol use, condom-less sex with multiple partners, and enthusiasm to initiate PrEP due to their perceived elevated risk for HIV. Men anticipated receiving social support from family members, main sexual partner, and close friends for PrEP use. Other men were important sources of support for starting PrEP.

Nearly all men expressed positive views generally of people using PrEP. However, participants believed that HIV testing would be a barrier to PrEP initiation for other men. Men highlighted the need for convenient, rapid, community-based, non-conventional clinic PrEP initiation and support.

Conclusions: Men's perception of their increased risk of HIV infection was cited as a facilitator for PrEP initiation. Men expressed positive perceptions of PrEP users, but noted that HIV testing may be a barrier to PrEP initiation. Men reported that convenient access points would facilitate PrEP initiation and sustained use. Interventions tailored to men's preferences will support their use of HIV prevention services.

EPE014

Preference for injectable PrEP among PrEP non-users in Western Kenya: results from a discrete choice experiment

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Background: HIV incidence and prevalence are high in Western Kenya. While oral PrEP is available free-of-charge through Kenya's Ministry of Health, uptake is suboptimal. Understanding consumer preferences may enhance uptake.

Methods: The RV393 cohort enrolled 671 men and women aged 18-35 years who were at risk for HIV in Kombewa, Kenya. From February 2020 through May 2021, participants who were active in the study, without HIV, and had never taken PrEP as of February 2020 completed a 5-attribute discrete choice experiment (DCE) with 10 random choice tasks related to PrEP preferences. Data were collected and analyzed in Qualtrics XM.

Results: A total of 102 female (12 reporting same-sex encounters) and 74 male (29 reporting same-sex encounters) participants completed the DCE. For the majority of participants, the preferred PrEP package was 99% effective, was in injectable form, could be used privately, was dosed monthly, and could be accessed within 1 kilometer of home.

Among female participants, preference for an injection over pills, vaginal rings, or implants most strongly drove stated interest in PrEP, accounting for 61% of the preference share with a utility score of +18.4. Vaginal rings were the least preferred PrEP modality among women, detracting from package uptake with a utility score of -22.6. Among male participants all 5 attributes contributed more evenly to interest in PrEP (preference shares ranged from 17-21%), though injections were also the preferred modality.

Reduced PrEP efficacy (50% vs. 90% or 99%) strongly detracted from PrEP uptake, with utility scores of -7.3 for female and -14.4 for male participants. Female participants were willing to compromise on privacy if PrEP retained other preferred attributes. Male participants were not willing to compromise on privacy but were willing to take PrEP that was 90% effective if other preferred attributes were retained.

Conclusions: In this DCE, PrEP-naïve Western Kenyans at risk for HIV showed a strong preference for highly efficacious monthly injectable PrEP. Preference for injectable PrEP over other modes of delivery was particularly strong among women, while vaginal rings were the least preferred PrEP modality. Incorporating injectable PrEP into current programs may substantially improve uptake among the highest risk individuals.

EPE015

Implementation of PrEP in Kinshasa, the Democratic Republic of Congo: the gaps between screening, initiation, and retention

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Background: The Democratic Republic of Congo (DRC) has a combination HIV prevention approach including screening key populations and free pre-exposure prophylaxis (PrEP). Early demonstration projects in DRC showed good initial acceptability of PrEP in healthcare settings, but sustainability of PrEP implementation remains in question.

This study describes PreP initiation and retention patterns among eligible clients in Kinshasa, DRC.

Methods: Data were extracted from clinical PreP registries in five health centers affiliated with Central Africa International Epidemiology Databases to Evaluate AIDS. All clients evaluated for PreP from January 2019 through December 2021 were eligible. DRC guidelines recommend PrEP for at risk individuals including: HIV-negative partners of people living with HIV (PLWH), sex workers (SW), men who have sex with men (MSM), injection drug users, and transgender people. We used Chi-square tests to examine differences between eligible populations in proportion initiating PrEP and proportion of those initiate with at least one refill (early retention).

Results: Over the three years period, the study sites cumulatively screened 12,829 people. 10,554 (82%) clients were HIV-uninfected and eligible for PrEP: 4,034 (31%) MSM, 4,788 (37%) female SW, 1,703 (13%) clients of SW, and 11 (<0.1%) HIV-negative partners of PLWH. The proportion of eligible clients initiated on PrEP increased over time: 5% (n=140), 21% (n=670), and 19% (n=880) in 2019, 2020, and 2021, respectively. MSM were significantly more likely to initiate PrEP (n=834, 21%, p=0.05) compared with female SW (n=722, 15%), and clients of SW (n=129, 8%). Among 1,259 PrEP clients evaluated for retention, including 658 (52%) MSM, 593 (47%) SW, and 9 others (1%), 62% received at least one PrEP refill (n=777). The difference in retention between MSM (53%, n=409) and SW (47%, n=362) was not significant (p=0.55).

Conclusions: The growing number of people screened for and initiating PrEP over the past 3 years suggests a huge need for PrEP in DRC. However, the significant gap observed between PrEP eligibility and initiation may indicate behavioral or other factors behind low PrEP initiation, which merit further investigation.

Acknowledgements: This work was supported by NIAID, NICHD, NCI, and NIDA, as part of Central Africa IeDEA (U01 AI096299).

EPE016

Shaping the implementation science agenda for injectable long-acting cabotegravir for PrEP: results from a workshop convened by the Biomedical Prevention Implementation Collaborative (BioPIC)

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Background: Data from two randomized clinical trials (RCTs) showed that injectable long-acting cabotegravir (CAB-LA) was effective in reducing HIV acquisition across populations. Recent US regulatory approval paves the way for introduction in the US, and regulatory approval is being sought in several low- and middle-income countries (LMIC). However, implementation experience beyond highly resourced and well-organized RCTs is limited. As countries consider CAB-LA introduction, there remain questions regarding delivery and involvement of populations not included in the trials. A coordinated approach is needed to ensure these are addressed and that CAB-LA can be introduced in LMICs in timely, acceptable, and effective ways.

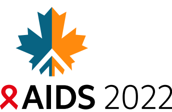
Description: In 2020, under Biomedical Prevention Implementation Collaborative (BioPIC), over 100 global health experts developed a comprehensive introduction strategy for CAB. Using this roadmap, country landscaping for CAB-LA introduction, and lessons from oral PrEP implementation, AVAC and WHO co-convened 50 researchers, donors, implementers and civil society in September 2021 to:

1. Identify common questions and evidence gaps related to CAB-LA across contexts and partners;
2. Define the implementation science agenda for CAB-LA, and
3. Agree on mechanism(s) for future coordination.

Lessons learned:

1. CAB-LA-related questions were identified, including: defining optimal and feasible HIV testing strategies that expand access; delivery models for CAB-LA; integration with family planning and antenatal care services; and how to embed CAB-LA in overall demand generation for HIV prevention choices.
2. Current and planned implementation research for CAB-LA needs to be mapped to identify gaps in populations, geographies, and delivery approaches.
3. To generate more comparative and generalizable data and identify scalable strategies, outcomes across projects and partners should be standardized.

Conclusions/Next steps: Ongoing policy and implementation dialogue, including with civil society, is critical to accelerate the development of CAB-LA implementation studies that adequately address priority knowledge gaps. Additional prevention products may be available over the next five years, increasing choice, but potentially making delivery and stakeholder engagement more complex.
The need for enhanced coordination has never been greater. BioPIC has established an open-source clearinghouse to improve knowledge sharing on CAB-LA implementation. Ongoing coordination with WHO will also accelerate adoption of evidence-based policies and wide scale implementation.



EPE017

Practice-based adaptive responses to overcome challenges in the scale-up of PrEP: a qualitative multiple case study of PrEP implementation in Belgian HIV clinics

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Background: To maximize the impact of PrEP on the HIV epidemic, we need to better understand and respond to barriers in real-world PrEP implementation. Very little research has applied health systems approaches to studying PrEP delivery in routine care. In Belgium, PrEP is formally delivered in a centralized system of 12 HIV clinics.
This study aimed to provide a contextualized understanding of how PrEP providers in these clinics develop PrEP implementation strategies in response to emerging contextual challenges.
Methods: We conducted a qualitative multiple case study in eight Belgian HIV clinics. Data collection between January and December 2021 consisted of: 21 interviews with a purposive sample of different provider profiles (e.g. medical and paramedical), semi-structured observations of delivery settings and clinical care processes, and review of documents relevant to understanding care practices and structure.
We analyzed field notes and verbatim transcribed data comparing 'within-case' and 'across-case' thematic coding.
Results: We identified three common themes of organizational challenges across the study sites: accommodating a continuously growing cohort of PrEP clients, dealing with competing clinical priorities at facility-level, and operating in a restrictive policy environment (e.g. where prescription of reimbursed PrEP is limited to HIV specialists).
In response, several context-specific innovations emerged through provider-initiated change, which we classified in five broader implementation strategies:
1. Expanding on-site PrEP services,
2 Simplifying care processes,
3. Task-shifting care aspects to non-physician professionals,
4. Differentiating care according to clients' needs and;
5. Collaborating with professionals outside HIV clinics.
The boundaries of these strategies were largely determined by system "hardware" factors, such as available infrastructure and workforce.
Yet, within these limits, we identified several underlying and less visible "software" factors as crucial enablers of change: the role of local leadership, provider agency and motivation, and shared values on quality of care, particularly creating a non-judgmental environment to accommodate the needs of sexual minority populations.
Conclusions: Within the structural constraints of limited resources, policy frameworks and a centralized PrEP delivery model, "software" factors emerged as essential enablers of provider-initiated adaptive change. Our results stress the need to consider aspects of organizational culture in ongoing efforts to improve and scale-up PrEP service delivery.

EPE018

Assessing the reach, adoption, implementation, and maintenance (R-AIM) of the systems analysis and improvement approach for prevention of mother-to-child transmission of HIV in Manica Province, Mozambique 2018-2021 (the SAIA-Scale Program)

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Background: Optimal delivery of prevention of mother to child transmission of HIV (PMTCT) programs is challenging, including in Mozambique. The Systems Analysis and Improvement Approach (SAIA) is a multi-component systems engineering strategy that has demonstrated PMTCT cascade improvement in a previous cluster randomized trial. To facilitate scale-up and improve integration into routine management systems, the SAIA-Scale trial (NCT03425136) evaluates delivery of SAIA to health facilities by maternal and child health District Supervisors, with minimal external support. SAIA-Scale uses the RE-AIM framework to evaluate essential ingredients for public health impact that are infrequently reported, including intervention reach, adoption, implementation, and maintenance.
Methods: SAIA-Scale is a stepped-wedge trial in 36 facilities covering all 12 districts of Manica province, central Mozambique, from 2018–2021. Each district received a one-year intensive phase with external research staff support, followed by a maintenance phase with only limited financial support.
We used data from health management information systems and activity tracking to assess reach, adoption, implementation, and maintenance of the SAIA strategy.
Results: SAIA-Scale reached 36 facilities covering over 146,000 births and 206,000 first antenatal care visits during the study period. Mean scores on two organizational readiness predictors of adoption were 24.1/25 for change commitment and 33.5/35 for change efficacy. The program was adopted by all 12 targeted districts attending initial training, and 36 facilities initiating the SAIA strategy. Intensive and maintenance phases comprised equal fa-

cility-months. Each facility received an average of 1.1 and 1.0 mentorship visits from district supervisors per month during the intensive and maintenance phases, respectively.

Across all facilities, 429 workplans were developed during the intensive and 432 during the maintenance phase. Facility staff reported implementing 91.8% of intensive phase workplans, and 85.9% of maintenance phase workplans. Facilities reported adopting into routine practice 70% and 62% of micro-interventions tested during the intensive and maintenance phases, respectively.

Conclusions: Assessment of reach, adoption, implementation, and maintenance revealed the successful integration of a systems engineering strategy for PMTCT into routine healthcare management systems in Mozambique. R-AIM should be reported alongside effectiveness more frequently for a deeper understanding of sustained public health impact of HIV prevention programs.

EPE019

Can evidence based from robust trials be translated into routine practice? The adoption of an evidenced-based innovative REMSTART package to reduce mortality in advanced HIV disease individuals starting ART in Tanzania

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Background: In Africa, Cryptococcal meningitis (CM) is still associated with high mortality among people living with HIV. We scaled up and evaluated Cryptococcal Antigen (CrAg) Screening and pre-emptive treatment with fluconazole of asymptomatic CrAg positive individuals.

Methods: We implemented the intervention among patients with HIV who had CD4 counts < 200 cells/µl or were at WHO clinical stages 3 or 4 in 18 health facilities while in another 18 facilities we deferred implementation.

The study was done rural and urban settings in Tanzania in Dar es Salaam, Tanzania. Several meetings were conducted with the Ministry of health (MoH) and implementing partners supporting MoH in efforts to ensure guidelines and tools were in place.

By the end of our study, the MoH scalled up cryptococcal screening to 201 facilities.

Results: A total of 2602 patients were enrolled in the 18 health facilities. The median (IQR) CD4 count(cells/µl) was 39 (19,94) among CrAg +ve asymptomatic(n:64), 47(9,99) among CrAg +ve with symptoms of meningitis (n:30), 96 (46,150) among CrAg -Ve (n:2162). The median follow-up in days (IQR range) was 356 (4-395), 16 (1-117), and 365 (0-663)) among CrAg +ve asymptomatic, CrAg +ve with symptoms of meningitis, and CrAg -Verespectively.

3/76 (3.9%), 0/39(0%), 278/2487 (11.2%) participants were lost to follow-up among CrAg positive asymptomatic, CrAg positive symptomatic and CrAg negative participants respectively over 12 months.

Overall mortality was comparatively low 17/76 (22.4%) at 12 months among CrAg positive asymptomatic participants; 16/39 (41.0%) at 10 weeks among CrAg positive symptomatic participants; 214/2487 (8.6%) at 12 months among CrAg negatives patients. If we assume those lost have died, then the mortality figures are 26/76(34.2%) and 20/39 (51.3%) among CrAg positive asymptomatic and symptomatic participants.

Conclusions: The TRIP translational trial provides evidence that Cryptococcal Screening and pre-emptive fluconazole could be effectively translated and scaled up to reduce mortality among people with HIV under pure routine health care settings.

The effectiveness is demonstrated by low mortality among CrAg positive asymptomatic, but very high mortality is still observed in CrAg positive with meningitis.

EPE020

Utilizing electronic health record best practice alert to promote PrEP awareness among U.S. cisgender women who attend OB/GYN clinics: what have we learned?

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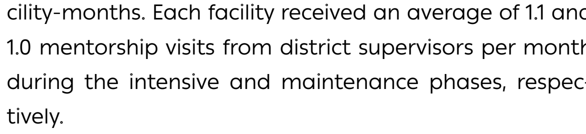
Background: Pre-exposure prophylaxis (PrEP) awareness and uptake are low among cisgender women, despite indications. Therefore, we created electronic medical record (EMR) Best Practice Alerts (BPA) to promote provider-initiated HIV prevention counseling, including PrEP, with women.

Description: EMR changes were implemented as part of a quality improvement project in OB/GYN clinics in Baltimore, Maryland, U.S.. EMR BPAs were created to:

1. Encourage nurses and providers to add HIV risk-related ICD-10 codes to the problem list;
2. Offer comprehensive and easily accessible order sets that facilitate initiation of PrEP;
3. Offer templates for note documentation and to ensure adequate HIV prevention counseling (*Figure 1*).

The BPA were launch for pregnant patients with a positive HIV risk screen and non-pregnant patients with a sexually transmitted infection (STI). Six months prior to EMR changes were served as the baseline.

Lessons learned: After EMR changes, PrEP was discussed with 20.2% of patients (52/257) in total, which was significantly increased from the baseline (vs. 0.9%, p<0.001). Although providers took no action or overrode BPAs more often for non-pregnant than pregnant patients (61.6% vs.



33.2%, p<0.001), PrEP discussion occurred more frequently among non-pregnant than pregnant patients (18.7% vs. 5.5%, p<0.001). Most prenatal care providers overrode the BPA because they believed a PrEP discussion was unnecessary for pregnant women with a remote history of STI, whereas providers for non-pregnant patients reported not having enough time to discuss it with patients. Our project finds that BPAs effectively promote PrEP discussion; however, additional interventions are needed to enhance this effect. Further education about the increased risk of HIV acquisition associated with STIs, PrEP effectiveness,and the safety of PrEP, including during pregnancy, is warranted.

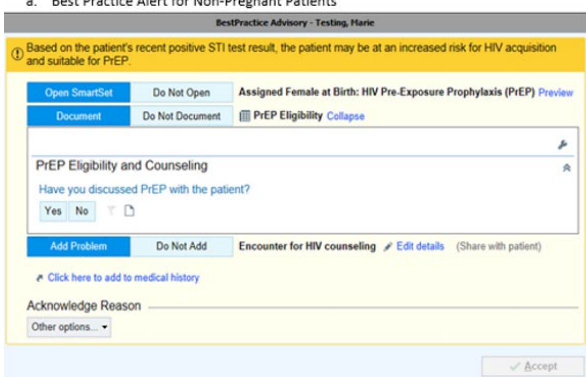


Figure 1. Electronic health record best practice alert for PrEP.

Conclusions/Next steps: Providers will be updated about the new CDC recommendations to inform all sexually active adolescents and adults about PrEP. Strategies to incorporate HIV prevention messaging into clinic visits will be explored.

EPE021

Development and implementation of a rapid PrEP initiative at a sexual health center in New Orleans, Louisiana

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Background: In 2022, pre-exposure prophylaxis (PrEP) is still not reaching Americans at highest risk of HIV, especially those living in the Southern US. Rapid PrEP services provided by sexual health centers (SHC) can facilitate access and overcome barriers such as referral requirements. Here, we are studying the adaption of a successful Rapid PrEP Initiative (RPI) in Denver, Colorado for an SHC in New Orleans, Louisiana, an epicenter of HIV in the South.

Description: Applying the ADAPT-ITT process model (Figure 1) to the Denver Program to inform development of the New Orleans RPI, our investigators and the Denver team ("topical experts") identified core components of the Denver program. We then conducted focus group discussions (FGDs) with SHC and PrEP providers ("local stakeholders"), and with SHC clients ("target population"). Table 1 lists the Denver Model's core components, with suggested modifications.

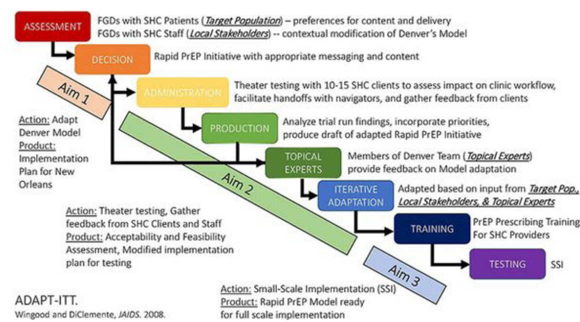

Figure 1. ADAPT-ITT Process Model

Core Components	What is being modified (content vs context)?	Who is making the modifications?	Comments	Illustrative Quote
Check in with Medical Assistant (MA) to assess PrEP interest	Content – the check in will be eliminated.	SHC providers	MA doesn't have time; provider should be the one asking about PrEP readiness	"…she's already, doing their vitals, getting their weight." – *Provider 4* "[the MA] doesn't really know much about the patient when they're coming in her room, you know." – *Provider 1*
Provider Initiation	No major modifications – agree with steps outlined by Denver team	N/A	Providers voiced support for program and interest in discussion PrEP with more clients. They also desire training to address: 1. labs to order and rationale 2. symptoms of acute HIV 3. who is a candidate for PrEP 4. How long until PrEP is effective 5. TAF/FTC vs TDF/FTC – when to prescribe 6. Initial counseling for anyone starting – side effects, etc	"So, my - just a basic thought, it's to get them right there and then." – *Provider 3* "And I do think it helps the more people you talk to about it just because so many people don't know it's out there. And it might be the friend that needs it, not …the person you're seeing. But the more people that know about it…" – *Provider 1* "And this is where a checklist and, like, the EMR for, like, symptoms of acute HIV…[would be helpful]." – *Provider 4*
			Clients desire providers to thoroughly address concerns about side effects. Clients also noted that providers should address stigma and talk to all SHC clients about PrEP so that no one feels targeted.	"I just would focus more on like the long-term side effects" – *Client 6* "There's enough stigma for people to not want to engage in conversations at all, or even open up to the – like, be real about, "Hey, I'm engaging in sexual activity that could be risky, and so I should take this drug." – *Client 13* "It is damaging whenever you go to a doctor's office, and the doctor might look at you and be like, "Oh, maybe this person needs that." They're pegging you in some type of category, and it feels a little like if everyone were asked then it wouldn't feel so heavy." – *Client 21*
Navigational Services	Context – navigator desired but unclear availability, will likely be shared with PrEP clinic	PrEP providers	Clients suggested using navigation as an opportunity for patient education on continued STI risks. They also suggested that navigator address social, emotional, and physical concerns, adherence, and stigma.	"I don't have anything. I'm on PrEP." It's like, okay, you don't have one of the many STD's that's out there. You know. So, when people tell me that, that means that they are having sex without condoms because they're on PrEP. And so, they might carry other things. So, that needs to be educated definitely" – *Client 1* "People are probably going to want space to verbalize whatever other needs they might have. So, offering space for that, like, "Are you up-to-date on all of your other medications? Do you need to schedule a follow-up for anything else?" You know, just making it full circle." – *Client 20*
Lab review – shared pool	Content – shared pool not necessary	SHC providers	Each provider can review his/her own labs	"So, we can all handle reviewing our own labs." – *Provider 4*
Space/ workflow	Content – room for navigator not available	SHC providers	Need space for navigational services. Proposed starting with Medicaid patients only so that required navigational services are minimal during initial rollout.	"We don't really have the space for a …navigator to spend a half an hour with the patient in our room…You know what, maybe the way we pilot this is we just do it for Medicaid or sliding scale patients." – *Provider 4*

Table 1. ADAPT-ITT Denver core components and planned modifications

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Lessons learned: Providers and clients voiced support for the RPI. Providers noted several barriers (time constraints, navigating financial assistance programs), but suggested contextually appropriate solutions (note templates, additional navigational support). Clients similarly supported the RPI, particularly the ease of consolidated appointments. They had concerns about costs and voiced a desire for financial counseling and navigational services.
Conclusions/Next steps: The use of ADAPT-ITT has informed specific adaptations to the content and delivery of well-established rapid PrEP initiation model in Denver to inform and enhance implementation in New Orleans. Next steps include theater testing (i.e. trial runs) of a draft implementation plan and evaluation of small-scale implementation of the RPI at our SHC.

EPE022

Using health care providers' perspectives to refine a clinical decision support implementation strategy for increasing the adoption of PrEP provision in Alabama clinics

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Background: The southern U.S. accounts for a disproportionate number of new HIV infections annually, and pre-exposure prophylaxis (PrEP) is underused in this region. Our objective was to understand healthcare providers' perspectives on utilizing a clinical decision support (CDS) tool to prompt PrEP discussions and prescribing and to refine strategies for implementing the tool in Alabama, a priority state in the national Ending the HIV Epidemic initiative.
Methods: We conducted two virtual focus groups with providers from two federally qualified health centers in Alabama that were either offering or planning to offer PrEP. Moderators used a semi-structured guide to elicit providers' perspectives on
1. Barriers and facilitators to prescribing PrEP, and;
2. How to successfully implement a CDS tool to prompt providers to discuss PrEP with patients at increased risk of HIV infection.
Using rapid qualitative analysis to generate findings quickly, we summarized data from focus group transcripts using a structured template, transferred the summaries into an Excel matrix, and synthesized results using a team-based approach. We then worked closely with a multidisciplinary research team of clinicians, epidemiologists, and public health authorities to refine the implementation strategies based on the results.
Results: Providers identified multiple barriers to PrEP prescribing, including:
1. Providers' negative attitudes and concerns about side effects, patient adherence, and costs;
2. Providers' lack of knowledge about PrEP and neutral sexual history taking;
3. Structural barriers including time constraints; and
4. Features of the CDS tool, such as the potential to cause alert fatigue among clinicians.
Facilitators to PrEP included:
1. Training of clinic staff to support clients on PrEP;
2. Clinical resources, including prescribing guidance for providers; and
3. Patients' motivation about PrEP.
We adapted preliminary implementation strategies based on the results, to include providing tailored communication materials about PrEP for multiple stakeholders (e.g., clinicians, new and potential PrEP clients and community members) and including all clinic staff in the CDS system training and implementation.
Conclusions: Using qualitative analysis, we rapidly identified feasible adaptations for strategies to implement a CDS intervention for PrEP, with the potential to increase PrEP discussions and prescribing in a high-priority jurisdiction.

EPE023

Strategies to improve PrEP uptake among women receiving ANC services at Tondoro Health Centre, Namibia

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Background: Women are at substantially increased risk of HIV acquisition during pregnancy and post-partum periods, with possible onward transmission to their babies. PrEP is highly effective in preventing HIV. The Namibian HIV prevention guidelines recommend PrEP be offered to all HIV negative pregnant and breastfeeding women (PBFW) at risk. Much is still to be learnt, however, on how to effectively integrate PrEP in routine antenatal care (ANC) and postnatal care.
Description: A quality improvement (QI) project was conducted over a 12-month period to increase PrEP uptake among pregnant women at Tondoro Health Centre. A facility-based QI committee conducted a root cause analysis identifying multiple contributors to low PrEP uptake including health care worker (HCW) reluctance to

initiate PrEP, staff rotation, PrEP being only offered at the ART clinic, knowledge gaps on PrEP priority populations and service delivery, and client refusals. The committee developed, tested, and either adopted, adapted, or abandoned change ideas using plan, do, study, act (PDSA) cycles. Routine program data were used to describe PrEP uptake, defined as initiations among women attending ANC.

Lessons learned: Key change ideas that were adopted included sensitization of all staff about PBFW being a priority population for PrEP implementation, scaling PrEP integration in the ANC clinic through capacity building of HCWs, PrEP orientation of new staff who rotated to the primary health care clinic, and health education to clients about PrEP at the clinic waiting area and during HIV testing and clinical consultation.

Between October 2020 and September 2021, a total of 322 women attended ANC, of whom 42 (13%) were known HIV-positive and three (0.9%) were newly diagnosed HIV-positive. Among the 277 women who tested HIV-negative, 227 (82%) initiated PrEP, at a monthly average of 19. In comparison, no pregnant women had been initiated on PrEP in September 2020.

Conclusions/Next steps: Regular sensitization and continuous health education of HCWs on PrEP as a pivotal HIV prevention tool for PBFW as well as commitment and teamwork among the staff were key in improving PrEP uptake among pregnant women at Tondoro Health Centre. Facilities facing similar challenges could adopt these strategies to improve PrEP uptake.

EPE024

Ask for PEP: the experience of the response to demand of information about Post-Exposition Prophylaxis (PEP) after weekends in Argentina

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Background: The NGO site provides free personalized attention on prevention, diagnosis and care of HIV and STIs, on weekdays. In February 2021 we noticed that 75% of HIV exposure related inquiries occured on Mondays and needed a quick response. Therefore, the Communications department implemented a 360 digital campaign to respond to demands of this information after weekends from February to May 2021.

Description: The intervention Ask for PEP consisted of a 5-steps process on our digital marketing channels so people would not need to wait until Monday to get information.

First, we updated the information about PEP available on our Website, relocated it to the homepage and set up a digital promotional campaign through Google Ads that showed the information after google searches related to condom fails/ HIV exposure. Then, posts about similar topics were promoted on Facebook and Instagram prompting people to subscribe to get more information by email. Also, we increased the frequency of organic posts on social media.

Finally, an email was sent to our contact bases of people wanting to receive this current information.

Lessons learned: Even though our goal was to reduce inquiries, they did not decrease significantly (Figure 1). However, they became more specific and related to PEP access because, despite being available for free through public and private health systems, the treatment was delayed and limited.

Also, organic content on social media about "condoms fails" got more engagement on social media than PEP as itself probably because people were not familiar with the meaning of PEP.

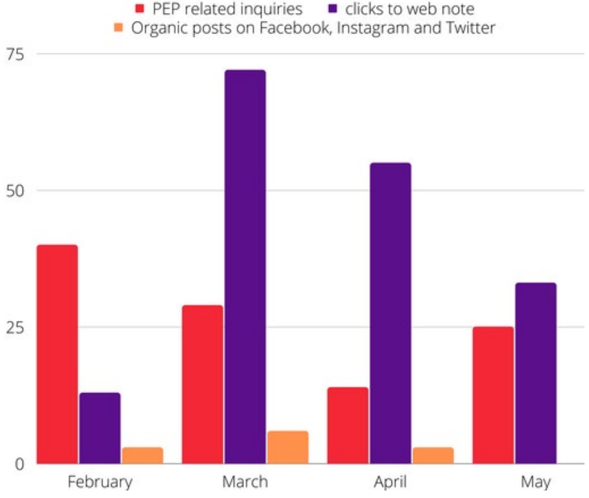

Figure 1

Conclusions/Next steps: Even though a digital strategy was effective to increase the quality of information about PEP, it was not enough to facilitate access. It is necessary to combine it with public advocacy for better access and community education on what PEP is and when to ask for it.

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EPE025

The acceptability of pharmacy-based HIV PrEP delivery among private pharmacy clients in Kenya: findings from a pilot study

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Background: The delivery of PrEP at health facilities has limited reach and access. Private pharmacies often fill a gap in overburdened health systems and are frequently a preferred venue among clients. We conducted a pilot study in Kenya to test a model of pharmacy-based PrEP delivery and understand its acceptability among pharmacy clients.

Methods: We offered PrEP in 5 private pharmacies in Kisumu (n=2) and Kiambu (n=3) Counties. Eligible individuals were clients ≥18 years who reported behaviors associated with HIV risk and met PrEP eligibility criteria (e.g., no history of kidney disease) on a standardized prescribing checklist. Participants who initiated PrEP were eligible for follow-up visits at one, four, and seven months.

At each visit, a questionnaire was administered to measure client perceptions of model acceptability, including component constructs of acceptability (e.g., affective attitude, burden) borrowed from the Theoretical Framework of Acceptability (TFA). We also measured predictors and downstream outcomes of acceptability (e.g., willingness to recommend; likeliness to continue) using a 5-point Likert scale.

Results: Between November 2020 and December 2021, we screened 575 pharmacy clients for HIV risk and enrolled 287 (50%), all of whom initiated PrEP at enrollment. At one, four, and seven months, 54% (156/287), 65% (102/156), and 57% (58/102) of participants due for follow-up continued PrEP. At enrollment, 95% (272/287) of participants strongly agreed that they liked pharmacy-based PrEP (TFA: affective attitude) and 87% (249/287) strongly agreed that receiving PrEP at the pharmacy was easy (TFA: burden).

Additionally, 92% (263/287) strongly agreed that they would recommend pharmacy PrEP to friends/family members, and 95% (273/287) strongly agreed that they would like to continue getting PrEP at a pharmacy. These findings remained consistent across all follow-up periods.

Conclusions: The pharmacy clients at HIV acquisition risk participating in this pilot study found pharmacy-based PrEP delivery acceptable, which suggests that this model reaches and meets the care preferences of at least some portion of the target population for PrEP. More research is needed to quantify the potential gains in reach, PrEP initiation, and PrEP continuation that expanding PrEP delivery to private pharmacies might support.

EPE026

Uptake and completion of tuberculosis preventive therapy (TPT) in people living with HIV/AIDS in Nigeria: the APIN program experience

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Background: Despite WHO recommendation to start people living with HIV (PLHIV) who are at greater risk of Tuberculosis (TB) infection on TB Preventive Therapy (TPT), PLHIV access to TPT and TPT completion rate is still poor in Nigeria. In the CDC/APIN supported HIV Programme, we implemented strategies to improve access to TPT and completion among PLHIV.

Interventions such as capacity building on TPT demand creation, aligning TPT with multi-month dispensing (MMD), TPT gate keeping, kitting, and regular TPT data analysis for monitoring, the use of case management approach to patients' TPT initiation, adherence and completion monitoring, were implemented within 4 years period. The aim of this analysis is to determine the uptake and completion rate of TPT among eligible PLHIV during the period of interventions in 7 APIN states in Nigeria.

Methods: We conducted a retrospective review of routine data for PLHIV who initiated TPT in 425 facilities between October 1, 2017 and September 30, 2021. Data from the electronic medical record, facility health medical record, and reporting trackers. Variables of interest include clients HIV status, TB status, TPT status, date of TPT initiation, date of TPT completion, and TPT completion status. We estimated the TPT completion rate per year and plot the trend on a line graph. TPT completion rate was defined as the proportion of clients who initiated and completed TPT in a given fiscal year (Oct – Sept). Analysis was done using an Excel Microsoft.

Results: A total of 331,181 PLHIV were initiated on TPT between 2018 and 2021. Of the 331,181 that commenced TPT during the period, 92.4% (n=305876) completed. TPT completion rate per fiscal year increased from 78% at baseline in 2018 to 98% in 2021. The trend of annual TPT completion rate is as shown in figure 1 below.

Conclusions: The implementation of the TPT strategic interventions coincided with a significant and progress TPT uptake and completion rate among PLHIV. Therefore, we recommend adaptation of these strategies in similar contexts in Nigeria. There is need for further studies to explore patient-level and health system factors associated with TPT uptake and completion in the program.

EPE027

Missed opportunities when we focus only on risk: Using value-added items to identify potential PrEP candidates

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Background: PrEP implementation programs commonly use risk assessments to identify individuals who could benefit from PrEP. While consistent with CDC guidelines to prescribe PrEP to those 'at elevated risk,' self-report of condomless sex, multiple partners or recent STIs has known limitations and maps poorly onto actual risk for HIV for some groups. Questions about protection-related desires, concerns and experiences could identify potential PrEP candidates otherwise missed in behavioral risk-based screeners.

Methods: Five items reflecting potential benefits of PrEP (value-added items) were added to the 2019 cycle of the American Men's Internet Survey, a nationwide survey of men who have had sex with men. Answers to the value-added items were characterized overall and in relation to PrEP indication (based on adapted CDC criteria- having a partner living with HIV or 2 or more partners plus any condomless sex or an STI in the past 12 months) and willingness to use PrEP.

Results: 1606 survey respondents not using PrEP were half (50%) below age 25, 11% Black, 16% Latino, and 64% White. 61% met CDC PrEP-indication while 80% were identified by value-added items (Table 1). 28% were uniquely flagged by the value-added items, 9% uniquely by the risk-based items, and 52% were flagged by both (Figure 1). Of those uniquely identified by the value-added items, 56% reported being willing to use PrEP.

VALUE-ADDED QUESTIONS		AT RISK (CDC INDICATION BASED ITEM SET)		TOTAL
		Not Indicated 39% (623)	Indicated 61% (988)	
Did you ever wish you had a better strategy to protect yourself from HIV?	No	251 (49%)	251 (30%)	502 (37%)
	Yes	259 (51%)	598 (70%)	857 (63%)
	Total	510	849	1359
Did you ever experience stress or distress because of HIV-related thoughts or concerns?	No	363 (61%)	360 (38%)	723 (47%)
	Yes	232 (39%)	592 (62%)	824 (53%)
	Total	595	952	1547
Did thinking about getting HIV ever interfere with your sex life or sexual relationships?	No	310 (53%)	393 (42%)	703 (46%)
	Yes	270 (47%)	540 (58%)	810 (54%)
	Total	580	933	1513
Did you ever worry about a partner's HIV status?	No	275 (47%)	309 (33%)	584 (38%)
	Yes	312 (53%)	639 (67%)	951 (62%)
	Total	587	948	1535
Thinking back to the last time you had a cold or flu, did you worry it might be HIV?	No	495 (82%)	670 (70%)	1165 (75%)
	Yes	111 (18%)	287 (30%)	398 (25%)
	Total	606	957	1563
Flagged by any value-added item	No	177 (29%)	151 (15%)	328 (20%)
	Yes	443 (71%)	835 (85%)	1278 (80%)
	Total	620	986	1606 (100%)

Figure 1. PrEP indication by value-added and risk-item screeners.

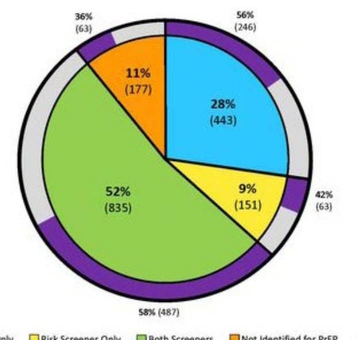

Figure 2. PrEP indicated by screen type (% and (n) of total sample) and associated willingness to use PrEP.

Conclusions: Value-added screening identified MSM missed by risk-screening; over half of them willing to use PrEP. Value-added screening should be considered in efforts to promote shared decision-making and reduce stigmatization in PrEP implementation

EPE028

Public health stakeholder perspectives on implementing molecular HIV surveillance for next generation cluster detection and response for ending the HIV epidemic: a qualitative study

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Background: The U.S. government's plan for Ending the HIV Epidemic (EHE) has invested in cluster detection and response (CDR) as a promising approach to target limited public health resources to optimize engagement in HIV testing, treatment as prevention, and preexposure prophylaxis. Despite interest and rapid development of molecular cluster-guided public health activities, methods for optimal usage remain underdeveloped.

Methods: We conducted semi-structured qualitative interviews with key stakeholders in HIV elimination initiatives in Texas and Illinois to examine capacity, readiness, and challenges to adopting strategies for CDR. Interviews were held via video conference or telephone, audio recorded, and transcribed. Rapid qualitative analysis was performed to identify relevant themes using the Consolidated Framework for Implementation Research (CFIR).

Results: Between February 2020 and September 2021, 15 interviews were conducted, the majority being with public health practitioners. While stakeholders in Texas and Illinois faced different local contexts, several shared themes emerged:

1. Data concerns, including infrequent genotype collection by providers [outer setting] and disjointed data systems [inner setting] for CDR;

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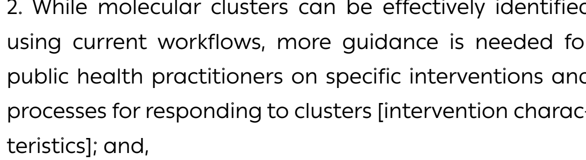

2. While molecular clusters can be effectively identified using current workflows, more guidance is needed for public health practitioners on specific interventions and processes for responding to clusters [intervention characteristics]; and,

3. CDR is not fully accepted by the community, with uncertainty as to whether the benefits outweigh possible negative legal consequences [outer setting].

Several participants noted that local and national policies around HIV criminalization and immigration negatively impact participation in health department activities and trust in CDR approaches. Possible strategies include securing support and understanding of CDR through community- and provider-public health partnerships, and rigorously testing response interventions.

Most participants felt more staff are needed to effectively scale up CDR activities while continuing to prioritize traditional partner services; however, participants were split on whether CDR activities should stand alone or be integrated into current partner services workflow.

Conclusions: For CDR to realize its full potential, additional strategies are needed to address identified barriers across CFIR domains including the development and evaluation of clear interventions for responding to clusters, additional staff support, a focus on decriminalization of HIV, and engagement with community and providers.

EPE029

A Digital Mother-to-Child Transmission (MTCT) risk screening tool increases oral PrEP initiation in Matabeleland Province, Zimbabwe

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Background: Recent HIV estimates show that the Mother-to-Child Transmission (MTCT) rate in Zimbabwe remains high at 7.11%. To reduce the MTCT rate and ensure healthy mothers and their babies, pregnant and lactating women should be encouraged to use a combination of HIV prevention methods, including Oral Pre-Exposure Prophylaxis (PrEP). However, the uptake of Oral Pre-Exposure Prophylaxis (PrEP) in the peripartum period remains low in our context. We therefore rolled out a clinical decision support enabled MTCT-risk screening tool for improved PrEP uptake in selected health facilities of Matabeleland South from October-December 2021.

Description: The tool targeted women aged 15-24 years attending antenatal and postnatal clinics and was administered by a clinician. It consists of pre-defined MTCT-risk screening questions with prompts to offer PrEP to HIV-negative women identified to be at risk of MTCT. To assess impact of utilization of the risk screening tool on the increase in PrEP initiations we compared the proportion of HIV-negative women in antenatal and postnatal care initiated on PrEP before (July-September 2021) and after (October – December 2021) roll out of the tool using the Student T-test in Stata V17.

Lessons learned: Across the 9 health facilities assessed, there were 456 (67%) of 684 HIV-negative pregnant and lactating women aged 15-24 years who were screened using the MTCT risk screening tool. 168 women (24.6%) were eligible and initiated on PrEP. There was a significant increase the proportion of PrEP initiations among HIV negative women in ANC/PNC when compared to the July-September 2021 period ($p<0.05$).

Indicator	Before Roll Out of MTCT Screening Tool (July-Sept 2021)	After Roll Out of MTCT Screening Tool (Oct - Dec 2021)	p-value
Number of HIV-negative in ANC & post ANC	854	684	
HIV-negative women screened for PrEP eligibility, n (%)	0 (0)	456 (67%)	
HIV-negative women eligible & initiated on PrEP in ANC & PNC, n (%)	21 (2.5%)	168 (24.6%)	<0.01

Table.

Conclusions/Next steps: We demonstrate that decision support enabled MTCT risk assessment tools have the potential to scale up PrEP initiations among pregnant and lactating women. There is need to scale-up their use going forward and to monitor implementation fidelity among all HIV-negative women in ANC and PNC.

EPE030

Effectiveness of telehealth for PrEP clinical follow-up in public services in Brazil (Combina Study)

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Background: Close clinical follow-up geared to users' needs can enhance PrEP access and impact. We examined whether telehealth for daily oral PrEP clinical follow-up could change the effectiveness of the prophylaxis.

Methods: A desktop/mobile app was developed to assist three asynchronous and one in-person consultations per year. Between Jul/2019-Dec/2020, participants of the demonstration study taking PrEP for at least 6 months, with regular access to internet and without clinical contraindications, were given the option to transition to telehealth in the five cities. Indicators of individuals who chose telehealth were compared with those who remained in-person, including information prior to and after the choice. Predictive factors of the choice of telehealth and outcomes were analyzed: interruption of PrEP (not having the medication for more than 90 days), adherence (average rate of possession of the medication for daily use); occurrence of STI (syndromic); and HIV incidence.

The analyses considered the first choice (telehealth or in-person) and were adjusted for sexual practices, schooling, age, time on PrEP, and follow-up situation at the moment the choice was made.

Results: Out of a total of 470 users, 52% chose telehealth, with adjOR increasing over time of PrEP use (adjOR_25 to 32 months:4.90; CI95%1.32-18.25) and having had interrupted PrEP at the time of the choice (aOR:2.91; CI95%1.40-6.06); and diminishing for those reporting higher-risk behavior (adjOR_active_anal_without_condom:0.51 CI95% 0.29-0.88). After an average follow-up period of 1.6 years post-follow-up choice (CI95%:1.5-1.7), the risk of interrupting PrEP was 34% lower with telehealth (adjHR:0.66; CI95%:0.45-0.97). When adjusted by mixed linear regression, no differences in adherence were found between in-person and telehealth (p=0.486)nor at the pre- and post-follow-up choice (p=0.245). STI occurrence, calculated by generalized estimating equations, increased between the pre- and post-follow-up choice, though not associated with in-person or telehealth (p=0.528). No HIV infections occurred.

Conclusions: Opting for telehealth is driven by more experience with PrEP and lower infection risk, which may represent individuals with better ability and resources to manage self-care. In addition, telehealth for PrEP reduced the risk of interrupting the prophylaxis, thus strengthening the prevention cascade.

Implementation science of scaling up HIV testing

EPE031

HIV self-testing reached the our key populations regardless of COVID-19

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Background: Access to facility-based HIV testing is challenging in the context of Covid-19 due to travel restriction. Viet Nam has been heavily affected by Covid-19 especially in 2021. To ensure HIV testing services is accessible to key populations (KP), a web-based HIV self-test (HIVST) distribution and linkage to ART and PrEP (https://tuxetnghiem.vn) was piloted in three provinces to assess the uptake, feasibility, and effectiveness in linking self-testers to HIV services to inform national scale-up.

Methods: The pilot was started in Can Tho city in Nov 2020 and expanded to Nghe An and Hanoi in April 2021. Clients are encouraged to create a website account to request HIVST. Clients choose how test kits are delivered (courier/peer educator) or opt for self-pick-up. Reporting of self-test result is encouraged, but not required.

Following distribution, staff or peers supported clients to access further testing, PrEP or ART. User demographic information and risk behaviors were collected at account registration and via voluntary client-satisfaction survey.

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Data were automatically stored and compiled in the web-system. Linkage was documented by staff and peers in the same system.

Results: Between Nov 2020 and December 2021, of 4454 clients registered on the website, 4192 clients received HIVST. Almost of them were male (90.0%) and aged between 15 and 34 (82.3%). No disruption of HIVST distribution via the website occurred during the fourth wave of Covid-19, although monthly kit distribution was variable. Of 4192 received HIVST, 3088 (73.7%) reported their test results; 168 (5.4%) had reactive results; 163/168 (97%) confirmed HIV positive and 157/163 (96.3%) received ART.

Of 2915 clients reported HIV negative, 609 (20.9%) accessed to PrEP service. The satisfaction survey results show 99% of the clients reported "very satisfied with the services" and 95% reported that HIVST was easy.

Conclusions: Results of the pilot shows how web-based HIVST can be utilized as a critical COVID-19 adaptation for reaching KP, including younger age groups and those not previously tested. This approach was feasible, acceptable and facilitated linkage to ART and PrEP services which overcame service delivery challenges during the pandemic. Viet Nam is scaling up the programme nationally to cover 23 provinces in 2022.

EPE032

Acceptability and cost-effectiveness of blood sample transport by drone for HIV-testing of infants exposed to HIV in the city of Conakry, Guinea (ANRS 12407 AIRPOP)

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Background: Early infant diagnosis (EID) of HIV is essential because of the high mortality of HIV-infected infants during the first months of their lives. In Conakry timely EID is difficult as traffic congestion prevents the rapid transport of blood samples to the central laboratory. We investigated the cost-effectiveness and acceptability of transporting EID blood samples by drone.

Methods: The incremental cost-effectiveness ratio (ICER) per life-year gained of drone transport compared to motorcycle transport was estimated using Monte Carlo simulations. The local annual GDP per capita (1,160 USD) was set as the threshold. The main parameters and data sources used are presented (Figure 1). Interviews were conducted with 65 stakeholders including postpartum women, local residents and policy makers. The drones were demonstrated to these individuals.

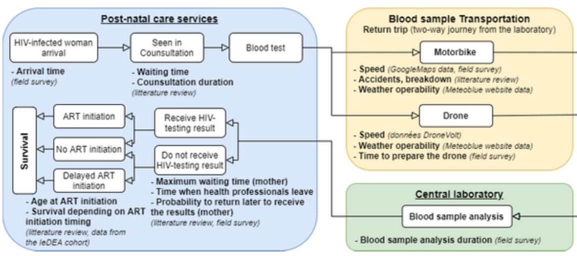

Figure 1. Main parameters and data sources of the cost-effectiveness simulation.

Results: Based on the current purchase price for a drone of 22,500 USD, the ICER of 2,504 USD/ life-year gained is above the cost-effectiveness threshold. The ICER would fall below the threshold if the price reduced to 8000 USD. The ICER is sensitive to weather-related downtime, number of exposed infants, and drone speed (Figure 2).

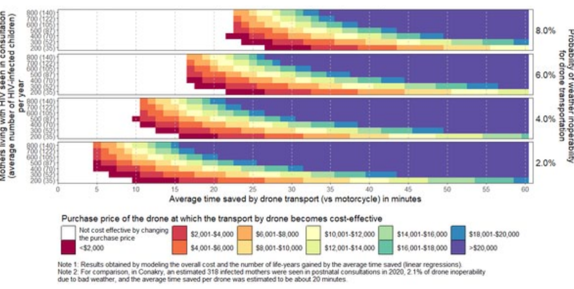

Figure 2. Cost-effectiveness of blood samples transportation by drone depending on main parameters.

Post-partum women perceived that the use of drones could reduce the time taken to receive EID results. Health policy makers expressed the view that drone use could improve care decentralization and allow for the transportation of other health products.

Conclusions: The transportation of EID blood samples by drone whilst highly acceptable is not currently cost-effective in Conakry. Expected improvements in drone technology and decreases in purchase costs suggest it may soon be an acceptable option.

EPE033

Trauma patients in an emergency department with routine opt-out HIV screening have lower screening rates and higher HIV rates than medical patients

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Background: Limited published data and trauma-associated risk factors suggest rates of HIV may be very high among trauma patients. However, it is unknown if this

simply reflects higher local prevalence of HIV in communities where trauma patients originate. This study compares rates of HIV screening and diagnosis among trauma and medical patients at a busy Level 1 trauma center emergency department (ED) with a robust universal HIV screening program.

Methods: A retrospective cross-sectional study was performed of all patients who visited the ED from May 1, 2018, through May 1, 2021. Duplicate encounters, encounters with repeat testing within one year, and patients younger than 18 or older than 65 were excluded. Encounters were categorized as trauma (trauma team activated or consulted) or medical (non-traumatic complaint or minor trauma managed by ED team only).

Chi-squared analysis was used to compare demographics, rates of HIV testing, new and known HIV infections, and linkage to care between trauma and medical patients. Modeling with a General Estimating Equation (GEE) was used to produce adjusted outcomes.

Results: Over the three-year study period, there were 225,101 patient encounters. After exclusion criteria were applied, 147,430 encounters from 91,468 unique patients were analyzed. Trauma comprised 7,487 (5.4%) encounters. Trauma patients were less likely to be screened for HIV than medical patients (18.1% vs 25.6%; OR 0.64; 95%CI, 0.61-0.68, p<.01).

When adjusted for demographics (age, gender, and race), the difference in screening rates remained significant (OR 0.47; 95%CI, 0.44-0.51, p<.01). Trauma patients had significantly higher rates of HIV (2.2% vs 1.3%; OR 1.78; 95%CI, 1.2-2.6, p<.01), although the adjusted association was not statistically significant. Trauma patients were less likely to have a new diagnosis of HIV (OR 0.21; 95%CI 0.05-0.91, p=0.01). Linkage to care rates were similar between the groups.

Conclusions: Trauma patients are an especially vulnerable population who may otherwise have limited contact with the medical system. Trauma patients in this study were both significantly more likely to have HIV and significantly less likely to be screened for HIV.

Including trauma patients in routine ED HIV screening should be a priority to increase diagnosis rate and linkage to care in vulnerable populations.

EPE034

Understanding gaps in index case testing cascade: Experience from Partners in Hope supported health facilities in Malawi

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Background: Index case testing (ICT) is critical to reaching the minority of people still unaware of their HIV status. Implementation challenges limit the impact of ICT in sub-Saharan Africa. We use programmatic data from Partners in Hope supported facilities in Malawi to identify gaps across the ICT cascade, and in-depth interviews (IDIs) to understand why these gaps exist.

Methods: ICT strategies were taken to scale in October 2020 at 48 facilities in two districts in Malawi, with a focus on testing sexual partners (SP) and biological children (BC) of individuals recently diagnosed with HIV or with viral load results ≥1000copies/ml. Programmatic ICT data from October 2020-January 2021 were reviewed from 48 facilities to assess outcomes across the ICT cascade. We conducted IDIs with a random subset of index clients, their contacts (SP and BC), and health care workers (HCWs) from four facilities who were ≥18 years old and engaged in ICT during the same time-period. We analyzed data using constant-comparison methods in Atlas.ti.v9.

Results: The largest gaps in the ICT cascade were: 1) not successfully tracing eligible contacts; and 2) low HIV-positivity rates among those tested (Figure).

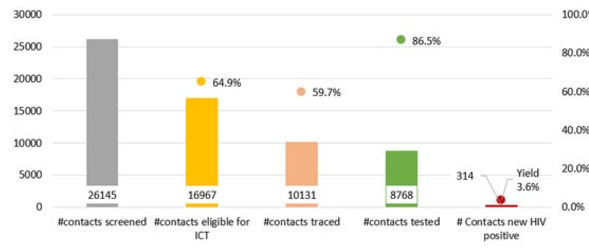

Figure. Description of the ICT testing cascade for contacts across 48 facilities in Malawi (October 2020 - January 2021)

We analyzed 49 IDIs: 13 index clients, 21 contacts (13 SP, 8 BC), and 15 HCWs. Barriers to contact *tracing* were index clients giving inaccurate contact information due to fear of unwanted disclosure (especially for new or extra-marital partners), as well as due to poor counseling/lack of trust in HCWs, and lack of privacy at ICT screening locations. Transport challenges for HCWs hindered community tracing. Barriers to high *HIV-positivity rates*were testing BCs of men and testing non-eligible BCs who were easy to reach during home visits to increase test productivity.

Conclusions: Improving quality of counseling and privacy, facilitating tracing activities, and promoting fidelity of ICT protocols are key to success across the ICT cascade.

EPE035

Implementing safe and ethical index testing services: adapting provider referral contact tracing method to suit client and provider needs in the Western Region of Ghana

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Background: Breaking the chain of HIV transmission is key to preventing new infections and achieving epidemic control. Disclosure of HIV status to sexual partners and children who may have been exposed persists as a huge challenge to HIV positive clients in communities where stigma, discrimination, and the fear of intimate partner violence is pervasive. Assuring and maintaining the confidentiality of index clients enhances contact elicitation, tracing and testing.

Description: The USAID Strengthening the Care Continuum Project, implemented by JSI Research & Training Institute, Inc. with the Population Council, trained healthcare providers (HCP) from 43 facilities in Western Region of Ghana to support clients to notify and contact their sexual partners and biological children below 19 years to test for HIV. Due to sociocultural difficulties with the partner notification approaches, the project introduced the adapted provider-assisted strategy where traceable addresses of clients' contacts are given to Community-Based Organizations to anonymously trace and conduct HIV testing within the community, the workplace or the social network of contacts.

Lessons learned: A review of index testing registers showed about 70% of clients selected passive referral, where contacts elicited had to visit the health facility for testing. Sexual partners, in particular, did not show up for testing or were probably never informed by their HIV positive partners that they needed to test.Under the provider-assisted strategy, providers had difficulties informing HIV-exposed contacts by phone for fear of exposure of the identity of the index client. With the introduction of adapted provider-assisted strategy the projectidentified 760 undiagnosed HIV infections out of 4,356 persons tested and 489 known positives between April 2020 and March 2021 compared to 296 HIV+ clients diagnosed out of 1848 persons tested and 75 known positives between October 2019 and March 2020. When HCWs maintain the confidentiality of index clients and elicited contacts, and trace contacts anonymously, high contact tracing and testing rates are achieved.

Conclusions/Next steps: Theadapted provider-assisted strategy provides a feasible adaptation of the traditional provider-assisted testing strategy and is appropriate in situations where the risk of partner violence, stigma and discrimination, and other adverse events is high.

EPE036

Improving HIV testing in the primary care setting: results from a multifaceted, educational intervention study in Amsterdam, the Netherlands

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Background: In the Netherlands, general practitioners (GPs) are a key provider for HIV testing, but opportunities for HIV diagnosis are being missed in the primary care setting. We implemented a multifaceted, educational intervention for GPs in Amsterdam to improve HIV testing in primary care.

Methods: All GPs in Amsterdam were invited to participate in an educational program between 2015-2020, which included repeat sessions using audit and feedback, interactive discussion and quality improvement plans. Data on HIV testing by all Amsterdam GPs were collected from 2011-2020.

The primary outcome was the HIV testing frequency, which was compared between GPs before participation (reference group), never participating, and after participating, in quarterly time-periods using Poisson regression. Due to the disruption of healthcare service delivery by COVID-19, data from quarters 2-4 of 2020 were excluded.

Analyses were adjusted for city district and secular trends in testing from 2011-2020; additionally analyses stratified by patient sex and age were done. In a sensitivity analysis, GPs with >30 tests/quarter before the intervention started (n=30) were excluded, as participation and effect of the intervention were expected to be low amongst these GPs.

Results: Data from 106,424 HIV tests in 2011-2020 were included. Overall, 36% (229/632) of GPs active in 2015-2020 participated. In the model adjusting for city district and secular trends, GPs who participated performed 5% more HIV tests compared to GPs before participation (Table 1); excluding already high testing GPs this was 8%. Increases in HIV testing associated with participation were observed for both male and female patients.

Participation was associated with increased HIV testing for patients 20-34 and 50-64 years, but not ≤19, 35-49, and ≥65 years.

Patients	GP participant category*	Main analysis		Sensitivity analysis**	
		Relative Test Ratio	95% CI	Relative Test Ratio	95% CI
Overall	Never participated	1.17	1.15 - 1.19	1.01	0.99 - 1.03
	Participated	1.05	1.03 - 1.08	1.08	1.05 - 1.10
Males	Never participated	1.23	1.20 - 1.26	1.05	1.03 - 1.08
	Participated	1.05	1.01 - 1.08	1.05	1.01 - 1.09
Females	Never participated	1.10	1.08 - 1.13	0.96	0.94 - 0.98
	Participated	1.06	1.03 - 1.10	1.12	1.08 - 1.16

*reference category = GPs before participation. **excluding GPs that had already ordered >30 HIV tests/quarter at baseline. CI: confidence interval. GP: general practitioner.

Table 1: Adjusted relative HIV test ratio by GPs who never participated and by GPs after participation in the educational intervention, compared to GPs before participation, overall and by patient sex.

Conclusions: The intervention was associated with a statistically significant, but very modest increase in HIV testing among participating GPs. Whether HIV testing became more targeted could not be assessed from these data.

EPE037

Realized potential: results from a post-demonstration nationwide rollout of a community-run COVID-responsive unassisted HIVST service in the Philippines

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Background: HTS in the Philippines fell from 1,220,765 to 480,285 tests between 2019-2020 due to COVID-related disruptions. Only 68% of the country's 115,100 estimated PLHIV were diagnosed, well below global targets. To narrow this gap, the Global Fund SKPA program, through KP-led CBO LoveYourself, ran a 2020 HIVST demonstration study, dubbed SelfCare, in the National Capital Region (NCR). Post-demonstration, LoveYourself scaled up the service nationwide in 2021 with 1,799 additional HIVST kits for qualified KPs.

Description: SelfCare leverages a chatbot for clients to order, process delivery, administer the test guided by online instructional videos, report results, and access counseling, linkage to confirmatory testing and HIV prevention and treatment information and services. From February to November 2021, 1,763 qualified men-having-sex-with-men and 36 transgender individuals received free HIVST kits, 609 of whom had never been tested before.

No. of people who expressed interest via SelfCare chatbot	12,873
No. of people who answered all eligibility questions	7,341
No. of people who were eligible	5,097
No. of people who proceeded to order	2,413
No. of kits delivered	1,799
No. of clients who reported their HIVST result	772 (42.9%)
No. of reactive clients among those who reported their HIVST result	78 (10.1%)
No. of HIVST-reactive clients linked to care to date	55 (70.5%)

Table.

Lessons learned: Consistent with results from the NCR pilot1, SelfCare's nationwide rollout2 demonstrated significant reach among first-time testers (26.9%[1], 33.9%[2]), high client self-reporting (56.4%1, 42.9%[2]) and reactivity rates (9.8%[1], 10.1%[2]), and a considerable proportion of first-time testers among reactive clients (13.4%[1], 53.8%[2]).
While 53% of rollout clients still come from NCR, SelfCare received orders and served clients from all regions, resulting from complementary online demand generation strategies (e.g., materials in multiple local languages, engagement of influencers, etc.) where online post reach averaged 14,300 individuals.

Conclusions/Next steps: Access to HIVST, coupled with courier delivery options and online outreach strategies, combats the negative impact of COVID-19 on HTS and resonates with hard-to-reach groups, especially first-time testers.
Updates and expansion to national HTS guidelines, including increasing providers and strengthening linkage mechanisms for confirmatory testing and treatment, must be fast-tracked to reinforce HIVST and other differentiated testing approaches as COVID-adaptive measures to reaching and linking to care remaining undiagnosed PLHIV.

EPE038

Increasing access and utilization of HIV services among Key Populations (KPs) in Namibia

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Background: The KP-STAR project implemented by IntraHealth Namibia with funding from USAID, has interventions to increase HIV testing Services (HTS) uptake by KPs. The project offers HTS to clients at to clients at their convenient time and comfort zone. The 2019 Namibian Integrated Biological and Behavioural Surveillance Survey (IBBSS) amongst Female Sex Workers (FSWs) and Men having Sex with Men (MSM) reported poor HIV testing uptake for FSWS with estimates in Windhoek at 25.9%, Walvis Bay/Swakopmund at 10.9 %, and Katima Mulilo with only 25% respectively. HIV testing uptake for MSM was estimated at 10.6% in Windhoek, while it is estimated that the uptake by MSM is 24.5% in Walvis Bay/Swakopmund. Treatment uptake for MSM was below 90% in Windhoek and Walvis Bay/Swakopmund. We demonstrate the value of flexibility in HIV service provision.

Description: The KP-STAR consortium, implement activities targeting increased demand and access to comprehensive HIV prevention and treatment services for KPs. Interventions include community mobilisation, peer-to-peer outreach, health education, case management, condom, lubricant, HIV self-testing kits distribution at hotspots, "moonlight" HIV testing services using mobile vans and gazebos; and home testing for those who preferred to be tested at home.

Lessons learned: Between April 2020 and September 2021 the following results were achieved:

	FY20(April-Sept 2020)			FY21(Oct2020-Sept 2021)		
	MSM	FSW	TG	MSM	FSW	TG
KP PREV	1943	5596	269	3640	12293	374
Tested	1139	4894	153	3366	11410	320
Percentage HTS uptake	59%	87%	57%	92%	93%	86%
Positives	134	363	12	267	946	33
TX NEW	122	359	13	266	943	30
Linkage to ART	91%	99%	108%	100%	100%	91%
Tested Negative	1100	4695	169	3099	10464	287
PrEP NEW	374	1045	56	718	2491	101
PrEP Uptake for newly tested negatives	34%	22%	33%	23%	24%	35%

Table.

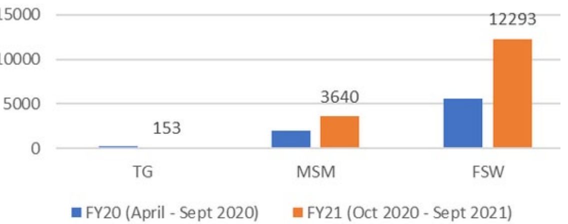

Figure. KP_PREV: Number of KPs reached with individual and/or small group-level HIV prevention interventions designed for the target population.

Conclusions/Next steps: Provision of HTS at times and places convenient for KPs led to increased service access, HIV testing, detected new positives and treatment uptake among KPs. This approach also identified HIV negative clients eligible for PrEP, hence strengthening HIV prevention among KPs.

EPE039

Use of hot spots for promoting HIV Self Testing (HIVST) services and distribution of self testing kits for Key Populations (KPs) in Namibia

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Background: HIV Self Testing is useful for increasing case finding among Key Populations (KPs) with an unknown HIV status. The 2019 Namibian Integrated Biological and Behavioural Surveillance Survey (IBBSS) amongst Female Sex Workers (FSWs) and Men having Sex with Men (MSM) established poor testing uptake with estimates in Windhoek at 25.9% for FSWs, Walvis Bay/Swakopmund had HIV testing uptake of 35.7 % for FSWs, while in Katima Mulilo among FSWs was only at 10.9% respectively. The IBBSS findings indicated HIV testing uptake for MSM was at 10.6% in Windhoek and 24.5% in Walvis Bay/Swakopmund.

Description: Between April 2020 and December 2021 Peer Educators (PEs) and Case Managers (CMs) were trained on HIVST, and hotspots were identified for HIVST interventions. Posters on HIVST messaging were designed, printed, and placed at the identified hotspots. Bartenders were trained on HIVST data collection tools for easy follow up of clients by PEs and CMs. Specific messages on HIVST were developed at populated on various social media platforms such as WhatsApp and Facebook. An online app called QuickRes that allows people to make appointment and booking was developed and populated.

Extra HIVST kits were given to clients for their sexual contacts. Clients with HIVST positive results were linked to health facilities for confirmatory test using and were enrolled in case management. Contact numbers of PEs and CMs were printed on HIVST posters and kits for easy access to clients in need of more information and support.

Lessons learned: From April 2020 to December 2021, a total of 18,154 HIVST kits were distributed among FSWs, MSM and TG and yielded the following results.

	Assisted HTS SELF	Positive	Yield
MSM	4564	246	5.4%
FSW	13146	677	5.1%
TG	444	20	4.5%

Conclusions/Next steps: HIVST initiatives to increase case finding essential to attainment of the UNAIDS 2030, 95-95-95 targets among key populations in Namibia. Using hotspot for promoting and distribution of HIVST is effective to reach out to KP who are at high risk of HIV exposure. The intervention can be used increase HIV testing and treatment uptake, which leads to early diagnosis and linkages to care and treatment.

EPE040

Who is providing HIV testing services? The profile of lay counsellors providing HIV testing services in South Africa in the UTT era

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Background: Lay counsellors are critical in maintaining large-scale access to HIV testing services (HTS) and ensuring ongoing treatment support for persons living with HIV (PLHIV). We aim to characterize the training background, current work context, and emotional well-being of lay

counsellors working in the primary health care (PHC) setting in South Africa and deficiencies that may affect their impact in the universal-test-and-treat (UTT) policy context.

Methods: We report on a cross-sectional survey among adult (≥ 18 years) lay counsellors enrolled from June 2018 to March 2019 from 20 PHC facilities in Johannesburg, South Africa. Major depression was defined as scoring ≥12 on the Centre for Epidemiologic Studies-Depression-10 scale (CES-D-10) (Cronbach's alpha = 0.78). Low psychological well-being was defined as scoring <3.5 on the Ryff's-shortened 18-item, six-point Psychological Well-Being scale (Cronbach's alpha = 0.63). Moderate Job satisfaction was defined as scoring 2 to<3 on the Job satisfaction survey (Cronbach's alpha = 0.79).

Results: 55 lay counsellors (92.7% female, median age 37 years, interquartile range [IQR]: 33-44, and 27.3% HIV diagnosed) were surveyed. Most (85.5%) were department of health lay counsellors (considered volunteers at the time); the remainder were from non-governmental organizations (NGO) supporting HTS at PHC clinics. 85.5% reported high English literacy, but 23.6% did not complete high school. All participants had received basic counselling training, and 13.0% attended a training of less than the guideline-recommended 10-days.

Additionally, 45.2% had not attended a refresher training within the requisite 24-months. Participants reported operational barriers, including lack of designated space for counselling (56.4%), inadequate supervision and support (40.7%), inadequate emotional support (over 56.4%), 39% felt inadequately trained, and 60% were overwhelmed by their workload.

A total of 18.2% were screened with major depressive symptoms, with 18.2% reporting low psychological well-being. While the majority (87.3%) reported being moderately satisfied with their job, 50.91% actively sought alternative employment.

Conclusions: Despite the significant role of lay counsellors in expanding access to HIV care in South Africa, little has been done to invest in their ongoing training, emotional support, and integration into the formal health workforce. Counsellors' persisting unmet psychosocial, training, and professional needs could impact their efficacy in the UTT-era.

EPE041
Introducing and optimizing safe and voluntary partner notification services in Indonesia

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Background: With funding from the PEPFAR and USAID, the Linkages across the Continuum of HIV Services for Key Populations Affected by HIV (LINKAGES) and the Meeting Targets and Maintaining Epidemic Control (EpiC) projects have helped the Government of Indonesia establish and implement guidelines for the introduction of voluntary partner-notification services for people living with HIV (PLHIV). They do this using routine program data to identify opportunities for further improvement.

Description: In 2019, team members helped adapt the 2016 World Health Organization index testing guidelines into standard operating procedures relevant to the local Indonesian context. They emphasized key-population-friendly services, given the concentration of HIV infections in these groups, and incorporated strategies that could be implemented through a mix of community- and facility-based service providers. LINKAGES and EpiC supported implementation in Jakarta beginning in October 2019. They collected and analyzed routine program data on PLHIV participation in voluntary partner-notification services, assessing rates of acceptance, contact referrals, successful linkage of contacts to HIV testing services, and new HIV case-finding rates by population, service setting, and geography.

Lessons learned: From October 2019 through September 2021, 13,710 offers of partner-notification services were accepted among a total of 22,323 PLHIV. PLHIV who accepted partner-notification services referred 18,899 contacts, of whom 9,121 (48.3%) were reached and 5,702 (30.2%) received HIV testing. Among the contacts tested, 978 (17.2%) received positive results.

Community-based services contributed to case-finding rates 4.7 times higher than those in facility-based settings (11.1% vs. 2.4%) among PLHIV who had been offered partner notification. In community settings, PLHIV who identified as men who have sex with men were significantly less likely (aOR=0.29, [95% CI: 0.25-0.33]) than clients of other categories to accept partner notification, but those who did accept were significantly more likely (aOR=5.3 [3.76-7.45]) than clients of other categories to refer HIV-positive contacts.

Conclusions/Next steps: Project team members are working with national HIV program partners to mainstream offers of partner notification into PLHIV community support services and expand online and anonymous contact referral options to improve participation among men who have sex with men.

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EPE042

Factors influencing confirmatory testing and linkage after a reactive HIV self-test result: a private sector-focused insight from young people in Nigeria

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Background:
HIV self-testing (HIVST) has been found to be acceptable, feasible, accurate, and effective in increasing the number of people who test for HIV. However, less is known about whether and how those who access HIVST through the private sector access confirmatory testing, linkage to HIV care and treatment following a reactive result. This qualitative study identified the factors that influence young people to take the next step after a reactive result following the use of a purchased HIVST kit.
Methods: Forty-five in-depth interviews and seven focus group discussions with sexually active men and women between 18 – 29 years were conducted in Lagos, Kano and Anambra. Using thematic analysis, data collected from the participants was analyzed into themes related to barriers and enablers to confirmatory testing and linkage to care and treatment after a reactive HIV self-test result.
Results: Key enablers to confirmatory testing and linkage to care include the availability of good quality healthcare delivery, support from loved ones, instructional materials that stipulated next steps following test results, experiencing poor health and implications of a reactive result.
Furthermore, key barriers identified were emotional trauma, lack of transport fee to a healthcare facility, fear of status disclosure and avoiding being treated as sick.
Conclusions: The findings from this research have demonstrated the need for sensitization of healthcare providers on high-quality HIV service delivery, provision of pre and post-test counselling at the point of purchase, adequate and clear information on HIVST, interventions to address HIV stigma in the community.
All of these would ensure timely linkage of clients and ultimately reduce HIV-related morbidity and mortality among clients in the private sector

EPE043

Integrating quality improvement methodologies in improving index testing positivity yield in 19 selected sites in Southern province Zambia

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Background: As the proportions of people living with HIV (PLHIV) who do not know their HIV infection status decrease, reaching the remaining few who are asymptomatic and not in contact with the health care system becomes a critical challenge. Therefore, reaching the first 90 of the UNAIDS 90-90-90 targets will require effective and efficient HIV testing approaches. Index testing model has demonstrated an increase in identification of HIV positive cases among children and adults and linkage into care and treatment services.
Methods: A baseline assessment was conducted and found the index positivity yield of 14% in September 2020. Following a baseline assessment, a root cause analysis was conducted to establish the magnitude of the problem.
The root causes were found to be:
1. Non appointment of an Index Champion,
2. Incomplete locator information for the elicited contacts for easy follow-ups,
3. Inadequate knowledge and counselling skills on safety and ethical index testing,
4. Inconsistent departmental data review meetings,
To address the route cases facilities enrolled into QI project with following intervention:
1. Provided integrated ART outreach service and engaged community partner (DAPP) in making follow ups,
2. Provided TORs and oriented facility index champion on the Job Aids,
3. Involved Facility/ART in charges in index testing services to enhance supervision,
4. Built capacity in counsellors and other providers in Ethical & Safe Index Testing through trainings and onsite mentorship,
5. Holding data review meetings, daily, weekly and monthly.
Results: The index positivity yield improved from 14% in September 2020 to 25% by end of the first quarter and increased to 36% by end of second quarter with a further increase to 48% by the end of the third quarter and further improved to 57% by the end of FY21.
Furthermore, it was observed the average (12 months) index positivity yield and contribution was 29% and 55% respectively. It was also observed that Index reduced untargeted testing by 1. 1% by the end of quarter one and by 4.8% by the end of the second quarter.
Conclusions: Application of quality improvement methodologies remains pivotal in index positivity yield improvement and achieving the first 95%.

EPE044

I'm Ready Research Program: Outcomes from the first 6 months of the first national HIV self-testing program in Canada to reach the undiagnosed and link them to care

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Background: The COVID-19 pandemic has negatively impacted facility-based HIV testing in Canada. To reach the estimated 8,300+ undiagnosed people living with HIV, we implemented the I'm Ready research program in June 2021, 7 months after the first HIV self-test (INSTI® HIV Self-Test) was licensed in Canada. I'm Ready is a national integrated online program (mobile app, telehealth platform and website) that offers access to free HIV self-tests, care pathways, and optional virtual support by trained peer navigators (www.readytoknow.ca).

We aimed to evaluate the impact of using technology and peer navigation support to reach those undiagnosed with HIV and link them to care.

Methods: Through the *I'm Ready, Test* mobile app, participants aged 18+ and who lived in Canada can consent, create an anonymous profile, answer surveys, order up to 3 free HIV self-tests for delivery or pick-up at 80 community sites across Canada, take the test, and provide/upload results. Participants could connect directly with peer navigator support before, during or after taking the test through the *I'm Ready, Talk* platform.

Results: In the first 6 months, 2,676 people from all regions across Canada consented. Mean age was 32 years, with 65% self-identified as men, 25% as women and 10% gender-diverse (e.g., non-binary, trans, genderqueer). About 55% reported reduced access to facility-based HIV testing due to COVID. Of the 4,854 HIV self-test kits ordered, 60% were delivered by mail to a chosen address and 40% were picked up at community sites. Among those who submitted at least one test result, 62% self-identified as belonging to at least one key population group (gay/bisexual/MSM, Indigenous, African, Caribbean or Black, or people who use/inject drugs).

The program reached 635 first-time HIV testers (31.5% of total), and 5 previously HIV-undiagnosed participants, all from key populations. There were 68 appointments with 15 different peer navigators for support to participants with testing and linkage to care.

Conclusions: The *I'm Ready* program leveraging its innovative/integrated technology platform provides an acceptable and effective low barrier option for reaching those with undiagnosed HIV infection, particularly those from key populations who have been difficult to reach and engage in HIV testing and care.

EPE045

Innovative use of power BI desktop to track partner/family notification/testing services (PNS) for contacts of newly diagnosed HIV+ cases to increase Index Case Testing (ICT) performance in Oromia, Ethiopia 2020-2021

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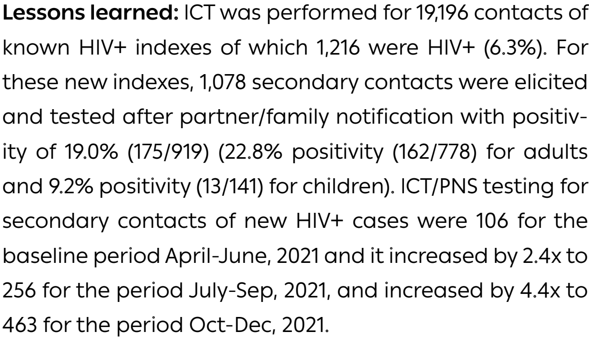
Background: The USAID Family Focused HIV Prevention Care and Treatment Activity in Oromia, Ethiopia works to improve HIV case finding at community level using ICT/PNS in a low HIV prevalence setting (adult 15-49 prevalence <0.7%). Newly diagnosed HIV+ cases are said to have contacts with high positivity rate. There is an electronic system to track ICT but none for PNS performance for contacts of newly diagnosed HIV+ cases.

Description: We analyzed project data on ICT from October 2020-December 2021 in 39 towns in Oromia. ICT for contacts of index cases was done based on risk assessment. Every new HIV+ adult is expected to receive counseling to elicit a minimum of two sexual partners and two children and get them tested for HIV. This means a newly diagnosed HIV+ person is expected to appear as contact when receiving testing while as index when his/her secondary contacts are elicited and tested for HIV partner/family notification.

We exported electronic data used to track ICT performance and used it to locate secondary contacts of newly diagnosed HIV+ cases by matching name or medical record number (MRN). Power BI Desktop was used analyze the data by using LOOKUP function to identify how many secondary contacts of newly diagnosed HIV+ cases were tested for HIV and how many of those tested positive.

An interactive dashboard was also developed and shared to implementers using Power BI Desktop to track performance on daily basis starting July 2021.



Lessons learned: ICT was performed for 19,196 contacts of known HIV+ indexes of which 1,216 were HIV+ (6.3%). For these new indexes, 1,078 secondary contacts were elicited and tested after partner/family notification with positivity of 19.0% (175/919) (22.8% positivity (162/778) for adults and 9.2% positivity (13/141) for children). ICT/PNS testing for secondary contacts of new HIV+ cases were 106 for the baseline period April-June, 2021 and it increased by 2.4x to 256 for the period July-Sep, 2021, and increased by 4.4x to 463 for the period Oct-Dec, 2021.
Conclusions/Next steps: Power BI Desktop was used to develop a tool to effectively track elicitation of secondary contacts resulting in improvement in data use and performance.

EPE046
HIV risk screening: a systematic and efficient approach for improving identification of HIV-positive children in Ethiopia

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Background: In Ethiopia, universal testing of children under five and targeted testing of older children was recommended in national guidelines to support identification of children. However, as universal testing led to test kit shortages, and health care workers (HCWs) had limited guidance on targeted testing, sick children presenting with opportunistic infections were prioritized.
To minimize missed opportunities for identifying at-risk children, Ministry of Health adopted a HIV risk screening tool (HRST), informed by known risk factors and existing guidance, to systematically screen all children and offer HIV testing based on symptoms, family status and vulnerability. Since September 2020, Ministry and CHAI have provided training and mentorship to support implementation and monitoring of the screening tool.
Methods: The HRST was administered by trained HCWs to children <15 years in outpatient departments (OPD). Those who screened positive, defined as providing an affirmative response to one or more screening questions, were offered HIV testing. Data were collected on screening and testing, pre-(2020) and post-(2021) introduction of screening at 24 facilities.
We assessed testing uptake among those screened and the number of children identified HIV-positive, and compared testing yields using a t-test.
Results: In 2021, 70% (127,192/180,832) of eligible children were screened. Among those screened, 12% (15,334/127,192) screened positive, 85% (13,031/15,334) were tested and 0.42% (55/13,031) were identified HIV-positive. An additional 91 (2.19%) children were identified among 4,150 who were tested without being screened, likely due to presentation with opportunistic infections or for index testing. Overall, from 2020 to 2021, identifications increased 54% from 95 to 146, with 38% identified through screening, and there was a statistically significant increase in yields from 0.72% to 0.85% (p-value: 0.049). The number needed to test (NNT) to identify one child declined 15% from 139 to 118.
Conclusions: Increases in overall identifications and yields suggest that screening is an efficient way to identify HIV-positive children who may otherwise not be tested, and should be considered if universal testing is not feasible. To maximize impact, screening coverage should be increased, and outcomes routinely monitored.
Further research should also review cases of children prioritized for testing without screening, and identified, to refine screening criteria.

Implementation science of scaling up HIV treatment

EPE047
Perception and acceptability of delivery of chronic medication through the use of Unmanned Aerial Vehicles (UAVs) in the district of Ekurhuleni, South Africa

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Background: Unmanned aerial vehicles (UAV), otherwise known as Drones, have the potential to increase capacity and efficiency of healthcare systems and circumvent challenges to healthcare delivery in hard-to-reach and isolated areas. As a relatively inexpensive and rapid transport solution, Drones may expand healthcare access through greater reach and meet urgent human need in challenging environments. The Aurum Institute, CHAPS and Kusasa AeroSpace conducted a safety, feasibility and acceptability study to explore the use of Drones to deliver medication.
Methods: The Aurum Institute, CHAPS and Kusasa AeroSpace conducted a safety, feasibility and acceptability study to explore the use of drones to deliver medication. The pilot phase included an acceptability study among 396 public health patients receiving chronic medication in Ekurhuleni, Gauteng, South Africa.
Participants were recruited and enrolled at local public health clinics between June and September 2021. Upon consenting for participation, they were shown a video of

a drone where medication is dropped via a small parachute to a client receiving the package on the ground. A study staff member guided the participant through an online survey, conducted on Android tablets at the clinic. Data was analyzed using SPSS 27.0.

Results: Perceptions of drones use were largely positive among clients receiving chronic medication at public health facilities. The Pearson's chi-square test of contingencies revealed several factors that positively impact clients' preference for Drone-delivered medication. These comprised spending more than R20 ($2) to travel to the clinic (p=0.000), not regularly being able to refill a prescription (p=0.001), forgetting to fill a prescription and safety concerns (p=0.030).

Conversely, people who would not want their medication delivered via drones currently access their medication using alternative modes of collection and perceive more risks of using drones.

Conclusions: Drone use for chronic medicine delivery has many benefits and given the impetus to decongest clinics and facilitate continuity of treatment access, this modality may provide long-term benefits to the medical field.

Supporting accessibility and adherence to treatment, drone use could improve local and national treatment outcomes. However, further research is needed to understand community perceptions and concerns to support the acceptability of this method in the future.

EPE048

Accelerating HIV epidemic control in Benue State, Nigeria, 2019-2021: the APIN program experience

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Background: Benue state has the second highest HIV prevalence of 4.9% in Nigeria. In 2018, about 35,623 people living with HIV (PLHIV) were yet to commence antiretroviral treatment (ART) in the state and they accounted for ART coverage gap of 11% in the country. To close this HIV treatment gap and fast track epidemic control, we implemented the Benue ART surge (BAS) intervention to increase PLHIV access to quality comprehensive HIV services.

The aim of this study was to describe the BAS strategic approaches and demonstrate progress in expanding ART access for PLHIV in Benue State, Nigeria.

Methods: We implemented BAS in 252 health facilities from May 2019 to September 2021. The BAS was a flexible model of Incident Command System and the State Surge Consortium. BAS strategic approaches prioritized stakeholders engagement, small area estimation, tiered facility management, targeted community-based HIV testing, comprehensive HIV services for key populations, enhanced program management, and viral load optimization. Data were collected and reported using an excel-based dashboard and electronic medical record. We described the trend of HIV case identification, ART initiation, viral load suppression rate, and rate of interruption in treatment during the BAS period.

Results: Out of 893,462 clients reached and tested for HIV during BAS implementation, 15% (n=60,297) were diagnosed with HIV and 99.8% (n=60,236) were initiated on ART. HIV case identification per month increased by 467% from 650 at baseline to a peak of 3,685 in August 2020, and then declined by 35% to 2,380 in September 2021. All new HIV infected patients (100%) were linked to ART. Viral load testing coverage and viral load suppression rate increased from 30% (43,185/126,004) and 84% (n=36,165/43,185) at baseline to 95% (n=193, 890/204,095) and 96% (185,785/193,890) respectively.

Conclusions: Implementation of the BAS improved access to comprehensive HIV services in Benue State. The increase in HIV case identification and ART initiation significantly reduced HIV treatment gap in the state. To fast track the attainment of UNAIDS 95-95-95 goals, lessons learnt from the BAS should be adapted and scale up in the national HIV programme in Nigeria.

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EPE049

Evaluating the impact of WHO's Treat-All guideline on disease progression for people living with HIV in Central Africa from cohort data by target trial design and multi-state modeling

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Background: By the end of 2018 nearly all countries in Central Africa had adopted WHO's "Treat All" guideline, which eliminates eligibility thresholds for people living with HIV (PLWH) to receive antiretroviral therapy (ART). Previous studies showed that implementation of this guideline led to increased ART initiation and viral load monitoring, plus prolonged retention in care. However, the impact of the Treat All policy on critical clinical outcomes, such as HIV disease progression and mortality, is largely unexplored.

Methods: We utilized a "target trial" design with individual-level longitudinal data collected between 2013 and 2019 from the Central Africa International Epidemiology Databases to Evaluate AIDS (IeDEA) consortium, from Burundi, Cameroon, the Democratic Republic of Congo (DRC), the Republic of Congo and Rwanda. Multi-state models (MSMs) infered the transitional hazards of disease progression among four disease stages (Stages 1-4 and death) which consisted of WHO clinical stages and death. The hazard ratios (HR) between a cohort enrolling in HIV care under Treat All guideline implementation and a cohort enrolling prior to Treat All guideline implementation were estimated, with and without adjusting covariates: sex and age.

Results: A total of 9,293 patients were included, 4,680 in the Treat All cohort and 4,613 in the pre- Treat All cohort. The Treat All policy was significantly associated with a reduced hazard of transition from WHO stage 1 to death with an adjusted HR (AHR) of 0.35, 95% CI 0.16 to 0.76, and from stage 2 to stage 3 (AHR = 0.63, 95% CI 0.43 to 0.92).

Conclusions: The adoption of Treat All was associated with a reduced likelihood of disease progression and death, especially for people with no or mild clinical symptoms at care enrollment. Prevention of HIV disease progression from the early-stage HIV infection suggests that 'treat all' policies can improve both short- and long-term clinical outcomes, and ultimately the quality of life and life expectancy.

EPE050

Factors associated with healthcare providers' preference for forgoing an oral lead-in phase when initiating long-acting injectable cabotegravir and rilpivirine in the SOLAR clinical trial

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Background: The Extension Phase of the FLAIR trial demonstrated similar efficacy and safety in maintaining viral suppression at week 124 among cabotegravir (CAB) and rilpivirine (RPV) long-acting (LA) stable switch participants receiving 4 weeks of oral lead-in (OLI) compared to those who start with injections (SWI).

The Phase IIIb SOLAR study comparing efficacy and safety of the daily oral medication bictegravir/emtricitabine/tenofovir alafenamide versus CAB+RPV LA therapy every 2 months allowed participants and health care providers (HCPs) the option of utilizing OLI prior to LA initiation versus SWI. Factors influencing HCPs' future intentions regarding OLI versus SWI are presented.

Methods: An online survey conducted among HCPs in 13 countries during SOLAR assessed reasons for utilizing an OLI prior to LA injections versus SWI. Eligible HCPs were involved in the participant-provider decision-making pro-

cess. Bivariate and multivariate logistic regression analyses were used to identify factors, including geographic region, provider role, LA antiretroviral therapy experience, and participant-provider dynamics that influenced a provider's decision to use OLI prior to LA dosing.

Results: 110 HCPs participated in the survey; 32% reported a future preference to use OLI, whereas 54% reported a future preference for SWI. HCPs had greater odds of reporting future intentions for SWI if they were: from Continental Europe compared to North America (aOR: 3.83, $p<0.05$); from sites with a greater number of participants who initiated CAB+RPV LA without OLI (aOR: 1.56, $p<0.01$); and those who reported comfort with the medication safety profile (aOR: 6.39, $p<0.01$). HCPs who participated in CAB+RPV LA trials prior to SOLAR had decreased odds of reporting a preference for SWI compared to those with no prior CAB+RPV LA trial experience (aOR 0.11; $p<0.01$).

Conclusions: The SOLAR on-line survey indicated higher levels of future intentions to SWI over OLI among HCPs initiating participants on CAB+RPV LA. A major factor leading HCPs to SWI was provider comfort with safety related data. HCPs with prior clinical trial experience were less likely to proceed without OLI reinforcing the role of continued training and education regarding the safety and tolerability of CAB+RPV LA using a SWI approach.

EPE051

Single center experience evaluating patients for and initiating long acting cabotegravir/rilpivirine

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Background: Long-acting injectable (LAI) cabotegravir and rilpivirine (CAB/RPV) was approved in the United States in January 2021. We describe a single center experience evaluating patients interested in LAI CAB/RPV and examine factors associated with initiation and reasons for not initiating CAB/RPV.

Methods: Retrospective single center study conducted at a primary care HIV clinic in San Diego. Our practice for evaluation of resistance is to consider an archive genotype if no baseline or prior resistance test is available.
Patients were evaluated between March and December 2021 and included in the study if a clear determination was made to start or not start CAB/RPV. Baseline characteristics were compared between those that did and did not start, and reasons for not initiating were evaluated.

Results: 202 patients were included, with 73 (36.1%) initiating LAI CAB/RPV. Baseline characteristics are shown in Table 1, with type of insurance and type of baseline ARV regimen associated with initiating CAB/RPV. An archive genotype was completed in 65 (32.2%) patients.
Of those that had an archive genotype completed, 15.4% had a mutation identified that may impact effectiveness of CAB/RPV. In those that did not initiate CAB/RPV (n=129) reasons included previously identified resistance (23), inconsistent clinic attendance/not easily reached (21), patient choice (17), uncertain out-of-pocket costs (17), not covered (11), not virally suppressed (11), failure to complete resistance work-up (10), resistance found on archive genotype (10) and other (9).

	Total (n=202)	Initiated CAB/RPV (n=73)	Did not start CAB/RPV (n=129)	p-value
Median age (IQR)	44 (34-53)	44 (32-52)	43 (36-54)	0.17
Race (%)				0.50
White	100 (49.5)	33 (44.0)	67 (51.9)	
Black	33 (16.3)	15 (20.5)	18 (14.0)	
Asian	8 (4.0)	2 (2.7)	6 (4.7)	
AI/AN	3 (1.5)	2 (2.7)	1 (0.8)	
Other/mixed race	52 (25.7)	20 (27.4)	32 (24.8)	
Unknown	6 (3.0)	1 (1.4)	5 (3.9)	
Ethnicity (%)				0.88
Hispanic	72 (35.6)	26 (35.6)	46 (35.7)	
Non-hispanic	126 (62.4)	47 (64.4)	79 (61.2)	
Unknown	4 (2.0)	0 (0.0)	4 (3.1)	
Sex Assigned at Birth (%)				0.16
Female	22 (10.9)	11 (15.1)	11 (8.5)	
Gender Identity (%)				0.46
Male	179 (88.6)	62 (84.9)	117 (90.7)	
Female	21 (10.4)	10 (13.7)	11 (8.5)	
Non-binary	2 (1.0)	1 (1.4)	1 (0.8)	
Baseline ARV regimen (%)				0.02
2nd gen INSTI+2 NRTI	128 (63.4)	41 (56.2)	87 (67.4)	
1st gen INSTI+2 NRTI	20 (9.9)	7 (9.6)	13 (10.1)	
NNRTI+2 NRTI	13 (6.4)	6 (8.2)	7 (5.4)	
PI+2 NRTI	8 (4.0)	2 (2.7)	6 (4.7)	
2 drug regimen	20 (9.9)	14 (19.2)	6 (4.7)	
Multi-class	13 (6.4)	3 (4.1)	10 (7.8)	
Primary insurance (%)				0.0006
Medicaid	88 (43.6)	46 (63.0)	42 (32.6)	
Medicare/Medicaid	19 (9.4)	7 (9.6)	12 (9.3)	
Medicare only	6 (3.0)	1 (1.4)	5 (3.9)	
Ryan White/ADAP	12 (5.9)	3 (4.1)	9 (7.0)	
Commercial	77 (38.1)	16 (21.9)	61 (47.3)	
HBV status (%)				0.67
Negative	149 (73.8)	57 (78.1)	92 (71.3)	
CoreAb+, SAg-, SAb+	45 (22.3)	14 (19.2)	31 (24.0)	
CoreAb+, SAg-, SAb-	6 (3.0)	2 (2.7)	4 (3.1)	
SAg+	2 (1.0)	0 (0.0)	2 (1.6)	
On PPI at baseline	25 (12.4)	11 (15.1)	14 (10.9)	0.38

Table.

Conclusions: One of the main barriers to initiation of LAI CAB/RPV is insurance coverage, particularly for those with commercial insurance. Those that initiated CAB/RPV were more likely to be on a two drug regimen, possibly due to a lower likelihood of resistance concerns in these patients. The use of archive genotypes provides an additional tool to evaluate for transmitted or polymorphic CAB/RPV resistance that may impact the effectiveness of this regimen.

EPE052

Implementation of the CD4 advanced disease rapid test: lessons learned from the pilot test in Uganda

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Background: In 2018, WHO recommended several interventions to prevent mortality among individuals with advanced HIV disease (AHD), most of which have since been adopted by Uganda. Identifying people with AHD begins with performing a CD4 cell count (CD4+), since most individuals remain asymptomatic for some time even when their CD4+ is less than 200. Since only about 50% of ART treatment centers have CD4+ machines, the introduction of VISITECT CD4 Advanced Disease rapid test (VISITECT), a semi-quantitative instrument-free test, could improve CD4 coverage at lower-level treatment centers that have limited laboratory capacity.

Description: Between January and August 2021, the Ministry of Health with support from Clinton Health Access Initiative, Inc. (CHAI), through funding from UNITAID, field tested VISITECT at 12 health facilities across Uganda with the aim of understanding its performance in an uncontrolled setting for consideration of potential scale-up.

The healthcare workers (HCWs) at these 12 facilities were trained in January 2021 and given a tool to collect the comparative data from VISITECT and point-of-care (POC) CD4+ machines at the facilities. Periodic supportive supervisions were conducted to assess the feasibility of VISITECT.

Lessons learned: Data from 681 comparative tests were collected from February to August 2021, highlighting 177 CD4 ≤200 and 504 CD4 >200 test results for the POC CD4+ machines while VISITECT had 195 CD4 ≤200 and 486 CD4 >200 test results. From this data, the VISITECT sensitivity and specificity was determined to be 97% and 95%, respectively.

Although HCWs highlighted the long turnaround time with VISITECT (45 minutes) as a challenge, they reported that access to such a test would facilitate quick clinical action in lower-level facilities without CD4+ machines as opposed to referring samples to other health facilities. It was also noted that VISITECT was portable, easy to use, and fit for facilities with limited technical expertise.

Conclusions/Next steps: Implementation of VISITECT testing is feasible besides yielding good results and could significantly increase access to CD4+ testing and the AHD package of care.

EPE053

Virological outcomes and ARV switch profiles one year after dolutegravir transition among children in southern Mozambique

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Background: The WHO recommends treatment optimization with dolutegravir (DTG) for first-and second-line ART among children. We describe DTG treatment in children approximately one year after DTG introduction in pediatric programs in Gaza and Inhambane provinces, Mozambique.

Methods: Clinic records from children 0-14 years with HIV-related clinic visits between September 2019 and October 2020 were extracted from paper and electronic records in 16 health facilities.

Among children aged ≥5 years (proxy for weight ≥20kg, the threshold for DTG 50mg), we report treatment switches, defined as change in anchor drug, ignoring changes only to NRTI backbones.

Among those on DTG-based regimens, we described treatment changes and available viral load (VL) outcomes.

Results: Of 3,205 children aged ≥5 years (52.7% female), 2,685 (83.8%) switched ART regimens during this period; 995 (37.1%) children switched ≥ 2 times; 34 (1.3%) changed 5-7 times.

Of those who switched, 2,523 (94.0%) switched to DTG-based ART, including 146 who started on DTG, but switched off and then back to DTG; 1,955 switches (77.5%) were from NNRTI-based ART. At last visit, 89.7% (2,785/3,104) of children were receiving DTG, excluding 101 without a documented regimen during follow-up.

Among children who switched to DTG, 2014/2523 (79.8%) were on continuous DTG for ≥6 months. Of these, 725 children had VL results available at median 9.1 [7.4-10.8] months after DTG start; 571 (78.8%) had suppressed VL <1,000 copies/mL. Among 372 with pre-DTG VL results, 187 (50.3%) were virally suppressed.

Of those who switched to DTG for ≥6 months, 1657 (83.1%) also changed NRTI backbone; 474/602 (78.7%) with available VL were virally suppressed. Of 336 DTG switches with same NRTI backbone, 89/114 (78.1%) were suppressed; 21 children changed from 3 NRTI-ART to DTG-ART.

Conclusions: 90% of eligible children were on DTG after one year of rollout, though DTG was not consistently maintained for all. Among ART-experienced children, viral suppression rates were higher following DTG switch. Most children with VL results also changed NRTI backbone; sup-

pression rates were similar to those who switched with same backbone, though numbers were limited. Further exploration, including drug resistance testing, is needed to understand why 21% are unsuppressed after nearly a year on DTG.

EPE054

HIV test and treat policy increases retention on ART in Zambian adults living with HIV. A multi-site cross sectional time series analysis

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Background: Most countries are using the ART test and treat approach to achieve UNAIDS 95-95-95 targets. However, the impact of this approach has not been appraised in many settings. We evaluated treatment outcomes of adults on ART and assessed the impact of the strategy.

Methods: We conducted a cross sectional time series data analysis of 6,909 individuals who initiated ART between January 1st, 2014 - July 31st, 2016 (before test and treat cohort (BTT), n=3,143 (45.9%)) and August 1st, 2016 - October 1st, 2020 (after test and treat cohort (ATT)). The study was conducted in 42 health facilities in Southern province.

The primary outcome was retention defined as regular attendance of ART appointments at 3, 6, 12, 24 and 24 months after ART initiation. Viral suppression (viral load <1000 copies/ml) and attrition were assessed. To assess factors associated with retention, we used logistic regression (xtlogit model).

Results: There were more females (60% BTT and 61% ATT). The median age was 40 years (IQR: 34 - 47) and 37 years (IQR: 30 - 45) in BTT and ATT cohorts respectively.

Variable	Retention	
	cOR (95%CI)	aOR (95%CI)
Cohort		
BTT	ref	ref
ATT	3.10 (2.92-3.29)	3.63 (3.35-3.94)
Facility location		
Urban	ref	ref
Rural	1.46 (1.36-1.55)	1.30 (1.21-1.40)
Marital status		
Never married	ref	ref
Married	1.31 (1.09-1.58)	1.30 (1.17-1.86)
Divorced	1.20 (0.93-1.54)	1.10 (0.97-1.26)
Windowed	1.38 (1.02-1.86)	1.30 (1.09-1.52)

Table 1. Factors associated with retention using GEE to account for correlation within observations.

Overall retention was 83.4%, higher in the ATT cohort (90.4% vs. 75.1%, p<0.001). At all-time intervals retention was higher (p<0.001) in the ATT cohort: at 3 months (92.7% vs. 76.0%); 6 months (91.4% vs. 76.2%); 12 months (91.9% vs. 77.3%); 24 months (91.9% vs. 78.5%) and >24 months (92.6% vs. 87.3%). Attrition was due to: transferred out (0.2%), LTFU (9.5%) and death (0.8%). Viral suppression at 6, 12 and 24 months was 80.4%, 92.2% and 94.7% respectively. ATT cohort was 4 times more likely to be retained on ART (Table 1).

Conclusions: Retention increased after test and treat while viral suppression was still low. LTFU was the main reason for attrition. Our findings demonstrate the need for improved clinical monitoring of ART patients.

EPE055

Experiences and early lessons from adoption and introduction of the generic paediatric Dolutegravir 10mg dispersible, scored tablets (pDTG) in Malawi

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Background: Despite notable progress towards adult 95-95-95 targets in Malawi by end of 2020 (88-98-97), significant work remains for children (75-100-74). By end 2020, ~77% of all children living with HIV (CLHIV) on treatment were virally suppressed, suggesting treatment inequalities when compared to adults (96%). In 2021, Malawi prioritized pDTG adoption to expand paediatric access to the life-saving formulation, which was not available at a sustainable price until 2020.

Description: Malawi's treatment guidelines were revised in 2021 to include pDTG as the preferred first-line treatment for children between 3kg-19.9kg and aged above four weeks. Through Unitaid funding, CHAI procured pDTG for ~2,500 children to catalyse product access in 50 targeted high-volume sites, while large-scale resource mobilization took place.

Enhanced monitoring was adopted from Phase I of implementation to provide rapid insights on patient safety, product experience, health care worker (HCW) capacity to introduce the product and to support troubleshooting ahead of national scaleup. Phase II followed with 48 additional sites by August 2021. Across the 98 Phase II sites, 3,631 children were on pDTG by the time Global Fund delivered pDTG in October 2021, enabling Phase III implementation across all 671 sites serving CLHIV.

Lessons learned: Relative to most countries, a high proportion of the 6,900 eligible children (~53%) were on pDTG by December 2021. Swift stakeholder coordination, site-level trainings, monitoring visits, distribution of HCW materials and a comprehensive package of community resources enabled an effective rollout. A phased transition ensured building of supply chain experience with a

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new product during the COVID-19 pandemic. Caregivers, CLHIV, and HCWs across the 50 Phase I sites cited a preference of pDTG over LPV/r due to improved tolerability, simpler administration and palatability for children. A highlighted challenge has been pDTG 90-pack sizes, which have clinical implications on prescribing practices and patient monitoring in early phases of initiation.

Conclusions/Next steps: Malawi is one of the first countries to adopt and scale-up pDTG nationally. Given pDTG's superior clinical profile and tolerability, optimal viral suppression rates in children are anticipated. National HIV programs can learn from Malawi's experience as a best practice for rapid adoption of child-friendly treatment products.

EPE056

High mean weight gain among patients on Dolutegravir in Malawi

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Background: DTG ART was rolled out in Malawi starting January 2019. Some studies suggest excess weight gain after DTG initiation or switch, we evaluated weight gain after DTG ART initiation/switch in Malawi.

Methods: We conducted a retrospective study in children, adolescents and adults on ART using routine data from 40 selected Elizabeth Glaser Pediatric AIDS Foundation-supported sites across nine districts in Malawi.

We used multi stage systematic random sampling from nine districts, 179 health facilities categorized by age groups for children (0-9 years), adolescents (10-19) and adults (=> 20years). Data were abstracted from patient files, ART registers, laboratory registers and clinical cards for January 2017 to October 2020.

Primary outcome was "mean weight gain" at 6 and 12 months from DTG initiation/switch, defined as the difference in baseline weight (before DTG) and weight at the respective time points, stratified by sex and age.

Results: Of 3,109 clients, 60% were female and median age was 31 years (15-48) for females and 37 (20-54) for males. Overall, 96.1 were on DTG-based regimen. For ART-naïve clients, 6 months after initiating DTG there was no observed mean weight gain difference by sex: males, 1.7 [1.08,2.25], females, 1.2 [0.72,1.58] kg.

Children aged 0-9 years had lower mean weight gain, 0.1 [-1.45,0.63] kg compared to adolescents aged 10-19 years (1.7 [1.03, 2.38] kg) and adults aged $\geq$20 years (1.3 [0.93,1.69] kg). Twelve months after initiating DTG, overall mean weight gain was 2.9 [1.77,3.98] kg; there was no difference in mean weight gain by sex (males 2.7 [1.37,3.96] kg; females 3.1 [1.18,5.04] kg), but higher weight gain in adolescents aged 10-19 years versus adults (3.5 [2.83,4.22] vs 0.8 [0.32,1.29] kg, respectively). For ART-experienced clients transitioned to DTG from non-DTG regimen, mean weight gain at 6 and 12 months was 0.8 [0.57, 1.19] kg and 1.5 [1.098, 1.92] kg respectively; there were no differences in mean weight gain by sex and age.

Conclusions: The high mean weight gain in some sub-populations was observed and may present potential challenges to client's overtime. Weight gain among clients on DTG needs to be systematically monitored for possibility of adverse events through cased based surveillance systems.

EPE057

An increase in pediatric ART retention after the HIV test and treat policy implementation. A multi-site longitudinal analysis

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Background: The test and treat approach has been used in pediatric antiretroviral therapy (ART) as a critical child survival strategy for children living with HIV. Because these children will be on ART for a lifetime, regular assessment of the impact of this approach is critical.

We evaluated outcomes of children enrolled on ART and assessed the impact of the pediatric ART test and treat policy.

Methods: We conducted a cross sectional time series data analysis in 845 children commenced on ART between January 1st, 2014 - July 31st, 2016 (before test and treat cohort (BTT), n=352 (41.7%) and August 1st, 2016 - October 1st, 2020 (after test and treat cohort (ATT)). The study was conducted in 42 health facilities in Southern province.

The primary outcome was retention, defined as regular attendance of ART appointments at 3, 6, 12, 24 and ³24 months after ART initiation. We assessed reasons for attrition and proportion of viral suppression (viral load <1000 copies/ml). To assess factors associated with retention, we used logistic regression (xtlogit model).

Results: The median age was 3 years (interquartile range (IQR): 1- 6) and 6 years (IQR: 2 - 9) in BTT and ATT cohorts, respectively. Overall retention was 80.7%, being higher in the ATT cohort (90.8% vs. 68.5%, p<0.001). At all-time intervals retention was significantly higher in the ATT cohort (Table1).

The reasons for attrition were stopped treatment (0.1%), transferred out (11.4%), lost to follow up (7.4%) and death (0.5%).

Viral suppression was 71.1% at 6 months and 80.0% at 12 months. ATT cohort were 4 times likely to remain on ART than the BTT cohort (aOR: 4.34 95%CI: 3.71-5.16) (Table 2).

Time point	(BTT)	(ATT)	P-value
	n=352	n=493	
3 months	68.2%	94.9%	<0.001
6 months	67.6%	91.4%	<0.001
12 months	68.2%	92.3%	<0.001
24 months	71.3%	91.8%	<0.001
>24 months	82.4%	92.3%	<0.001

Table 1. Comparison of retention at different time points.

Variable	aOR (95%CI)
Cohort	
BTT	ref
ATT	4,34 (3.71-5.16)
Age at enrollment (yrs)	1.01 (1.00-1.05)
Sex	
Male	ref
Female	0.73 (0.63-0.86)
Baseline ART based regimen	
NNRTIs (NVP & EFV)	ref
INSTI (DTG)	9.72 (4.91-19.25)
PI (LPV/r & ATV/r)	1.96 (1.16-3.31)

Table 2. Adjusted analysis of factors associated with retention using GEE to account for correlation structure within observations.

Conclusions: Although retention on ART has improved after ART test and treat, HIV viral suppression is still suboptimal. Our findings underscore the need to improve clinical management of children on ART.

EPE058

The impact of integrating person-centered accompaniment into HIV test-and-treat strategies in remote and low-resource settings: a case study of HIV quality improvement initiatives in Maryland County, Liberia

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Background: HIV test-and-treat strategies, which were recommended by the World Health Organization in 2009 and universalized to include all people living with HIV (PLHIV) in 2015, have expanded antiretroviral therapy (ART) coverage worldwide. In low-resource settings, pervasive poverty, under-resourced health systems, and prevalent stigma nevertheless impede PLHIV from accessing testing and continuing treatment.

The conditions are exacerbated in Liberia,where just 65% of PLHIV knew their status in 2020. Nationally, 53% of PLHIV were on ART in 2020, while a 2013 cohort study found that only 70% of PLHIV remained on ART after 12 months.

In remote Maryland County, Partners In Health Liberia has strived to address these challenges and provide equitable, holistic care for PLHIV by implementing a comprehensive test-and-treat strategy.

Methods: This test-and-treat strategy paired quality improvement (QI) interventions on provider-initiated family testing (PIFT) and tracking and client enrollment (TRACE) with performance-based incentives for community health workers (CHWs) and clinicians to accelerate case finding and strengthen care linkages. Incorporated within this model, PLHIV received structured social support – including food, transportation, livelihoods training, peer counselling and HIV education – to address social-economic barriers to treatment access and adherence.

Under this person-centered accompaniment model, care providers walked should-to-shoulder with PLHIV throughout testing and treatment, with care delivery molded to patient needs, preferences and motivations. To institutionalize QI interventions, clinicians and supervisors regularly reviewed implementation and developed solutions to emerging challenges.

Results: From October 2020 to September 2021, 64% of newly diagnosed PLHIV (210/330) were linked to care, compared to 53% nationally in 2015. Under PIFT, 16 children below 15 were diagnosed with HIV, 81% of whom were linked to care. Through TRACE, CHWs reengaged and retained 79% of PLHIV (154/194) with interrupted treatment. Ten PLHIV received agricultural training to promote economic autonomy and wellbeing holistically.

Conclusions: Implementation strategies guided by QI and person-centered accompaniment models are fundamental for integrating high-quality HIV care in primary care. Project learnings have informed further interventions to improve treatment retention, clinical outcomes and economic self-sufficiency for PLHIV.

Additional research on behavioral and social factors that impact testing uptake and treatment retention can strengthen comprehensive test-and-treat frameworks.

EPE059

Assessing drivers of implementing the 'Scaling-up the Systems Analysis and Improvement Approach' for Prevention of Mother to Child Transmission in Mozambique (SAIA-SCALE) over implementation waves

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Background: The Systems Analysis and Improvement Approach (SAIA) is an evidence-based package of systems engineering tools designed to improve patient flow through the prevention of mother-to-child transmission of HIV (PMTCT) cascade. SAIA is a potentially scalable model for maximizing benefits of universal antiretroviral therapy (ART) for mothers and their babies. SAIA-SCALE is a stepped wedge trial being implemented in Manica province, Mozambique, to evaluate SAIA's effectiveness when administered by health facility workers, rather than by study nurses.

We present results of a qualitative assessment of drivers of successful implementation of SAIA-SCALE over two implementation waves, covering two intensive phases and one maintenance phase.

Methods: We used an extended case study design which embedded the Consolidated Framework for Implementation Research (CFIR) to guide data collection, analysis, and interpretation. Between March 2019 and March 2020, we conducted in-depth individual interviews (IDI) and focus group discussions (FGD) with district managers, health facility Maternal and Child Health (MCH) managers and frontline nurses in 21 health facilities and seven districts of Manica Province (Chimoio, Báruè, Gondola, Macate, Manica, Sussundenga, and Vanduzi).

Results: We included 82.5% (n=85/103) of the anticipated participants: 50 through IDIs and 35 from 3 FGDs. Nearly all study participants were women (98%), mostly frontline nurses (49.4%) and MCH health facility managers (32.5%). The key facilitator of successful implementation of the intervention (regardless of intervention wave or phase) was related to the intervention's compatibility with organizational structures, functioning, processes, and priorities of Mozambique's health system at the district and health facility levels. Key barriers to successfully implementing SAIA-SCALE were

a. Inadequate health facility and road infrastructure preventing mothers from accessing MCH/PMTCT services at health facilities, and those inadequacies distracting nurses from focusing on improving data quality and service provision; and

b. Challenges in managing intervention funds in some districts.

Conclusions: Our qualitative evaluation suggests that SAIA's scalability for PMTCT depends on the intervention's amenability to fit within organizational structures, functioning, processes, and priorities of local health systems. Inadequate infrastructures and resource management at the health facility and district levels of those health systems can threaten scalability.

EPE060

Effects of Dolutegravir on the liver: a meta-analysis involving 37 965 HIV patients

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Background: HIV implementation in the tropics especially sub-Sahara Africa is still under the support of donor agencies. Over the years, the region has experienced donor fatigue resulting in cutdown of activities to be supported. This includes cutdown in supporting baseline and routine investigations especially liver function test (LFT) for persons living with HIV (PLHIV). This has contributed to a financial burden to the individuals as they have to do out-of-pocket expenses for LFTs.

One of the recommended first-line antiretroviral therapy for HIV patients is dolutegravir (DTG), which is also a major component of various antiretroviral combinations. Some studies have reported deranged liver enzymes, however, the hepatoxic effects of DTG is not yet proven.

The objective is to conduct a preliminary meta-analysis evaluating the hepatotoxic effects of DTG among PLHIV.

Methods: PubMed was searched for relevant articles published until January 2022. Relevant articles from references were included. Relevant English language articles using the search terms dolutegravir, soltegravir, Liver/drug effects, Liver Diseases, hepatic disease, hepatitis and hepatic failure.

Case reports, reviews, and articles without data on outcome were excluded.Articles were initially screened based on title and abstract by two reviewers. Discrepancies are settled by discussion and consensus including a third reviewer. Relevant data were extracted and the pooled relative risk (RR) with 95% confidence intervals (CIs) were estimated. The heterogeneity was measured using I^2 test. A total of 84 papers were retrieved, of which sevenmet the inclusion criteria, but one study did not record any hepatic derangements leaving six studies which were then analyzed.

Results: A total of 736 cases of elevated liver enzymes and liver diseases were recorded. There was no significant association found between DTG or DTG-containing combinations and the risk of liver toxicity or deranged liver function enzymes with pooled risk ratio (95%CI) 0.75 (0.55-1.02) p=0.07, I^2 =75.35.

Conclusions: There is no significant hepatic burden of DTG and DTG-containing antiretroviral medications in PLHIV. Routine practice of requesting LFTs prior to the use of DTG, particularly in sub-Saharan Africa, may not be necessary unless there are other underlying medical conditions that would make such investigation beneficial to PLHIV.

EPE061

The effect of a targeted quality improvement intervention to improve access to antiretroviral therapy (ART) services for key populations in Zambia

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Background: The USAID Open Doors Project (ODP) is a five-year project aiming to increasing access to and use of comprehensive HIV prevention, care, and treatment services by key population individuals including female sex workers (FSWs), men who have sex with men (MSM) and transgender people. An ODP implementing partner, ZANERELA+, faced challenges in linking HIV-positive key populations to clinical HIV services, after joining the project in October 2020. A quality improvement (QI) intervention was implemented with a goal of 95% of newly diagnosed clients were linked.

Description: A QI team of two clinical officers and two medical doctors implemented QI activities over six weeks in collaboration with ZANERELA+. Starting December 1, 2020, the following interventions were implemented:

- Engaged ZANERELA+ staff in a root cause analysis and driver diagram to identify specific issues
- Developed job descriptions with defined responsibilities for health care providers and lay counselors
- Developed and implemented weekly virtual and onsite mentorship on pre-ART counseling for program/clinical staff over six weeks
- Demonstrated field-based HIV status probing skills for staff counselor
- Established designated zones for client outreach

Lessons learned: In the first quarter of fiscal year 2021 (Q1 FY21), the linkage rate for key population groups was 48% (FSW n=32 (50%), MSM n=5 (80%), transgender n=2 (0%)). Majority of unlinked clients were tested during community-based outreach (n=11) and were between the ages 20-29 (n=8). Linkage increased to 99.4% (FSW 99%, MSM 100%, transgender 100%) by March 2021, after the completion of Q1 interventions. Among previously unlinked FSWs, 92% (n=12) were initiated on care. All MSM (n=1) and transgender (n=2) clients were initiated, resulting in 100% linkage.

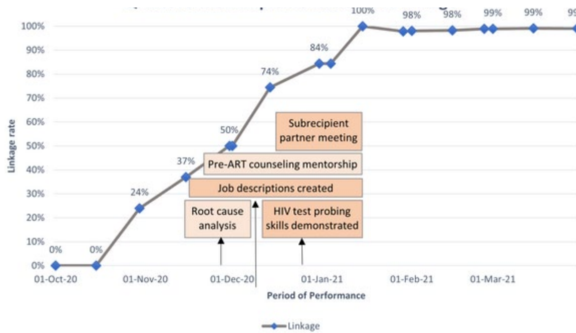

Figure. QI intervention implementation and linkage.

Conclusions/Next steps: Average monthly linkage increased from 27% before the QI intervention to 98% after intervention activities were completed. We recommend that QI be extended to other subrecipients to improve service delivery and organizational capacity.

EPE062

How are interventions implemented to improve global HIV prevention and treatment? A systematic review of published implementation strategies used in low- and middle-income countries

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Background: Understanding the characteristics, breadth, and overall landscape of current HIV implementation research can help identify critical gaps and inform future investigation and service delivery. The LIVE project (Living Database of HIV Implementation Science) conducted a systematic review to describe the features of implementation strategies included in published studies of HIV interventions in low- and middle-income countries (LMICs).

Methods: Embase and Medline databases were searched for HIV studies published after 2004. Abstract and full texts were screened for studies of any design, in any LMIC population, that described intervention implementation and reported at least one HIV cascade outcome. Strategies were extracted per the Proctor et al. framework (e.g., actor, action, action target). Waltz et al. clustered strategies were used to characterize strategies across the HIV care cascade.

Results: Between 1-Jan-2014 and 3-Feb-2022, 42,595 abstracts were identified, 1,531 (3.6%) were included for full-text review, and 418 (27.3%) met inclusion criteria. Included studies were from Africa (82.5%), Asia-Pacific (11.5%), the Americas (4.8%), and Europe (1.2%).

We identified 3,253 total strategies (Figure 1, median 6 per study, range 1-44), representing 409 unique actor-action-action target combinations. Strategies targeted HIV prevention (5.3%), testing (29.5%), and treatment (65.2%).

The most used strategies involved members of the healthcare workforce engaging patients (e.g. providing education on HIV treatment or prevention, providing routine HIV counseling; 45.5%) and adapting and tailoring interventions to the implementation context (12.8%). Many strategies also involved study teams engaging patients (9.1%) or training providers and other stakeholders (6.3%). Evaluative/iterative and financial strategies were less commonly applied.

Implementation strategies	Actors implementing the strategy							Total
	Patients	Community/ society	Healthcare workforce	Policymakers	Researchers	Other organization employees	Not Applicable	
Adapt and tailor intervention to context	1 (0.0%)	1 (0.0%)	415 (12.8%)	6 (0.2%)	74 (2.3%)	2 (0.1%)	7 (0.2%)	506 (15.6%)
Change infrastructure	0 (0.0%)	1 (0.0%)	158 (4.9%)	3 (0.1%)	16 (0.5%)	0 (0.0%)	1 (0.0%)	179 (5.5%)
Develop stakeholder interrelationship	2 (0.1%)	4 (0.1%)	74 (2.3%)	6 (0.2%)	32 (1.0%)	2 (0.1%)	1 (0.0%)	121 (3.7%)
Engage patients	28 (0.9%)	41 (1.3%)	1480 (45.5%)	4 (0.1%)	297 (9.1%)	7 (0.2%)	23 (0.7%)	1880 (57.8%)
Provide interactive assistance	0 (0.0%)	0 (0.0%)	12 (0.4%)	0 (0.0%)	5 (0.2%)	0 (0.0%)	0 (0.0%)	17 (0.5%)
Train and educate stakeholders	0 (0.0%)	7 (0.2%)	153 (4.7%)	6 (0.2%)	204 (6.3%)	2 (0.1%)	17 (0.5%)	389 (12.0%)
Use evaluative and iterative strategies	2 (0.1%)	4 (0.1%)	32 (1.0%)	1 (0.0%)	39 (1.2%)	1 (0.0%)	1 (0.0%)	80 (2.5%)
Utilize financial strategies	0 (0.0%)	2 (0.1%)	23 (0.7%)	5 (0.2%)	48 (1.5%)	2 (0.1%)	1 (0.0%)	81 (2.5%)
Total	33 (1.0%)	60 (1.8%)	2347 (72.1%)	31 (1.0%)	715 (22.0%)	16 (0.5%)	51 (1.6%)	3253 (100.0%)

Figure 1. Implementation strategies and actors.

Conclusions: Use of healthcare workforce to engage patients has been commonplace in published evaluations of HIV services. Few studies reported providing technical assistance, changing financial systems, conducting service evaluation, or involving individuals affected by HIV and policymakers in the implementation process. There is a need to evaluate other promising strategies for implementation effectiveness.

EPE063

Implementation of a readiness assessment tool to support the transition of adolescents living with HIV to adult care in Kenya

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Background: Tools assessing the transition from child-centred to adult care can improve outcomes among youth living with HIV (YLH). Within an ongoing clinical trial (Adolescent Transition to Adult Care for HIV-infected Adolescents in Kenya – ATTACH) evaluating the effectiveness of an Adolescent Transition Package (ATP), we determined experiences of clinic-based study staff who administered a transition readiness assessment tool.

Methods: Between January and March 2021, we conducted semi-structured interviews with ten research staff who administered a transition readiness assessment to 1066 YLH (ages 14-24) enrolled in the ATTACH study. The ATP was delivered to YLH by existing health care workers physically and later by phone during the Covid 19 pandemic. The effectiveness outcome &transition readiness was assessed by study staff. The tool included a combination of open-ended and rubric questions. Interviews were audio-recorded, transcribed, converted into structured debrief reports. We utilized thematic analysis grounded in the RE-AIM (Reach, Effectiveness, Adoption, Implementation Maintenance) framework, to identify attributes impeding or facilitating assessment of transition readiness.

Results: Participants described rapport building with YWH, access to private spaces, and supportive facility staff as critical in optimizing reach. Shifting to phone delivery of the assessment during COVID-19 negatively affected reach, limiting access to YLH lacking consistent phone access.

Participants perceived the tool to be adequate in assessing transition readiness. YLH engaged in facility support groups, had family social support & had received early disclosure performed better. Males often had not disclosed to partners and had little knowledge on sexual and reproductive health compared to females. Most YLH struggled with remembering antiretroviral names and understanding viral load cut-off measures.

Questions about sensitive topics, such as disclosure and sexual and reproductive health topics, were most challenging to ask. Participants recommended standardized rubrics for open-ended questions on HIV literacy and

strategies for asking sensitive questions. Incorporation of the tool within patient encounter forms and leveraging peer educators to address overwhelmed clinic staff were described as potential strategies for adoption of the tool.

Conclusions: Integration into routine clinic settings of the transition assessment tool will require optimization to include rubrics for grading open-ended responses and incorporation into routine clinic tools.

EPE064

Improving TLD transition coverage among people living with HIV in Nkurenkuru District, Namibia

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Background: The Namibia Ministry of Health and Social Services' (MoHSS) revised ART guidelines launched in August 2019 adopted the WHO recommendation of Tenofovir, Lamivudine, and Dolutegravir (TLD) as the preferred first-line antiretroviral therapy (ART) regimen for people living with HIV as TLD has a high genetic barrier, potential to improve adherence and retention with better drug tolerance, and reduced side effects. Transition of patients to TLD started in October 2019 but nationwide transition was slow. In January 2020, the MoHSS decided to improve TLD transition by setting regional and district targets for patient transition.

At the time of target setting, Nkurenkuru Health District (Kavango West region, Namibia) had transitioned 585 patients (16%) to TLD out of an estimated 3,727 eligible patients.

Description: Health facility teams used a quality improvement (QI) approach to identify challenges to TLD transition. Gaps included: lack of HCW training on how to transition patients; HCW discomfort with transitioning female clients due to presumed DTG side effects; and no monitoring tool in place. In response to these findings, change ideas were developed using plan, do, study, act (PDSA) cycles.

Lessons learned: From January to December 2020, TLD transition improved from 585 (16%) to 3,515 (94%) of the 3,727 estimated eligible patients. A significant improvement was noted in the first month with TLD transitions doubling from 16% to 33%. In that month, key change idea(s) implemented which proved successful were strengthening teamwork and team spirit, training of staff on TLD transition, generating lists of patients eligible for TLD transition from the electronic Patient Management System (ePMS) to distribute to the facilities, appointing a focal nurse in each facility, establishing a monitoring tool to track progress, holding monthly QI meetings to review performance data and discuss progress, and providing of regular onsite and virtual mentorship support.

Conclusions/Next steps: Strengthening HCW teamwork and commitment, establishing a dedicated monitoring tool, and consistent monthly QI meetings to review results and plan next steps were key in improving TLD transition across ART sites in Nkurenkuru Health District. Other health facilities could adopt these processes to accelerate and improve TLD transition.

EPE065

Outcomes and implementation considerations for optimizing dolutegravir based antiretroviral therapy among PLHIV in Northern Uganda

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Background: In 2018, Ministry of Health (MOH) Uganda adopted WHO's guidance to switch 1st line ART from NNRTIs to dolutegravir (TLD/DTG) following optimal efficacy and safety. This study assesses the outcomes and implementation considerations for TLD/DTG optimization to guide policy action.

Description: *Setting*: 70 health facilities in nine districts of Lango sub-region, post-conflict northern Uganda with 78,000 people living with HIV (PLHIV) supported by USAID Regional Health Integration to Enhance Services-North, Lango (RHITES-N Lango) project.

Intervention design: An implementation study was conducted between March–December 2018 (before) and January 2019–September 2021 (after). The phase one trainer-of-trainer TLD/DTG course for 30 participants was followed by onsite facility-based trainings in 18 priority hospitals. This informed phase two of 52 health facilities. MOH and RHITES-N Lango supervised and provided hands-on mentorship.

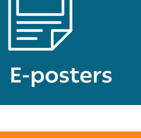
Outcome measures: Viral load suppression and uptake of TLD/DTG.

Data analysis: The DHIS-2 was used for data management and analysis.

Lessons learned: All 70 health facilities optimized TLD/DTG by September 2021, within three years. Emerging safety data permitted inclusion of reproductive age women mid-implementation, doubling targets from 40,000 to 80,000 PLHIV; with a slow initial uptake of TLD/DTG during phase one that markedly improved in phase two (15% to 92%, Figure 1). PLHIV with suppressed viral load increased from 85% to 94% after optimization of TLD/DTG (figure 2). Key implementation concerns were the national guidelines, laboratory systems, knowledge, and perceptions of healthcare providers. These included:

Oral abstracts

Poster exhibition



E-posters

Late-breaker abstracts

Author Index

- Initial deficits in DTG-specific knowledge among providers
- The requirement for baseline viral load testing
- Stock outs from multi-month dispensing
- Hesitancy to transition thriving PLHIV on NNRTI regimen to TLD/DTG.

However, the MOH guidelines were unclear around effective contraception for women of childbearing age; had a discrepancy of weight bands (30kgs versus 35 kgs in checklist versus guidelines) and there was a delay in providing official consent forms.

Conclusions/Next steps: This study depicts successful optimization of TLD/DTG with high viral load suppression in a resource-constrained setting. Health systems bottlenecks contributed to the initial lag in TLD/DTG optimization that were effectively circumvented. Formative evaluations at start of ART optimization could inform future programming.

EPE066

Observed time to HIV treatment initiation in the era of same-day initiation in Malawi, South Africa, and Zambia

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Background: Since 2017 global guidelines have recommended "same-day initiation" (SDI) of antiretroviral treatment (ART) for patients considered ready for treatment on the day of HIV diagnosis. Many countries in sub-Saharan Africa have incorporated a SDI option into national guidelines, but uptake of SDI is not well documented. We estimated average time to ART initiation at 12 public healthcare facilities in Malawi, 5 in South Africa, and 12 in Zambia.

Methods: We sequentially enrolled patients who were eligible to start ART between January 2018 and June 2019 and reviewed their medical records from the point of HIV treatment eligibility (HIV diagnosis or first HIV-related interaction with the clinic) to the earlier of treatment initiation or 6 months. We estimated the proportion of patients initiating ART at their original healthcare facilities on the same day or within 7, 14, 30, or 180 days of baseline, stratified by country and gender.

Results: We enrolled 850, 535, and 1,990 patients in Malawi, South Africa, and Zambia, respectively (Table 1). 88% of patients in Malawi, 57% in South Africa, and 91% in Zambia were offered and accepted SDI. In Malawi, most patients who did not receive SDI had also not initiated ART ≤6 months. In South Africa, an additional 13% of patients initiated ≤1 week, but 22% had no record of initiation ≤6 months. Among those who did initiate within 6 months in Zambia, nearly all started ≤1 week. There were no major differences by gender.

Time to ART initiation after HIV diagnosis or first HIV-related clinic visit (n, %)	Malawi (n=850)		South Africa (n=535)		Zambia (n=1990*)	
	Male (n=412)	Female (n=438)	Male (n=233)	Female (n=302)	Male (n=973)	Female (n=1017)
0 days (same-day initiation)	363 (88.8%)	376 (87.4%)	131 (56.2%)	173 (57.3%)	886 (91.1%)	932 (91.6%)
7 days	7 (1.7%)	7 (1.6%)	33 (14.2%)	36 (11.9%)	57 (5.6%)	39 (3.8%)
14 days	2 (0.5%)	2 (0.5%)	3 (1.3%)	9 (3.0%)	12 (1.2%)	22 (2.2%)
30 days	2 (0.5%)	3 (0.7%)	11 (4.7%)	6 (2.0%)	8 (0.8%)	6 (0.6%)
31 days to 6 months	3 (0.7%)	1 (0.2%)	4 (1.7%)	11 (3.6%)	8 (0.8%)	17 (1.7%)
Did not initiate ≤6 months	35 (8.5%)	49 (11.2%)	51 (21.9%)	67 (22.2%)	2 (0.2%)*	1 (0.1%)*

*Zambia data for patients who never initiated ART may not be complete.

Table 1. Time to ART initiation in Malawi, South Africa and Zambia by gender and country.

Conclusions: Uptake of same-day ART initiation is widespread in Malawi and nearly universal in Zambia but is considerably less common in South Africa. Limitations of the study include pre-COVID-19 data that do not reflect pandemic adaptations and potentially missing data for Zambia. South Africa may be able to increase overall ART coverage by reducing numbers of patients who do not initiate ≤6 months.

EPE067

Different Anti-Retroviral Therapy dispensing intervals and distribution of adverse follow up outcomes in stable patients

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Background: Extending clinic appointment intervals by dispensing more medication to stable patients was one of the strategies which can be implemented without any additional resources, it can minimize patient's opportunity cost, clinic congestion and improve quality of care. This study aimed to assess adverse follow-up outcomes (missed appointments and lost to follow up) among different following intervals in stable patients on Anti-Retroviral TherapyART in 83 ART facilities in Myanmar.

Methods: This study analyzed collected program data and data of stable patients (patients on ART for at least one year and having viral suppression or having baseline or recent CD4 count>200 cells/m^3) with valid visit dates extracted. The missed appointment was defined as >14 days late and lost to follow up (LTFU) was >90 days late for the appointment.

Results: A total of 68,824 stable patients visited study sites at least once between 1st September 2019 and 31st August 2020. The median age (interquartile range: IQR) was 39 (32-46) years, 31,272 (45.4%) were female, 38,834 (56.4%) were married, 41,251 (59.9%) were employed and 57.306 (83.3%) were literate. Appointment intervals and follow-up delays were calculated for visits with valid dates. The median (IQR) number of visits made by patients was 3 (2-4) visits. Of 190,972 visits with valid dates, 86,877 (45.5%) visits were three-month appointment interval, and 49,426 (25.8%) visits were ≥6 months appointment interval. Visits with the next appointment dates beyond the

study period were excluded in calculating the distribution of adverse follow-up outcomes. The proportion of visits having missed appointments and LTFU outcomes were 19.80% and 10.22% in <3weeks interval, 2.26% and 0.23% in 3 months interval and 2% and 0.16% in ≥6 months interval.

Conclusions: Visits with the shortest appointment interval had the highest proportion of missed appointments, and LTFU and 3 months and ≥6 months intervals had a similar proportion of adverse follow-up outcomes.

This study can be one of the supporting documents for making clinic appointments with multi-month dispensing in stable patients. It is recommended to extend the analysis to assess the effect of facilities level factors, individual factors and clinical conditions on adverse follow-up outcomes.

EPE068

PMTCT option B+ implementation at the primary level of care in the Ashanti Region of Ghana; challenges

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Background: The more efficacious Option B+ strategy for the prevention of mother-to-child transmission (PMTCT) of HIV has been implemented in Ghana over the past six years including the provision of ART services at the primary care. This baseline study assesses challenges facing service delivery at the primary care levels in the Ashanti Region of Ghana.

Methods: Four hundred and fifty health care providers made up of health care assistants, community nurses, enrolled nurses, midwives, physician assistants with between 2 and 4 years in services were selected from 75 health facilities.

The primary level of care is defined by the Ministry of Health, Ghana as CHPS compounds, clinics, maternity homes and health centres) in the Ashanti Region of Ghana offering PMTCT service. Facility geographical location (Urban and Rural) and ownership (public, private and mission) were conferred. Data including socio-demographic information was collected using a structured questionnaire. Data were analysed using SPSS 16.

Results: A majority (68.1%; 307/450) of respondents were aged 45 years and below. More than half (56.9%; 256/450) of the respondents had worked just under 2 years, with 32.1%; (144/450) and 11.0% (49/450) over 2 years and 4 years respectively. 90.1% (405/450) mentioned stigmatization as explained by the closeness of the health facility to their communities, preventing the women to access care. 65.1% reported the uncooperative attitude of pharmacists in terms of releasing of ARVs to lower levels. Lack of confidence among the respondents was a major issue from inadequate training (70.2%; 316/450). Inconsistent supplies of logistics including medicines were a major concern for over three-quarters of the respondents (72.9%; 328/450). There were no significant differences between the respondents' responses and geographical location (p-value 0.789) and facility ownership (p-value -0.699).

Conclusions: The study found stigmatization, erratic supply of commodities, inadequate training and lack of support from pharmacists as the main challenges facing health care providers at the primary levels of care.

There is the need to urgently attend to these challenges to ensure the success of the PMTCT option B+.

EPE069

Impact of Daily Situation Rooms (analysis) in increasing linkage to care among people living with HIV

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Background: Zambia has a high burden of HIV, with a prevalence rate of 11.1%, 85.4% on treatment, and 85% % virally suppressed. To achieve epidemic control, all HIV-positive individuals must be linked and retained on treatment. Zambia adopted the test and treat with a rapid treatment initiation approach following WHO guidelines.

Description: Right to Care is implementing HIV Direct service delivery in Northern, Luapula, and Muchinga Provinces. Activities are based on the 95-95-95 objectives (testing, linkage, and viral suppression. RTCZ's experience of linkage to treatment in Zambia is described through monitoring of linkage to care during the Daily Situation Room (DSR).

Data from facilities was analyzed and performance against targets discussed in the DSR. When facilities were not linking HIV-positive patients to treatment the same day, reasons and action points were documented in an issue log. These reasons included: client not ready had co-morbidity requiring treatment first, consulting partner, clinician unavailable to initiate treatment.

Lessons learned: At the inception of DSRs, linkage to care was as low as 83%. An increase of 22% linkage occurred between the first quarter and second quarter exceeding the expected target of 95% to 100% linkage. This increase was due to consistent follow-up of clients un-initiated, thus, linking 2,483 clients from 2373 positive clients. Linkage was sustained at 94% throughout the third and fourth quarters.

Northern and Muchinga Provinces consistently achieved above 95% target from first quarter to third quarter. Luapula Province improved linkage from 83% (first quarter) to 105% (second quarter).

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Linkage was consistently sustained at 95% in the third and fourth quarters. In the second quarter, there was over 100% linkage due to following up of uninitiated positives from the first quarter

Conclusions/Next steps: Consistent monitoring of performance during the DSR resulted in progressive improvement in the linkage of positive clients in the three Provinces.

This process helps identify problems in linkages take prompt action and offers such an opportunity for comparative analysis in performance.

Funding: RTCZ-EQUIP

EPE070

Predictors of unsuppressed viral load in pediatrics and adolescent HIV positive clients on ART in Zambia: an implementation study

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Background: Right to care Zambia, is providing direct service delivery in Northern, Muchinga and Luapula provinces since 2016. Data has shown a high proportion of children and adolescents usually present with a high viral load, leading to high rates of morbidity and mortality.

The understanding of the predictors leading to unsuppression in children will lead to implementations of improved care and treatment in children and adolescents.

Description: This is evidence from viral load results, enhanced adherence counselling (EAC) register. Unsuppressed viral load (VL) in PLHIV on antiretroviral therapy (ART) occurs when treatment fails to suppress the client's VL, this is associated with decreased survival increased morbidity and increased HIV transmission.

Data was analysed through the electronic medical records system SMARTCARE of ART patients with a VL result on record who started ART between January 2004 and April 2016 from 271 public health facilities. A descriptive and multivariable logistic regression for unsuppressed VL at last visit using a priori variables.

This triggered the need to conduct a cross sectional study, to find out, why pediatrics and adolescents present with unsuppressed VL. treatment outcomes.

Lessons learned: Children and adolescents are most likely to have no permanent home due to their parents being ill and not being able to provide for them or deceased. There was also a significant number that did not know why they were on treatment. The older children who had found out their HIV status by themselves held it as a grudge to their parents.

Other reasons were stigma, fear of change in body image, etc. With counselling, peer support the outcomes of care improved for alder children. The introduction of highly optimized drugs has also improved outcomes. Lopinavir syrup is very bitter and not palatable. Counselling and support of care givers has also helped to improve outcomes.

Conclusions/Next steps: There's need to develop and evaluate targeted interventions for children and adolescents in care who are at high risk of unsuppressed VL. Best suited interventions have proved to result in better outcomes. Differentiated models of care like multi-month dispensation have shown better adherence and compliance which leads to higher suppression rates.

EPE071

Task-shifting and differentiation of care for nurses and outreach workers in harm reduction strengthens HIV care continuum in Kazakhstan – Project Bridge

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Background: There is a large increase of new HIV cases in Kazakhstan, where nurses and outreach workers in needle and syringe programs (NSPs) are one of the main providers of harm reduction services to key populations.

The Bridge intervention revolutionizes the NSPs' role in the existing HIV care system in Kazakhstan, transforming them from ordinary harm reduction programs into integrated HIV care continuum services. This task-shifting approach was reinforced through training and supervision of nurses and outreach workers.

Methods: We examined the impact of the Bridge intervention on NSP workers' roles in HIV care, their ability to perform jobs in HIV care. We conducted a pre-intervention and post-intervention survey with NSP staff (nurses (n=20) and outreach workers (n=44)) in three project sites (Almaty, Shymkent, Karaganda/Temirtau).

Survey questions focused on how Bridge's task-shifting and program training impacted staff attitudes towards HIV care services, motivations to change, and attitudes towards PWID. Data analytics software R was used to perform statistical analysis.

Results: A descriptive univariate analysis of attitudes towards Bridge services indicates that both nurses and outreach workers viewed HIV testing, HIV care service linkage, confirmatory HIV testing, and non-HIV service referrals favorably. From the beginning of the intervention, both nurses and outreach workers held relatively open-minded views about PWID and recognized the importance of HIV care services. Six months after the implementation, attitudes towards these topics remained consistently high.

A majority of staff agreed that:

1. PLWH should not feel ashamed of themselves (83.9%),
2. HIV is not a punishment for bad behavior (69.4%),
3. Women living with HIV should be allowed to have babies if they wish (95.2%), and;
4. Staff would prefer to provide services to PWID (85.5%).

On the other hand, staff overwhelmingly agreed that people get infected with HIV because they engage in irresponsible behaviors.

Conclusions: NSP could play an important role in all stages of the HIV care continuum. Task-shifting was implemented successfully in project study sites, as both nurses and outreach workers showed confidence and understanding about their roles in HIV care service delivery, and had favorable attitudes around the services they were trained to provide to PWID.

EPE072

Antiretroviral drug pick-up compliance and association with viral suppression among children living with HIV in north-central Nigeria

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Background: The ultimate impact of increased antiretroviral therapy (ART) availability for Children Living with HIV (CLHIV) is on viral suppression as a result of timely drug pick-ups and medication adherence. Compliance with expected drug pick-ups may be used as a proxy for medication adherence. We assessed drug pick-up compliance and its association with viral suppression among CLHIV in North-central Nigeria.

Description: In this retrospective chart review, we abstracted data from ARV refill records for CLHIV aged 6 months to 10 years across six HIV treatment centers in Federal Capital Territory and Nasarawa State between June 2020 and May 2021. Compliant drug pick-up (pickup +/- 7 days of drug refill appointment date) and drug pick-up compliance rate (number of compliant drug pick-ups /total number of expected appointments in a 12-month period x 100) were assessed. Excellent compliance was benchmarked at ≥95%.

Viral suppression (Viral load <1000 copies/mL) was also evaluated. Age, gender and residence were considered explanatory variables. Chi-square was used to assess associations and binary logistic regression for multivariate analysis.

Lessons learned: We reviewed records of 133 CLHIV, with mean age of 7.2 yrs (SD ± 2.35 yrs). Approximately 18% (24/133) were under-5 years of age, and 78% were female. Only 30.1% of CLHIV had ≥95% compliant drug pickup rate. Furthermore, 48.9% (65/133) CLHIV had suppressed viral load. Compliant drug pickup rate was comparable among CLHIV ≥5 years old [32.1% (35/109)] and under-5 CLHIV [20.8% (5/24)], p= 0.275. Similarly, drug pickup adherence was comparable among male [32.7% (18/55)] versus female CLHIV [28.2% (22/78)], P=0.575. Viral suppression was also comparable among male [58.2% (32/55)] compared to female CLHIV [42.3% (33/78)], P=0.071. Multivariate regression revealed that CLHIV ≥5 years (AOR= 2.79, 95%CI= 1.04-7.47) were more likely to be virally suppressed, compared to under-5 children.

Also, non-compliant children (AOR=0.44, 95%CI= 0.20, 0.98) were less likely to be virally suppressed compared to the compliant children.

Conclusions/Next steps: Compliant ARV drug pick-up remains a challenge among CLHIV in North Central Nigeria, and is associated with poor viral load suppression. Our findings demonstrate a need for strategies to address patient/caregiver and facility-level challenges with drug pick-up compliance and viral non-suppression among CLHIV.

Scaling up access to models of integrated services (HIV, hepatitis, STI and other services, such as harm reduction, SRHR, gender affirming care, TB, NCDs and mental health)

EPE073

Sexually transmitted infection testing integrated with HIV prevention and contraceptive services in hair salons in urban South Africa

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Background: Curable sexually transmitted infections (STIs) increase HIV transmission and acquisition risks and cause morbidity for women, yet access to STI testing is limited for women at risk for STIs and HIV in sub-Saharan Africa. Offering STI care in novel community-based venues may address barriers to access.

We are evaluating the implementation of STI testing integrated with HIV prevention and contraceptive services in hair salons in urban KwaZulu-Natal, South Africa.

Methods: Women accessing oral HIV pre-exposure prophylaxis or hormonal contraception in hair salons in an ongoing study are offered testing for four curable STIs. Self-collected vaginal swabs are tested by polymerase chain reaction for gonorrhea, chlamydia, and trichomoniasis.

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Fingerstick blood is tested by non-treponemal and treponemal assays for syphilis. Participants with positive results are contacted and offered treatment at the hair salon or local clinic. Participant demographics, STI history, symptoms, risk factors, and risk perception are collected using structured questionnaires.

Results: Currently, we have enrolled 56 women eligible for STI testing, median age 26y [IQR 23-29], 61% unemployed. Fifty-four participants (96%) accepted STI testing: 53 (95%) provided vaginal swabs and fingerstick blood and one (2%) provided blood only.

At baseline, 18 participants (32%) reported a history of STI, 14 (25%) reported current STI symptoms, and 16 (29%) perceived a 'moderate' or 'great' chance of acquiring an STI within the next year. Twenty-five of 52 (48%) participants were in an age-disparate relationship (primary partner ≥5y older) and 27/40 (68%) reported never using condoms in the preceding month.

Among 51 participants with available results, 14 (27%) tested positive for at least one STI: 2 (4%) gonorrhea, 11 (22%) chlamydia, 1 (2%) trichomoniasis, and 3 (6%) syphilis. The majority (10/14, 71%) with an STI were asymptomatic. Of the 14 participants with STIs, 11 (79%) elected to receive treatment in the salons.

Conclusions: STI testing in hair salons in urban South Africa, integrated with HIV prevention and contraceptive services, is acceptable, reaches women with risk factors for STIs and HIV, and reveals a high STI prevalence. Hair salons may serve as novel venues to increase the reach of STI testing to women at risk for STIs and HIV.

EPE074
Leveraging Mobile clinics to provide differentiated service delivery HIV in conflict affected settings of the South West and North West regions of Cameroon

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Background: In conflict-affected settings, health systems are strained, limiting access to HIV services. Although the policy guiding Differentiated Service Delivery (DSD) of HIV care in Cameroon was adopted in 2017, there is yet to be clear guidelines for DSD in conflict-affected settings. For 5 years now, the North West-South West regions(NWSW) of Cameroon are experiencing armed conflict, displacing over 800,000 persons. Several attacks on health care led to the closure of 253/933 health facilities, thus reducing access to health care for internally displaced persons (IDPs). The COVID-19 outbreak further limited humanitarian responses. A model of care that made use of mobile clinics (MCs) as DSD for HIV was piloted in conflict-affected regions, within the COVID-19 context.

Description: Between March – October 2020, MCs were used in 5 divisions across the NWSW to provide primary health care (PHC). To ensure continuum of HIV care for IDPs in the COVID-19 context, HIV prevention and treatment services were integrated into the benefit package of the MCs. All MC doctors received HIV and COVID-19 infection prevention and control trainings.

Results from this delivery model of HIV were analysed in 6 MCs. Within 7 months, 209 clinical consultations for persons living with HIV were conducted, 1,979 persons received HIV testing, from which 122 tested HIV positive. 33 positive persons were placed on treatment and 28 lost-to-follow up persons were re-linked to treatment. Also, 14,623 persons were sensitized on HIV prevention and treatment.

Lessons learned:
- In the mist of the COVID-19 pandemic, MCs offered an opportunity to deliver HIV DSD for IDPs in conflict-affected communities.
- 45 persons who tested HIV positive didn't receive ARVs due to poor coordination/referrals. A collaboration/engagement strategy between the MCs and ARV treatment centers is necessary to improve trust and allow for dispensation of ARV in hard-to-reach communities.
- Training on effective referral systems should constitute a module for training MCs staff.

Conclusions/Next steps: In conflict affected settings, MCs could be leverage as an alternative model of care for HIV DSD to ensure continuum of HIV care and treatment.
This should however be done in collaboration with the ARV treatment centres to supply the MCs with ARVs.

EPE075
Improving uptake of viral load tests by key populations in Zambia: a review of two models

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Background: Viral load coverage (VLC) among key populations (KP) living with HIV in Zambia falls below that of the general population living with HIV at 54% and 70%, respectively. Evidence suggests this disparity is partly due to the established service delivery model in which KPs are referred to government health facilities. In response, CDC sponsored the implementation of an alternative model, in which HIV services are provided in the community from October 2019.

We review retrospective data on VLC among KPs in districts that implemented the community-based model versus the established model.

Methods: Data for the analysis was from routinely collected PEPFAR program indicators from October 2020 to September 2021 in districts with CDC-supported KP programs. During this period, Zambia experienced two waves of

covid-19 causing intermittent closure of community safe spaces supporting VL services among KPs. VLC was calculated as the number of KP with a VL result on file in the past year out of the total number of KP on treatment from six months prior.

Results: The community-based model was implemented in three districts of Lusaka Province while the facility-based model was implemented in nine districts in Southern, Eastern, and Western provinces. Between December 2020 and September 2021 there was greater improvement in VLC in the community-based model. VLC increased from 12% (66/530) to 86% (800/935), compared to 59% (1054/1800) to 67% (1675/2490) in the facility-based model.

Figure. Viral load coverage in two models of service delivery to key populations in Zambia - October 2020 to June 2021

Conclusions: This data suggests that the community-based model was effective in improving VLC in districts where the VLC was low, exceeding the average VLC level in the facility-based model districts within a year.

This Improvement is especially notable given that it coincided with the COVID-19 pandemic, and highlights the importance of conducting a more robust evaluation of the model as program managers, researchers, and policymakers explore better strategies for improving VLC among KP.

EPE076

Integration and decentralization of hepatitis C testing and treatment at district HIV outpatient clinics in Viet Nam to achieve micro-elimination

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Background: Nearly one million people are living with hepatitis C virus (HCV) in Viet Nam. Prevalence of anti-HCV among key populations (KPs) and people living with HIV (PLHIV) ranges from 47.5% - 98.5%. HCV diagnosis and treatment services in Vietnam are mainly available at provincial hospitals and thus, access to these services remains limited especially among KPs and PLHIV.

A demonstration model to integrate and decentralize HCV treatment services was implemented to assess feasibility and outcomes of integration and decentralization of HCV treatment at district HIV outpatient clinics (OPCs) in Viet Nam.

Methods: The project was started in April 2021 in 126 district HIV OPCs in 29 provinces. Health staff were trained on HCV diagnosis and treatment. Anti-HCV testing was provided to PLHIV patients receiving antiretrovirals therapy and if positive, lab-based HCV RNA or HCV cAg testing was performed to confirm viremic infection. Patients diagnosed with hepatitis C were treated with sofosbuvir and daclatasvir for 12 weeks. A lab-based HCV RNA test was performed at 12 weeks after treatment completion to evaluate the treatment outcomes. An electronic health record was used to collect patient information and monitor patient treatment.

Results: Between April and December 2021, 4587 patients were diagnosed with hepatitis C and started DAA treatment. Of which, 93.6% of the patients were men and 90.0% aged between 30-50 years old. As of 31 December 2021, 2083 (45.4%) completed 12 weeks of treatment, 2486 (54.0%) patients were on treatment, 18 (0.4%) patients stopped treatment for various reasons and 10 (0.2%) patients died. Of 2083 completed treatment, 2033 (97.6%) had completed treatment for at least 12 weeks and 447 (99.5%) of them had HCV RNA test to determine sustainable viral response (SVR 12) and 437 (97.8%) tested patients had undetectable HCV RNA.

Conclusions: The results demonstrated feasibility of integration and decentralization of HCV testing and treatment at district HIV outpatient clinics. Very high cure rate achieved in this project suggests that micro-elimination of hepatitis C among PLHIV is feasible. This programme is now being extended to all HIV clinic sites in 33 provinces.

EPE077

PrEP and family planning uptake among adolescent girls and young women in post-abortion care in Kenya

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Background: Women accessing care at post abortion care (PAC) clinics have had recent and potentially ongoing condomless sex, placing them at risk for subsequent unintended pregnancy, HIV, and other STIs depending on their geographic settings.

Few studies have assessed PAC settings to assess the uptake of HIV pre-exposure prophylaxis (PrEP) when integrated into PAC services, including family planning (FP).

Methods: Using medical records data abstracted from clients attending 14 PAC clinics in Kisumu and Thika, Kenya with an integrated PrEP program, we describe PrEP and FP uptake among adolescent girls and young women (AGYW) aged 15 to 30. Logistic regression models were utilized to estimate the effect of age on uptake of PrEP and FP.

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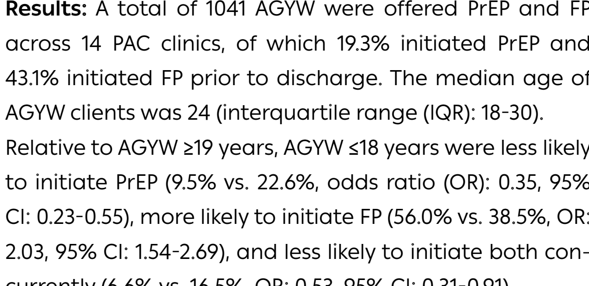
Results: A total of 1041 AGYW were offered PrEP and FP across 14 PAC clinics, of which 19.3% initiated PrEP and 43.1% initiated FP prior to discharge. The median age of AGYW clients was 24 (interquartile range (IQR): 18-30).
Relative to AGYW ≥19 years, AGYW ≤18 years were less likely to initiate PrEP (9.5% vs. 22.6%, odds ratio (OR): 0.35, 95% CI: 0.23-0.55), more likely to initiate FP (56.0% vs. 38.5%, OR: 2.03, 95% CI: 1.54-2.69), and less likely to initiate both concurrently (6.6% vs. 16.5%, OR: 0.53, 95% CI: 0.31-0.91).
Conclusions: Uptake of PrEP and FP among AGYW in PAC settings in Kenya are associated with age. Younger women (15-18 years) are more likely to initiate FP following post-abortion care.
However, younger women are significantly less likely to initiate PrEP or FP and PrEP concurrently, and may benefit from additional and more age-tailored counseling around sexual health and prevention of HIV and unintended pregnancy after an abortion.



EPE078
Digital health intervention linking female entertainment workers to HIV and gender-based violence services in Cambodia: a randomized controlled trial

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Background: Reaching female entertainment workers (FEWs) with health information and linking them to services has been difficult because of their hidden and stigmatized status.
This study evaluated the efficacy of the *Mobile Link* intervention in improving FEWs' health by engaging and connecting them to the existing HIV, sexual and reproductive health, and gender-based violence (GBV) services.
Methods: We conducted the *Mobile Link* randomized controlled trial between 2018 and 2021 in the capital city and three other provinces. Initially, we randomly selected 600 participants from a list of 4,000 FEWs by age group (18–24 and 25–30) and the study site using a random number generator and enrolled them in person. FEWs in the intervention arm (n=300) received automated twice-weekly short message services and voice messages with health information and direct links to outreach workers.
The control group (n=300) received the existing standard care. The outcome measures included self-reported HIV and STI testing, condom and contraceptive use, contact with outreach workers, escorted referral services use, forced drinking, and GBV experiences assessed through face-to-face structured interviews. Intervention effects were modeled using repeated measures, multilevel mixed-effects logistic regression.
Results: We included 218 FEWs in the intervention and 170 FEWs in the control arms in the per-protocol analyses after removing 212 dropouts. Evidence of positive intervention effects was detected for the following secondary outcomes: contacting an outreach worker (at 30 weeks: AOR 3.29, 95% CI 1.28–8.47), receiving an escorted referral (at 30 weeks: AOR 2.86, 95% CI 1.09–7.52; at 60 weeks: AOR 8.15, 95% CI 1.65–40.25), and never being forced to drink at work (at 60 weeks: AOR 3.95, 95% CI 1.62–9.60).
No significant differences between intervention and control groups were observed in the fully adjusted models for any primary outcomes.
Conclusions: The *Mobile Link* intervention effectively connected FEWs with outreach workers and escorted referrals but did show an effect on primary outcomes. Reduced forced drinking at work was also significantly more extensive in the intervention group than in the control group. Longer-term messaging may increase access to services and impact FEWs' health outcomes in the future.

EPE079
Moving from rhetoric to reality: lessons learned from integrating oral PrEP and family planning services in public health facilities in Nairobi, Kenya

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Background: Recognizing that adolescent girls and young women (AGYW) in Kenya face both high HIV incidence and high risk of unintended pregnancies, the Kenyan government is committed to advancing the integration of HIV prevention services, including pre-exposure prophylaxis (PrEP), and family planning (FP) services for AGYW.
The USAID/PEPFAR-supported CHOICE consortium partnered with the National AIDS and STI Control Programme (NASCOP) and Nairobi Metropolitan Services (NMS) to pilot integrated PrEP-FP services in three public health facilities in Kenya.
Description: The project aimed to increase uptake of PrEP among AGYW accessing contraceptive services through a quality improvement (QI) approach. The facilities piloted a referral-based model of PrEP-FP integration from April to October 2021. Activities were led by national, county, and/or subcounty health managers and included: training providers; introducing job aids, screening tools, and tools to measure facility-level PrEP-FP integration indicators; supportive supervision and coaching of providers; and regular QI meetings to review data and identify actions to improve performance.

Lessons learned: Over seven months of implementation, 4,014 (61%) of 6,624 FP clients at the participating facilities were screened for HIV risk. Of those screened, 179 were determined to be eligible for PrEP; 77 (43%) of those eligible initiated PrEP, the majority of whom were ages 15-24.
Provider-related challenges included expectations for financial incentives to integrate services, inconsistent implementation of risk screening, inadequate completion of M&E tools, negative attitudes toward PrEP for AGYW, and turnover among trained providers.
Client-related challenges included lack of client readiness for PrEP and reluctance to initiate PrEP without partner support. Government leadership in QI workshops, trainings, and supervision was critical to integration.
We also recommend ongoing provider training to reinforce integration procedures and address negative attitudes, all-site QI and integration sensitization, digitizing M&E tools, and investing in demand generation for both AGYW and male partners.
Conclusions/Next steps: Although the number of FP clients who initiated PrEP over seven months was low, the project illuminated critical challenges — and potential solutions — related to operationalizing service integration in high-volume public health facilities. NASCOP is applying the lessons from this pilot to inform the national scale-up plan for PrEP-FP integration in Kenya.

EPE080

Integrating gender-affirming care into HIV services for transgender women in three Asian countries: an implementation opportunity using rogers' diffusion of innovation theory

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Background: The Tangerine Clinic in Thailand has successfully implemented the "integrated gender-affirming and sexual health service model" (the Integrated Trans Model) to serve more than 4,000 transgender women since 2015. We documented how the model was expanded to other Asian countries.
Description: The Tangerine Academy, the technical assistance platform supported by the USAID-funded EpiC project, worked with FHI 360 to provide South-South capacity strengthening on transgender health to HIV community-based organizations (CBOs) in Asia. Using Rogers' Diffusion of Innovation theory as the process of adopting new innovations, we documented how the Integrated Trans Model—an innovative intervention—was disseminated and adopted among CBOs in Myanmar, Nepal, and the Philippines during 2019–2021.
Lessons learned: We demonstrated to CBO leaders and staff in Myanmar, Nepal, and the Philippines the "relative advantage" of the Integrated Trans Model for increasing transgender women's access to sexual health services. This involved creating a learning collaborative in which CBO participants made on-site and virtual visits to the Tangerine Clinic.
Early adopters from the CBOs, along with local transgender opinion leaders, then explored the model's "compatibility" with serving the specific needs of the transgender community using Tangerine Clinic client service data. We trained health care providers and transgender community health workers on transgender-competent health care, supported them to develop guidelines, and discussed the "complexity" of the Integrated Trans Model.
Each CBO identified which levels of complexity they felt comfortable implementing:
1. Providing counseling on gender-affirming hormone treatment,
2. Conducting hormone-level measurement, and
3. Prescribing gender-affirming hormone medications.
Through a series of ongoing consultations and case conferences, Ma Baydar Clinic in Myanmar, Cruiseaids Clinic in Nepal, and LoveYourself and Lakan Clinics in the Philippines began implementing the Integrated Trans Model to test its "trialability." Direct "observability" from all clinics was reflected in increased accessing of HIV testing and pre-exposure prophylaxis (PrEP) services among transgender women. HIV case-finding rates ranged from 2% to 15%. PrEP linkage ranged from 20% to 27%.
Conclusions/Next steps: The Integrated Trans Model was successfully diffused and disseminated from Thailand to three other Asian countries using implementation strategies informed by community and CBO leaders and tailored to cultural context.

EPE081

Predictors of uptake of HIV prevention interventions among transgender individuals in a community-led clinic in Metro Manila

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Background: There is delayed and poor uptake of HIV prevention interventions (HPI) among transgender women (TGW) in the Philippines. This remains unknown among

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transgender men (TGM) as they are not regularly part of the HIV surveillance. Globally and locally, health issues of transgender individuals, particularly TGM who have sex with men (TGM-SM), remains to be barely explored. These translate to lack of differentiated approach to service delivery, poor uptake of health interventions, and suboptimal health outcomes. We aimed to determine the uptake of HPI among TGW and TGM and its predictors.

Methods: We performed a secondary data analysis of clinical data among transgender men (TGM) and women (TGW) enrolled in Victoria by LoveYourself, a community-led HIV and TG health clinic in Metro Manila, from 2018-2019. Use of HPI, specifically condom, PrEP, PEP, and/or HIV testing, was identified through self-reporting. A multivariable generalized linear model, using modified Poisson distribution with robust variance estimator, was developed to explore covariates for utilization of HPI.

Results: From 2018-2019, 465 individuals, 139 TGW and 326 TGM, median age of 25 (IQR 16-29), enrolled in the clinic; 116 TGW (83.5%) and 17 TGM (5.2%) reported having sex with men. Among the 465 individuals, 128 reported using at least one HPI, most common of which were condoms (60.1%) and HIV testing (55.5%). PrEP (0.8%) and PEP (0%) use remains negligible. Prevalence of HPI uptake was higher among TGW (vs TGM; adjusted prevalence ratio [aPR]=5.11, 95%CI 2.89 – 9.04) and those who have sexual preference for men (vs otherwise; aPR=4.81, 95%CI 2.67 – 8.66). There was significant interaction between gender identity and sexual preference (p<0.001), such that the prevalence of HPI uptake is lower among TGM having sex with men (TGM-SM) than TGW having sex with men.

Conclusions: HPI uptake remains limited among transgender individuals, especially among TGM. Although transgender individuals who prefer having sex with men were likely to utilize HPI, this remains relatively lower among TGM-SM. This justifies the non-exclusion of TGM-SM in both biobehavioral surveillance and HIV programs. TGM-SM, nevertheless, remain vulnerable to stigma related to being MSM and transgender and would benefit from further exploration of their health issues.

EPE082

Community-based promotion of cervical cancer screeningamong HIV positive women in Ethiopia

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Background: WLHIV are at higher risk of developing invasive form of cervical cancer when compared to HIV negative women. Therefore, timely screening, management and follow-up care is necessary. We summarized the results of demand creation, social and behavioral change communication activities in community-based HIV prevention, care, and treatment project in Ethiopia.

Description: CxCa counseling and demand creation services were provided to WLHIV during community adherence support group meetings, community-ART refills, index case contacts testing by frontline community HCW, such as CEF and CRPs. Comprehensive SBCC package was developed to support demand creation activities including individual counseling, education, leaflet distribution and mass media campaigns.

Clients were offered CxCa screening test and those who accepted the offer were referred to the nearby health facility for VIA and treated when tested positive. The ComCare application system was used for electronic data collection, quality checking, and tracking client referrals. Data were exported to Excel and analyzed in STATA software.

Lessons learned: Between October 2020 and December 2021, a total of 8,427 WLHIV received CxCa counseling of which 6,718 (80%) were eligible and referred to a health facility for screening. In total, 6,688 (99.5%) women were screened of which more than half 3,664(55%) were from Addis Ababa, followed by 1,520(24%) Oromia and least 184 (3%) were from Gambella region.

Of total screened, 273 (4.1%; 95%CI: 3.51, 4.69) had lesions through VIA and 199 (92%) were treated on-site with Cryotherapy, 11 (5%) with Leep, and 6 (3%) with Thermo-coagulation. Whereas thirty-five (13%) women required referral to higher level for further investigation, and 22 (8%) women are on process to treatment. Majority 6,398 (96%) of women were screened for the first time of which 242 (4%) were screened positive, and 208 (3%) were re-screened t of which 5 (2.4%) were tested positive.

Age disaggregation showed that women aged ≥50 years had the highest positive result of 4/43 (9.3%) followed by age 25 - 49 years 259/6,303 (4.1%), and age 15 – 24 years 10/342 (2.9%) least.

Conclusions/Next steps: Result showed, community level CxCa demand creation and referral services helped to improve access to cervical cancer screening, care and treatment. Therefore, community-based demand creation, screening, and referrals should be scaled-up to all WLHIV in Ethiopia

EPE083

OK to not be OK in HIV care: experience and outcomes of integration of mental health screening, referrals and support in routine HIV care in Zimbabwe

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Background: People living with HIV are two times more likely to experience common mental disorders. Annual mental health (MH) screening is recommended for all recipients of HIV care in Zimbabwe. In practice, however, integration of mental health in HIV care has not been im-

plemented with fidelity. Our objective was to strengthen mental health screening, referral and treatment in routine HIV care.

Description: We implemented a learning phase MH/HIV integration program to screen recipients of HIV care using the Patient Health Questionnaire-2 (PHQ-2) in Chitungwiza District, Zimbabwe. PLHIV screening positive were referred to Friendship Bench for Shona Symptom Questionnaire-14 (SSQ-14) administration and evidence-based problem solving therapy (PST). Screening outcomes were documented as to inform construction of a 'mental health cascade' and standardization of implementation models in routine HIV programs at scale.

Lessons learned: Among 14,933 recipients of HIV care at 5 participating high-volume facilities from March-May 2021, 11,983 (80%) were screened using the PHQ-2; the majority (94%;11,320/11,983) screened by nurses at the facility while attending appointments or collecting antiretroviral medication. PHQ-2 screen positive yield was 4% overall (425/11,983); appointment/treatment defaulters screened in the community had a 25% PHQ-2 screen positive yield (164/663). The majority of those received and screened by Friendship Bench had a clinically significant SSQ-14 score (84%;355/423); 14.9%(53/355) with 'red flag issues' (suicidal ideation and/or hallucinations). Follow-up sessions with clients showed a decrease in SSQ-14 scores among 73% after just one session of PST with Friendship Bench.

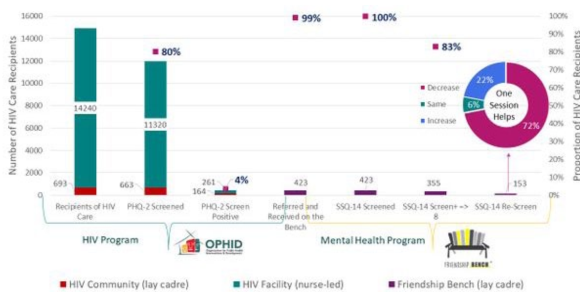

Figure. Cascade of integrated mental health screening, referral and support in routine HIV care, Chitungwiza District, Zimbabwe - March-May 2021

Conclusions/Next steps: We demonstrate feasibility of integration of mental health screening and referrals to community-based mental health interventions in routine HIV care. The program model and tools have been standardized and will be taken to scale at 44 high volume facilities, serving over 150,000 PLHIV.

Future implementation research is required to extend the MH/HIV cascade to include individual-level impact of integration on both HIV and mental health outcomes.

EPE084

High sexually transmitted infection prevalence/incidence among new, current, and non-users of pre-exposure prophylaxis and HIV-positive men who have sex with men and transgender women attending key population-led clinics in Thailand

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Background: Key population (KP)-led pre-exposure prophylaxis (PrEP) services contribute more than half of PrEP provision in Thailand. KP lay providers can legally perform HIV and sexually transmitted infection (STI) testing and give oral medications to clients as prescribed by doctors. We studied STI prevalence and incidence among new, current, and non-users of PrEP, and HIV-positive clients of KP-led clinics.

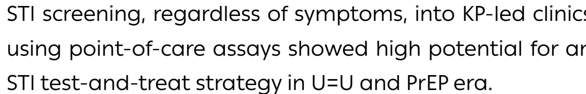
Methods: From August 2019 to September 2021, men who have sex with men (MSM) and transgender women ages ≥18 years, with ≥1 HIV risks in the past six months (condomless sex, >5 sexual partners, STI history, substance use), were enrolled and followed up for 12 months.

Provider-/self-collected urine, pharyngeal, and rectal samples from each participant were pooled for gonorrhea/chlamydia nucleic acid amplification testing using point-of-care Xpert at baseline and every three months, together with syphilis serology. Prevalence and incidence of any STIs, syphilis, gonorrhea, and chlamydia were reported by PrEP use and HIV status.

Results: We enrolled 1,696 MSM and 194 transgender women. Prevalence rates of any STIs, syphilis, gonorrhea, and chlamydia were 43.7%, 9.2%, 23.9%, and 27.0% among 390 new PrEP users; 49.7%, 11.9%, 28.0%, and 35.0% among 600 current PrEP users; 34.5%, 9.3%, 13.0%, and 24.2% among 600 PrEP non-users; and 61.0%, 27.7%, 31.3%, and 41.3% among 300 HIV-positive individuals. Incidence rates of any STIs, syphilis, gonorrhea, and chlamydia were 57.9, 7.9, 22.5, and 27.3/100 person-years (PY) among new PrEP users; 70.5, 10.1, 26.2, and 33.7/100 PY among current PrEP users; 38.1, 5.9, 8.7, and 20.5/100 PY among PrEP non-users; and 106.0, 20.0, 31.8, and 37.4/100 PY among HIV-positive individuals. No difference was found between MSM and transgender women. Median (IQR) duration from STI diagnosis to treatment was 4 (1–8) days.

Conclusions: MSM and transgender women accessing KP-led services had a high STI burden regardless of PrEP use and HIV status.

Overall STI prevalence and incidence were highest among HIV-positive individuals, followed by current PrEP users, new PrEP users, and PrEP non-users. Integrating regular



STI screening, regardless of symptoms, into KP-led clinics using point-of-care assays showed high potential for an STI test-and-treat strategy in U=U and PrEP era.

EPE085

Barriers and facilitators to use of male friendly clinical services in Quelimane, Zambézia province, Mozambique: results of a qualitative study, 2021

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Background: Programmatic data in Mozambique have shown that access to health services and chronic disease treatment outcomes are better among women than men. A National Strategy for Male Engagement in Health Care, including the provision of male-friendly services (MFS) was launched in 2018. In Quelimane, MFS were provided through male-friendly clinics, dedicated to male patients only, where predominantly male healthcare providers provided care through a one-stop model outside of normal clinic hours.

This evaluation aimed to identify facilitators and barriers influencing utilization of these services.

Methods: A qualitative study was done between February-April 2021 at three health facilities providing MFS in Quelimane. All participants were selected via convenience sampling. In-depth interviews (IDI) were conducted among male and female HIV-positive patients and their healthcare providers.

Focus group discussions (FGD) were performed with male community members and male employees of two companies in Quelimane. Sessions were done in Portuguese or Chuabo (local language). All recordings were transcribed in Portuguese and coded by two independent investigators. Thematic analysis was performed.

Results: Eighty-three IDI (41 male and 24 female patients, 18 healthcare providers) and five FGD (three involving community members, two involving company employees) were conducted. Barriers to uptake of MFS included: not knowing such services were available; poor health care seeking behavior; competing priorities (e.g., work responsibilities); perception that poor quality care would be received; and prolonged wait times. Healthcare providers highlighted barriers such as limited human resources, equipment (e.g., sphygmomanometers) or infrastructure (e.g., confidential space), and long distances (for patients and providers) from home to the health facility, which could compromise one's safety after dark. Among the facilitators for MFS uptake, all groups mentioned extended hours, one-stop-model, and male providers as program elements which increased patient comfort and willingness to share personal/confidential information.

Conclusions: Male friendly services are an acceptable means of offering male-centered care, especially for patients not able to visit the health facility during routine hours. Demand creation messaging is needed to improve awareness of MFS in the communities. Given the acceptance of the model, MFS could cover screening and management of infectious disease (e.g., HIV/AIDS) as well as non-communicable disease.

EPE086

Cervical pre-cancer in women with HIV in the context of highly effective antiretroviral therapy

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Background: Immunodeficiency caused by HIV increases the risk of cervical cancer. More data on the impact of antiretroviral therapy (ART) on cervical carcinogenesis in African women with HIV are needed. We assessed cervical pre-cancer detection by HIV and ART status among women in the African Cohort Study (AFRICOS), which follows people with and without HIV aged ≥18 in four countries.

Methods: We analyzed data from the women's first cervical cancer screening in AFRICOS between 2013-2020. We estimated the association between HIV and cervical pre-cancer, detected by visual inspection with acetic acid or cytology, using logistic regression adjusted for age, country, travel time to clinic, number of sex partners, and condom use. To assess the association between ART and pre-cancer, we repeated the logistic regression among

women with HIV and adjusted for time since HIV diagnosis, CD4 cell count, and HIV viral load. We evaluated the mediating effect of viral load and CD4 cell count using the potential outcomes approach.

Results: In our sample of 1729 women, overall prevalence of cervical pre-cancer was 4% (Table 1). >80% of women with HIV, regardless of ART status, had CD4 count ≥200. Mean duration on ART was 3.7 years (standard deviation 3.1). Relative to women without HIV, cervical pre-cancer detection was not significantly higher among women with HIV on ART (adjusted odds ratio [aOR] 1.8, 95% confidence interval [CI] 0.8-4.5) and ART-naïve women with HIV (aOR 1.8, 95% CI 0.7-4.9).

Among women with HIV, cervical pre-cancer detection was not different by ART status (aOR 1.0, 95% CI 0.4-2.4). The aOR was unchanged after accounting for potential mediation by viral load and CD4 cell count (aOR 1.0, 95% CI 1.0-1.0).

	Women without HIV (N=271)	Women with HIV, not on ART (N=339)	Women with HIV, on ART (N=1119)	p value*
Cervical pre-cancer detected	7 (2.6%)	16 (4.7%)	47 (4.2%)	0.376
Age (SD)	36.4 (10.3)	34.5 (9.7)	38.4 (9.4)	<0.001
Number of lifetime sex partners (SD)	3.2 (6.2)	4.6 (8.4)	3.7 (4.0)	0.004
Median number of year since HIV diagnosis (IQR)		0.2 (0.0, 1.5)	4.5 (1.7, 7.6)	< 0.001
Virally suppressed		61 (18.2%)	973 (87.3%)	<0.001
CD4+ cell count of≥200		276 (81.4%)	965 (86.2%)	<0.001

Table.

Conclusions: Pre-cancer detection was uncommon and not different by HIV or ART status in AFRICOS. Our findings suggest that early ART initiation, sustained HIV care, and integrating cervical cancer prevention into HIV programs can reduce cervical cancer risk among women with HIV.

EPE087

Implementation opportunities for scaling up methadone maintenance therapy as HIV-prevention strategy in Kyrgyzstan: methadone dosing and retention in treatment over two years

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Background: Methadone maintenance treatment (MMT) is the most cost-effective strategy to control HIV in countries in Central Asia, where the epidemic is concentrated among people who inject drugs (PWID).

Methods: An observational prospective cohort study design was applied to patients prescribed methadone in Kyrgyzstan between 2017 and 2021, both in community and carceral facilities. Retention in MMT was assessed at 1, 6, 12, and 24 months and was stratified by dosing levels, HIV status, and type of clinical setting using survival analysis. Predictors of treatment dropout were estimated using Cox multivariate regression models.

Results: Among 940 MMT patients, the proportion receiving low (<40mg), medium (40-85mg), and high (>85mg) dosing was 37.9%, 42.2%, and 19,9%, respectively. Increasing MMT dose was significantly (p<0.0001) correlated with retention at 1 (90%, 98%, 100%), 6 (42%, 63%, 95%), 12 (33%, 55%, 89%), and 24 (16%, 45%, 80%) months, respectively (Figure 1), with no differences between community and correctional settings.

	1 month			6 months			12 months			24 months		
	aHR	95% CL	p-value	aHR	95% CL	p-value	aHR	95% CL	p-value	aHR	95% CL	p-value
	*Controlled for the year of enrollment, previous OAT experience, post-release dropout risk											
MMT dosing*												
High	Ref.			Ref.			Ref.			Ref.		
Medium	2.6	1.8-3.6	<.0001	3.3	2.4-4.6	<.0001	3.5	2.5-4.9	<.0001	3.7	2.7-5.2	<.0001
Low	4.6	3.3-6.3	<.0001	7.4	5.3-10.2	<.0001	8.0	5.8-11.1	<.0001	8.9	6.4-12.1	<.0001
	**Controlled for the year of enrollment, methadone dose, previous OAT experience, and post-release dropout risk											
Admin. Region**												
City of Bishkek	Ref.			Ref.			Ref.			Ref.		
City of Osh	1.3	1.0-1.7	0.030	2.1	1.6-2.6	<.0001	2.0	1.6-2.6	<.0001	1.9	1.5-2.5	<.0001
Chuy Region	1.2	0.9-1.4	0.167	1.3	1.0-1.6	0.026	1.2	1.0-1.5	0.004	1.2	0.9-1.5	0.124
Osh Region	1.2	0.9-1.7	0.565	1.4	1.0-1.9	0.035	1.3	0.9-1.8	0.056	1.3	0.9-1.7	0.113
Batken Region	1.3	0.4-4.0	0.691	2.3	0.7-7.3	0.149	1.9	0.6-6.2	0.244	2.6	0.8-8.1	0.111
Jalal-Abad Region	1.1	0.7-1.7	0.610	1.7	1.1-2.6	0.029	1.7	1.1-2.6	0.023	1.6	1.1-2.5	0.048
HIV Status**												
Negative	Ref.			Ref.			Ref.			Ref.		
Positive	1.0	0.6-1.7	0.949	0.9	0.7-1.1	0.266	0.9	0.7-1.1	0.322	0.9	0.7-1.1	0.306
Incarceration St-s**												
Community	Ref.			Ref.			Ref.			Ref.		
Penitentiary	1.0	0.8-1.2	0.759	0.9	0.7-1.1	0.523	0.9	0.8-1.1	0.370	0.9	0.7-1.1	0.374
MMT Site												
General Hospital	Ref.			Ref.			Ref.			Ref.		
Narcology Center	0.8	0.6-1.1	0.286	0.6	0.4-0.9	0.005	0.6	0.4-0.9	0.004	0.6	0.4-0.9	0.009
AIDS Center	0.9	0.7-1.3	0.944	0.7	0.5-1.0	0.091	0.8	0.6-1.1	0.174	0.8	0.6-1.1	0.284
TB Center	0.8	0.5-1.3	0.420	0.6	0.4-0.9	0.034	0.5	0.3-0.9	0.025	0.6	0.4-1.0	0.059
Penitentiary	1.0	0.7-1.3	0.997	0.8	0.6-1.0	0.091	0.8	0.6-1.0	0.118	0.8	0.6-1.1	0.141

EPE087 Table 1. Cox regression model of factors associated with lower retention (dropout) on opioid agonist therapy, N=940.

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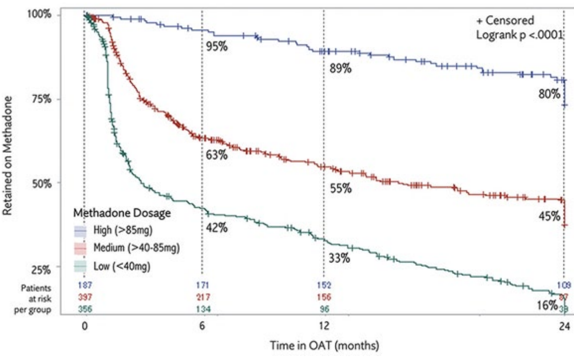

Figure 1. Retention on methadone for all patients over 24 months, stratified by dosage, N=940

OAT; opioid agonist treatment

Risk factors of treatment dropout at 12 months included (Table 2) low [adjusted hazard ratio (aHR)=8.0; 95% confidence limit (CL) =5.8-11.0] and medium (aHR=3.5; 95%CL=2.5-4.9) methadone dosing relative to high dosing and receiving treatment in three administrative regions (city of Osh, Chuy Region, and Jalal-Abad Region) relative to capital Bishkek.

Receiving MMT in the tuberculosis-specialized clinic in Bishkek (aHR=0.5; 95%CL=0.3-0.9) and addiction treatment specialized centers (aHR=0.6; 95%CL=0.4-0.9) was associated with higher retention at 12 months. HIV-positive individuals receive higher average MMT doses (79.5mg vs.63.1mg; p<0.0001) than HIV-negative; however, retention in MMT did not differ (aHR=0.9; 95%CL=0.7-1.1) after controlling for dosage.

Conclusions: Only one-fifth of MMT clients received optimal(>85mg) dosages; receiving lower dosages contributed most to dropout, providing an implementation opportunity for MMT scale-up in Kyrgyzstan.

EPE088

Do digital innovations improve sexual and reproductive health among youth? Results from a systematic review

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Background: Sexual and reproductive health (SRH) challenges disproportionally affect young individuals who are particularly vulnerable to engage in risky behaviours and acquire sexually-transmitted infections (STIs). Digital interventions may help improve access to SRH services, SRH-related education, thereby decreasing STI development and changing SRH attitudes/intentions. This systematic review summarizes literature regarding digital SRH interventions/innovations.

Methods: For the period June 2017-July 2021, two reviewers independently searched two electronic databases (Medline, Embase), retrieved 6,895 citations and abstracted data from 74 eligible studies which assessed SRH digital interventions/innovations among persons aged 10-30.

Results: This abstract, based on 13 publications that focused on HIV/STI prevention, testing and acquisition, included data of N=5,457 individuals. A wide range of digital strategies were assessed: web-based (n=4), text messaging (n=4), mobile application (n=3), telehealth (n=1), and a multimodal strategy (e-mail/website/video) (n=1).

A reduction of HIV/STI risk was shown. For instance, significant (p<0.05) differences between youth who underwent a digital-based intervention versus the standard of care were observed in regard to STI prevention self-efficacy and attitudes/intentions to reduce STI risk (condom usage, high-risk sexual behaviours).

Two studies which specifically evaluated PrEP usage among at-risk youth showed favourable results: the first proved that digital strategies improved individuals' ability to adhere to PrEP, and, in the second study, no cases of HIV were diagnosed, though bacterial STIs had been detected over the 180-day study period.

Two studies showed that text messaging-based strategies led to increased STI testing (intervention vs. control: 50.0% vs. 26.6%, p<0.001) or the intention to get tested [OR (95% CI)= 2.6 (1.49-4.68), p=0.001]. A third study failed to prove the impact of digital strategies on HIV/STI testing and PrEP initiation, though low sample size (n=155) likely led to statistical non-significance.

Moreover, digital innovations led to decreased STI incidence, including HIV, gonorrhoea, chlamydia and syphilis, while STI incidence among individuals who underwent routine care either remained stable or increased over time.

Conclusions: Digital interventions show tremendous promise to improve access to SRH services. Particularly during the ongoing COVID-19 pandemic, healthcare professionals are encouraged to scale up said innovations to reach youth and vulnerable populations who scarcely utilize in-person resources.

EPE089

Improved TB testing in Malawi following targeted supportive supervisions for TB LAM uptake

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Background: Tuberculosis (TB) case finding in people living with HIV (PLHIV) has been a focus of HIV programs for years. Malawi historically depended on sputum microscopy and, more recently, GeneXpert for TB diagnosis. GeneXpert improved pulmonary TB detection, however, given that significant proportions of PLHIV with TB are

unable to produce sputum or have extra-pulmonary TB, TB detection remained a challenge. Although the Malawi Department of HIV and AIDS (DHA) introduced the TB lipoarabinomannan (LAM) Point of Care (POC) test in a bid to address these issues, uptake of the test remained low. Therefore, the DHA conducted tailored supportive supervision visits to improve TB LAM uptake.

Description: In 2018, the DHA adopted the World Health Organization recommendation that all PLHIV with CD4<200, WHO stage 3/4 or who are seriously ill, have access to TB LAM testing for TB diagnosis. By January 2021, TB LAM implementation had scaled up to 118 sites across 28 districts. Following the lifting of COVID movement restrictions, capacity building through supportive supervision visits were conducted in July 2021 utilizing a checklist/scorecard at implementation sites to identify and address uptake barriers and share TB LAM best practices with health care workers (HCWs).

Lessons learned: Malawi has seen a steady increase in the percentage of AHD patients who receive a TB LAM test since the supportive supervision visits were conducted. From January – June 2021, sites were testing AHD patients for TB at an average of 81.4%. However, following capacity building and uptake reinforcement, the average TB testing rate increased to an average of 97.5% during July – September 2021.

In addition to the scorecard, crucial components of the supervision visits include interviews with providers, stock inventory, and review of data capturing tools.

Conclusions/Next steps: Malawi was one of the first low- and middle-income countries to adopt TB LAM testing and tailored supportive supervisions have been crucial in improving TB testing. Scale up to ~300 sites is planned for 2022 to increase access to POC TB testing. National HIV and TB programmes can learn from Malawi's experience improving TB LAM uptake for PLHIV with AHD.

EPE090

Integrating mental health counseling into PrEP delivery for South African adolescent girls and young women: an implementation science approach to identifying determinants and strategies for service delivery

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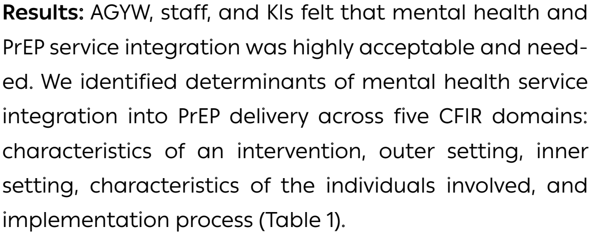
Background: African adolescent girls and young women (AGYW) who may benefit from HIV pre-exposure prophylaxis (PrEP) face high levels of depression and related psychosocial issues. Depression can significantly reduce PrEP adherence, yet mental health counseling interventions are often under-resourced and have not been well-integrated into PrEP delivery. Integrated mental health and PrEP services have the potential to be efficient and effective. We sought to identify barriers and facilitators of delivering a mental health intervention for AGYW in South African PrEP clinics.

Methods: We conducted 31 in-depth interviews with AGYW using PrEP (n=9), staff at a PrEP clinic in Johannesburg (n=12), and key informants (KIs) with experience in mental health and PrEP delivery in South Africa (n=10). Interviews were informed by the Consolidated Framework for Implementation Research (CFIR) and discussed acceptability of mental health interventions in PrEP clinics and approaches for service delivery. We used a rapid qualitative analysis approach to identify themes and compare content by respondent groups. Facilitators and barriers of mental health intervention implementation were grouped into constructs defined by the CFIR. We matched determinants to implementation strategies using the Expert Recommendations for Implementing Change (ERIC).

CFIR domain	Implementation determinants	Implementation strategies
Characteristics of the intervention – *mental health counseling*	**Facilitators**: building capacity for psychosocial counseling is more appealing than medication and standard-of-care referrals **Barriers**: unethical to screen for a counseling intervention if no specialists are available for referral; could result in long clinic wait times; AGYW may be reluctant to open up	- Refined screening practices to triage AGYW - Person-centered, stepped care models tailored to AGYW needs - Warm hand-offs (ensuring connection) for all referral services - Adapt intervention to incorporate local perspectives and content relevant for AGYW - Adapt clinic flow to maximize time efficiency for AGYW
Outer setting – *urban Johannesburg, South Africa*	**Facilitators**: Clear need for mental health interventions related to depression and other mental health issues (gender-based violence, relationship issues, PrEP stigma); mental health service integration aligns with South African Department of Health goals **Barriers**: Community stigma around mental health awareness and care seeking; lack of clarity on referral options and lack of existing services	- Community outreach activities for demand-creation, PrEP, and mental health stigma reduction - Conduct group sessions with AGYW to normalize mental health issues - Inventory referral services and engage key stakeholders to identify a broad range of referral options to address mental health issues and gender-based violence
Inner setting – *Ward 21 adolescent-friendly PrEP clinic*	**Facilitators**: Strong network to support within-clinic referrals; some mental health services already provided (referrals, some screening) although without formal procedures or monitoring **Barriers**: Provider judgment and discrimination among staff; tension between wanting to provide mental health interventions but also not adding more staff work or clinic inefficiencies; lack of time, space, and funding for counselors	- Create a non-judgmental and friendly atmosphere for AGYW - Incorporate mental health screening and counseling with other youth-friendly services (e.g., PrEP counseling) to maximize efficiency - Create a rewards system for counselors with recognition for outcomes - Training, supervision, and peer support to empower counselors - Engage clinic leadership to "own" the intervention
Characteristics of individuals involved – *lay counselors*	**Facilitators**: None described **Barriers**: Lack of counselor training on mental health and counseling approaches, judgmental attitudes among providers	- Train counselors in adolescent-friendly communication skills and mental health counseling approaches - Provide a space for counselors to process difficult cases - Conduct training on patient-counselor confidentiality - Regular supervision with audit and feedback to promote counselor self-efficacy for intervention delivery
Process	**Facilitators**: External change agents (celebrities, social media influencers) have spoken out about mental health during COVID **Barriers**: None	- Engage AGYW as peer champions and social influencers, to conduct demand creation

Table 1: Summary of determinants of mental health intervention implementation and potential implementation strategies for South African PrEP clinics.



Results: AGYW, staff, and KIs felt that mental health and PrEP service integration was highly acceptable and needed. We identified determinants of mental health service integration into PrEP delivery across five CFIR domains: characteristics of an intervention, outer setting, inner setting, characteristics of the individuals involved, and implementation process (Table 1).

Interviewees described implementation strategies for mental health and PrEP service integration including demand-creation through community outreach and youth champions, intervention delivery through "person-centered" stepped-care models, and staff training to promote efficient and non-judgmental service delivery.

Conclusions: Our findings highlight the need to adapt and deliver psychosocial interventions for AGYW in South African PrEP clinics. Mental heatlh counseling and PrEP integration is acceptable and needed, although successful implementation will require adequate training, and addressing the needs of clinics and AGYW.

EPE091
Assessing the feasibility and acceptability of integrating HIV/syphilis dual-testing in antenatal care facilities in Liberia

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Background: In Liberia, 2.0% of pregnant women are infected with HIV and 2.7% with active syphilis. If left untreated, these infections result in adverse outcomes for both mother and fetus. While over 85% of pregnant women are tested for HIV during antenatal care (ANC) visits, only 8% are tested for syphilis.

To address this gap, the National HIV Program implemented a pilot to assess the feasibility and acceptability of switching from an HIV-only screening test to a rapid diagnostic HIV/syphilis dual-test in ANC facilities across Liberia.

Description: From March-December 2020 dual-tests were piloted amongst pregnant women in 5 facilities with different characteristics. A 2-hour on-site training was held with providers on the use of the dual-test and treatment of syphilis. At least 8 mentorship-and-supervision visits were provided at each facility. Focus group discussions (FGDs) were used to assess provider perspectives at the end of the pilot.

Lessons learned: A total of 8,908 pregnant women were screened with the dual-test. Of the 1.3%(n=112) who tested positive for syphilis, 69.6% (n=78) received treatment. Additionally, 21.2% (n=29) were co-infected with HIV and syphilis while 1.5% (n=137) were positive for HIV. In 99.7% (n=8887) of HIV tests recorded at facilities, the revised HIV-testing algorithm was followed correctly. Through FGDs, providers expressed high levels of acceptance and confidence in using the dual-test and the benefits of using a single finger-prick to obtain timely results for both HIV and syphilis. Additionally, the introduction of the dual-test had no adverse impact on providers following the updated national HIV testing algorithm.

Conclusions/Next steps: The pilot demonstrated that the introduction of the dual-test in ANC settings is feasible and readily adopted by healthcare providers and leads to increases in syphilis screening and treatment. Early mentorship and supportive supervision beginning 2-weeks following on-site training are critical to address challenges early on as well as improve quality of data recording for programmatic decision-making.

The National HIV Program recommends that the dual-test be integrated into all ANC settings to ensure that pregnant women receive comprehensive care and that mother-to-child transmission of HIV and syphilis is prevented.

EPE092
Point-of-Care integrated platform as a strategy to improve national HIV viral load testing in the Brazilian National Healthcare System

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Background: Rapid access to diagnosis allows immediate HIV treatment. Brazil is a large country with different realities and the demand for HIV viral load (VL) tests is diverse. Conventional VL platforms are often closed systems, usually requiring a minimum sample demand to avoid the inputs loss, resulting in a long result releasing time and the impossibility of processing last-minute or urgent samples. These limitations impact the turnaround time for the patient and, consequently, care. Point-of-Care (POC) platforms allows rapid tests execution shortly after patient's sample receipt. Since 2014, the Ministry of Health (MoH) has been using the GeneXpert platform for Rapid Molecular Tuberculosis Test (TRM-TB). We carried out a project to evaluate the advantages of integrating the TRM-TB and HIV VL using GeneXpert POC platform.

Description: The project lasted 4 months and 16 laboratories from 10 Brazilian states were selected, based on their productivity and availability of TRM-TB equipment for sharing. The shared platform allowed prioritization for urgent HIV samples. The data from the realized exams were evaluated to determine the population served and result release time. The professional's perception was evaluated through a Google Forms questionnaire.

Lessons learned: 88% of the HIV exams were from adults (19-64 years old), 7% seniors (>65 yo), 4% infants and children (<11 yo), and 1% adolescents (12-18 yo). Among the infants and children, 51% were younger than 12 months

old. Pregnant women represented about 40% of the adults attended. The average release time droped from 7 days on the conventional VL, to 4 days on the POC VL, allowing a faster access to the result for the population above. About 81% of professionals evaluated integration positively affecting the laboratory execution flow, however, sharing GeneXpert is compromised when demand is higher than equipment capacity.

Conclusions/Next steps: POC integrated TB and HIV platform allows the prioritization of exams and could accelerate diagnosis fornewborns, children and pregnant women, contributing to the prevention of vertical transmission and to a faster access to care.

The results can support MoH to evaluate the expansion of the GeneXpert network integration in a nationwide scale-up. Cost-effectiveness must be evaluated.

EPE093

Effect of a one-time financial incentive on linkage to chronic hypertension care in Kenya and Uganda: a randomized controlled trial

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Background: Hypertension is the largest driver of morbidity and mortality globally and can be treated with low-cost, readily available medications; however, <10% of people with hypertension in sub-Saharan Africa are diagnosed, linked to care, and have hypertension control. We hypothesized that a one-time financial incentive and phone call reminder for missed appointments would increase linkage to hypertension care following community-based screening in rural Uganda and Kenya.

Methods: In a randomized controlled trial, we conducted community-based hypertension screening and enrolled adults ≥25 years with blood pressure ≥140/90 mmHg on three measures; we excluded participants with known hypertension or hypertensive emergency (the latter immediately transported to clinical care). The intervention was transportation reimbursement upon linkage (~$5 USD) and up to three reminder phone calls for those not linking within seven days. Control participants received a clinic referral only. Hypertension care was provided via a patient-centered HIV care model with multi-disease integration (chronic HIV, hypertension, and/or diabetes care). Outcomes were linkage to hypertension care within 30 days (primary) and hypertension control <140/90 mmHg measured in all participants at 90 days (secondary). We used targeted maximum likelihood estimation to compute adjusted risk ratios (RR).

Results: We screened 1,998 participants, identifying 370 with uncontrolled hypertension and enrolling 199 (100 control, 99 intervention). Reasons for non-enrollment included prior hypertension diagnosis (n=108) and hypertensive emergency (n=32). Participants were 60% female, median age 56 (IQR 47-68), 10% HIV-positive, and 42% had baseline blood pressure ≥160/100 mmHg. Linkage to care within 30 days was 96% in intervention and 66% in control (RR 1.45, 95%CI 1.25-1.68). Hypertension control at 90 days was 51% in intervention and 41% in control (RR 1.23, 95%CI 0.92-1.66). Among persons with baseline blood pressure ≥160/100 mmHg, hypertension control was 46% in intervention and 26% in control (RR 1.78, 95%CI 0.98-3.22).

Conclusions: A one-time financial incentive and reminder call for missed visits resulted in a 30% absolute increase in linkage to hypertension care following community-based screening. Patient-centered HIV care models can be effectively leveraged to deliver chronic hypertension care; financial incentives can improve the critical step of linkage to care for people newly diagnosed with hypertension in the community.

EPE094

Availability of substance use care implementation and integration in HIV treatment clinics within the global IeDEA consortium

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Background: Overwhelming evidence highlights the negative impact of substance use on HIV care and treatment outcomes. Yet, the extent to which care for alcohol use

disorders (AUD) and substance use disorders (SUD) (i.e., screening, management) have been integrated within routine HIV clinical settings is limited. We assessed AUD and other SUD screening and management practices within HIV treatment sites participating in the global International epidemiology Databases to Evaluate AIDS (IeDEA) consortium.

Methods: In 2020, 223 of 238 HIV treatment sites across seven geographic regions completed a survey on capacity and practices related to HIV care and SUD management. Sites provided information on the characteristics and AUD and other SUD screening and management practices.

Results: Among participating sites, 67% were in urban or primarily urban settings, 38% served only adults, and 50% served adults and children. Thirty-eight percent of sites were from lower-middle-income countries, with equal proportions from low-income and high-income countries (23% each). AUD and other SUD screening using validated instruments were reported at 32% and 12% of sites, respectively. North America had the highest proportion of sites that reported AUD screening (76%), followed by East Africa (46%). Among the sites that reported AUD screening using a validated instrument, 29% provided on-site counseling, 23% provided brief intervention, psychotherapy, or Screening, Brief Intervention and Referral to Treatment (SBIRT). While fewer sites provided treatment for SUD relative to AUD treatment, the patterns for treatment availability were similar.

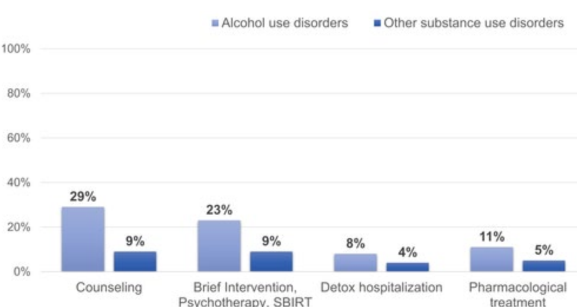

Figure 1. Availability of alcohol and other substance use management among HIV treatment sites reporting screening with validated instruments.

Conclusions: Availability of screening and management for AUD and other SUD were limited in HIV treatment settings in our consortium outside of North America, leaving a major implementation chasm for integration into ongoing HIV care.

Future research should investigate the feasibility of implementing integrated AUD and other SUD screening and management into HIV care settings, particularly in resource-constrained settings.

EPE095

Peer-led, outreach approach for upscaling of access to TB-HIV service integration in Myanmar during COVID-19 and Coup

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Background: In Myanmar, integrated TB/HIV services for people living with HIV in the rural and sub-urban areas are scarce, particularly during the time of COVID and political instabilities. With the very limited resources setting and the civil disobedience movement by public healthcare facilities after coup d e'tat, TB and HIV services has been force-stopped.

Description: During 2021, a group of local volunteer living with HIV in Pyay in partnership with "Local Action Towards TB-Free Myanmar" implemented the community outreach project for TB/HIV services to rural and hard to reach areas of the region. Project trained the peer volunteers on HIV/TB awareness raising, home based care, psychosocial counselling and outreaching activities. Peer workers delivered the field visit to the project areas and conducted PLHIV focus group discussions relating to the TB and HIV treatment difficulties. Coordinating with the National TB Program and Township Health Department, peer volunteers assisted in door to door delivery of Anti-TB medications, food support, referral for lab tests and regular follow up on adherence counselling. By means of sustainability of the intervention, the project encouraged and provided necessary assistance on development of local peer groups in each rural and sub-urban areas of the project.

Lessons learned: Effective integration of TB/HIV service could be rightly done when;

a. Local peer communities are trained, equipped with necessary skills and information to lead the program

b. The service providers and the healthcare facilities are integrated as a one comprehensive treatment package, and;

c. Multi-lateral partnerships of public and private sector for effective resource mobilisation and program implementation.

Conclusions/Next steps:

The methodology used in upscaling the access to TB/HIV integrated services in rural and hard to reach areas of Myanmar by peer PLHIV community can be useful for national and regional program development in other countries as well as internationally.

EPE096

Screening & management of hypertension among People Living with HIV (PLHIV) through 'single window approach': aexperience from ART Centers in Mumbai, India

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Background: Non-communicable diseases (NCD) including hypertension are the leading cause of mortality both globally and in India. HIV-infected adults on ART have a higher prevalence of hypertension when compared with HIV-uninfected individuals. People Living with HIV (PLHIV) with hypertension also have a higher risk of cardiovascular events and all-cause mortality.

Though longevity in PLHIV has increased with ART, there is hardly any information on NCDs or its management among PLHIVs in India.

It was decided to launch a pilot project for integrated hypertension and ARV services through ART centers in Mumbai.

Description: A standardized Protocol for Screening and Management of Hypertension was developed through the expert committee to avoid drug-drug interactions, reduce pill burden and improve medication adherence for PLHIVs.

The training was conducted for different cadres of ART Center staff with a focus on integrating the process of screening and treatment with existing patient flow strategies and defined roles & responsibilities for staff.

Screening for all adult PLHIVs has been initiated during their routine visit at ART Center with appropriate treatment for patients diagnosed with hypertension. Referral for patients with severe hypertension and other complications has also been initiated.

Lessons learned: Routine screening for hypertension has helped in early diagnosis and treatment initiation among PLHIVs across all ART centers in the city.

To date 25758 adult PLHIV registered for care have been screened for hypertension and 3948 (15.3%) have been put on anti-hypertensive medicines through ART centers.55% were males while 45% were females. The commonest age group was between 35 to 45 years of age.

Conclusions/Next steps: NCD screening can be integrated into HIV care through standardized screening and management protocol. The early detection and management of hypertension and other NCDs among PLHIVs at ART Centres can help in reducing morbidity & mortality. This model for integrated services can be scaled up at all ART centers across the country.

EPE097

Advancing integration of cervical cancer screening and treatment in faith-based health facilities in Uganda

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Background: Cervical cancer is the most common cause of cancer death among African women, and the HIV epidemic intensifies this burden. Cervical cancer incidence is six-fold greater among women with HIV infection than the general population. In Uganda, a study found that uptake of screening among women living with HIV (WLHIV) was 30.3%; those who had never been screened cited lack of information (29.6%) and no time (25.5%) as the main reasons for declining screening.Uganda Episcopal Conference (UEC)—with support of Infectious Diseases Institute (IDI) in Kampala, Rakai Health Sciences Program (RHSP) in Masaka region, and the Ministry of Health (MOH)—integrated and scaled up cervical cancer screening and treatment of precancerous lesions in 20 health facilities.

Methods: A training targeting health workers from 20 health facilities was conducted using the MOH's strict selection procedure. A total of 64 health workers were selected and trained on visual inspection with acetic acid (VIA) screening and treatment of pre-cancerous lesions with thermocoagulation.

All trainees were followed up with mentorship and supervision to ensure they mastered the skills and were able to provide quality service. All facilities were supplied with equipment, supplies, and thermocoagulators; all implemented the service/intervention.

Results: During March—October 2021, 6,539 WLHIV were screened for cervical cancer using VIA, of which 103 (1.6%) were positive for precancerous lesions eligible for ablative therapy and 40 (0.6%) were referred due to suspected cancer. Of the 103, 56 (54%) were treated with thermocoagulation the same day. Challenges such as stock-out of supplies, interruption in HIV treatment, delayed supply of thermocoagulators, delayed training, and poor documentation due to lack of registers affected screening uptake initially, but these issues have been addressed.

Conclusions: Cervical cancer screening was successfully integrated into HIV programming in 20 health facilities on a large scale, indicating that screening and same-day

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treatment of cervical cancer are feasible in faith-based facilities serving WLHIV. This intervention might reduce cervical cancer mortality among WLHIV who do not know about or make time for cervical cancer screening.

EPE098

Integrating hepatitis B into HIV programs in low and middle-income countries: pilot program in Zambia

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Background: 60 million individuals in sub-Saharan Africa (SSA) are living with chronic hepatitis B virus (HBV) infection, but <5% are diagnosed and in care. Within the national ART program in Zambia, we have begun to integrate care and treatment for chronic HBV.

Description: With catalytic funding from The Hepatitis Fund, we piloted an HBV care model integrated with an HIV clinic in Lusaka, Zambia. We designated one half-day clinic session per week for people with HBV. Existing and visiting staff rotated through the HBV clinic, which was supervised by an expert clinician, to gain experience caring for patients.

Project ECHO, already used in the HIV program, was leveraged to deliver educational content and review cases. Lay and professional counselors providing rapid HIV testing were trained and equipped to provide rapid HBsAg testing. Pharmacy registers were adapted to track prescriptions of tenofovir-based therapy for HBV monoinfection; GeneXpert machines allowed for integrated HBV and HIV viral load (plus TB sputum) testing at the laboratory.

File case report forms, clinic registers, and other tracking systems were also created, building from those used with HIV-uninfected people accessing HIV pre-exposure prophylaxis. Index testing, which is widely used to find undiagnosed and out-of-care people with HIV, is also being adapted for HBV.

Lessons learned: From September 2021-January 2022, during 20 half-day HBV clinics, 224 patient visits occurred, reaching 169 people with HBV (median age, 35 years; 39.6% female sex).

People with HBV had been diagnosed and linked to the clinic after routine (77.9%; i.e., blood bank, routine medical check-ups, antenatal care, etc.) and clinically-driven (22.1%; i.e., signs and symptoms) HBsAg testing.

Among the 169, 120 (71.0%) underwent serum transaminase testing, 95 (56.2%) had HBV viral load, and 63 (37.3%) were prescribed tenofovir-based antiviral therapy based on local guidelines. Since inception, 30 mentee physicians and 10 nurses have participated, seeing an average of 10 clients (range 3-32) with HBV per mentee.

Conclusions/Next steps: We demonstrated the initial feasibility of a model of HBV-HIV care integration in a high HIV prevalence setting in SSA. Applying treatment criteria for HBV monoinfection requires consistent laboratory capacity. Lessons learned from this pilot can inform future scale-up.

EPE099

Integrated transportation modelfor uninterrupted access to TB and HIV diagnosis, treatment, and monitoring in Ukraine

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Background: In many regions of Ukraine, inefficient or nonexistent specimen transportation systems have caused delays in access TB and HIV diagnostics, treatment, and patient monitoring. The COVID-19 pandemic worsened this situation, as regions had to prioritize services to combat the COVID-19 pandemic, leaving TB and or HIV patients, particularly in remote areas, with limited access to services.

Description: To ensure regular and uninterrupted access to HIV and TB diagnosis, treatment, and monitoring, the USAID-funded Support TB Control Efforts in Ukraine Project (STBCEU) established a transportation model in project-supported regions in Ukraine. The transportation system delivers specimens for TB and HIV diagnosis and treatment monitoring, COVID-19 testing, and others, and also transports TB and ART drugs when required.

Established mainly to improve TB diagnostics, the system has adapted to work across disease areas, including HIV. The model was first introduced in Cherkaska oblast in June 2020, and now is functional in ten project-supported regions.

Lessons learned: From June 2020 through December 2021, 12,273 smear samples were delivered for TB diagnosis and 15,934 samples for treatment monitoring.

As a result, 2,117 patients were diagnosed with bacteriologically confirmed TB (17% of all bacteriologically confirmed cases in 12 regions during this period), including 655 patients with DR-TB. In addition to TB samples, the transportation system delivered 30,644 biological samples (15,936 HIV, 3,965 hepatitis B, C, and other opportunistic diseases) for diagnostics and monitoring.

The system also delivered TB and ART drugs to 1,500 clients every month. Two regions established local funding to sustain transportation system activities based on positive implementation results.

Conclusions/Next steps: The successful pilot of an integrated transportation system for biological samples and medications by STBCEU has helped maintain continuity of TB and HIV diagnosis and treatment services.

Based on these outcomes, STBCEU presented the model to national partners, and the National TB Program (NTP) plans to adopt and replicate the integrated transporta-

tion system using a Global Fund grant starting in 2022, using guidance and SOPs developed by STBCEU for country-wide implementation. The next step will be a cost-effectiveness study of the system to advocate for more sustainable funding.

EPE100
Cervical cancer screening and treatment among women living with HIV: experiences from in 4 counties in Kenya

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Background: Cervical cancer is global killer, and is the leading cause of cancer morbidity and mortality among women in Kenya, predominantly affects HPV unvaccinated HIV positive women more than those who are HIV negative or vaccinated. Cervical cancer is preventable and curable in early stages through primary, secondary and tertiary interventions involving vaccination, early diagnosis and treatment. Although countries have started exploring strategies to address awareness, prevention, screening and immunization and research in these areas is increasing, much remains to be done.
Description: USAID Tujenge Jamii (UTJ) is a 5 year USAID funded activity co-implemented with MOH in supporting 201 sites. Implementation is pronged approach of intervention which entailed: - training and mentorship of healthcare providers on screening all eligible clients using VIA, with subsequent treatment of precancerous lesions by cryotherapy or thermal ablation.
UTJ in addition supports routine line listing of eligible WRA between 18-49years, creating awareness through Health talks, data monitoring and system strengthening. The Outcome of interest was cervical cancer screening and treatment uptake before and after intervention.
Lessons learned: Of 30428 women WLHIV line listed between October 2020 and September 2021, 62% (n=19010) had been screened for cervical cancer. Of unscreened women (n=11418), 37.5% were aware of cervical cancer screening.
Overally the positivity was at 1.9% (361) of 19010 women Screened. Of 361 women tested positive, 38% (136) were treated. Cryotherapy accounted for 83% (113) 7% (10) for thermoablation and 10% (13) had LEEP therapy. A total of 5 clients were diagnosed with invasive form of cervical cancer and referred for specialist management. 134 clients were treated for infections upon re-evaluation by reproductive health experts. Of 74 not treated 9.4% (7) were LTFU, 9.4% (7) Declined, whilst 81% (60) still on follow up.
Conclusions/Next steps: Cervical Cancer Screening among high risk targeted groups shows improved case identification and early treatment of suspected lesions.
The journey towards improved uptake of screening must incorporate intensive peer to peer mentorship, integration of services alongside service areas like CCC and streamlined reportingtools to capture service delivery, diagnosis and treatment.

EPE101
Offering Hormone Replacement Therapy (HRT) helps improve retention in HIV care and viral suppression among transgender patients in Atlanta, Georgia, USA

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Background: In the United States, transgender people continue to experience heighted vulnerability to HIV, particularly transgender women of color, with 44% of Black transgender women estimated to have HIV.
Given the unique structural inequities faced by transgender people living with HIV, programs that specifically prioritize transgender people and improve outcomes across the HIV care continuum are needed to end the HIV epidemic among this community, particularly in the southern U.S.
Programs that address stigma, socio-economic barriers, and health literacy among transgender communities combined with gender-affirming clinical care show early promise in improving HIV-related outcomes for transgender people living with HIV.
We present the design and implementation of a gender-affirming care pilot project at Positive Impact Health Centers (PIHC), an HIV/AIDS service organization located in Atlanta, Georgia, USA.
Description: We offered gender affirming care in the form of hormone replacement therapy (HRT) to transgender patients receiving HIV care in PIHC clinics.
The goal of this pilot program is to improve our understanding of how incorporating gender-affirming care in the form of HRT into the clinical care of transgender patients living with HIV impacts retention and engagement in care, and ultimately viral suppression.
Lessons learned: After starting the HRT pilot program at PIHC, viral suppression rates among enrolled transgender patients living with HIV increased from 64% to 80%. Adding gender affirming care hormonal therapy to existing wrap-around services such as housing, case management, behavioral health, transportation, can help improve viral suppression among transgender people living with HIV.

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Conclusions/Next steps: Positive Impact Health Centers recently hired a new Gender-Inclusive Program manager and TransLife Care Specialist to help expand our organization's services that prioritize the health needs of transgender people in our region.

EPE102

Impact of continuous quality improvement on Ca Cervix Screening at Naivasha Sub County, Nakuru Kenya

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Background: Cervical cancer remains a public health concern as being the 4th common with a devastating—impact on women, especially developing countries. In Kenya, cervical cancer ranks second common killer cancer after breast cancer accounting for 13% of cancer-related mortalities in the country. About 4802 women were diagnosed with a cervical malignancy in Kenya in 2018, with 2500 annual deaths, but only 3.2% screening uptake.
The current trends to reverse the cervical malignancy adopted by the country are HPV vaccination among under 10 years and mass cervical cancer screening, especially among WRA.
Description: Naivasha Sub County Health management team in collaboration with the USAID Tujenge jamii project implemented continuous quality improvement across its 4 high volume facilities.
A RE-AIM framework and implementation approach was adopted; Reach (R)-Proportion of health facilities scaling up Cacx screening and HIV infected WRA accessing screening services, Efficacy (E)-Impact of Health care worker peer to peer mentorship towards CaCx screening scale-up among HIV WRA, Adoption (A)-Proportion of health care managers adopting to peer mentors approach to improve screening uptake, Implementation (I)-Core elements and determinants of CaCx uptake among HIV infected WRA, and Maintenance (M)-Proportion of health facilities and health care workers sustaining 80% Cacx screening coverage among HIV infected WRA 25-49 years.
Lessons learned: Comparing a one year period before roll out of RE-AIM as the baseline and during RE-AIM for the 4 high volume site, there was a significant improvement with a growth from 13% (325/ 2034) ca cervix uptake to a 90% (1838/2034) increasing 7 times by January 2022. Overally the positivity was at 2.3 %(46) of 2034 women Screened. Of 46 women tested positive, 43.5% (21) were treated. Cryotherapy accounted for 43.5%(20) and 2.2% (1) done for thermoablation and no LEEP therapy. 1 client was diagnosed with invasive form of cervical cancer and referred for specialist management. 23.9% (11/46) clients were treated for infections upon re-evaluation by reproductive health experts. Of 3 not treated 1 was LTFU and 2 Declined.
Conclusions/Next steps: A peer led on site mentorship and approach to improve service delivery and uptake of CACX screening showed adoptability and home grown innovative approaches to scaling up performance in health care programs.

EPE103

Support of HIV treatment initiation and ART adherence among needle and syringe program participants

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Background: Expanding of HIV treatment for PLWH who use drugs with provision of NSP and OST are essentials elements of HIV response. Our purpose was enrolment of regular NSP clients in ART and support of its continuation.
Description: Minsk region with 1473000 population. In 2021 there were registered 3818 PLWH and 1314 PWUD. NSP fixed site as well as OST and drug detox centers operated in our clinic during 11 years. We provide HIV prevention (provision of sterile injecting equipment, information and education materials) and testing (rapid oral and blood tests) with referrals to HIV and drug treatment. NSP site staff (doctor, nurse, psychologist, social worker) cooperate with outreach workers from peer-based NGO, epidemiologists, infection disease doctors. In 2021 we provided services to 1705 clients and distributed 20902 syringes, 17000 needles, 11800 alcohol wipe, 6156 disinfectant tablets, 7038 male condoms.
Because of opioid overdose deaths growth (140 in 2021) site provide naloxone (460 ampules, 1100 prescriptions). For 795 clients reported as previously HIV+ tested staff contacted with infection disease doctors. Only 695 registered with HIV diagnosis. 280 registered PLWH received ART on first visit to clinic and just 195 of them have VL suppression.
As incentives for HIV diagnosing and start of ART we provide psychologist or psychiatrist consultation (465 clients), treatment of opioid withdrawal (1169), referral to OST program (155). On the last visit 415 PLWH clients received ART and 330 of them have suppressed VL. 910 PWUD who have no HIV record underwent HIV testing. 13 who tested positively received diagnose, doctor consultation and start ART with help of social worker and peer.

Lessons learned: Access to drug treatment services is one of the best motivation PLWH clients of NSP program to start ART and adhere to it. Main barriers were registration of PWUD seeking treatment, high threshold OST regulation and drug user stigma among health care specialists.

Conclusions/Next steps: We plan to include HCV testing and referral to treatment both with HCB vaccination for NSP clients as additional goals of this year project. Close work with infection disease professionals, primary health care services and peer-lead NGO would be key elements of project success.

EPE104

Engaging U.S. behavioral health clinicians in HIV prevention: Collaborating for PrEP

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Background: The role of medical clinicians in providing HIV pre-exposure prophylaxis (PrEP) is well-established, and these clinicians are often the focus of PrEP education. Engagement of behavioral health clinicians in PrEP education and programs has been less well described, despite the role of these clinicians in addressing potential barriers to PrEP uptake and adherence, including stigma, mental health conditions, and substance use disorders.

Description: In 2020, as part of a federal initiative to foster HIV prevention in U.S. federally-qualified health centers, the National LGBTQIA+ Health Education Center of The Fenway Institute in Boston, Massachusetts, delivered a 12-session virtual training program on PrEP for health center staff in high-HIV-burden locations identified in the federal government's Ending the HIV Epidemic plan.

Training topics included PrEP prescribing; integration with behavioral health and substance use disorder treatment; PrEP for adolescents, sexual and gender minority people, and people who inject drugs; and adherence. Behavioral health and medical clinicians were invited to participate. Participants completed a baseline survey about their experiences with and knowledge about PrEP.

Lessons learned: Seventeen health centers participated in the program. Forty-five participants completed the baseline survey, of which 25 (56%) were medical clinicians, 9 (20%) were behavioral health clinicians, and 11 (24%) had other roles. Of behavioral health clinicians, 13% rated their capacity to discuss PrEP as high or very high, and 38% considered their capacity to guide patients on how to discuss PrEP with medical providers as high or very high. In contrast, a majority of behavioral health clinicians ranked their ability to provide culturally competent care for sexual and gender minority people, people who inject drugs, and members of racial and ethnic majority groups as high or very high.

Qualitative data from the baseline survey indicated that behavioral health clinicians sought to learn how to incorporate discussions of sexual health and HIV prevention into their work.

Conclusions/Next steps: Behavioral health clinicians at U.S. health centers in high-HIV-burden areas are committed to HIV prevention and have unique strengths in caring for people at increased risk for HIV. PrEP education and scale-up efforts should engage behavioral health clinicians.

EPE105

Sexually transmitted infections among clients seeking both pre-exposure prophylaxis (PrEP) and non-PrEP services at key population-led and -friendly private clinics in Vietnam

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Background: Sexually transmitted infection (STI) testing and treatment is an essential component of key population (KP) healthcare in Vietnam. HIV pre-exposure prophylaxis (PrEP) further routinizes STI screening among KP.

The USAID/PATH Healthy Markets project has supported KP-led and KP-friendly private clinics to integrate STI screening, diagnosis and treatment as part of routine care and PrEP services.

Description: PrEP users in five KP-led and KP-friendly private clinics are screened for syphilis using a rapid diagnostic test (RDT) every three months. If the RDT result is positive, a blood sample is sent to a specialized lab for confirmatory testing using a Treponema pallidum hemagglutination (TPHA) test. Nucleic acid amplification testing (NAAT) is used as gold standard for chlamydia and gonorrhea testing. Due to high costs, this is offered to PrEP users every six months.

Samples collected from oropharyngeal, anal and urethral or vaginal swaps, together with a urine sample, are pooled by specialized labs offering NAAT. Confirmatory results are sent back to PrEP providers for client counseling and treatment.

Lessons learned: From October 2020 to November 2021, 6,380 clients at KP-led and KP-friendly private clinics sought testing for STIs: 14.4% were diagnosed with either syphilis, gonorrhea or chlamydia (8.3% syphilis, 7.6% gonorrhea and 4.9% chlamydia). 90.0% of clients diagnosed with one or more STI were men who have sex with men.

Among PrEP users, syphilis and gonorrhea infection were significantly higher (12.0% and 25.5%, respectively) than among non-PrEP users (8.0% and 6.6%, respectively).

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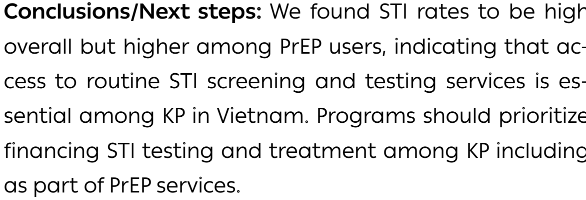

Conclusions/Next steps: We found STI rates to be high overall but higher among PrEP users, indicating that access to routine STI screening and testing services is essential among KP in Vietnam. Programs should prioritize financing STI testing and treatment among KP including as part of PrEP services.

EPE106

Increasing syphilis testing coverage in antenatal care by 70% in Ghana: lessons from the rollout of dual HIV/syphilis rapid diagnostic tests

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Background: WHO recommends the use of dual HIV/syphilis rapid diagnostic tests (dual tests) as the first test in antenatal care (ANC) to prevent mother-to-child transmission (MTCT). Scaling-up use of dual tests and achieving 95% syphilis testing coverage is a priority in Ghana's triple elimination strategy for HIV, syphilis and hepatitis B virus (HBV). Here we describe lessons learned from the initial implementation.

Description: In 2018, the Ghana Health Service, through the National AIDS/ STI Programme, began introducing the dual test and fully adopted the WHO guidance for using dual tests in all ANC sites in 2020. From the beginning, key stakeholders, including community groups, were engaged in planning dual test introduction and scale-up. A verification study was completed to select the correct dual test for the national algorithm. Quantification and procurement of the selected test kits was followed by training of service providers. The national rollout began in October 2020.

INDICATOR	2018	2019	2020	2021
ANC Registrants	938779	936253	980822	985457
Number Tested for HIV	867,263	869,615	861,030	924,584
Number Tested for Syphilis	496,665	562,312	686,176	894,983
HIV Testing Coverage	92%	93%	88%	94%
Syphilis Testing Coverage	53%	60%	70%	91%
% gap between number tested for HIV and Syphilis	39%	33%	18%	3%

Table.

Lessons learned: Following the initial introduction of the dual test, between 2018 and 2021, syphilis testing coverage increased from 53% to 91%. Overall, syphilis testing coverage in Ghana increased by 70% and the gap between HIV and syphilis testing coverage was virtually eliminated over this period. Healthcare workers reported dual tests were very convenient to use, and the national program found dual tests reduced overall quantification and procurement costs by at least 16%. Broad and extensive stakeholder engagement was essential for the success of the dual test rollout.

Conclusions/Next steps: Adoption of the dual HIV/syphilis rapid diagnostic test in ANC is feasible and critical in improving syphilis testing coverage. Ghana's early adoption of the dual test has accelerated progress toward national targets within the triple elimination strategy.

National programs should establish robust systems to facilitate rapid evaluation, adoption and scale-up of innovative tools such as the dual test.

EPE107

Systems analysis and improvement approach for hypertension for people living with HIV

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Background: Undiagnosed and untreated hypertension (HTN) is a main driver of cardiovascular disease (CVD) in sub-Saharan Africa. As survivorship of people living with HIV (PLHIV) increases with improvements in ART access, HIV-HTN comorbidity is expanding. While HIV treatment is integrated into primary care, access to HTN services are suboptimal, resulting in uncontrolled HTN among comorbid patients.

A hybrid type III parallel cluster randomized controlled trial is underway in Mozambique to assess the effectiveness of the Systems Analysis and Improvement Approach in improving HTN care cascade outcomes (SAIA-HTN), including HTN screening, HTN management, and controlled HTN.

Description: SAIA-HTN includes 16 facilities (eight intervention, eight control) in central Mozambique, with a focus on integrating HTN services into the HIV treatment platform. Healthcare teams use cascade analysis to diagnose HTN care cascade inefficiencies for PLHIV, process mapping to identify potential workflow modifications, and continuous quality improvement (CQI) to iteratively test context-appropriate, low-cost solutions.

Facility-level work is supported by study nurses with guidance from public-sector clinical leaders. Principles of human-centered design were used to establish a system for collection and use of HTN care cascade data, including adaptation of existing patient forms and facility-level data flows.

Lessons learned: Patient forms, developed with Ministry of Health support, were introduced in 16 facilities in central Mozambique to provide data on the HTN cascade.
Sixteen CQI cycles across eight intervention facilities supported facility-led identification of inefficiencies in care delivery and iteratively tested solutions to improve care performance. Data efforts focused on defining workflows, improving data availability and quality, patient education and communication among facility staff.
The patient forms are being used to lay the groundwork to expand SAIA-HTN in real-time to an additional province in southern Mozambique, jointly led by Eduard Mondlane University, the Mozambican National Institute of Health and the Ministry of Health.
Conclusions/Next steps: Routine data systems that collect HTN care cascade data are needed to improve delivery of HTN services for PLHIV and assess if sustained improvements in HTN care cascade outcomes are achieved.
Initiating the expansion in overlap with SAIA-HTN allows for a rapid translation of this finding.

Strategies to enhance U=U communication and implementation

EPE108
LGBTQ affirming care may increase awareness and understanding of "Undetectable=Untransmittable" (U=U) among midlife and older gay and bisexual men in the US South

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Background: Healthcare providers are an important point of contact for dissemination of the U=U message, however not all providers are comfortable delivering this information and patients may not disclose their sexual behavior to providers they perceive to be nonaffirming.
In this study we examine whether having an LGBTQ affirming healthcare provider increases U=U awareness, belief, and understanding among midlife and older gay and bisexual men in the US South, a region where new HIV infections are increasing and undiagnosed cases remain high.
Methods: We use data from the Vanderbilt University Social Networks Aging and Policy Study (VUSNAPS) on 676 sexual minority men aged 50 to 76 from four Southern US states--Alabama, Georgia, North Carolina, and Tennessee--collected in 2020-2021.

Results: Only one in four (25.4%) of older sexual minority men had heard of the U=U concept. U=U awareness was higher for HIV positive men (56.3%) compared to HIV negative men (17.5%). Two thirds (64.8%) of respondents identified a primary or secondary healthcare provider as LGBTQ affirming. HIV positive men were more than 7 times more likely to identify their healthcare provider as LGBTQ affirming compared with HIV negative men (OR=7.10; 95% CI=3.94-12.80.
In logistic regression analyses adjusting for respondent characteristics and geographic variation, we find that HIV negative men with an affirming care provider were more than 3 times more likely to have heard of U=U (OR=3.13; 95% CI=1.75-5.61), 1.5 times more likely to believe U=U (OR=1.53; 95% CI=1.02-2.30), and more than 2 times more likely to have ever tested for HIV (OR=2.26; 95% CI=1.38-3.72) compared to HIV negative men with a non-affirming provider. Having an LGBTQ affirming healthcare provider also improved risk perception accuracy among HIV negative men.
Among those with an LGBTQ affirming provider, 21.2% heard about U=U from their healthcare provider compared with just 8.7% among those with a nonaffirming provider.
Conclusions: Awareness of U=U among older sexual minority men in the US South is substantially lower compared with other samples of men who have sex with men. Improving access to LGBTQ affirming healthcare may improve U=U awareness, belief, and understanding, which could help to curb HIV transmission in the US South.

EPE109
Talking about treatment-as-prevention and U=U: patient needs and health worker perspectives

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Background: People who are virally-suppressed cannot transmit HIV sexually. While the science of HIV treatment-as-prevention (TasP) is clear, this message has not been disseminated widely in sub-Saharan Africa, limiting its value in motivating treatment uptake, adherence, and retention HIV care.
We sought to understand the TasP communication needs of persons living with HIV (PLHIV) and barriers and facilitators to TasP communication among health care workers in South Africa.

Methods: As part of an ongoing randomized controlled trial, we conducted five focus group discussions (FGDs) with healthcare workers (N=42) including nurses and counsellors from primary healthcare clinics and counselling staff of non-governmental organisations supporting the HIV testing and treatment programs in the Gauteng and Free State Provinces of South Africa.

Additionally, three FGDs (N=27) were conducted with PLHIV recruited by snowball sampling through civil society organisations and we interviewed 27 PLHIV referred by HIV counsellors at primary healthcare clinics in Johannesburg. Interviews were conducted in May 2021, audio-recorded, transcribed verbatim, translated to English, and thematically analysed.

Results: While PLHIV participants had some knowledge about TasP, they expressed scepticism about the effectiveness of TasP. Knowledge about viral load (VL) suppression was an important validator and motivator for medication adherence. However, PLHIV expressed the need for guidance in communicating TasP, highlighting ongoing concerns around possible rejection by potential sexual partners.

Healthcare workers expressed discomfort with sharing the science of TasP due to concerns about patient non-adherence to ART and being responsible for ensuing HIV transmission. Healthcare workers worried that promoting TasP would undermine strong messaging on condom use to prevent other sexually transmitted infections. HIV counsellors expressed the need for communication tools providing simple, unambiguous, and consistent narratives for TasP and VL counselling, with visual and narrative support.

PLHIV and counsellors alike recommended a phased approach to communicating ART benefits, focusing first on attaining viral suppression and emphasizing condomless sex only after sustained viral suppression.

Conclusions: These data highlight the need for TasP communication support. Healthcare workers also need training and support to confidently and adequately communicate TasP, adapting the message according to the phases of PLHIVs' ART journey.

EPE110

Medical community attitude to U=U fact in Russia

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Background: It is widely recognized by the scientific and medical community that U=U is a very important step in the fight against stigma and discrimination of PLHIV. There are some barriers to the U=U implementation in Russia.

The study objective is to find out the attitude of infectious disease doctors to the U=U fact in Russia and identify factors, which hinder its implementation.

Hypothesis: Misunderstanding of the U=U message among infectious disease doctors can be a barrier to translate it to patients.

Methods: The study was descriptive. It was carried out in Google Forms as an online survey in September 2021. The questionnaire consisted of 10 questions with estimated length of 5 minutes.

The survey involved 122 respondents: doctors specialized in HIV from different regions of Russia. Their working experience with HIV was 1-35 years (median 7 years).

Limitations: most likely, the study involved doctors who are interested in the issue, and the results may look finer compared to the real situation.

Results: The majority of respondents (89%) are aware of the U=U fact, but only 56% translate it to their patients. 81% were able to exactly explain the U=U message, while the rest were inaccurate in its interpretation, and used the old definition assuming theminimum risk of HIV sexual transmission instead of zero risk.

An important issue is that doctors translate this principle to patients selectively. Only 38.5% inform all their patients about it.

Doctors translate the concept less often to elderly people (at 1.5 ratio) and to socially disadvantaged people (at 1.6 ratio).

The most common reasons of this fact:

- Unsure of patients to take ART correctly – 20%
- Not all patients have undetectable viral load – 20%
- Without condoms patients will not be protected from other STIs and pregnancy – 17%
- Viral load blips – 17%

Conclusions: The major part of doctors (89%) understand the U=U and can explain its essence (81%), but only 38,5% of those informed translate it to all patients.

The main reasons are not based on evidence, hence, a continuous medical education and awareness raising efforts are required to improve the situation and make practice correspond to the contemporary science.

EPE111

"We are equal": increasing service uptake through strategic communications

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Background: Mozambique has approximately 2.1 million PLHIV; 710,000 are men, of which only 62% are on ART. With our partner, Ipsos, PSI conducted qualitative research to identify Mozambican men's barriers to treatment. A key finding was that both men and their influencers associate ART with HIV. Men fear that being on ART would limit acceptance by peers, creating a key barrier to treatment uptake.

Methods: The "Somos Iguais" (We are equal) campaign was designed to reduce the negative associations with ART by normalizing PLHIV on treatment. From May-August 2021, 4,211 ads reached an estimated 30,496 people through TV and 16,131 through radio; over 20,000 were reached daily through social media. Key messages included "We are all the Same, the virus doesn't define us" and depicted people taking ARVs in daily settings around friends and family.

After 6 months of the campaign, a cross-sectional study was conducted reaching 2,285 people dispersed across Mozambique (60% PLHIV, 45% of whom were female and 40% non-PLHIV, 39% of whom were female) with an additional analysis of social media performance to assess the impact of the campaign on attitudes and beliefs about HIV and ART.

Results: 79% of respondents recalled messages from the campaign, with many respondents reporting preliminary steps towards behavior change as a result, including discussing HIV with someone else (54%) and seeking health services (21%). While three of the four most popular social media posts were unrelated to HIV, the fourth was a PLHIV testimonial video, illustrating similarities between the lives of PLHIV and non-PLHIV.

Analysis of social media interactions showed 82% of private messages requested information or help related to HIV; this was unrelated to whether the post contained HIV or non-HIV content. The testimonial videos by PLHIV received positive feedback, showing the power of this form of content to connect with audiences.

Conclusions: Breaking the association between HIV and ART is key to increasing men's uptake of treatment. Mass, mid and social media campaigns normalizing HIV treatment behaviors can play an effective role in changing attitudes and increasing service uptake.

EPE112

A muddled understanding of U=U: a perspective from PLHIV in Malawi and Zimbabwe

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Background: As viral load testing has scaled, healthcare workers (HCW) have been giving people living with HIV (PLHIV) information about viral load suppression (VLS) and its benefits. We wanted to know what PLHIV understand about VLS and whether its benefits feel pertinent to them.

Methods: We interviewed a total of n=786 adult PLHIV across Malawi and Zimbabwe using a 20 minute Computer Aided Telephone Interview (CATI) technique.

Results: 92% of PLHIV in Malawi and95% in Zimbabwe understand that viral load is the term used to describe the amount of HIV in the blood. 76% of PLHIV in Malawi and 90% in Zimbabwe understand that viral load can also determine how sick or healthy one feels.

When asked what factors PLHIV would consider as important when taking ARVs, 86% of PLHIV in Malawi and 79% in Zimbabwefeel that it is either important or extremely important that they won't pass on the HIV virus to a sexual partner. However only 32% of PLHIV in Malawi and 12% in Zimbabwe believe that PLHIV who take treatment every day will not pass on HIV to other people who they have sex with without a condom.

Concerningly, 17% of PLHIV in Malawi and 18% in Zimbabwe believe that once you have achieved viral load then it is not required to take ARVs anymore and 34% of PLHIV in Malawi and 47% in Zimbabwe believe that taking treatment everyday will lead to a cure.

Conclusions: PLHIV in Malawi and Zimbabwe are not yet receiving complete information about the benefits of ART and VLS, and an important minority hold misconceptions about VLS, including about its ability to prevent transmission, an important benefit to them. ART programs may be able to improve adherence by emphasizing these benefits in their patient communication.

EPE113

Impact of innovative patient- centred two-way digital communication and community-based proactive cohort management on improving retention of ART clients in Zambia

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Background: Zambia has high HIV prevalence; and Luapula Province had highest Interruption in Treatment (IIT) rate at 16%.

Description: Zambia Ministry of Health launched digital community-retention program, utilizing implementing partner Avencion, in Luapula Province across six districts. Objective; maintain ART patients on treatment and recover "lost patients" who had IIT. Of 45,745 ART patients in Luapula Province; intervention supported 15,810 ART patients at 17 sites (96% coverage): 64% female, 89% within 20-60 age range and 56% had mobile phones.

Methods: *Proactive community management:* Engaged ART patients in community before appointment, verified patient-locator data and reminded patients of appointments.

Improved patient-locator data: Of intervention ART patients; 58% had verified mobile number and 54% had new physical address recorded.

Digital communication and appointment monitoring: Digital attendance tracking, appointment SMS reminders, two-way communication enablers for patients and facility hotline.

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Improved customer care: Customer care training for health providers; weekly refresher trainings and customer service awards.

Lessons learned: Intervention supported patients experienced 771 IIT; reduction from 4,153 before intervention. Recovered 984 patients who had IIT and been "lost" before intervention started. 12 of 14 intervention sites posted decreased % IIT by Q4 FY21 while non-supported sites remained with high % IIT.

Reduced % IIT in all the sites supported by intervention.

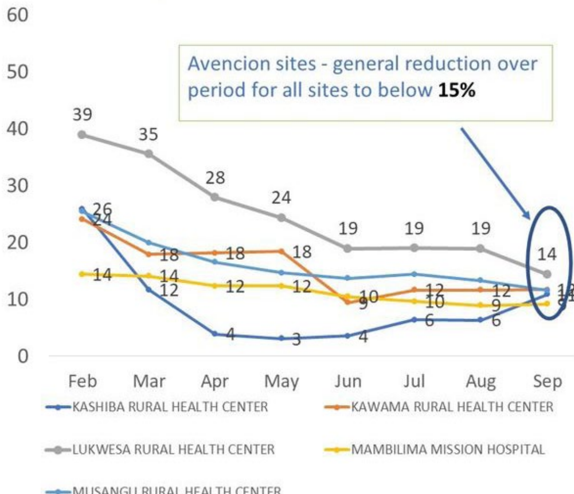

Figure. Analysis of intervention sites.

Non-supported sites remained with high % IIT; high of 67% and 22% average in province.

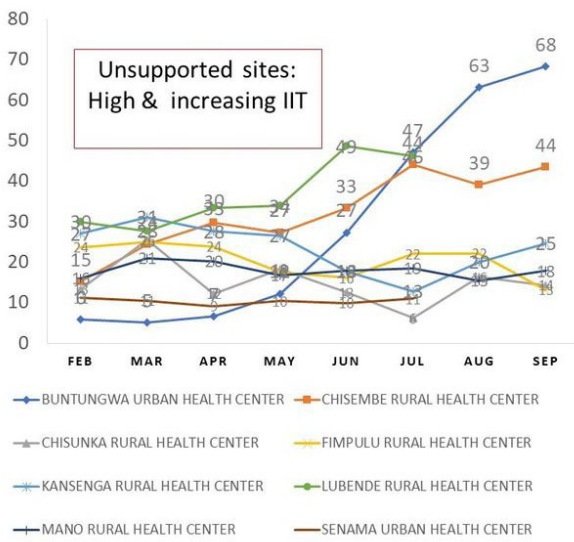

Figure. Analysis of non-supported sites.

Conclusions/Next steps: Intervention reduced % IIT in 12 of 14 supported sites analyzed and can be scaled to other facilities experiencing high % IIT; recommend scaling intervention.

EPE114
Following the science? Hesitation amongst healthcare workers to embrace U=U communication

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Background: Awareness that an undetectable viral load renders a person living with HIV (PLHIV) untransmittable (U=U) has the potential to revolutionize how PLHIV feel about treatment, liberating them from fear and providing the opportunity for condomless sex. Healthcare workers are trusted and critical communicators of U=U information.

Research was conducted in Malawi and Zimbabwe to understand how HCWs feel about the U=U message and their confidence with communicating it to PLHIV.

Methods: We talked to HCWS in Malawi and Zimbabwe, using a mixed method approach, including n=24 x 60 minute in-depth qualitative interviews and n=504 x 30 minute quantitative interviews with SRH/ HIV care Nurses & Nurse/ peer Counsellors. Survey responses were analysed to determine level of comfort with U=U and confidence with delivering the message.

Results: 99% of HCWs in Zimbabwe/ 96% in Malawi understand that viral load is the term used to describe the amount of HIV present blood. 96% of HCWs in Zimbabwe/ 91% in Malawi state that it is possible for a PLHIV to have an undetectable viral load.

However, only 11% of HCWs in Zimbabwe and 21% of HCWs in Malawi believe that it is possible for PLHIV to have condomless sex when they are virally suppressed and 13% of HCWs in Zimbabwe/ 18% in Malawi do not believe that it is possible for a virally suppressed PLHIV to be untransmittable.

When asked to rank the importance of delivering a set of messages to PLHIV at diagnosis, HCWs ranked U=U as the least essential message to convey, after daily pill taking, accepting status, always using a condom and the importance of disclosure.

Through qualitative interrogation, the reasons for feeling discomfort with passing the message that a virally suppressed person can have sex without a condom included the idea that it would 'give a PLHIV a license to conduct mischief' and concern over other STIs.

Conclusions: A key benefit of U=U is the ability to have condomless sex. However, HCWs feel uncomfortable to give this message to PLHIV. If U=U is to reach its full potential, health programmers need to ensure HCWs feel confident to deliver the full U=U message.

EPE115

U=U conversations in busy clinical practice: why and how to have them

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Background: Overwhelming evidence shows that viral suppression prevents sexual transmission of HIV, a concept commonly known as U=U due to a global messaging campaign. Despite scientific consensus and endorsement from leading public health, medical and nursing organizations, many providers are still selective or reluctant to discuss U=U with all patients.

Various community-led initiatives confirm knowledge of U=U can have profound positive impacts on a person's mental health and clinical outcomes.

Description: ANAC and the Prevention Action Campaign have joined forces to present a series of educational offerings to facilitate provider understanding of the role of U=U in patient's lives, how to integrate simple but tailored U=U messages in a busy clinical practice, and how to educate and engage all staff in this effort.

This skill building includes an understanding of the science, a review of providers' responsibilities, how to craft short, effective messages using supportive language. Participants explore motivators for engagement in care and common misperceptions and hesitations amongst providers.

Lessons learned: Providers underestimate the positive impacts on a person's mental health, quality of life and clinical outcomes impact of U=U

Short messages that can be delivered by various members of the healthcare team, across all disciplines and roles can be incorporated into on-going care.

The first-person descriptions of the value of U=U in people's experience by U=U champions are powerful messages and communication tools.

Conclusions/Next steps: Continue national & global webinars that feature partnerships between providers and U=U champions.

Support and expand the partnerships between local U=U campaigns, U=U champions and nursing/provider organizations.

Develop pocket tools on supportive language and sample messaging.

Implementation of HIV status-neutral approach to enhance HIV testing, HIV prevention and HIV treatment services

EPE116

DREAMS cascade in Botswana: findings and lessons learned

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Background: In 2020, adolescent girls and young women (AGYW) in sub-Saharan Africa accounted for 25% of all new HIV infections, more than three times higher than adolescent boys and young men. In Botswana, 2,200 AGYW acquired HIV in 2020. PEPFAR launched the Determined Resilient Empowered AIDS-free Mentored and Safe (DREAMS) partnership to reduce HIV risk for AGYW. We describe the implementation strategies and outcomes of the DREAMS initiative in Botswana and share lessons learned.

Description: DREAMS was scaled from two to eight districts (from four to 36 facilities) between October 2020 and September 2021. Each facility completed a readiness assessment and had a team of trained service providers (standardized training curriculum).

The program used various platforms (e.g., radio, TV, Facebook, and newspaper) for demand creation for DREAMS and PrEP. Community dialogues with stakeholders and beneficiaries were conducted to increase demand creation and reduce stigma associated with PrEP. DREAMS enrollment increased from 585 in October-December 2020 to 7,101 from July-September 2021.

During this period, 8,270 AGYW were eligible for DREAMS; 7,101 (86%) were enrolled. Among them, 5,979 (84%) were linked to safe spaces for psychosocial support and socio-economic empowerment. PrEP uptake increased from 13 AGYW in October-December 2020 to 1,258 in July-September 2021. More than 484 AGYW received support for gender-based violence, including 201/829 (24%) for sexual violence and 283/2,483(11%) for physical and emotional violence.

Lessons learned: In Botswana, DREAMS enrolment increased by more than 10-fold within one year. Strategies deployed during this period include integrating DREAM screening at every service point (e.g., PMTCT), streamlining data collection to reduce the burden on the client, training lay health workers to integrate DREAMS screening with other services. We also developed and implemented supportive, individualized case management services for AGYWs who declined or were not eligible for DREAMS. Case managers discuss barriers and play a role in linking AGYWs to additional services.

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Conclusions/Next steps: DREAMS reached thousands of AGYW in Botswana within one year. The inclusion of various demand creation activities, a structured approach to provision of DREAMS services, and the use of data to identify and solve implementation challenges were central to the scale up of DREAMS.

EPE117

The Impact of Community Centered Approach on HIV indicators in Samburu County, Kenya

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Background: Samburu County supported through Afya Nyota ya Bonde project is one of the ASAL regions, not performing well and subjected to internal performance improvement to improve uptake *of HIV Prevention*sub optimal indicators.

ANYB and Ministry of health initiated a Community centered approach as a component of rapid results interventions to improve on 4 indicators to allow increased access and ease availability of prevention, care and treatment services to the rural population at risk.

Description: The Community Centered Approach (CCAH) entailed CHVs supported by NEPHAK in Samburu mobilized through CHV Led pre-SURGE for sensitization and training on four indicators;

1. HTS-INDEX targeting household members with children below 18yrs,
2. HTS-SELF targeting all community members involved in high-risk behavior,
3. PREP-NEW and
4. CX-CA SCRN targeting HIV Positive women 15-49 years.

CHVs were allocated households for both family index testing and CA-CX Screening and an integrated outreach mobilization template was shared with the CHVs to support holistic mobilization for services in a household visit addressing fatigue and duplication of work.

Lessons learned: Comparing a ten-week periodpre-surge as the baseline and during surge for four sub-optimal performing indicators, there was a significant improvement in the % achievement against weekly targets for HTS INDEX testing growing from 21% to 87%, HTS SELF with a growth from 3% to above 100%, PREP NEW increasing 2.5 times to 249% of the expected target and CA-CX screening improving from 2% to 215% by March 2021.

Conclusions/Next steps: CCAH towards improving/upscaling of HIV Prevention and Care services in ASAL region using local HIV positive CHVs not only to upscale the uptake of services but provide solutions to long withstanding household and self-stigma. Good coverage on CA-CX Screening, PREP New, HTS Self Testing and Index Testing with sustained performance across the surge period.

Approaches to viral load monitoring at scale

EPE118

Enhanced adherence counselling (EAC) enrollment via phone: a strategy to improve timeliness of enrollment and completion of EAC among HIV-infected patients with high viral load at Nkwen Baptist Hospital, Cameroon

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Background: National guidelines for antiretroviral therapy (ART) in Cameroon recommend enhanced adherence counselling be provided for patients with high viral load before making a decision whether to switch ART regimens. Significant gaps exist in the timeliness of this intervention. We present EAC enrollment via phone as a strategy to improve timeliness of EAC, including its effect on viral re-suppression in the context of the covid-19 pandemic.

Description: The national HIV programme in Cameroon since 2019 has reinforced the implementation of EAC in all HIV care and treatment centres in the country. NBH has the second largest HIV clinic in the North West Region of Cameroon with 4500 patients.

This was a comparative retrospective observational study that involved patients with high viral load (HVL) enrolled in care and treatment at Nkwen Baptist Hospital (NBH)as at June 2021. The electronic patient register (DAMA) was used to extract information on the timeliness, completion of EAC, outcome of repeat results, while information on modality of EAC enrollment by phone or face-face was extracted from patient files.

Lessons learned: Of the 103 clients eligible for EAC only 93 completed 3 EAC sessions. Of these, 56 received EAC1 physically (54%) whereas 47 (46%) had EAC1 via phone. Overall 68 viral load (VL) results were received (91%) and out of this 53 were suppressed (78%).

Out of those enrolled physically 48 (86%) completed 3 EAC sessions, 38 (79%) had repeat VL sample collection, 35 (92%) results were received with 26 suppressed (74%).Of the 47 enrolled via phone, 45 (96%) completed 3 EAC sessions, 37 (82%) had repeat VL sample collection, 33 (89%) results were received, 27(82%) had suppressed VL.

Average time to completion for patients enrolled physically was 123 days, average time of completion for patients enrolled by phone was 92 days.

Conclusions/Next steps: Enrollment of patients with high viral load on EAC by phone is an effective strategy and has the potential of scale up to improve the uptake, timeliness and completion rates of EAC especially in the context of covid-19 where reduction of face-face contact is important in infection prevention control.

EPE119

Applying a seven-step approach to rapidly improve viral load testing coverage: lessons from Burundi, Nigeria and Togo

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Background: Viral load (VL) monitoring is the preferred approach for monitoring treatment outcomes for people living with HIV on antiretroviral therapy. Globally, VL testing coverage falls short of the 95% benchmark and in 2021 was only 73%, 69%, and 35% in Burundi, Nigeria, and Togo, respectively.

The FHI 360 Viral Load Action Group worked with three FHI-360-supported projects (RAFG Burundi, #EAWA Togo/Burkina Faso, SIDHAS Nigeria) to implement a seven-step approach to examine barriers to VL testing coverage, develop and implement tailored plans to address barriers, and track progress to achieve optimal VL coverage.

Description: We implemented the following steps:

1. Developed the VL testing service chain framework to guide identification of and address gaps.
2. Developed a 31-item VL testing coverage gap diagnostic tool in MS Forms™ to identify barriers at each step in the VL service chain.
3. Developed an interactive analytic and visualization tool in Excel™ using PowerQuery™ and PowerPivot™ to generate graphs and tables.
4. Applied the VL diagnostic tool in 10 provinces in Burundi, three regions in Togo, and two states in Nigeria.
5. Used the data analytics and visualization tool to map gaps, decide which sites to prioritize, and develop VL testing surge plans tailored to the largest gaps
6. Implemented the VL testing surge plans
7. Tracked progress and provided feedback

We conducted a pre- and post-intervention analysis using routine data from the three projects to determine the impact of these interventions.

Lessons learned: On the Burunid project, VL testing coverage increased post-intervention from 34% in March 2021 to 83% in August 2021 at an average of 9.0% per month compared to 5.8% per month pre-intervention (p–value=0.01). In Togo, coverage increased from 6% in October 2020 to 93% in August 2021, with an average growth of 9.9% per month post-intervention (p–value=0.34).

On the Nigeria project, coverage increased from 61% in October 2020 to a peak of 94% but dropped to 78% at the end of August 2021.

Conclusions/Next steps: The multi-step, structured approach tailored to country context improved VL testing coverage significantly. When scaled up, this approach could help close global VL testing coverage gaps.

EPE120

HIV drug resistance testing gap in Malawi's HIV programme advocates for increased local genotyping capacity

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Background: Between 2019-2021, full transition to dolutegravir-based regimens took place in Malawi's HIV program. National guidelines were adjusted to require confirmation of HIV drug resistance (HIVDR) for patients on dolutegravir and protease inhibitor-based therapy before switching to next-line regimens.

Description: Malawi implements routine viral load (VL) monitoring at 6 months after ART initiation and yearly thereafter. Confirmed virological failure is defined as: VL result >1,000 copies/mL followed by second VL result >1,000 copies/mL after 3 months adherence support.

For patients with confirmed virological failure, guidelines require submission of a standardized case form to the national HIVDR committee to determine eligibility for HIVDR testing. Eligible samples are currently genotyped in South Africa as capacity at the national reference laboratory is not yet available.

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Lessons learned: Using data from quarterly Ministry of Health reports and laboratory information management system (LIMS), we estimated that VL coverage (routine VL results/patients on ART, mid-period) during October 2020-September 2021 was 64%. Comparing VL data from LIMS with submissions to the national HIVDR committee in the same observation period, we observed a large unmet need of HIVDR testing among patients with confirmed virological failure (Figure).
While >3,500 patients were eligible, only 174 (5%) applications for HIVDR testing were received. Contributing to this gap are clinician-related factors (insufficient guidelines knowledge, low motivation to complete HIVDR testing applications) and systems-related factors (long VL result turn-around times). Only 52% of submissions resulted in HIVDR testing, mainly through rejections (poor adherence to ART; incomplete documentation) or suspension of sample transport to South Africa during Covid-19 waves.

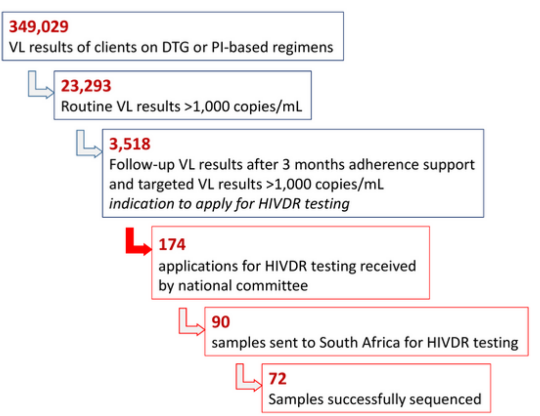

Figure. HIVDR testing gap in Malawi's HIV program, October 2020 - September 2021.

Conclusions/Next steps: Malawi's current HIVDR policy does not meet the high need for genotyping after transition to dolutegravir-based regimens and increased VL testing coverage.
Sufficient in-country HIVDR testing capacity, rapid communication of VL results and capacity building among ART providers may contribute to closing Malawi's HIVDR testing gap.

EPE121

Comparison of phone based and in-person adherence counseling for non suppressed PLHIV on anti retroviral therapy (ART) in military facilities in Uganda.

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Background: Military personnel on anti retroviral therapy (ART) are often deployed in hard to reach areas with limited access to routine in person clinical encounters including adherence counseling. Intensified adherence counseling (IAC) has been recommended as the first intervention for people living with HIV (PLHIV) on treatment with non suppressing HIV viral load (VL). The COVID-19 pandemic created challenges of travel and need to avoid crowding within hospitals.
In this study we compared outcomes of IAC sessions conducted in-person and through phone among PLHIV not suppressing while on ART at Military managed health facilities.

Methods: This was a retrospective comparative study that used data from chart reviews and adherence counseling records from January to December 2021. In total 62 PLHIV with a non suppresed HIV VL were randomly sampled from four military ART clinics.
Descriptive statistics and chi square test were done to compare proportions of those who achieved viral suppression after 4 to 6 months of IAC, each session conducted about one month apart. HIV VL suppression was defined as a VL of <1000 copies/ml.

Results: Of the 62 participants, 17(27%) were female, average of 39 years(SD 9.76), on treatment for an average of 5 years. 50% were on a 1st lime regimen of TLD, 20% were on TLE based regimen while 33% were on a second line regimen that included a protease inhibitor.
The CD4 counts, ART regimens, HIV VL levels and adherence ratings were not significantly different between the groups at baseline.
The follow up HIV VL tests showed no statistical difference in proportion achieving a suppressed VL among the in-person compared to phone IAC. (55% among in-person group compared to 50.4% among phone based groups [p<0.61]).

Conclusions: Among PLHIV with non suppresed VL, those receiving IAC through telephone did not have significant difference in suppression compared with those who had in-person IAC. A trend towards better outcomes with in-person IAC was noted.
Phone based counselling is an option to deliver IAC for non suppressing PLHIV in hard to reach areas and to reduce crowding at health facilities, though caution needs to be taken. A larger study is recommended.

EPE122

Promising association between caregiver and pediatric viral load outcomes. Key Interventions to Develop Systems and Services (KIDSS) - Orphans and Vulnerable Children Project - Cameroon

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Background: Viral suppression among HIV positive individuals remains a key focus for PEPFAR in line with UNAIDS 95-95-95 goal. Using a case management approach, the KIDSS OVC projects supports C/ALHIV and HIV positive caregivers to ensure treatment adherence, continuity of ART and attainment of viral load suppression. Given central role of caregivers for C/ALHIV's adherence and suppression, we sought to understand the association between caregivers' and C/ALHIV's viral suppression.

Methods: Retrospective cohort study reviewed electronic program data from C/ALHIV enrolled in the KIDSS program and their adult caregiver living with HIV.

The study population included all C/ALHIVwith a valid viral load test result and whose HIV positive caregivers also have a valid viral load test result.

The primary outcome measure was viral non-suppression among children, defined as viral load of ≥1000 copies/mL. The independent variable was caregiver viral load suppression.

Results: Based on sampled 664 C/ALHIV whose caregivers had VL results, 638 children were living with CG with suppressed VL out of which 547 (86%) CLHIV were suppressed and 91 (14%) CLHIV unsuppressed. On the other hand, 26 C/ALHIV were living with caregiver who had unsuppressed VL resulting 14 (54%) of C/ALHIV had suppressed VL while 12 (46%) were unsuppressed see table 1.

Children mean age was 9 years and majority of caregivers were female. These findings demonstrate a statistically significant association between caregiver viral load outcome and those of C/ALHIV VL outcome with a P value <0.001.

Conclusions: Among caregiver–child pairs in which both members were living with HIV, children were more likely to not be virally suppressed if their caregivers were not virally suppressed, compared to children with suppressed caregivers.

Addressing barriers to caregivers' viral load suppression (socioeconomic, food insecurity, disclosure status etc)may benefit C/ALHIV's viral load suppression, while also ensuring C/ALHIV has support of a healthy caregiver. OVC projects should be deliberate in supporting HIV+ CG in adherence to attain VL suppression which is associated with better VL suppression in C/ALHIV.

OVC programs should advocate for health facility family centered service delivery models such as synchronized clinical appointments that promote continuity of treatment.

Innovations and lessons for supporting HIV prevention effective use and treatment adherence

EPE123

Review of Antiretroviral Therapy (ART) coverage in 10 highest burden HIV countries in Africa: 2015-2021

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Background: Africa is responsible for two-thirds of the global total of new HIV infections. South Africa, Nigeria, Mozambique, Uganda, Tanzania, Zambia, Zimbabwe, Kenya, Malawi and Ethiopia were responsible for 80% of HIV cases in Africa in 2014 according to the Joint United Nations Programme on HIV/AIDS (UNAIDS).

This study assesses antiretroviral coverage strategies implemented by these countries after the initiation of the 'Fast-Track strategy to end the AIDS epidemic by 2030'.

Methods: Data reported in this review were obtained from different e-bibliographic including PubMed, Google Scholar, and Research Gate. Key terms were 'Antiretroviral therapy', 'Antiretroviral treatment', HIV treatment, 'HIV medication, HIV/AIDS therapy. HIV/AIDS treatment + each of the countries listed earlier. We also extracted data on ART coverage from the UNAIDS database (https://api.worldbank.org/v2/en/indicator/SH.HIV.ARTC.ZS?downloadformat=excel). About 50 papers published from 2015 till 2021 met the inclusion criteria.

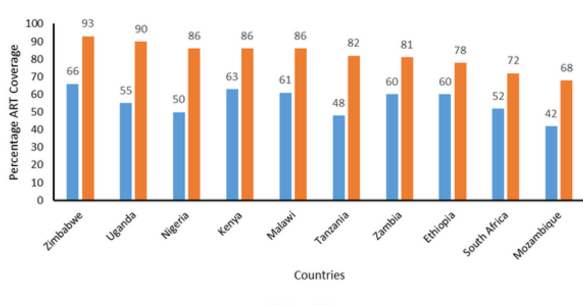
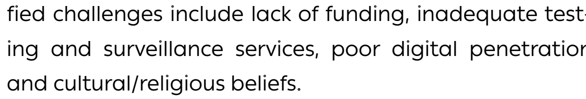


Figure.

Results: All ten countries have experienced an increase in ART coverage from 2015 to 2020 with an average of 47.6% increment. Nigeria recorded the highest increase in the rate of ART coverage (72% increase) while Ethiopia had the least (30%). New strategies adopted to increase ART coverage and retention in most countries were community-based models and use of mobile health technology (mHealth) rather than clinic-based. These strategies focus on promoting task shifting, door-to-door access to HIV services and long term supply of antiretroviral medications. Most of these strategies are still in piloting stage.

However, some new strategies and frameworks have been adopted nationwide in countries like Mozambique, Tanzania, Zambia, Zimbabwe, Kenya and Malawi. Identi-



fied challenges include lack of funding, inadequate testing and surveillance services, poor digital penetration and cultural/religious beliefs.

Conclusions: Adoption of community-based and digital health strategies could have contributed to the increased ART coverage and retention. African countries should facilitate nationwide scaling of ART coverage strategies to attain the 95-95-95 goal by 2030.

EPE124

Raising HIV awareness, fighting stigma and improving ART adherence using Recycled ARV bottles. Lessons learned

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Background: Adherence to ART is still low in Uganda. A study among adolescents receiving ART at the Joint Clinical Research Centre found that23% of patients hadan adherence of greater than 95%. The greatest challenge was identified as stigma partly because anti-stigma and adherence campaign messages have with time become monotonous. Pill Power Uganda (PPU) realized the urgent need to innovate unique ways of fighting stigma and improving adherence using cost effective approaches. PPU embarked on raising HIV awareness, fighting stigma and encouraging adherence through recycling of empty ARV bottles into household artefacts and souvenirs.

Description: In 2017, PPU formed three peer support groups of ten HIV positive young people at each parish in Hoima district. The young people were trained in recycling empty ARV bottles. The artefacts include flower vases, baskets, dust bins, lamp shades and wind chimes. The products are branded with HIV adherence messages and sold for an income to support the adolescents. While at it, their leaders share the importance of adherence and encourage the young people to share their successes and challenges so that they can learn from each other.

Additionally, PPU reserves trading stalls at weekly markets where the young people exhibit and hold ART adherence campaigns on busy market days.

Lessons learned: As a result of the campaigns, seven more peer groups were formed reaching 82 adolescents with adherence peer support and income advancement. The peer support, adherence meetings and unique income generating activity motivated the youths to shun stigma and collaboratively adhere to their mediation. The youths have registered 83% adherence.

Conclusions/Next steps: It is evident that innovative, unique, collaborative and cost effective approaches play a big role in raising HIV awareness, reducing stigma and promoting ART adherence among HIV positive young people. PPU plans to replicate the peer support groups to two more districts.

EPE125

Gaps and opportunities for strengthening HIV support in schools for youth living with HIV

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Background: As a result of optimized HIV treatment, youth living with HIV (YLHIV) have improved survival and are enrolled in schools. YLHIV spend most of their time in schools, making schools an important venue to optimize health and social outcomes.

Methods: We conducted surveys with secondary/high schools in Kenya to determine policies/practices and staff training on HIV. Selected schools were in counties with varying adult HIV prevalence (Homa Bay 21%, Nairobi 6%, Kajiado 4%). Chi-squared tests and logistic regression were used to compare policy availability and staff training by HIV prevalence and school type (day or boarding).

Results: Of 506 schools, we surveyed 97 (19%); (35, 37 and 25 in Homa Bay, Nairobi, and Kajiado, respectively). Many schools had boarding facilities (58 [60%]). Median student population was 400 (IQR: 200, 750]) and student:staff ratio 13 (IQR: 9, 16).

While 85% of schools required disclosure of chronic illnesses, only half (49%) had confidentiality policies with significantly higher frequency of policy availability in higher HIV prevalence regions (Homa Bay [91%], Nairobi [57%], Kajiado [32%], p=0.004). Similarly, while a majority (81%)

had clinic attendance policies; and policy availability was higher in higher HIV prevalence regions (Homa Bay [100%], Nairobi [81%], Kajiado [56%], p<0.001). Only 48 (49%) schools had medication use policies; significantly more in boarding than day schools (64% versus 28%, p=0.001).

Eighty percent of schools had staff trained in counseling, 32%, in HIV prevention 22%, mental health 31% stigma reduction, 36% psychosocial support, and 35% confidentiality.

Overall, 24 (25%) schools had staff dedicated to health, 11 (46%) of which had staff trained in HIV care/treatment. Boarding schools were more likely to have staff trained in HIV prevention/care/treatment compared to day schools (75% vs 25%, p=0.03).

There were significant regional differences in student populations, staff:student ratio and HIV training (all highest in Nairobi).

Conclusions: In this survey of Kenyan schools, there were notable gaps in HIV care policies and training, despite high HIV burden. Implementation of national policies on confidentiality, medication use, and clinic attendance as well as HIV training in schools may improve outcomes for YLHIV.

EPE126

Scaling up risk differentiated microplanning of female sex workers in varying geographic and socioeconomic contexts in Zimbabwe

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Background: HIV prevalence among female sex workers (FSW) in Zimbabwe is 57.5%. Microplanning has been successfully implemented in India and Kenya for intensive coverage of identified hotspots with frequent contacts to reinforce prevention and promote clinical services. We incorporated a simple risk assessment to better target services for improved engagement in the prevention and care cascades.

Description: We rapidly scaled up microplanning with FSW across 11 sites between June 2019 and August 2021. Programmatic mapping provided population size estimates (PSEs) for a mix of urban, semi-rural, mining, fishing, farming and university towns, some with high mobility. Risk was assessed using a 6 criteria matrix with frequency of outreach contacts for high risk 1/week, low risk seen 1/month.

Lessons learned: Accuracy and completeness of data collected for PSEs improved over time with new hotspots and individual sex workers identified. PSE for the 11 sites rose from programme attendance baseline of 3831, to 4667 in June 2020 and 5879 in June 2021. Engagement of FSW in microplanning increased almost 4-fold from 1951 (51% of baseline PSE) in June 2019 to 7394 (126% of larger updated PSE) by August 2021. First-time clinic attendance increased 6-fold from 877 (45% of 1951) to 5657 (77% of 7394) from June 2019 through August 2021. Frequency of outreach contacts was almost twice monthly overall, nearly three times monthly for high risk FSW.

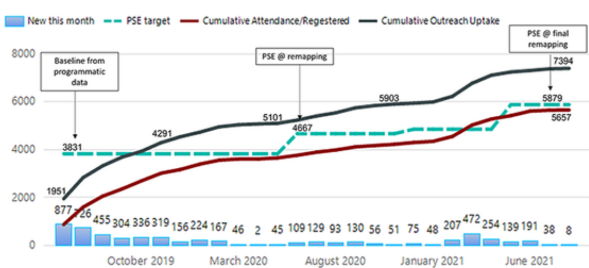

Figure 1. Clinic attendance and outreach uptake against population size estimate (PSE)

Conclusions/Next steps: Six-monthly programmatic mapping and data collection for PSE improved over time as microplanners gained knowledge of their hotspots. PSE updates together with quarterly assessments enabled better targetingp. Simple risk assessment proved feasible with those assessed as higher risk seen more often than lower-risk sex workers. Clinic attendance, both first time and repeat visits increased despite Covid-19 and funding disruptions. Microplanning is being scaled across 40 sites nationally with added focus on improving PrEP and ART uptake and adherence.

EPE127

Improving peer outreach through the engagement of people living with HIV in Nepal

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Background: With funding from the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) and the United States Agency for International Development (USAID), the Meeting Targets and Maintaining Epidemic Control (EpiC) project supports community partners in Nepal to close HIV service access gaps through an enhanced peer outreach approach (EPOA) involving incentivized peer referrals.

However, partners in Nepal have historically experienced lower than expected rates of new HIV case detection through EPOA—possibly because some of the key population peer mobilizers and network members engaged through this approach had already adopted preventive behaviors against HIV.

Description: By helping partners engage people living with HIV (PLHIV) in EPOA, the EpiC Nepal team saw an opportunity to complement index testing with expanded

options for PLHIV to make safe and voluntary peer referrals, improving the focus of outreach in networks with higher risk of HIV infection. At the beginning of FY20, the team ramped up efforts to identify PLHIV who were willing to serve as peer mobilizers such that in supported districts, most newly engaged peer mobilizers were PLHIV.

Lessons learned: With the expanded strategic engagement of PLHIV as peer mobilizers, participating partners experienced a tenfold increase in HIV case-finding rates through EPOA, from a baseline average of 2% of individuals tested, to a post-implementation average of 25% of individuals tested. From October 1, 2020 through September 30, 2021, 1,642 individuals were successfully referred to HIV testing services through EPOA, 457 (28%) of whom received a confirmed HIV diagnosis.

Among those diagnosed, 427 (93%) had already initiated HIV treatment services by mid-October 2021. Similarly, out of those screened negative, 650 individuals were referred for HIV pre-exposure prophylaxis (PrEP) services, and 370 (57%) of those referred initiated PrEP services through EpiC Nepal partners.

Conclusions/Next steps: The EpiC team has helped establish EPOA as a feature of Nepal's National HIV Strategic Plan (NHSP) 2021–26 and is now working with community organizations and a broader set of partners and stakeholders—including those receiving Global Fund support—to expand voluntary engagement of PLHIV as allies to help close gaps in service access.

EPE128

Improving male partners' involvement in HIV+ women's care in Malawi (WeMen study): a prospective, controlled before-and-after study

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Background: Several strategies and interventions have been implemented to improve male support or male partner involvement (MI) in Sub-Saharan Africa, but evidence on successful interventions is scarce. This controlled before-and-after intervention study aims to evaluate the impact of three different interventions on male partners' involvement in HIV+ women's care in Malawi.

Methods: Both before-and after-intervention periods, we enrolled HIV+ women with a stable partner and older than 18 years. We asked women to invite their male partners to the health centre for HIV testing and counselling and we administered an ad-hoc questionnaire to the woman at the subsequent visit to evaluate the following outcomes:

i. The number of women accompanied by male partners after invitation,

ii. Number of men accepting to be tested for HIV,

iii. Perceived partner involvement, and;

iv. Presence of gender-based violence in the family.

These data were collected in the pre-and post-analysis. Three interventions were implemented in three different clinics: the organization of a special day for men, the deployment of male champions in communities to increase awareness on MI and the use of a food package as an incentive for improving MI. A fourth clinic was considered the control center. We adopted a two-sample test of proportions to test the difference between outcomes and Kruskal-Wallis test to test the difference in the distribution of responses to indicator (iii) expressed with a Likert scale

Results: Overall, 461 women were included at the baseline and 483 in the post-intervention evaluation. Where the special day intervention was implemented, we observed an increase of 32.8 % in the number of women accompanied by their partners (from 48.5 to 81.4%), and 32.1% in the number of women feeling safe at home (from 63.5% to 95.2%) after the intervention.

This outcome increased after the deployment of male champions in communities (from 44.0% to 75.0%). In the site where the incentive was delivered to couples, we did not observe significant improvement in any outcomes.

Conclusions: Our findings showed that the special day for men and the use of male champions may be effective strategies to enhance male involvement in the health of their female partners.

EPE129

Acceptability of a motivational adherence intervention and point-of-care monitoring for perinatal women on ART with unsuppressed HIV viral load

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Background: The Promoting Adherence through Counselling and Testing (PACT) study sought to modify the standard Enhanced Adherence Counselling (EAC) approach for perinatal women experiencing elevated HIV viral loads (VL) by:

1. Reducing the VL threshold for action to 200copies/mL,
2. Providing point-of-care (POC) VL testing, and
3. Adopting a motivational EAC approach.

We report on the acceptability of this novel behavioural intervention (PACT) among service providers and clients using the Theoretical Framework of Acceptability (TFA).

Description: Women whose long-term HIV outcomes were being followed in the PEPFAR-PROMOTE observational study in Zimbabwe who had VL above 200copies/

mL were invited to enroll in the PACT study. Participants were randomized to standard EAC vs PACT intervention. In-depth interviews were conducted with service providers and clients at exit to assess acceptability, then transcribed, coded by two independent researchers and emergent themes identified.

Lessons learned: From the seven TFA constructs, *affective attitude* was positive with limited perceived *burden* of implementing PACT procedures on a large scale, as long as POC machines are within reach. The intervention was perceived as *effective* and was a good fit (*ethicality*), as most providers and clients preferred to wait for the POC results than to return later. *Intervention cohesion*, *opportunity cost* and *self-efficacy* were balanced out with some providers feeling they needed more training while it was adequate for others, or feeling time spent waiting for VL results was valuable time wasted.

In summary, service providers had relevant skills and experience to implement PACT intervention. The main challenge perceived by providers was time pressure due to higher numbers qualifying for EAC and longer sessions for the PACT approach. Advantages were potential for earlier action following sample collection and full client participation in motivational sessions. Clients were willing to wait to receive the POC VL result.

Conclusions/Next steps: Service providers valued the PACT intervention, in conflict with their concerns about added workload of conducting more VL tests and individualized adherence support.

Current human resources and lack of POC devices limit opportunities to improve the EAC process. Policy makers should consider adopting elements of the PACT intervention to promote sustained viral suppression among perinatal women with HIV.

EPE130

Assessing the feasibility and acceptability of dried blood spot tenofovir diphosphate-based adherence feedback: results from a pilot study of a cohort of South Africans on ART

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Background: Tenofovir diphosphate (TFV-DP) concentrations in dried blood spots (DBS) are an objective measure of adherence to antiretroviral therapy (ART) that predict future viral breakthrough. Research is needed to examine how people living with HIV (PLWH) understand, accept, and respond to concentration-based adherence and how this might affect adherence.

This pilot study of concentration-based feedback to PLWH examined feasibility, acceptability and preliminary impact on adherence.

Methods: The study sample consisted of 60 PLWH from four primary health clinics in Cape Town who attended study visits once a month for 5 months. At first visit, 30 participants were randomly assigned to receive concentration-based feedback at 4 subsequent visits, and 30 to no feedback. Descriptive statistics were used to characterize the study sample and determine feasibility and acceptability of concentration-based feedback. Feasibility was operationalized as the number of drug concentration results available to participants at subsequent visits. An exit interview assessed comprehension and acceptability of concentration-based feedback using a 5-point Likert scale with Strongly Agree and Agree combined into one category.

Results: Mean (SD) age was 40 (10.51), mean duration on ART at study entry was 6 (3.5) years, 85% were women. Of 112 total concentration-feedback visits, 109 (97%) results were available to participants at their next monthly visit. Exit interview data among 29 participants receiving concentration-based feedback showed that all participants thought that these results and the associated education they received was helpful to their adherence (pill-taking behaviors).

Among these participants, 88% reported changes to pill-taking behaviors (e.g., participants stating they became more aware of daily pill-taking behavior because they were receiving drug-level feedback). In the concentration-based feedback group, there was only one instance

of a concentration result being <400 fmol/punch (a value range predictive of future viral breakthrough) compared to 9 instances in the control group.

Conclusions: A TFV-DP concentration-based feedback adherence pilot study in Cape Town among PLWH showed high feasibility and high acceptability with most participants indicating they improved their pill-taking behavior in relation to receiving the feedback. Larger scale trials are needed to assess the effects of concentration-based feedback using TFV-DP on subsequent adherence and clinical outcomes.

EPE131

Effects of a multimedia campaign on HIV self-testing and PrEP outcomes among young people in South Africa: a mixed-methods impact evaluation of 'MTV Shuga Down South'

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Background: Innovative HIV technologies can help to reduce HIV incidence, yet uptake of such tools is relatively low among young people. To create awareness and demand among adolescents and young adults, a new MTV Shuga campaign entitled "Down South 2" (DS2), featured storylines and messages about HIV self-testing (HIVST) and pre-exposure prophylaxis (PrEP) through television, radio and accompanying multimedia activities in 2019-2020.

Methods: We conducted a mixed-methods evaluation to investigate whether and how the DS2 campaign works among 15-24 year-olds in Eastern Cape, South Africa, in 2020. A web-based survey, promoted via social media platforms of schools, universities, and communities, assessed MTV Shuga exposure and knowledge of HIV status; secondary outcomes included awareness and uptake of HIVST and PrEP. We used multivariable logistic regression to estimate associations between DS2 exposure and each outcome, adjusting for confounding factors. An embedded qualitative evaluation explored mechanisms of DS2 impact through deductive and inductive thematic analysis of in-depth individual and group interviews.

Results: Among 3,431 online survey participants, 43% engaged with MTV Shuga and 24% with DS2. Knowledge of HIV status was higher among those exposed to DS2 (71%) versus the non-exposed (39%; adjustedOR=2.26 [95%CI:1.78-2.87]) (See Figure 1).

Exposure was also associated with increased awareness of HIVST (60% vs 28%; aOR=1.99[1.61-2.47]), use of HIVST (29% vs 10%; aOR=2.49[1.95-3.19]), and awareness of PrEP (52% vs 27%; aOR=1.90[1.53-2.35]). Qualitative insights offered evidence of DS2's influence on awareness, confidence and motivation to use HIVST and PrEP, but limited influence on service access.

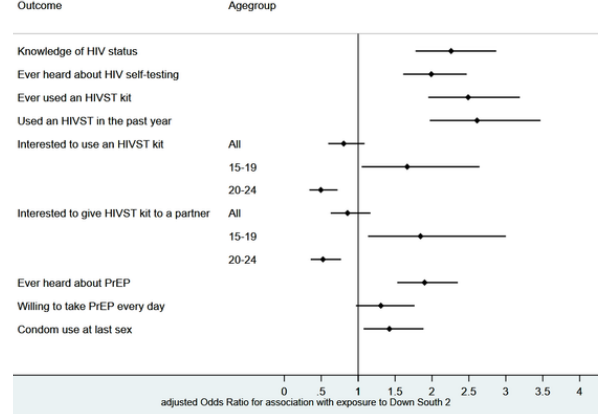

Figure 1.

Conclusions: We found evidence consistent with a positive causal impact of the MTV Shuga DS2 campaign on HIV prevention outcomes among young people in a high-prevalence setting. As diverse testing and PrEP technologies become accessible, an immersive edutainment campaign can expand HIV prevention choices and narrow the age and gender gaps in HIV testing and prevention goals.

EPE132

Who decides? Understanding patient and provider perspectives on decision-making related to HIV treatment to inform shared decision-making tools for long-acting injectable ART

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Background: As the HIV treatment landscape expands with new options for frequency and mode of delivery, people living with HIV (PLWH) and their providers are faced with multiple therapeutic choices. Recently approved long-acting injectable antiretroviral therapy (LAI-ART) will require decision making to determine "ideal candidates" and tailor implementation strategies.

We explored how patients and providers approach decisions about HIV treatment to inform shared decision-making tools for LAI-ART.

Methods: From November 2019 to April 2021, we conducted qualitative in-depth interviews with PLWH (n=71) and HIV care providers (n=32) recruited from three clinics in the eastern US as part of the Shared Decisions when Choosing between Long-Acting Injecting or Oral Therapy (SELIGO) study. Interviews were conducted in Spanish or English based on participant preference. Using a semi-structured guide, we elicited narratives of experiences with HIV treatment decision making and probed on preferences regarding LAI-ART. We analyzed data using narrative analysis and thematic coding with Dedoose software.

Results: Nearly all patients had changed their HIV treatment since initiating. Most viewed these changes as the result of their provider's recommendation rather than their own decision.Patients deferred to providers' recommendations because they trusted them as experts and considered it the provider's role to make decisions with their patients' best interest in mind. To decide about LAI-ART, patients would want to discuss LAI-ART effectiveness, side effects, logistical considerations, and fears about changing from a pill to an injection.

Providers perceived their role in decision making as providing information, facilitating buy-in, and offering advice. Some viewed patients as the "ultimate decision makers" while recognizing the tension between persuading versus informing patients. Providers emphasized the importance of providing information on LAI-ART effectiveness and "managing expectations" around the burden of injection schedules and oral lead-in, while considering patients' unique circumstances.

Conclusions: Accompanying introduction of LAI-ART with shared decision-making tools could facilitate a shift from patient deference to greater collaboration between PLWH and their providers. Findings highlight that shared decision-making approaches for LAI-ART need to provide information along with facilitating discussion of patient preferences and concerns, grounded in the context of their lives, to maximize the benefits of this treatment innovation.

EPE133

Lessons learned from the development and implementation of MARVIN: a bilingual artificial intelligence Chatbot for people living with HIV

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Background: People living with HIV find it challenging to access reliable information to actively self-manage their care, an accessibility issue exacerbated by the COVID-19 pandemic. Aiming to respond to this need, we have developed an artificial intelligence Chatbot (AIC) named MARVIN (for **M**inimal **A**nti**R**etro**V**iral **IN**terference) to provide remote access to streamlined and verified information on HIV care.

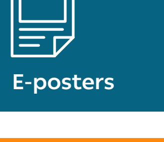
Description: MARVIN, an AIC available 24/7 in both English and French on Facebook Messenger**,** stemmed from a McGill University and Polytechnique Montréal (Canada) collaboration in January 2020. A multidisciplinary team of people living with HIV, developers, healthcare professionals, community organizations and researchers developed MARVIN following a participatory design approach.

Then, a usability pilot study took place, between April and November 2021, with 28 participants who could ask MARVIN about antiretroviral therapy (ART), vaccination/travel recommendations and general HIV-related knowledge. Finally, MARVIN was launched in Canada in December 2021.

Lessons learned:

1. Participatory design methods and patient engagement are paramount to project success. Continuous communication with MARVIN's users, from expert patients to focus groups participants, is key to align the project with their needs. The involvement of other stakeholders ensures the reliability of the project's delivery.

2. To ensure MARVIN's accessibility, ease of use and simplicity of implementation, we chose Facebook Messenger, a well-known platform to users and developers alike.



3. Confidentiality, privacy and data security are also major concerns. Considering the unique context of MARVIN, adapted privacy and usage policies regarding the processing of collected personal data are needed.
4) Pilot testing was essential to assess MARVIN's usability and acceptability while making iterative improvements based on participants' feedback.
Conclusions/Next steps: MARVIN is seen as a reliable virtual tool for verified information about HIV care. Women represented only 14.3% of pilot participants. Further evaluation is needed to identify any gender gap in the use of MARVIN and its associated factors. Next steps include to:
1. Orient future developments based on users' opinions,
2. Connect MARVIN with an up-to-date database on medication interactions and side effects,
3. Create triage tools to assess the needs of people living with HIV and offer guidance, accordingly.

EPE134

Advocacy for strengthening psychosocial intervention models to increase use and adherence of ARVs for MSM living with HIV in Indonesia

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Background: Before deciding to start and adhere to ARV treatment, MSM performs a risk calculation. Which mainly include the acceptance of sexual behavior and HIV before deciding to take ARV. Therefore, providing psychosocial interventions that involve a person's life journey when facing dilemmas related to sexual behavior, HIV positive status, and other challenges when starting or maintaining treatment is very important.
Description: This project used the Institute of Medicine's (2015) framework to generate evidence-based standards for psychosocial interventions. The intervention design consisted of 5 times direct group meetings with counselor and providing information without meeting. The goal is to improve self-acceptance and strengthening relationships with those closest to them.
These needs form 5 mandatory materials for the Support-RETENTION Group, namely:
1. Self-acceptance of sexual behavior;
2. Self-acceptance of HIV;
3. Living with ARV treatment;
4. Healthy romantic relationships;
5. Social support.
The provision of information through reading materials is still carried out to accommodate the needs of MSM in calculating the risk for ARV access as well as building trust within the group.
Lessons learned: Some lessons from the services needed by MSM in Indonesia.
1. The process of self-acceptance in MSM behavior and HIV is an important factor that requires special assistance and time before starting ARV;
2. The readiness of health services is an important factor for treatment adherence;
3. Mental health of MSM with HIV needs to be considered;
4. Peer support affects adherence to ARV treatment;
5. The provision of HIV services in Indonesia is not yet client-centered and still sees compliance issues as a one-dimensional problem.
Conclusions/Next steps: Recommendations for Ministry of Health:
1. Integrate mental health services in the HIV services;
2. Include the model into the current program;
3. Maximize the role and function of peer support groups to provide support and motivation for its members.

EPE135

Factors associated with viral load suppression after Enhanced Adherence Counseling in HIV seropositive clients with an initial high viral load in RISE facilities

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Background: Enhanced adherence counseling (EAC) is recommended by WHO for people living with HIV (PLHIV) with unsuppressed viral load (VL) >1000 copies/ml after prescribed antiretroviral treatment (ART) for > 6 months. The Reaching Impact, Saturation, and Epidemic Control (RISE) project funded by the U.S. President's Emergency Plan for AIDS Relief through the U.S. Agency for International Development supports 103 health facilities in Akwa Ibom, Niger, Adamawa, Cross River and Taraba states, Nigeria.
This analysis aims to determine factors associated with VL suppression (VLS) for PLHIV who enrolled and completed EAC session between July 2020 –June 2021.
Methods: This was a retrospective analysis of de-identified client level dataset of unsuppressed VL clients who were current on treatment at the end of July 2021 and subsequently enrolled to EAC program. A log binomial regression model was used to report crude and adjusted risk ratio with 95% Confidence Intervals (95% CI) and a

p-value of 0.05 to determine association between clinical characteristics and suppression of VL post EAC in RISE program (July 2020 –June 2021).

Results: A total of 1080 clients with initial high VL who completed EAC were included in this analysis out of which 987 (91%) were virally suppressed.The median time to completion of EAC was 12 weeks and the median time for post EAC VL test was 10 weeks.

Following EAC, males were 1.1 times more likely to have VLS compared to females (ARR = 1.0893, 95% CI: 1.0194-1.1639), and PLHIV enrolled in facility settings were 1.2 times more likely to have VLS compared to community settings (ARR=1.2145, 95% CI: 1.1031-1.3371).

Similarly, PLHIV who were not TB-co-infected were 1.2 times more likely to have VLS compared to PLHIV who had TB-coinfection (ARR=1.1774, 95% CI: 0.6477 -2.1402).

Conclusions: VL suppression after EAC completion on the RISE project surpasses the WHO 70% target. Findings shows that sex, ART enrollment setting, TB co-infection, and duration on ART were significant predictors of VLS. More targeted outreach of EAC amongst females, community clients and those with TB co-infection is necessary to ensure better VLS within these groups.

EPE136

Increasing men's access to HIV prevention, care and treatment services in Nampula, Mozambique

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Background: Mozambique has a generalized HIV epidemic, with 13.2% overall prevalence among adults aged 15-49 and 10.1% among men. Men lag behind in the 95-95-95 global targets and recognizing this challenge, the Ministry of Health (MOH) developed male engagement guidelines to improve demand and access for health services. ICAP worked in collaboration with Nampula Provincial Health Authorities (DPS/SPS) to contextualize national guidelines and develop a comprehensive package of targeted interventions, aiming to engage more men in health services at select health facilities (HF) and their surrounding communities in Nampula province.

Description: In October 2020, ICAP, Nampula DPS/SPS and HF leadership designed and implemented a combined package of male engagement interventions in 10 HF. Male engagement interventions included: identification and training of male champions to create demand among their peers for health services uptake at HF and community levels; identification and training of community and religious leaders to disseminate key messages within the community and religious institutions; expansion of HIV prevention, care and treatment services through mobile brigades at the community level and within workplaces to reach men with school or work commitments during the day. ICAP also partnered with the Social Communications Institute to disseminate key messages in local languages on community radios.

Lessons learned: At the selected HF, there was an increase in 40% (24,166/17,241) in HIV testing, 13% (1,560/1,385) in HIV case identification, 19% (106%/89%) in the proxy linkage, 7% (10,003/7,043) in viral load (VL) samples collected and 4% (92%/88%) in viral suppression (VS) among adult men between pre implementation (October-December 2020) and post-implementation (July-September 2021) period.

Conclusions/Next steps: Targeted demand creation and health literacy strategies using peers and key community actors, coupled with differentiated service delivery, including decentralization of services to communities and workspaces and extended hours at HF, has resulted in an increased number of men receiving HIV testing services and increased HIV case identification and linkage to ART services among men. As the MOH bolsters efforts to reach the 95:95:95 global targets, contextualized interventions to reach men are essential. ICAP will continue to expand male engagement strategies to other HF and communities within Nampula.

EPE137

Does intensity of exposure to an edutainment programme matter for HIV prevention? Findings from an evaluation of MTV Shuga in Eastern Cape, South Africa

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Background: MTV Shuga is an edutainment campaign designed to equip young people with skills and motivation to protect themselves from HIV. In 2019-2020, 10 episodes of a new series "Down South 2" (DS2) were broadcast via television and internet, alongside complementary media activities. We investigated whether intensity of exposure to DS2 was linked with positive HIV prevention outcomes in a high-prevalence HIV setting.

Methods: We analysed data from a web-based survey with 15-24 year-olds in Eastern Cape, South Africa, in 2020. The survey was promoted via social media platforms of schools, universities and communities. Intensity of exposure was based on number of Shuga DS2 episodes watched. Individuals with no DS2 exposure were further re-grouped according to other Shuga content accessed (Figure 1). We estimated associations between intensity of DS2 and outcomes including knowledge of HIV status, awareness, and uptake of HIV self-testing (HIVST) and PrEP, adjusting for confounders with multivariable logistic regression.

Results: Among 3,431 survey participants, 24% (n=827) accessed at least one component of DS2, with the majority (18%) viewing one episode only. Fewer participants accessed multiple episodes: 2.4%, 1.7%, and 1.8% viewed 2-4 episodes, 5-7, and 8-10 episodes, respectively. For most outcomes, frequency increased with increasing exposure to DS2. Viewing multiple episodes (2-4; 5-7; 8-10) was associated with successively higher odds of knowing one's HIV status, awareness of PrEP and HIVST, and uptake of HIVST, compared to no Shuga exposure, with considerable uncertainty around some estimates. Interest in using HIVST or PrEP was high overall (>80%), with no differences by DS2 intensity (Figure 1).

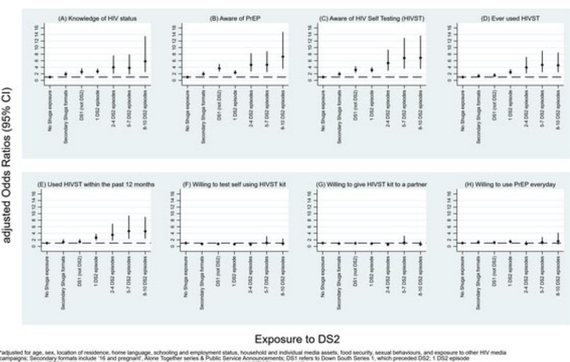

Figure 1. Adjusted associations between DS2 intensity and HIV prevention outcomes*

Conclusions: We found evidence consistent with a dose-response relationship between MTV Shuga DS2 and multiple HIV prevention outcomes among young people in South Africa. Few individuals viewed all episodes, suggesting that increasing access to the show can have beneficial effects for more young people.

EPE138

Low PrEP knowledge and high interest among men living with HIV in rural South Africa

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Background: Young African women have among the highest HIV incidence rates globally. Due to gender norms, women are often more successful when their partners support their prevention efforts. The number of South African men with HIV (MWH) without viral suppression continues to be a public health concern and their partners may benefit from PrEP. We explored PrEP knowledge, experience, and opportunities for implementation among MWH in rural South Africa.

Methods: Twenty-five MWH participated in in-depth telephonic interviews, between April and September 2021, in rural and peri-urban KwaZulu-Natal, South Africa. MWH ages 18 years and older who participated in prior research and consented to be contacted for future projects were recruited. Interviews were audio-recorded, transcribed, translated, and analyzed using thematic analysis.

Results: Participants' median age was 44 years old. Thirteen (52%) knew their HIV status for at least 14 years and all were accessing ART. Eighteen (72%) reported a partner with HIV, 7 (28%) reported an uninfected partner. Knowledge of PrEP was low; some had heard about PrEP from clinics, radio, and friends.

Few knew where to access PrEP and none were aware of having a partner who had accessed PrEP.Interest in PrEP was high.Men reported that, at the individual-level, PrEP use could promote HIV testing. For couples, they noted that PrEP use by an uninfected partner could support the partnership, safely support reproductive goals, and decrease stigma.

At the community-level, men were eager to share PrEP information with partners, family, and peers.Men suggested that PrEP education and dissemination expand to community settings, addressing people of all ages with and without HIV.Men also voiced PrEP concerns including challenges of routinely accessing the clinic, taking a daily medication when not sick, and potential for risk compensation.

Conclusions: In this population of research-experienced, adult MWH, many diagnosed for more than a decade, PrEP knowledge was low in 2021, five years after the start of South Africa's PrEP programme. Men were optimistic towards PrEP as an important prevention strategy for their partners and others in their community. Engaging MWH to support their partners to access PrEP may be a novel implementation strategy.

EPE139

Acceptability of at-home blood sampling using volumetric absorptive microsamplers among young Black and Latinx sexual and gender minorities assigned male sex at birth in the United States

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Background: At-home specimen collection using volumetric absorptive microsamplers may be an option to monitor HIV preexposure prophylaxis (PrEP) adherence. We examined the acceptability of at-home blood collection to measure tenofovir-based PrEP metabolite concentrations among young Black and Latinx sexual and gender minorities (SGM).

Methods: Between January and December 2021, PrEP users enrolled in an ongoing intersectional stigma intervention (HealthMpowerment 2.0) focused on U.S. Black and Latinx SGM (ages 15-29) were invited to collect an at-home blood specimen (20 µL) using the Mitra® microsampler kit. Participants completed an online survey on the acceptability of at-home collection. Kruskal-Wallis tests were used to analyze 4-point Likert scale scores for acceptability of first sample collection and differences in medians and interquartile ranges (IQR) among different demographic groups.

Characteristic	Comfort with self-collection using lancet†				Comprehension of provided instructions‡				Overall experience using kit§				Willingness to use at-home blood collection kit again¶			
	n	Mean (SD)	Median (Q1, Q3)	p-value#	n	Mean (SD)	Median (Q1, Q3)	p-value#	n	Mean (SD)	Median (Q1, Q3)	p-value#	n	Mean (SD)	Median (Q1, Q3)	p-value#
Overall	56	3.3 (1.0)	4 (3, 4)		53	3.6 (0.7)	4 (3, 4)		56	3.7 (0.6)	4 (3, 4)		60	3.6 (0.7)	4 (3.5, 4)	
Age				0.30				0.88				0.16				0.57
18-24 years (n=19)	19	3 (1.1)	3 (2, 4)		18	3.7 (0.6)	4 (3, 4)		19	3.7 (0.6)	4 (4, 4)		19	3.6 (0.7)	4 (3, 4)	
25-28 years (n=26)	24	3.4 (0.9)	4 (3, 4)		23	3.7 (0.7)	4 (3, 4)		24	3.5 (0.7)	4 (3, 4)		26	3.6 (0.8)	4 (3, 4)	
29-32 years (n=15)	13	3.5 (0.9)	4 (3, 4)		12	3.5 (0.9)	4 (3, 4)		13	3.9 (0.4)	4 (4, 4)		15	3.7 (0.7)	4 (4, 4)	
Educational level				0.42				0.58				0.75				0.62
At least college (n=36)	34	3.2 (1.0)	4 (2, 4)		33	3.6 (0.8)	4 (3, 4)		34	3.6 (0.6)	4 (3, 4)		36	3.6 (0.8)	4 (4, 4)	
Some college†† (n=14)	13	3.6 (0.7)	4 (3, 4)		13	3.8 (0.4)	4 (4, 4)		13	3.8 (0.4)	4 (4, 4)		14	3.5 (0.8)	4 (3, 4)	
High school or less (n=10)	9	3.1 (1.1)	3 (3, 4)		7	3.7 (0.8)	4 (4, 4)		9	3.7 (0.7)	4 (4, 4)		10	3.7 (0.7)	4 (4, 4)	
Race/ethnicity				0.34				0.67				0.23				0.30
Non-Hispanic Black (n=25)	21	3.4 (1.1)	4 (3, 4)		19	3.7 (0.8)	4 (4, 4)		21	3.8 (0.5)	4 (4, 4)		25	3.5 (0.9)	4 (3, 4)	
Hispanic (n=30)	30	3.3 (0.9)	4 (3, 4)		29	3.6 (0.6)	4 (3, 4)		30	3.6 (0.6)	4 (3, 4)		30	3.7 (0.7)	4 (4, 4)	
Another race/ethnicity‡‡ (n= 5)	5	3 (0.7)	3 (3, 3)		5	3.4 (1.3)	4 (4, 4)		5	3.6 (0.6)	4 (3, 4)		5	4 (0)	4 (4, 4)	

SD=standard deviation; Q1=interquartile 1; Q3=interquartile 3
* Total number of participants may not equal 60; several participants did not respond to all questions.
# Kruskal-Wallis test; $\alpha \leq 0.05$
†† Includes vocational school and technical school
‡‡ Includes American Indian, Alaska Native, Asian/Pacific Islander, and other race/ethnicity categories
§§ Includes transgender and gender diverse identities
Likert scores: †Comfort with self-collection: 1="Very uncomfortable"; 2="Somewhat uncomfortable"; 3="Somewhat comfortable"; 4="Very comfortable". ‡Comprehension: 1="Very hard to understand"; 2="Hard to understand"; 3="Easy to understand"; 4="Very easy to understand". §Overall experience: 1="Very hard"; 2="Hard"; 3="Easy"; 4="Very Easy". ¶Willingness to use again: 1="Very unlikely"; 2="Unlikely"; 3="Likely"; 4="Very likely".

Table 1. Acceptability of first at-home blood sampling using volumetric absorptive microsamplers among young Black and Latinx sexual and gender minorities assigned male sex at birth, by age, educational level and race/ethnicity; United States - January-December 2021.

Results: 239 participants reported taking PrEP over the study period. Of these, 73 (30.5%) responded to the invitation requesting ≥1 kit. Sixty participants (82%) attempted to collect ≥1 sample. All participants were assigned male sex at birth; three were transgender (5%); most were college graduates (60%); half were Latinx (50%); and median age of 26 years (IQR: 24-28.5). Nearly all participants reported the overall self-collection experience as easy or very easy (95%; 53 out of 56).

Most reported being somewhat comfortable or very comfortable with self-collection (79%; 44 out of 56); perceiving the written instructions as easy or very easy to understand (94%; 50 out of 53); and being willing to use the at-home kit again (88%; 53 out of 60). There were no differences between median scores in acceptability by age, educational, or race/ethnicity (p-values >0.05).

Conclusions: At-home blood collection for PrEP adherence analysis was acceptable in a diverse online cohort of young Black and Latinx SGM adults. Future larger scale studies should consider including at-home blood collection for objective PrEP adherence measurement rather than relying on self-report alone.

EPE140

Implementation strategies responsible for the success of iCARE Nigeria: a combination HIV treatment intervention integrating text message medication reminders and peernavigation for youth living with HIV in Nigeria

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Background: To address poor outcomes among youth living with HIV (YLWH), the iCARE Nigeria study successfully piloted two-way text message medication reminders in combination with peer navigation. Study participants (n=40) had significant improvement in ART adherence and viral suppression at 48 weeks. Understanding factors associated with implementation success is critical for further scale-up of this pilot intervention.

Methods: We used an explanatory, mixed-methods design to identify:

1. Facilitators and barriers to implementation outcomes (feasibility, acceptability, and adoption), and
2. Implementation strategies used and/or adapted to address barriers.

Qualitative data were collected from key informant and focus group discussions with program staff, and summarized using directed content analysis. Quantitative data included participant surveys and program records, and were summarized using descriptive statistics.

Results: iCARE Nigeria was feasible as evidenced by seamless recruitment and high retention (88%) of peer navigators. In addition, after early technical challenges, text message reminders were sent with 100% success. The intervention was acceptable and showed high adoption

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by patients and peer navigators (PN). Most patients found the text message reminders (95%) and PN (90%) were not bothersome or intrusive. Implementation strategies employed to facilitate intervention success included:

1. Training, selection, supervision and matching of PN (based on age, sex, and education level etc.),
2. Flexibility in the frequency (daily to weekly) and mode of patient communication according to patient need (text/ WhatsApp message convenience vs. phone calls/in-person interaction needed to gauge well-being),
3. Early recognition and intervention on adherence issues, and
4. Customization of medication reminders.

Implementation barriers included infrastructure issues with mobile devices, power availability, and rapid overuse of airtime provided for mobile phones. Strategies employed to address these challenges included: systematic identification and troubleshooting of telecommunication constraints (eg provision of inexpensive mobile phones, to approximately 40%, chargers as needed, and revision of phone airtime stipends from monthly to weekly).

Conclusions: The iCARE Nigeria treatment intervention was feasible and acceptable with high adoption from both patients and PN. Logistical and financial challenges posed by telecommunication infrastructure were identified as important barriers, but PN/program staff were key to selecting and adapting implementation strategies to optimize implementation outcomes.

EPE141
The contributions of community-based orphans and vulnerable children projects to optimal pediatric HIV treatment outcomes: lessons from Mozambique and South Africa

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Background: FHI 360 supports two PEPFAR-funded orphans and vulnerable children (OVC) projects to improve pediatric and adolescent HIV treatment outcomes- COVida in Mozambique, and Capacity Development and Support (CDS) in South Africa. By December 2020, COVida had achieved 50% viral load (VL) coverage and 61% viral suppression (VS), while rates for CDS were 55% and 82%, respectively.

We examined the association between community-based interventions and HIV treatment outcomes among children and adolescents living with HIV (C&ALHIV).

Description: In 2021, both projects implemented interventions to improve adherence to antiretroviral therapy (ART), and VL testing and VS among C&ALHIV under 18 years. They strengthened coordination with HIV clinical partners and health facilities (HFs), provided differentiated socio-economic services, collected VL data from HFs, created new clinical staff positions to monitor and support unsuppressed C&ALHIV, and offered remote case management during COVID-19. In addition, COVida trained case workers on pediatric HIV care and treatment, implemented case management in HFs (when preferred by C&ALHIV/ caregivers), and triangulated program and HF data to confirm treatment status and eligibility for VL testing. CDS delivered ART to C&ALHIV homes, as needed, participated in multidisciplinary case conferences at HFs, and trained case workers as VL champions to improve VL literacy and testing.

Lessons learned: By September 2021,VL coverage among COVida and CDS clients had increased from 50% to 86% and from 55% to 90% respectively, and VS increased from 61% to 82% and from 82% to 87%, respectively.Z-test analysis comparing VL coverage between the two periods-October-December 2020 and July -September 2021 from both projects showed a statistically significant increase [COVida- n1=13144, p1=0.5; n2=24099, p2=0.91, (Z=89.218, P<0.0001), and CDS-n1 7,400, p1=0.55; n2 21,670, p2=0.90 (Z=66.38, p<0.00001]. Likewise, VS increased significantly for both projects [COVida-n1= 6,589, p1= 0.61; n2=21918, p2= 0.82 (Z=35.5973, P<0.0001), and CDS-ni=6,081, p1=0.82; n2=18912, p2=0.87 (Z=9.7122, p<0.0001].

Conclusions/Next steps: COVida and CDS' achievements demonstrate that strong coordination with HIV clinical partners and HFs, engagement of OVC staff with HIV clinical expertise, and triangulating program data with HF data are invaluable in improving HIV treatment outcomes among C&ALHIV and should be standard practices in OVC programs.

EPE142
Treatment adherence and retention in HIV care among Mexican nationals and migrants in Mexico

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Background: Public health policy for people living with HIV in Mexico is challenging due to migration. Migrants living with HIV (MLWH) require diagnostic and treatment services that stimulate medication adherence and lead to viral suppression.

The aim of this study was to compare differences in characteristics of MLWH in Mexico with Mexican nationals living with HIV (NLWH).

Methods: This descriptive study compared MLWH in Mexico (1,362) to Mexican NLWH (26,466) until December 31st, 2021 using Student's t-distribution and Chi-squared tests. The de-identified dataset was obtained from Clinica Condesa in Mexico City and contained information on demographics, patient status, and first and last viral load.

Results: On average, patients were 39 years old and mostly male (89.0%). Mexican NLWH had been diagnosed, on average, 8.3 years, while MLWH had been diagnosed

for 7.2 years (p<0.0001). Results showed that 82.6% of MLWH were on ARV treatment, as compared to 89.1% of Mexican NLWH. By December 31st, 2021, 38.2% of MLWH were considered inactive, while only 32.2% of Mexican NLWH were inactive (p<0.0001).

Among the inactive patients, 45.2% of the MLWH were classified as having abandoned care, while the largest percentage of inactive Mexican NLWH (26.1%) were inactive due to a change in health insurance.

Additionally, on average, the first viral load was significantly higher (p<0.0001) among the MLWH, while the last viral load was significantly higher (p<0.001) among the Mexican NLWH. In terms of viral suppression status, all patients were virally unsuppressed at their first viral load test.

However, at the last viral load, there was a statistically significant difference in viral suppression status between MLWH and Mexican NLWH; 85.3% of MLWH were virally suppressed, as compared to 82.8% of Mexican NLWH.

Conclusions: MLWH are demographically like Mexican NLWH, but due to their migratory status, MLWH in Mexico City tend to abandon care at a higher rate and have lower rates of people on ARV treatment than Mexican NLWH. However, MLWH do have a higher percentage viral suppression, which may suggest that policy for access to HIV care for MLWH in Mexico has been successful in terms of adherence, but not in terms of retention.

EPE143

Effect of TLD on suppression of clients on ART: an exploratory analysis of scaled-up TLE toTLD transition during the COVID-19 pandemic in USAID ACTION HIV supported provinces

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Background: HIV treatment has made strides in the introduction of more efficacious medicines. Dolutegravir-based regimen (TLD) was recommended by WHO as the best medicine for first-line in 2018, as it demonstrated a higher viral suppression rate. Right To Care Zambia is working with the Ministry of Health, through Pepfar USAID funding, to attain the ambitious 95-95-95 UNAIDS objectives in the Muchinga, Northern, and Luapula provinces of Zambia.

The purpose of this paper was to analyze the relationship between TLD scale-up and viral load outcomes.

Description: Right To Care Zambia, with funding from USAID, collected programmatic data on TLE to TLD transitioning and viral load suppression from October 2020 to December 2021, from the three province and analyzed using the Microsoft Excel package. Excel Pivot tables were used to analyze and run a trend analysis for current treatment, TLE-TLD transitioning, the proportion of clients on TLD, and Viral Suppression.

Lessons learned: In October 2020, RTCZ had only 36% of clients on TLD. A larger proportion of clients were on TLE as the first-line regimen. The suppression rate was 86% in October 2020. TLD scale-up improved to 75% in April 2021. Increased long-duration expiry TLD was received in the provinces at the end of September 2020, which saw the transition to TLD increase. As of December 2021, 93% (117,433) of the clients (126,762) were on TLD and the suppression rate improved from 86% in October 2019 to 95% in December 2021. TLD transition helped improve viral load suppression among the ART clients in Muchinga, Northern, and Luapula provinces.

Conclusions/Next steps: Having more clients on TLD was associated with a higher suppression rate. USAID Action HIV program is working hard to have 95% of clients on treatment on a TLD regimen, this is being done to improve treatment outcomes of clients current on treatment in the supported provinces.

EPE144

Building up quality of PrEP services offered by key population-led clinics through a continuous quality improvement approach: A case study of Glink Hanoi clinic in Vietnam

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Background: HIV pre-exposure prophylaxis (PrEP) has been scaled-up in Vietnam through public, private and key population (KP)-led clinics. With this expansion, it is vital to ensure PrEP services are of quality and meet national standards and client expectations.

Description: The USAID/PATH Healthy Markets project and Ministry of Health (MOH) piloted PrEP in 2017 and defined collaborative continuous quality improvement (CQI) system in PrEP clinics.

Standardized forms and checklists were developed and vetted by clinic, community and MOH stakeholders to help CQI teams (consisting of PrEP providers, community representatives and provincial CQI coordinators) pause-and-reflect on PrEP service quality. CQI teams conduct Plan-Do-Study-Act (PDSA) cycles every quarter to pinpoint quality challenges, implement solutions and measure their effect. We provide a case study of Glink-Hanoi, a KP-clinic delivering PrEP since 2020.

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Lessons learned: Glink's first CQI session was conducted by clinic staff, technical program officers and community workers in September 2020 who identified three areas for improvement:
i. Sufficiently completing client medical records;
ii. Properly documenting reasons for drop-out; and,
iii. Establishing client feedback channels.
These were reflected in Glink's action plan, with staff assigned to oversee each follow-up action. Subsequent CQI visits were conducted in January, June and October 2021 to review progress and identify priorities for continuously improving services.
From September 2020-October 2021, Glink-Hanoi demonstrated a systematic medical record system, enhanced documentation of drop-out reasons and staff capacity to counsel clients, and established client feedback channels.
Client feedback was increasingly positive: from January-June 2021, 84%, 90%, and 89% clients reported high satisfaction and 0%, 1%, and 1% reported dissatisfaction with waiting time, staff attitudes, and service quality, respectively; from July 2021-January 2022, 91%, 94%, and 92% reported high satisfaction with these same quality indicators and 1% reported dissatisfaction with service quality (n=387). From October 2020-September 2021, Glink-Hanoi recruited 713 new PrEP clients, with 99% continuing on PrEP after three months despite severe COVID-19 social distancing.
Conclusions/Next steps: Our results demonstrate that applying regular collaborative CQI-PDSA cycles can help clinics identify gaps in PrEP services and actively improve quality. Strong CQI systems enable KP-clinics like Glink to play a leading role in Vietnam's PrEP program.

EPE145
Should a pill a day keep the doctor away? Re-examining assumptions about frequency of sex and continuity of PrEP use

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Background: Programs typically dispense oral PrEP in 30-pill increments, and appointment schedules assume HIV risk is sufficiently frequent to exhaust clients' supply by the time of follow-up. Refill delays are thus interpreted as unprotected days of risk. However, based upon updated starting and stopping time recommendations by WHO, men and women free of risk for at least 4 or 16 continuous days, respectively, could safely stop and later resume dosing, when sex resumes.
Methods: Clients starting daily oral PrEP and participating in a longitudinal cohort study conducted by Jilinde in Kenya completed a baseline survey of demographic, behavioral, and social factors and month-long paper-based diary, indicating whether they had sex daily. All received 30 PrEP pills. We characterized abstinence from sex from a temporal perspective.
The outcomes were the total number of days (during the follow up period) and maximum contiguous days of abstinence at the individual level. We report median, 25th and 75th percentile values.
The risk factors associated with maximum reported contiguous days of abstinence were modeled using quantile regression (median, 25th and 75th percentiles). The study was approved by the Johns Hopkins University and Kenya Medical Research Institute IRBs.
Results: Daily log patterns were reported for $\geq$ 28 days by 762 individuals. The median total days without sex was 14 days (IQR 7-22 days, range 0-30 days), and median contiguous days was 4 days (25th- 75th: 2-8 days) and 7 days (4-12 days) for women and men, respectively.
Among men, 61 (84.7%) reported no sex on 4+ contiguous days; among women, 122 (17.7%) reported no sex on 16+ contiguous days. Perceived stigma score was the most significant association, particularly at the higher quantile (75th percentile) of the abstinence period (b=-2.34, p= 0.014, 95%CI -4.22 - -0.47).
Conclusions: Delayed PrEP refills should not automatically be interpreted as problematic missed doses, as abstinence periods may allow for effective cyclical use, especially among men. One-size-fits-all adherence counseling supporting habitual daily use may be programmatically preferred but may not fit all clients' needs.
Client-centered care necessitates tailored support for safely stopping and restarting aligned to fluctuating risk, complemented by more nuanced measures of both.

EPE146
TAFU Community intervention model, the magic bullet to reaching the last child living with HIV in communities, a case of Kyenjojo District

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Background: Of the estimated 96,000 children under the age of 14 years living with HIV in Uganda, 37% are not on treatment. Many enrolled into care become lost to follow up and others in HIV care have non-suppressed viral loads. The need for interventions to reduce new HIV infections, linking of identified HIV+ children and sustaining them on ART treatment as per the 95-95-95 UNAIDs cascade is still wanting.
Community Health Alliance Uganda (CHAU) with funding from Aidsfonds is implementing Towards an AIDS Free generation in Uganda (TAFU) project in Kyenjojo, Mubende and Mityana Districts which uses a "TAFU community intervention model to reach all children. TAFU model cherishes the need to Strengthen Community Systems especially using Community Resource Persons (CoRPs) such as Village Health Teams (VHT), expert clients, peer mothers,

and institutions including networks of people living with HIV, village savings and loan associations (VSLAs), District Health Team among others.

Description: Through a multi-sectoral approach, the TAFU Model address barriers to paediatric HIV services access through; Socio-economic empowerment of families and community structures,. Strengthening linkage & referral and Lobby & advocacy.

In 4 years, 102 CLHIV were identified, enrolled and retained in care i.e. from 217 at baseline in January 2018 to 319 by December 2021 (32% increment) at four target facilities.

Lessons learned: TAFU model greatly improves identification of children and women living with HIV; link and retain them in care. CoRPs and VHTs who doubled as expert clients are preferred to reach children and women living with HIV. These draw on personal experiences to support others especially the newly identified HIV positive clients.

Conclusions/Next steps: Within 4 years of implementation, there has been an increase in the number of children in HIV care from 217 to 319 (32%), hence the need lobby other stakeholders to increase buy-in, funding and scale-up the TAFU model.

EPE147

Structural barriers to ART adherence: lapses in healthcare coverage by health insurance status among MSM living with HIV

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Background: Adherence to antiretroviral therapy (ART) is essential for maintaining long-term HIV viral suppression. Interventions to improve adherence are largely designed from the individual's behavior perspective. Considering potential structural barriers to ART adherence and to the continuity of healthcare coverage may help improve health outcomes and reduce transmission.

Methods: Secondary data analysis of the Engage[men]t study was performed to examine the association between lapses in healthcare coverage for ART and insurance status. Engage[men]t study is a prospective cohort designed to analyze racial disparities in HIV care and prevention in Atlanta, Georgia that includes 200 non-Hispanic Black and 200 White men who have sex with men (MSM) living with HIV from June 2016 to May 2017. Lapses in healthcare coverage were determined by the self-reported number of months participants were without insurance or healthcare coverage during the first year of follow-up. Insurance status was determined at baseline as insured (covered by health insurance, Medicare, or Medicaid), underinsured (health insurance and Ryan White program (RWP)), uninsured (RWP/ADAP/Drug company program (DCP)), none.

Results: Overall, 10.3% (36/349) of participants reported experiencing lapses in healthcare coverage for ART during the first year of follow-up, 6.1% (7/115) among insured MSM, 11.5% (16/139) among underinsured MSM, and 14.1% (10/71) among uninsured MSM using RWP/ADAP/DCP.

Younger MSM (cPR= 4.36, 95% CI:[1.38, 13.78]) and Black MSM were more likely to experience lapses (cPR= 2.32, 95% CI:[0.99, 3.72]).

After adjusting by race, age, and income in a multivariable log-binomial model, we found that underinsured MSM at baseline were more than twice as likely (aPR= 2.34, 95% CI:[0.95, 5.77]) to experience lapses in healthcare coverage for ART compared to insured MSM. After adjustment, no significant difference was found for uninsured MSM.

Conclusions: MSM in Atlanta who were young, Black, or underinsured were more likely to experience lapses in health coverage than men insured by private health insurance or Medicaid.

Continuous coverage with the RWP is crucial for ART adherence and care of uninsured and underinsured MSM. Simplifying RWP renewal procedures and Medicaid expansion would likely reduce lapses in coverage for MSM living with HIV and improve continuous access to care.

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Scaling up services for adolescents and youth

EPE148

Moving from biomedical HIV prevention to "V ineka that, that, that!": early insights from implementing "V" in Zimbabwe

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Background: Adolescent Girls and Young Women (AGYW) remain disproportionately affected by HIV in Zimbabwe where new infections are more than double those among young men. HIV prevention options are available, including oral pre-exposure prophylaxis (PrEP), however AGYW face significant barriers to PrEP uptake and continuation. In 2021, PSI and PZAT launched "V" in four districts with the aim of reframing PrEP as an empowering self-care product that young women desire. "V" consists of fashionable branding (including "starter kit"—pill case, FAQ guide, makeup bag, reminder sticker), service integration, and peer education/support through online fora. Our objective was to characterize early learnings to inform implementation and scale up.

Methods: Observations and interviews explored "V"'s acceptability and relevance to target users, and feasibility of integrating "V" into existing service delivery. In-depth interviews (n=46) were conducted with healthcare workers, Brand Ambassadors (PrEP champions), and young women (18-24) sampled from four sites. Interview data was analyzed thematically using the framework method for qualitative data management and analysis. Project budgets and invoices were reviewed to compile unit cost data and procurement quantities for all "V" materials.

Results: Interviews indicated "V" is highly acceptable due to attractive branding coupled with factual and thought provoking messaging, establishing "a girl code" for talking about PrEP, and addressing a gap in communications materials. One young woman described "V" as "V ineka that, that, that!" which translates to "in a class of its own!" "V" was also feasible and efficient to integrate into routine service provision, including with adolescent health services and through outreach events.

Interest in "V" beyond AGYW was substantial. Minor adaptations to "V" materials (color, size) were identified to better suit the context and to address possible unwanted disclosure issues.

Conclusions: Early learnings indicate V is an acceptable and feasible innovation to help support demand creation for PrEP and continuation among AGYW in a variety of settings. National scale up discussions are ongoing pending impact analyses and sustainability considerations. Plans for scale up could explore savings through higher volume procurement and by adopting a customized lighter package of the most essential "V" materials, while still retaining "V"'s core approach.

EPE149

Applying the HIV prevention cascade to a large-scale combination HIV prevention programme for adolescent girls and young women in South Africa

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Background: Measuring uptake and adherence to HIV prevention interventions is important for setting targets and scaling interventions but challenging to conduct at scale. The HIV prevention cascade is a novel framework for measuring and understanding gaps in intervention coverage which describes how a participant must be motivated to use and have access to a prevention method to effectively use it.

The aim of this study is to identify the barriers to each stage of the cascade for male condoms and PrEP among adolescent girls and young women (AGYW).

Methods: We analyzed data from the HERStory2 process evaluation of a large-scale combination HIV prevention programme for AGYW (15-24 years) in South Africa. Due to COVID-19 restrictions, a descriptive telephonic survey was conducted with AGYW from six of the 12 programme districts. Bivariate and multivariate logistic regression were used to identify barriers at each stage of the cascade.

Results: The analytic sample consists of 515 AGYW (sample realization=23.8%). Most participants were 15–19 years old (56.6%). Motivation, access and effective use of condoms was 92.1%, 81.2 and 15.5%, respectively. Participants were less likely to be motivated to use condoms and have access to condoms if they disliked using condoms (OR=0.22; 95% CI: 0.10-0.48, N=301) and if the place where they accessed condoms was far away (OR=0.33; 95% CI: 0.15-0.76, N = 260) respectively. AGYW who had a sex partner five or more years older (OR=0.40; 95% CI: 0.16-1.01) or whose partners refused condoms (Adjusted OR=0.13; 95% CI: 0.02-1.01) were less likely to effectively use condoms (N=223). Motivation and access to PrEP was 75.7% and 40.0%. AGYW were less likely to be motivated to use PrEP if they did not believe PrEP was efficacious (OR=0.30; 95% CI: 0.17-0.54; N = 260) and more likely to have access to PrEP if they had been offered PrEP (OR=2.94; 95% CI: 1.19-7.22, N=205).

Conclusions: These findings suggest that interventions need to approach condom and PrEP uptake differently. Risk reduction counselling for boys and older men could in-

crease condom use while educational campaigns among AGYW may be more pertinent to PrEP. Addressing structural barriers to condoms and PrEP remains essential.

EPE150

Making a case for adolescents and young people HIV programming Nigeria: an assessment of returns on investment

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Background: Adolescent and young people (AYP) aged 10-24years constitute approximately a third (70 Million) of Nigeria's population. AYP possess a significant risk of HIV infection, with adolescent girls and young women (AGYW) having higher levels of vulnerabilities. Some major contributors to their higher vulnerability include gender inequalities, harmful traditional practices, sexual and gender-based violence. Over the years, this population has not been prioritized with inadequate HIV programming and limited funding. Hence, the need to develop an investment case to serve as an advocacy tool for increased funding and adequate programming for AYP to help achieve the UNAIDS 95-95-95 goals among youths in Nigeria.

Methods: Three principles guided the development of the investment case - investment in high risk areas with limited resources; opportunistic investments in low and medium risk areas; and intervention packages to meet the demographic and epidemiological needs of the target population. A desk review of programmatic data, surveillance reports and epidemiological data was done. Key informant interviews and focus group discussions were conducted to provide further insights into the findings from the desk review. Three scenarios were developed and cost modeled for each scenarios.

Results: The table below show the different investment scenarios, their cost implications and return on investment.

Scenario	Geographical spread	Service package	AYP coverage	Cost (USD)	Return on investment (%Coverage /USD)
Scenario 1	All AYP in all LGAs in the 36 states + FCT	Relevant basic or comprehensive package	100%	4.7 billion	21
Scenario 2	All AYP in all LGAs of the 10 high burden states.	Relevant basic or comprehensive package	55.3%	1.7 billion	32
Scenario 3	All AYP in the 80 high risk LGAs	Comprehensive service package.	10.6%	964 million	11

Table 1. Investment scenarios and Cost implications.

Based on the model, scenario 2 is the most efficient strategy with a unit cost of $88.3 and a return on investment of 32.

Conclusions: Scenario 2 offers the highest return on investment, reducing the burden of HIV amongst the AYP by 55% in a period of 5 years and this will be the most expedient investment for the government and her partners towards the attainment of the 95-95-95 target among AYP.

EPE151

Examining the barriers to and facilitators of implementing Friendship Bench delivered by peers for adolescents living with HIV in Botswana

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Background: The burden of mental health illness is of particular concern among adolescents living with HIV (ALHIV) in sub-Saharan Africa. Hence, the evidence-based Friendship Bench intervention was adapted and piloted among ALHIV in Gaborone, Botswana. The purpose of this study was to qualitatively describe the barriers and facilitators that influence the implementation of Friendship Bench from the perspective of peer counselors delivering the intervention to ALHIV in Gaborone, Botswana.

Methods: We used qualitative data from a five-phase Friendship Bench pilot study to evaluate Friendship Bench among ALHIV in Botswana. Nine peer counselors participated in semi-structured interviews to determine their experiences with implementing Friendship Bench during the pilot. To guide our directed content analysis, we used the five domains of the Consolidated Framework for Implementation Research (CFIR) framework (i.e., intervention characteristics, outer setting, inner setting, characteristics of individuals, and process).

Results: We organized our findings based on the five CFIR domains:

1. Intervention Characteristics: Several counselors stated the need for the intervention to be adapted in hard-to-reach settings (e.g., rural areas, schools) since the cost of transportation is a barrier to accessing the intervention.
2. Outer setting: The peer-based Friendship Bench model acknowledges that age is a factor in terms of how well counselors are able to relate to their clients and engage in conversations about sensitive topics such as sex and substance use.
3. Inner Setting: Although counselors consistently reported that they are not adequately compensated for their work, there was a shared perception regarding the importance of implementing Friendship Bench among ALHIV.
4. Characteristics of Individuals: Counselors have varying degrees of self-efficacy regarding their level of preparedness to handle difficult scenarios during counseling sessions.

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5. Process: Some counselors thought that clients were not being screened fast enough which was preventing them from getting more clients.

Conclusions: Unlike the original Friendship Bench model delivered by elders, there are several benefits to peer delivery of Friendship Bench among ALHIV in Botswana. Despite the benefits of peer-based implementation of Friendship Bench, there are several barriers to implementation that need to be addressed such as limited resources, insufficient skills and training, and inefficient client recruitment methods.

EPE152
Barriers to HIV and STI services access among Adolescent Girls and Young Women in Nigeria: A Cross-sectional Study

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Background: Adolescent Girls and Young Women (AGYW) account for a disproportionately higher number of new HIV infections in Nigeria. AGYW have low levels of comprehensive knowledge of HIV, low HIV risk perception, and access to appropriate sexual and reproductive health services (UNAIDS 2019).

This study aimed at identifying barriers to HIV and STI services access among AGYW in Nigeria.

Methods: This was a cross-sectional study, conducted in six states across the country in November 2021. States were selected based on existing AGYW interventions, geographical representation by HIV prevalence. A convenience sampling technique was used to recruit respondents (AGYW). Quantitative data was collected through client exit interviews, conducted for 2520 AGYW receiving services at selected service delivery points using a structured questionnaire. Information on locations where clients accessed HIV and STI services, and barriers to services was collected. Stata was used for data analysis.

Results: A total of 2520 AGYW with a mean age of 18.9 years (SD=3.7) were interviewed. 36.7% of them had completed secondary education, 17.9% were employed, 57.7% were students while 81.2% were single. Majority of AGYW accessed HIV Testing Services (66.4%) and ARV refill (88.3%) from health facilities. The major barrier faced by AGYW was distance to the health facility, OSS and drop-in-centers as alluded by 23.4%. This was followed by stigma and discrimination, and fear of harassment as alluded by 17.9% and 12.1% of the AGYW respectively. Among the least mentioned barriers were lack of transportation fare, and fear of the outcome of results as alluded by 0.5% and 0.4% of AGYW respectively.

Conclusions: The findings showed that HIV and STI services being accessed by AGYW were majorly facility-based but had distance as a major challenge. Designing strategies that would bring these HIV and STI services closer to the reach of AGYW is very critical in order to close this gap in service delivery. Also, addressing barriers like stigma and discrimination, and fear of harassments may require interventions targeting both AGYW and the service providers.

Differentiated service delivery for HIV testing, prevention and treatment

EPE153
Social network strategy improves access to HIV services for key populations in a legally restrictive environment: findings from Lusaka Zambia

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Background: Sex work and same-sex relationships are illegal in Zambia. Key populations(KP), including men who have sex with men (MSM), female sex workers (FSW), Persons Who inject Drugs (PWID), and transgender persons(TG), face discrimination and stigma, which negatively affects their access to health services.

We report findings and lessons from using a social network strategy (SNS)to identify and reach KP with HIV service in Zambia.

Description: From October 2019 to September 2021, the Centre of Infectious Disease Research in Zambia implemented SNS - a peer-driven, incentive-based, chain referral method to reach and provide HIV testing, treatment, and prevention services to KP in three urban districts of Lusaka.

SNS was used for immediate linkage of high-risk HIV-negative or HIV-positive KP to HIV prevention and treatment services respectively. Services were provided in collaboration with public health facilities, and at community safe spaces identified in consultation with KP groups

Lessons learned: We tested 4,411 FSW, MSM, PWID, and TG who did not know their HIV status. Over time, HIV testing yields ranged between 30-71% among FSW; 10-34% among MSM; 6-41% among PWID; and 8-38% among TG. Linkage to care ranged between 95-100%, while viral load coverage and suppression were 91% and 93% at the end of September 2021, respectively. For all HIV-negative, uptake of pre-exposure prophylaxis (PrEP) ranged between 88-100% during the period.

Lessons learned from the SNS implementation included:
1. The SNS is an effective strategy for reaching previously undiagnosed, hard-to-reach, and highly stigmatized groups;
2. Use of unique participant codes and real-time data monitoring prevented repeat participation by KP;
3. Engagement of KP civil society groups helped to identify persons who were already receiving ART;

4. Scheduling of appointments prevented over-crowding of safe spaces;
5. Continuous planning and risk mitigation ensured safety and confidentiality of KP.

Conclusions/Next steps: The SNS and use of safe spaces are effective ways of achieving high HIV yield and providing ART, PrEP, and other services to KP in a legally and socially conservative environment.
The use of safe spaces increased trust with KP, ensured safety, security, and confidentiality, thereby improving uptake of services and retention in care.

EPE154

"We used to fear going to clinics but now health services have been brought close to us" Perceptions and experiences of key populations in Zambian with access to community-based delivered PrEP

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Background: Pre-exposure prophylaxis (PrEP) is an essential HIV prevention tool for persons at increased risk of HIV. In Zambia, key populations (KPs) face substantial psychosocial and structural barriers to access PrEP, especially female sex workers (FSWs) and men who have sex with men (MSM). Alternative community-based PrEP delivery strategies can improve and sustain PrEP uptake.
This study explored KPs' experiences and perceptions of accessing PrEP outside the clinic

Methods: From 2016-2021, the University of Maryland Baltimore and its partners implemented the *Zambia Community HIV Epidemic Control for Key Populations* (Z-CHECK) program to reduce HIV transmission particularly among KPs. Z-CHECK community health workers (CHWs) conducted PrEP education, HIV testing services, and PrEP initiation and persistence support, in conjunction with facility healthcare workers (HCWs). KPs could access PrEP at the health facility or have it delivered to them by CHWs in the community. We conducted interviews with CHWs and mobilisers (n=5) and with purposively selected KPs accessing PrEP in focus group discussions (n=4) and interviews (n= 41). Interviews and discussions were transcribed and analyzed thematically

Results: Clinic-based PrEP distribution was the main source of PrEP for KPs but included a few challenges such as stigma, distance, and long waiting time, which discouraged uptake. Most participants perceived community PrEP distribution via CHW delivery in homes and safe spaces as a way to overcame barriers to PrEP uptake and encourage persistence. KPs receiving PrEP in the community described this approach as being patient-centered, safe, convenient, confidential, and a more efficient means of accessing PrEP. CHWs could reach KPs in places where HCWs could not, and community delivery was said to have promoted further patient-provider dialogue. Disclosure of PrEP use positively influenced acceptability of community distribution.
However, fears of involuntary disclosure for those that did not disclose PrEP use was common, thus CHWs often adopted covert and discreet delivery approaches to ensure confidentiality for KP clients.

Conclusions: Community distribution of PrEP is well regarded by KPs in Zambia and was perceived by KPs to improve PrEP access, uptake, and persistence. Future PrEP programs should consider integrating community-based delivery approaches to promote uptake among KPs.

EPE155

Pivoting differentiated distribution to improve access to medicines for PLHIV in South Africa during COVID-19

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Background: South Africa has approximately 7.7 million people living with HIV (PLHIV) and supports the world's largest antiretroviral therapy program. The high numbers of people requiring routine access to HIV medicines lead to congested health facilities, overburdened health staff, and challenges in quality of care.
The COVID-19 pandemic exacerbated these problems: closed health facilities, national and provincial lockdowns, and restrictions on patient transport limited access to medication.

Description: Since 2016, Project Last Mile (PLM) has supported the National Department of Health (NDoH) to expand and improve the Central Chronic Medicine Dispensing and Distribution (CCMDD) program by applying private-sector best practices. CCMDD decongests public health facilities by creating community-based and private-sector pick-up points (PuPs) where people living with HIV and other chronic diseases can conveniently collect medications.
COVID-19 increased the need to reduce the burden on public health facilities. CCMDD became pivotal to decongest facilities. PLM supported NDoH with geospatial analytics to identify optimal public and private PuPs, operationalizing innovations like smart lockers and modular containers for vaccinations and medication pick-up, and led engagements to enrol additional external PuPs.
PLM supported NDoH in rapidly pivoting operations to limit disruptions on medication access by identifying alternate facilities and PuPs for patients affected by facility

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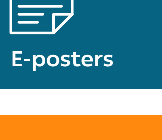
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closures, enabling multi-month dispensing, and changing enrollment criteria to allow more eligible patients to join.

Lessons learned: During COVID-19, the number of registered patients grew 107% to over 4.72 million registered on CCMDD by October 2021. PLM supported NDoH in adapting methods for rapid decanting, resulting in 45% more patients collecting their medication through CCMDD PuPs.

The number of active patients collecting at external PuPs increased by 55%, with an average waiting time of less than 10 minutes. Most new patients opt to collect from external PuPs, supporting increased patient benefits.

Conclusions/Next steps: The methods adopted by PLM demonstrate how expanding access to medication through differentiated service delivery can increase patient benefits, with implications during and beyond COVID-19.

EPE156

In-use stability studies show safety of implementation of larger bottles to support multi month dispensing initiatives

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Background: The 2016 WHO Consolidated HIV Guidelines include a recommendation for less frequent medication pickup for people living with HIV (PLHIV) on stable antiretroviral therapy (ART). Multi-month dispensing (MMD) of ART allows PLHIV to receive 90 and 180-day supplies of antiretrovirals (ARVs) rather than returning to the clinic or pharmacy on a monthly basis for medication. MMD has been shown to improve treatment outcomes and client satisfaction and reduce clinic congestion.

To accommodate the shift to MMD of ART, ARV manufacturers offered ARVs packaged in more convenient 90- and 180-day bottles in addition to traditional 30-day bottles.

However, due to the temperature and humidity trends in countries where the President's Emergency Plan for AIDS Relief (PEPFAR) operates, concerns grew regarding ARV stability during the span of the dosing period for the larger bottle sizes. In-use stability studies were conducted by ARV manufacturers to determine risk of degradation of product.

Description: Four ARV manufacturers conducted in-use stability studies on dolutegravir/lamivudine/tenofovir disoproxil fumarate (TLD) containing tablets to measure the concentration of active pharmaceutical ingredients at various time points.

Procedures for in-use stability studies are as follows - The investigator:

1. Conducts a full monograph test to determine physical and chemical attributes of tablets at baseline, and;
2. Places an opened bottle of ARVs in chamber and;
3. Conducts pharmaceutical analyses at various time points, removing tablets from the bottle at each time point and replacing the bottle in the chamber.

PEPFAR country work plan guidance recommends rapid optimization of ART by offering TLD to all PLHIV weighing > 30kg.

Lessons learned: The following parameters were accessed: water content, tenofovir disoproxil fumarate dissolution, lamivudine dissolution, dolutegravir dissolution, TDF assay, 3TC assay, DTG assay, impurity. Upon review of in-use stability data from four ARV manufacturers, all samples tested remained within the manufacturer-defined limits.

Conclusions/Next steps: Data indicate larger pack sizes can be safely dispensed without risk of accelerated degradation of TLD. The research pipeline for ARVs with a potential treatment indication is robust.

Stakeholders intimately involved with product development and procurement of ARVs should coordinate regarding the potential pack sizes for consideration early in the research and development process.

EPE157

No differences in recipients of care perceived quality of care between differentiated service delivery models and conventional care in South Africa

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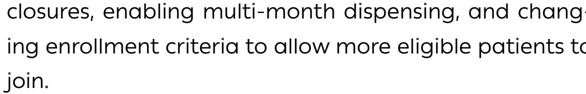
Background: Differentiated service delivery (DSD) models aim to increase the responsiveness of HIV treatment programs to individual needs of recipients of care (RoC) to improve treatment outcomes and quality of life. Little is known about how care experiences in DSD models differ from conventional care.

Methods: From May-November 2021 we interviewed adult RoC at 12 primary clinics in four districts of South Africa. Participants, selected consecutively at routine visits and stratified by DSD model, were asked about perceived quality of care (QOC) including provider attitudes, trust in provider, and time spent with the provider using questions with Likert-scale responses (Cronbach's alpha =



0.70). Mean scores were categorized as "low" QOC (score <=3) or "high" QOC (score>3). We used logistic regression to assess differences and report crude and adjusted odds ratios (AORs). Qualitatively, participants explained their overall satisfaction; themes were identified through content analysis.

Results: 767 RoC (70.4% female, median age 39) were surveyed: 23.9% enrolled in facility pick-up-points; 26.2% in out-of-facility pick-up-points; the remainder in conventional care. Participants reported high QOC regardless of model. (Figure 1).

Those in facility-based models perceived no differences in QOC compared to those in conventional care; fewer RoC in out-of-facility models reported low QOC. Participants who missed more visits, had more expected healthcare interactions and/or more out-of-facility interactions perceived lower QOC, as did those receiving longer dispensing intervals (non-significant differences).

Qualitatively, participants receiving conventional care perceived providers as helpful, respectful, and friendly; they were satisfied with care despite long queues. Those in DSD models frequently spoke about ease and convenience, particularly not having to queue.

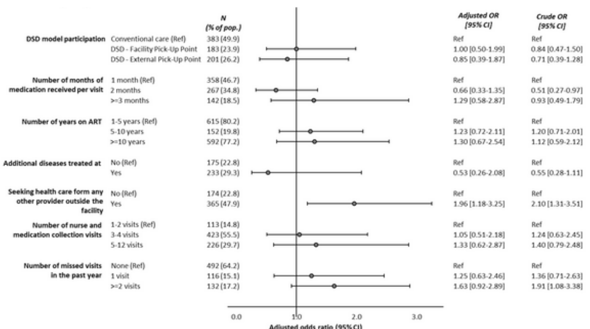


Figure 1. Crude and adjusted odds ratios for recipients of care low perceived quality of care for differentiated service delivery models and conventional care in South Africa (n=767)

Conclusions: RoC enrolled in DSD models in South Africa did not perceive differences in QOC compared to those in conventional care. Existing DSD models (facility and external pick-up-points) and dispensing intervals do not appear to affect self-reported QOC but are perceived as more convenient.

EPE158

Does differentiated service delivery for HIV treatment change healthcare providers workload? Provider views from Malawi, South Africa and Zambia

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Background: Differentiated service delivery (DSD) models aim to make delivery of HIV treatment more efficient, reduce the burden on healthcare providers, decongest clinics, and improve quality of care and/or increase clinic capacity. Although many countries are implementing DSD models, there is limited evidence on how they affect providers' workloads.

Methods: We surveyed providers (April-November 2021) at 43 public facilities in Malawi (12), South Africa (19), and Zambia (12). A convenience sample of ≤10 clinical (doctors, nurses etc.) and non-clinical (lay counsellors, data capturer etc.) providers per facility who had direct or indirect involvement in DSD implementation were invited to participate. Quantitative and qualitative questions examined changes in providers' work schedules and workloads associated with the advent of DSD models.

Results: 444 providers were interviewed (n=142 Malawi, n=182 South Africa, n=120 Zambia). Most providers reported that DSD models freed up their time (74% Malawi, 71% South Africa, 93% Zambia) and made their jobs easier (90% Malawi, 73% South Africa, 98% Zambia). Freed-up time may have stemmed from seeing fewer patients/day (75% Malawi, 73% South Africa, 98% Zambia), and most respondents stated that DSD models led to changes in how their clinic was managed (80% Malawi, 67% South Africa, 90% Zambia). This change in management may have manifested in multiple ways: about a third reported spending more time with each patient, 11% reported working shorter hours; 11% said that DSD models led to more time for administrative duties. Qualitatively, providers described fewer patients seen daily due to DSD models, reducing their workloads and allowing more time for each patient for administrative tasks and for personal affairs due to shorter hours, resulting in lower stress overall.

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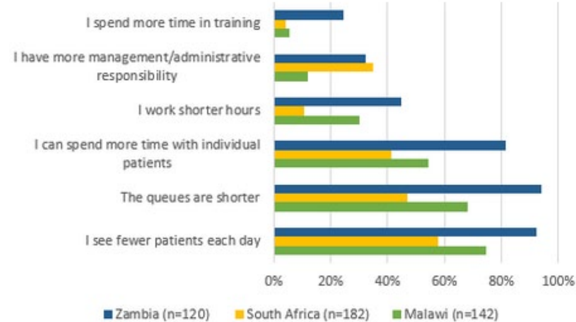

Figure 1. Provider-reported changes to their jobs post-DSD implementation, by country.

Conclusions: A diverse sample of southern African providers reported that DSD introduction freed up time, made their jobs easier, and led to changes in patient and clinic management.

EPE159

Peer-driven approaches to increase uptake of HIV testing services among Fetish Priests who are men who have sex with men (MSM) in the Western Region of Ghana

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Background: Key populations such as MSM are classified as major drivers of the HIV epidemic in Ghana. There are different subgroups of high-risk MSM who do not avail themselves for HIV services. In Ghana, fetish priests who are MSM engage in risky sexual behaviours but reaching them with HTS is difficult because of some superstitious beliefs and the notion that HIV is a spiritual disease and cannot infect fetish priests. Reaching this subgroup of MSM who are fetish priests require using peer-driven approaches to uncover them.

Description: Using the snowball approach, an MSM who was reached, tested, and diagnosed with HIV was encouraged to link his sexual partners within the past year to a trained counselor to provide HTS. The referral chain linked the outreach team to a fetish priest at his shrine. Constant visitation and HIV education were provided to the Priest and was counseled on the need for an HIV test. With confidentiality assurance by the trained counselor, the Priest accepted HTS and was encouraged to link other fetish priests who are MSM for testing services.

Lessons learned: The peer-driven approach using the referral chain of HIV-positive fetish priest reached out to more fetish priests who are MSM in the Prestea district. A total of 20 shrines headed by MSM fetish priests were identified. 15 out of the 20 Priests agreed to test for HIV after constant education and visitation.12 fetish priests who received HTS were diagnosed HIV positive; 3 did not accept their test results and refused to be initiated on ART; 9 accepted their test results and were linked to ART using differentiated service delivery at their various shrines.

Conclusions/Next steps: Targeted approaches to HTS through effective snowball and referral chain strategy is an effective way of reaching out to closeted MSM and should be extended to other districts in the country.
Confidential and accessible differentiated service delivery encourages hidden MSM to seek HIV services themselves. As a next step, continuous education and monitoring should be ensured among the Fetish priests to encourage acceptability of ART among those who refused treatment; and support achievement of viral suppression among those who accepted treatment.

EPE160

Eswatini's Differentiated Service Delivery (DSD) models: adaptation, scale-up and monitoring

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Background: Since 2016, the Eswatini Ministry of Health (MOH) has prioritized the expansion of HIV differentiated service delivery (DSD), including scale-up of differentiated treatment (DT) models. Because routine monitoring and evaluation (M&E) systems did not capture key DT data, MOH invested in adaptations to the national electronic Client Management Information System (CMIS) to enable tracking of DSD-relevant data, collected *ad hoc* data on DT scale-up, and conducted annual DSD system self-assessments supported by the multi-country CQUIN learning network.

Description: We triangulated scale-up of DT in Eswatini using national HIV annual program reports (2016-2020), CMIS quarterly reports (2020-2021), results from DT client satisfaction study, and Eswatini's CQUIN annual meeting reports and capability maturity model dashboard staging (2018-2021).

Lessons learned: The proportion of health facilities (HF) implementing DT grew from 22/176 (29%) in 2016 to 193/202 (96%) in 2020. The proportion of ART clients enrolled in DT rose from 13,791/174,103 (7.9%) in 2017 to 164,336/204,286 (80.4%) in 2020. The diversity of DT models also increased over time; the eight current models include 5 facility-based, (Mainstream, Fast Track, Family Centered Care, Treatment Clubs, Teen Clubs) and 3 community-based models (Outreach, Community Drug Distribution, and Community Antiretroviral Therapy (ART) groups).
Tailored DT models are available for adults, adolescents, people with HIV and co-morbidities, advanced HIV disease, men, pregnant and breast-feeding women, high viremic, and key and vulnerable populations. All DT models offer 3-multimonth dispensing (MMD) or 6MMD. *Ad*

hoc studies indicate high levels of client satisfaction. National systems cannot yet compare viral load suppression (VLS) for clients in different models, but VLS for all PLHIV on ART increased from 90% (males) and 91% (females) in 2017 to 96% and 97% respectively in 2020.

Conclusions/Next steps: Eswatini has markedly scaled up DT coverage and diversity, ensuring that HIV treatment is responsive to the needs of different groups and sub-populations. An increasing proportion of PLHIV are virally suppressed, receiving their HIV treatment through DSD models with extended ART refills and less frequent clinical visits.

Moving forward, ongoing investments in CMIS will allow MOH to use routine program data for in-depth monitoring of DT model uptake and outcomes.

EPE161

Effect of peer-delivered community-based tracing support on survival in people living with HIV in China: a propensity-score matched analysis

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Background: Despite wide-spread access to antiretroviral therapy (ART), mortality among People Living with HIV (PLHIV) in China remains higher than the general population. Community-based organizations (CBOs) can deliver peer-tracing support to PLHIV to increase access to care and optimize health outcomes. Tracing support was a novel community-based model of health care support for PLHIV.

After taking part in the only CBO for PLHIV in Wuxi, China, patients would be traced by peer health workers to improving their retention in care, ART adherence and survival.

Methods: Data on PLHIV in Wuxi, China from January 2006 until December 2021 was retrieved from the Chinese HIV/AIDS Comprehensive Information Management System. The intervention group included PLWH who received peer-delivered community-based tracing support.

Controls were matched 1:1 using propensity score matching to ensure that their characteristics were comparable to the intervention group. Competing risk model and cox proportional hazards model were used to analyse differences and correlates in AIDS-related mortality (ARM) and all-cause mortality, respectively.

Results: A total of 860 individuals were included in our analysis. The 430 PLHIV in the intervention group were likely to perform better ART adherence (92.1% vs. 83.7%, χ^2=14.176, P<0.001) and more likely to keep retention in care (93.5% vs. 76.1%, χ^2=50.655, P<0.001) compared to the 430 matched controls.

Significantly lower rates of AIDS-related mortality (ARM) (1.8 vs. 7.0 per 1000 person-years, P=0.011) and all-cause mortality (2.3 vs. 9.3 per 1000 person-years, P=0.002) were observed among PLWH in the intervention group. Survival analysis also showed that PLHIV in the intervention group had higher cumulative survival rates compared to those who in the control group (χ^2=9.147, P=0.002).

Competing risk model found peer-delivered community-based tracing support reduced ARM by 72% (SHR=0.28, 95%CI: 0.09-0.95) and all-cause mortality by 70% (HR=0.30, 95%CI: 0.11-0.82). The average cost of preventing 1 death is about USD 30,000 if employing full-time community health workers (CHWs) compared to USD 7,143 through voluntary CHWs.

Conclusions: PLHIV who received peer-delivered community-based tracing support were likely to have significantly improved survival. This model of intervention for PLHIV presented potential cost-effectively and prospective well-powered studies are needed to confirm this perspective.

EPE162

Expanding three-month drug distribution eligibility in Mozambique: impacts on viral load suppression and long-term retention

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Background: In response to the COVID-19 pandemic, Mozambique changed multi-month dispensing guidelines to expand eligibility for providing people living with HIV with 3 months of medication and reduce clinic visits (3MMD). Access to 3MMD was expanded by reducing the time on antiretroviral therapy (ART) required for eligibility and eliminating the need for laboratory tests to verify eligibility (CD4 or viral load (VL)). This study assesses the impact of these changes on patients' viral load suppression (VLS) and long-term retention (LTR) in care (>12 months on ART).

Methods: This is a retrospective cohort study of routine data collected from electronic medical records of patients included in 3MMD on/after 30th March 2020. Data was extracted from 20 high-volume health facilities in four provinces, representing 48% of all patients active on ART in those provinces. Patients were divided into 2 cohorts: cohort 1 (C1) included patients who met 3MMD eligibility criteria before the change in policy; and cohort 2 (C2) included patients who started ART on/after 1st November 2019 and became eligible for 3MMD due to the change in policy. All patients were followed until September 2020 to assess VLS (VL<1,000 copies/ml after at least 6-months on ART), and until May 2021 to assess LTR.

Results: 13,041 patients were included (8,009 in C1, 5,032 in C2); 70% were female in C1 and 53% in C2, and 5.6% were children in C1 (ages 0-14 years) vs 2.6% in C2. Distribution of patients in an optimized ART regimen was equivalent across the two cohorts, with 98% in C1 vs 99% in C2. The distribution of patients by time on ART in C1 was: 11.5% ≤1 year; 14.5% 1-2 years, and 73.6% ≥2 years.

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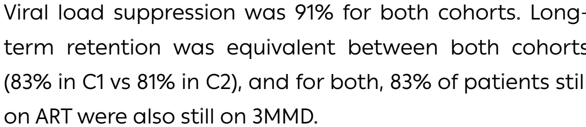

Viral load suppression was 91% for both cohorts. Long-term retention was equivalent between both cohorts (83% in C1 vs 81% in C2), and for both, 83% of patients still on ART were also still on 3MMD.

Conclusions: Expanded access to 3MMD for HIV treatment had no negative impact on patients' viral load suppression and on long-term retention. These results support the implementation of the expanded 3MMD policy beyond COVID-19 response.

EPE163

Formation of designated weekend clinics for children and adolescents in HIV care at Mayuge HCIV, East Central Uganda improved their viral load suppression rates

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Background: The World Health Organization(WHO) aims to achieve HIV epidemic control worldwide with 95% of adults as well as children and adolescents living with HIV (CALHIV) on ART attaining suppressed HIV viral loads. Data from national population health impact assessments show that children need extra support to live with HIV and achieve viral load suppression (VLS); their VLS rates lag behind adults. In Uganda, for example, VLS for children was 39% compared to 84% for adults by 2020.

The WHO recommends differentiated service delivery as a person-centered approach to improve delivery of HIV services and outcomes for people living with HIV (PLHIV). We sought to pilot dedicated clinic and clinic days for CALHIVs Care at Mayuge HCIV East Central Uganda to evaluate if they would improve their HIV viral load suppression rates.

Description: To address this challenge, the USAID Regional Health Integration to Enhance Services in East Central Uganda (RHITES-EC) project provided technical support to Mayuge HCIV to pilot a dedicated weekend clinic day for children and adolescents in addition to the routine daily HIV clinic days. The designated weekend clinic offered CALHIVs comprehensive healthcare and adequate time with health service providers on a day that did not interfere with school schedules.

Lessons learned: There has been significant improvement in CALHIVs appointment keeping to clinic visits from 69% in August 2020 to 94% in September 2021; similarly in the same time period viral load suppression rates at Mayuge HCIV increased from 38% at baseline in August 2020 to 90% 12 months later, despite the challenges of COVID-19.

Conclusions/Next steps: Running the dedicated weekend clinic days for CALHIVs at Mayuge HCIV improved CALHIV appointment keeping, ensuring adequate contact time for the provision of comprehensive HIV care and treatment package hence contributed to increasing the suppression rate. Technical support to Mayuge HCIV and scaleup to 131 other government facilities in East Central Uganda continues and, since October 2021, occurs under the USAID Local Partner Health Services East Central Activity.

EPE165

High acceptability of a direct-to-pharmacy PrEP delivery model in public health HIV clinics in Kenya: perspectives of PrEP clients and healthcare providers

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Background: High opportunity costs and health system burdens limit oral pre-exposure prophylaxis (PrEP) delivery in Kenyan public HIV clinics. Differentiated care interventions can reduce persistent barriers, and enhance PrEP scale-up and implementation.

We conducted a qualitative study to gather insights of PrEP clients and healthcare providers regarding a PrEP differentiated care intervention aimed at improving efficiency of PrEP delivery in public HIV clinics.

Methods: From March to November 2021, we conducted in-depth interviews with 17 clients enrolled in a direct-to-pharmacy (DTP) PrEP care model with HIV self-testing (HIVST) for PrEP refill visits, and 18 healthcare providers. Participants were purposively sampled from two public HIV clinics in central Kenya.

We used semi-structured interview guides informed by the theoretical framework of acceptability. We used inductive and deductive thematic approaches to understand attitudes, experiences, opportunity costs, burden, and willingness to participate in the intervention.
Results: PrEP clients were 76% female with a median age of 40 years (interquartile range 33-50). Providers were 61% female, and included 44% HIV testing services (HTS), 28% pharmacy, and 17% clinical providers, among other cadres. Participants reported feeling satisfied with the DTP model, as it improved service efficiency and quality, motivating continuation and PrEP adherence.
Clients reported that they experienced less queues and movement between clinic rooms, which improved privacy and reduced HIV clinic-associated stigma. Clients also reported that spending less time in the clinic reduced loss of working hours and income.
Providers reported reduced workload attributed to involvement of fewer staff and improved clinic flow, saving time for other roles. Both clients and providers expressed confidence in, and willingness to continue with the DTP model.
However, participants described concerns of clients possibly missing out on other healthcare services during DTP refill visits, and of HIVST self-efficacy and accuracy. Providers further described worries over shift of workload to the pharmacy and loss of roles among HTS providers.
Conclusions: DTP refill visits with HIVST was highly acceptable as a differentiated care intervention for PrEP delivery among clients and providers.
Context-specific adaptations and scale-up of the intervention could improve efficiency of PrEP delivery in public HIV clinics in Kenya.

EPE166

How do nurses spend their time? A time and motion analysis in the context of differentiated service delivery at primary public healthcare facilities in South Africa

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Background: Among other benefits, differentiated service delivery (DSD) models are expected to reduce the time that clinicians spend with established ART clients enrolled in DSD models and thus potentially increase available provider time for non-DSD ART and non-ART clients. The actual use of provider time after DSD model implementation has not been reported. We measured healthcare provider time utilization in the context of DSD model implementation in South Africa.
Methods: We conducted a time and motion study at 10 primary clinics in South Africa from August to November 2021. Nurses involved in ART delivery (n=34) were observed for a total of 61 working days; type and duration of activities were recorded. We estimated average minutes spent/nurses/day on each activity and average number of clients seen/nurse/day, stratified by proportion of a facility's ART clients enrolled in DSD models, facility setting, and facility size.
Results: Compared to facilities with DSD model uptake below the median (< 47.7% of ART clients), nurses in facilities with high DSD model uptake worked slightly shorter days (-13 minutes), had more free time/breaks (26 minutes), spent substantially more time on client-related tasks (42 minutes), general administration/meetings (18 minutes), and spent slightly less time on direct client care (11 minutes) (figure). Low or high DSD model uptake did not meaningfully affect the average number of clients seen/nurse/day (26 and 27 clients, respectively). Nurses at facilities with below-median client volumes and in rural areas saw more clients/day. Nurses at rural facilities spent more time on DSD-related tasks and had less free time.

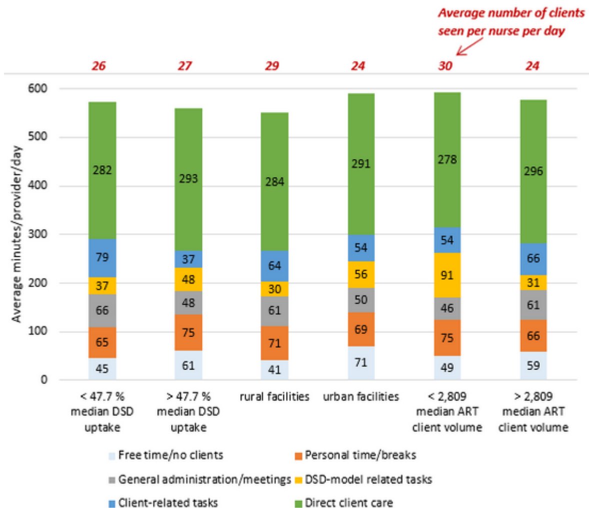

Figure. Average minutes spent per activity per day by nurses in South African clinics.

Conclusions: Nurses in facilities with high DSD uptake spent slightly less time on direct client care but more on related activities; they did not see more clients/day. As DSD model implementation expands, effective reallocation of time may enhance facility performance.

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EPE167

Assessment of the effect of community differentiated service delivery models on viral load suppression among children and adolescents living with HIV in Uganda

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Background: Viral load suppression (VLS) for Children and Adolescents Living with HIV (CALHIV) in Uganda has improved but remains low at 74% compared to that of adults (91%), DHIS2 2021. This has been due to suboptimal ARV regimens, non-adherence to treatment due to psychosocial and drug administration challenges. With support from PEPFAR, Uganda started implementing community Differentiated Services Delivery (DSD) models for children (>2 years) and adolescents (10-19 years) living with HIV in 2020. Facility models include; Facility-based individual management model (FBIM), Facility-based groups (FBGs), Fast track drug refill (FTDR) while community models include; Community Drug Distribution Point (CDDP) and Community Client Led ART Distribution (CCLAD).

A national DSD dashboard was developed to monitor VLS among clients on DSD models, by DSD type. We set to assess the effect of community DSD models on VLS among CALHIV across the country.

Description: We retrospectively analyzed data for CALHIV from the DSD dashboard for all HIV antiretroviral (ART) clinics in Uganda from July 2021 to September 2021. This dashboard pulls data from DHIS2 the national reporting system on a quarterly basis. Descriptive analysis included data on demographics and VLS for community DSD models.

Lessons learned: Among 92,562 CALHIV active on ART during July 2021 to September 2021, 56.2% were females and 43.8% were males. Of these, 74.4% were in Facility-based models, 21.0% were in community models and 4.6% un categorized; 28.9% were in FBIM, 45.5% in FBGs, 17.9% in FTDR, 1.6% in CDDP and 1.5% in CCLAD. VLS among community DSD models did not differ by sex (Males = 67.0% vs Females = 66.0%, p-value >0.05) and by community DSD type; CCLAD (62.0%) vs CDDP (61.0%), p-value>0.05). Among children, VLS (<1000 copies) was 62.0% and 75.0% among adolescents living with HIV receiving ART under a community DSD model.

Conclusions/Next steps: We observed lower viral load suppression for children and a comparable VLS for adolescents in community DSD models, compared to the national VLS., There was no significant difference in VLS among the two community DSD models. Children and adolescents living with HIV can still benefit from community DSD models, however, psychosocial support should be strengthened, especially for children.

EPE168

Effectsof multi month dispensing on viral suppression and continuity in treatment among HIV-infected children aged 2 to 9 years in selected health facilities in Western Kenya

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Background: WHO recommends differentiated models of care, including Multi-Month Dispensing (MMD) for stable people living with HIV. As of June 2020, MMD coverage for children in PEPFAR-supported counties was 51%. After COVID-19 epidemic began (March -2020), Kenya extended MMD to all PLHIV regardless of age and viral load.

We assessed the effects of MMD (>3 months) on clinical outcomes of children living with HIV(CLHIV) aged 2–9 years in Kisii and Migori counties, Kenya.

Methods: We conducted a retrospective cohort analysis of CLHIV on antiretroviral therapy (ART) to assess viral suppression (VS) (<400 copies/ml) and continuity in treatment (no interruption >30 days after a clinical appointment). CLHIV who made ≥1 clinic visit between March 2020 and September 2021 were included.

Those on MMD (≥ 90 days' pills) at any point during the period were classified as ever on MMD. Demographic data and clinical information from 43 facilities was abstracted from electronic medical records and generalized linear models with a log link used to assess VS and retention by MMD enrolment.

Results: Of 963 CLHIV included, 751 (78%) sought treatment in Migori, median age was seven years [Interquartile range 6-9], 488 (51%) were female, 458(48%) were on Dolutegravir (DTG)-based regimen.).

Overall, 756 (79%) of CLHIV were enrolled in MMD. VS at baseline (March, 2020) was 85% (551/649) for MMD-enrolled vs 63% (106/167) for non-MMD. At endline (September, 2021), VS for MMD-enrolled CLHIV had increased to 93% (688/736) with a retention of 91% (691/756), compared to VS of 74% (144/194) and retention of 79% (164/207) among non-MMD CLHIV. Regimen class (DTG, Non-DTG) (OR 0.47, 95% CI: 0.34 – 0.65), region (Kisii vs Migori) (OR 0.46, 95% CI: 0.30 – 0.72) and age (2-4 vs 5-9 years) (OR 2.01, 95% CI: 1.43 – 2.95) were associated with enrollment into MMD.

After adjusting for age, sex, region, and regimen, children on MMD were more likely to suppress (aRR 1.22 95% CI (1.02 – 1.46)) and continue in treatment (aRR 1.12 95% CI (1.02 – 1.19)).

Conclusions: MMD for CLHIV may contribute towards the improvement of VS and continuity in treatment. Continued MMD implementation beyond the COVID-19 pandemic may be beneficial in improving treatment outcomes.

EPE169

Mobile clinics improve HIV testing, ART initiation and treatment continuation among female sex workers in Nampula Province, Mozambique

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Background: Reaching and engaging key populations (KP) in HIV prevention, care and treatment (C&T) services is a challenge in Mozambique. An estimated 22% of female sex workers (FSW) know their HIV serostatus (Spectrum v7.584 & Shiny 90), and only 13% are on antiretroviral treatment (ART) nationwide (PEPFAR MER FY20/Q1).

To improve access to health services in Nampula among KP, particularly FSW, ICAP implemented mobile clinic (MC) services within communities and select sex work (SW) hotspots.

Description: In July 2020, ICAP collaborated with Nampula Provincial Health Authorities (DPS/SPS) and KP community partner, Promoção Integrada de Direitos e Saúde (PASSOS), to design an integrated community-based HIV and TB prevention, C&T and general health service delivery approach for KP, utilizing MC and pop-up tents at SW hotspots and community venues in four districts, including night and weekend services. PASSOS identified hotspots and trained FSW to create demand for MC services. ICAP allocated dedicated staff to provide service delivery, including a clinical officer, lay counselor, nurse, and driver. Data from MC services were reported through seven health facilities (HF).

We reviewed data from the pre (July-September 2020) and post (July-September 2021) implementation period to assess the impact of MC on HIV case identification, ART initiation and treatment continuation (defined as patients who did not miss their drug pickup for more than 28 days from their last scheduled appointment) among FSW at the seven HF.

Lessons learned: Between pre and post implementation periods, there was a 137% (912/385) increase in HIV testing, 80% (234/130) increase in case identification, 115% (325/151) increase in ART initiation and 161% (1482/567) increase in treatment continuation among FSW. Between July-September 2021, MC contributed to 32% (290/912) of HIV testing, 30% (70/234) of case identification, 28% (92/325) of ART initiation and 34% (497/1482) of treatment continuation among FSW at seven HF.

Conclusions/Next steps: Implementing MC at community level improved health service provision for FSW in Nampula. Interventions that bring health services closer to FSW and involve KP partners are important to address gaps in access to HIV prevention, C&T. ICAP will continue to work with KP partners and DPS/SPS to strengthen and expand MC services within Nampula.

EPE170

Community health commodities distribution to address community needs during COVID-19 pandemic in Eswatini

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Background: Community Health Commodities Distribution (CHCD) was launched in March 2020 as emergency response to COVID-19 pandemic. Eligible Human immunodeficiency (HIV) clients with suppressed viral load(VL) and patients on selected chronic medications refill at community pick up points (PUP).

Antiretroviral therapy, Tuberculosis (TB) and TB preventive therapy (TPT), pre-exposure prophylaxis (PrEP), family planning (FP) and non-communicable diseases (NCD) commodities were distributed. HIV testing and laboratory services are also provided.

Description: By October 2020, about 97 health facilities offered CHCD services during the pandemic. Community members and patients were informed about services in their catchment areas by Expert Clients (EC) during visits to health facilities. Patients were recruited and registered into the CHCD service delivery model at the public health facility. A day prior to service delivery, the CHCD facility team (nurse, EC, and data clerk) prepack the necessary commodities. On the appointment day, the facility team deliver the necessary commodities to the community PUPs where patients access the services.

Lessons learned: From April to October 2020 about 23,906 clients received CHCD services. About 70,000 medications and commodities were distributed every month and approximately 370,000 condoms distributed. Among all medications and commodities distributed, 34,288 (64%) were HIV-related: self-test kits 22,953 (67%); rapid diagnostic tests kits 5,241 (15%); VL test 5,029 (3%), TB and TPT 1,146 (6%) and PrEP refills 1,065 (3%). The non-HIV services commodities were 19,343 (36%),which included, 14,992 (78%) general outpatients' medications, refills for: hypertension 2,204 (11%); diabetes 785 (4%) and FP 216 (1%). Facilities added different curative and HIV related services based on client specific needs, and availability of commodities. However, service package and monitoring and evaluation is not standardized across the country and there is lack of some chronic disease medications.

Conclusions/Next steps: There was a rapid roll out of CHCD during the COVID-19 pandemic, increase access to commodities during COVID-driven lockdown, decongest

facilities, integrated model of care and increased service coverage. We recommend standardization of services to all PUPs. Based on uptake of CHCD and to ensure sustainability, public health facilities need to integrate CHCD in their outreach programs.

EPE171

Viral suppression levels among newly enrolled ART patients on multi-month dispensing of antiretroviral drugs

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Background: HIV programs across sub-Saharan Africa adopted multi-month dispensing (MMD) of antiretroviral treatment (ART) as a preventative measure during the COVID-19 pandemic. We evaluated the effect of MMD on viral suppression among newly enrolled adolescents and adults with HIV in northern Nigeria.

Methods: We abstracted electronic medical records for patients ages ≥10 years, newly initiated on ART and with viral load test (VL) done at 6 or 12 months after initiation, across 11 states in Northern Nigeria (April 1, 2019-June 30, 2021).

A VL performed 6-9 months after ART initiation was considered a 6-month VL, while those performed between months 9 and 15 were considered 12-month VL. A VL of <50 copies/ml was considered suppressed. Participants were categorized in the MMD group if they were issued ART for ≥84 days within 6 months of ART initiation.

The period when participants were enrolled was classified as pre-COVID-19 (before April 1, 2020) and during the COVID-19 pandemic.

We estimated the relative risk (RR) comparing proportion of virally suppressed among patients on MMD and not on MMD, and adjusted for age, gender, COVID-19 period, and ART regimen. We report 95% confidence intervals (95%CI) and p values (α=0.05).

Results: Of the 6,415 patients, 94% were >19 years, 66% were female, 73% were enrolled during the pre-COVID-19 period, 86% were on a dolutegravir-based regimen, 54% had a 6-month VL, and 57% had a 12-month VL. Of 3,474 with a 6-month VL, 2,197 (63%) were virally suppressed, while 2,280 (63%) of the 3,638 with a 12-month VL were virally suppressed.

We found that MMD was associated with viral suppression at 6 months (p=0.046). Those on MMD had a 5% higher likelihood of viral suppression compared to patients not on MMD (RR: 1.05 [95%CI: 1.00-1.11]). There is no association between MMD and viral suppression at 12 months, (RR: 1.04 [95%CI: 0.99-1.09], p=0.148).

Conclusions: Approximately two thirds of newly enrolled patients achieved VL suppression after 6 months and 12 months on ART. Multi-month ART dispensing is a plausible option for newly enrolled ART patients.

EPE172

A "One Stop" Differentiated Service Delivery Model in the Maternal and Child Health Clinics improves compliance and viral suppression among children, pregnant and breastfeeding women in Lusaka District, Zambia

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Background: Meharry Medical College Global Health Services implemented a PEPFAR-supported program: "One-Stop" differentiated service delivery (DSD) model to improve HIV care for moms and babies at four maternal and child health (MCH) clinics in level 2 hospitals (Chawama, Chilenje, Matero and Kanyama) in Lusaka District, Zambia.

The one-stop DSD clinic model included MCH services and a satellite pharmacy. Implementation includes collaboration with medical superintendents, facility staff, and the Lusaka Provincial Health Office.

Description: The patient-centered, team-based, DSD care model was implemented in October 2020 to establish and coordinate appointments and prevent interruption in treatment. This was accomplished by introducing five, low-cost, low-intensity interventions:

1. An electronic appointment system,
2. Patient appointment reminders with telephone calls and texting,
3. Improved signage for ease in identifying service points,
4. Sheltered waiting areas to promote and encourage clinic attendance during adverse weather conditions, and
5. A mentoring mom program to provide psychosocial support to pregnant and breastfeeding women.

Lessons learned: On average, ~1,600 pregnant women are seen at their first antenatal care (ANC1) visit in the clinics and subsequently monitored through labour and postnatally.A total of 250 (16%) mothers has HIV infections at ANC1 comprising the initial and known positives. If negative, PBFW are re-tested at 3-month intervals to check negative status for HIV infections. Using viral load suppression monitored at 12 month as an indicator of the efficacy of the model, 97% percent of pregnant women and 96% of breastfeeding women in the four clinics have exceeded the target of 95% virally suppressed.

Additionally, 80% of children under the age of 5 years are virally suppressed. Furthermore, over 90% of children under the age of 24 months (>3 kg weight, > 4 weeks age)

have been transitioned from Lopinavir/ritonavir- to Dolutegravir-based antiretroviral treatment regimen to improve viral suppression.

Conclusions/Next steps: The one-stop DSD model has resulted in improvements in prevention, linkages to care, treatment, and ART adherence for mothers and children under the age of 5 years. This model has implication for prevention of mother to child transmission of HIV (PMTCT), increased care coordination and viral suppression for the mothers and children.

EPE173

Strategies to engage men in health care services: lessons from Manica province, Mozambique

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Background: Identifying and engaging men in HIV care and treatment services has been a challenge for health facilities supported by USAID's Efficiencies for Clinical HIV Outcomes (ECHO) project. The Mozambique Ministry of Health (MOH) has guided the implementation of a male engagement (ME) strategy to improve the HIV treatment cascade for men. ECHO developed a plan to implement and operationalize this national strategy with specific interventions at community and health facility levels to improve ME.

This study evaluates the effect of these interventions on ME performance along the HIV care and treatment cascade in Manica province, Mozambique.

Description: In April 2020, ECHO began supporting ME implementation in eight health facilities in Manica. By May 2021, the project developed and implemented a revision of the ME plan, which included a variety of new interventions including trainings for health providers to more consistently offer male-focused services.

This package of services comprised sexual health services, couples consultations, extended service hours, ME-focused lectures in waiting areas, health service brochures and invitations for women to share with their male partners, and community-level interventions such as community dialogues and radio spots targeting men's health.

Lessons learned: ECHO collected routine data from national registers, disaggregated by sex, to analyze male performance in HIV testing positivity rates, people active on HIV treatment, and viral load suppression, focusing specifically on progress at sites implementing the ME plan.

From April 2020 to June 2021, the project observed improvements in HIV testing (47,706 men testing and 3,540 diagnosed with HIV), men active on ART (from 44,625 to 49,007, for a 10% increase) and viral load suppression (from 81% to 88%). These results are encouraging and indicate that these interventions are helping to expand male engagement for HIV health services.

Conclusions/Next steps: A combination of interventions focusing on male interests and needs may get more men engaged in health services. Encouraging a male-friendly environment through health provider capacity building can help attract men to services and get them invested in their health.

EPE174

Multi-month dispensing and use of dolutegravir associated with better viral suppression among children in Nigeria

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Background: Few studies have investigated the effect of multi-month dispensing (MMD) of antiretroviral treatment (ART) and compared the effect of dolutegravir (DTG) to other regimen on viral suppression in program settings among children in sub-Saharan Africa.

Methods: We utilized program data (July 1, 2020-June 30, 2021) for children ages 0-15 years from 74 facilities in northern Nigeria. Definitions: MMD (ART dispensed for >84 days); viral suppression (<50 copies/ml on recent viral load [VL]); ART regimen (DTG-based, non-nucleoside reverse transcriptase inhibitor [NNRTI-based], and protease inhibitor [PI-based]); regimen-line (first or second line). Multivariate analyses using generalized linear models estimated the effect of ART regimen, MMD, and a combination of MMD and ART regimen on viral suppression.

We adjusted for duration on ART, gender, regimen-line in the three models, ART regimen in the MMD model and MMD in the ART regimen model. We report relative risks (RR), bootstrapped 95% confidence intervals (95%CI) and p values (α=0.05) to account for clustering by facility.

Results: Of 3,824 children, 1,939 (51%) were male, median age of 10 ((IQR: 6-13) years, on ART for 4 (1-6) years; 2,210 (58%) were suppressed, 3,580 (94%) on first line regimen, 2,290 (60%) on DTG, 1,095 (29%) on a PI and 386 (10%) on an NNRTI; 1,590 (42%) were on MMD and 1,159 (30%) were on both DTG and MMD.

Compared to children on DTG, those on a PI had a 16% lower likelihood of suppression (0.84 [0.71-0.99], p=0.049). The difference in suppression between those on DTG and NNRTI was not significant (0.89 [0.71-1.13], 0.306). Those on MMD had an 18% higher likelihood of suppression (1.18 [1.06-1.32], p=0.001) compared to those not on MMD. Lastly, children on DTG without MMD had a lower likelihood of suppression compared to those on DTG+MMD (0.83 [0.76-0.92], p<0.001 and 0.73 [0.63-0.85], p=0.001 respectively). The difference in suppression between those on DTG+MMD and MMD only was not significant (0.83 [0.65-1.07], p=0.162).

Conclusions: Slightly over half of the children achieved undetectable VL levels. VL suppression is higher among children on MMD and those on DTG, and even higher among children on DTG plus MMD.

EPE175

Shifting from 3-multimonth prescribing (3MMP) to 6-multimonth prescribing (6MMP) was associated with non-inferior outcomes for adults on antiretroviral therapy in Rwanda

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Background: In 2016, WHO endorsed multi-month prescription (MMP) of antiretroviral therapy (ART) to reduce drug refill frequency for clients established on ART and increase efficiency at both client and facility level. Rwanda started the 3-MMP initiative in 2017 and moved to 6-MMP in July 2020. People Living with HIV (PLHIV) who meet eligibility criteria (age$\geq$18, on ART for >12 months with at least 2 consecutive viral load tests [VLT]<200 copies/mL) can opt into the 6-MMP model, which includes twice-yearly clinic visits and VLT, and provision of 6-months of ART at each visit. We reviewed charts of clients who transitioned from 3-MMP to 6-MMP to compare the outcomes of the two models.

Description: We reviewed charts of all PLHIV receiving at least one year of 3-MMP followed by one year of 6-MMP at a convenience sample of 22 HFs in Kigali, Rwanda, abstracting data on VLT results, VL Target NOT Detected [TND: VL=0], undetectable VL [uVL: VL<20] and VL Suppression [VLS: VL<200 copies/ml] and retention rate defined as reporting in time (<1week) for ART pickups and VLT.

We used paired t-testing to compare VLT and retention for clients' last 12 months on 3MMP vs their first 12 months on 6MMP. VL absolute values were log-transformed and analyzed as either mean or median log VL.

Lessons learned: 10,129 PLHIV were enrolled at study health facilities. There was no significant difference in the mean-log VL values (1.32 vs 1.33) during 3-MMP vs 6-MMP (p=0.998). 28.7% of PLHIV had VL TND during 6-MMP (95%CI: 27.8-29.5) compared to 22.7% during 3-MMP (95%CI: 21.9-23.5) p<0.001.

The proportion of PLHIV with VLS during the 6-MMP period was very high 99.4% (95%CI: 99.2-99.6) but slightly lower than observed during the 3-MMP period 99.8% (95%CI: 99.7-99.9), (p<0.001). Retention improved with exposure time, 67% at 6-months and 74% after 12-months of ART exposure. Stratification showed no significant difference by sex and age group.

Conclusions/Next steps: Transitioning PLHIV established on ART from 3-MMP to 6-MMP did not majorly affect VL outcome measures. Retention improved with the establishment on ART for both periods. HIV programs should consider offering the option of 6-MMP one year after initiating ART.

EPE176

The positive impact of multi-month dispensing (MMD) of ARVs on client treatment continuity

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Background: Treatment continuity is essential in achieving the second 90% of the UNAIDS 90-90-90 target. However, by the end of 2020, achieving the second 90% eluded most countries in Africa including Ghana. ARV Multi-month dispensing (MMD) is critical to successful treatment because it reduces the barriers to care at both the patient and provider levels. We assessed facility-based differentiated MMD model after Ghana adopted MMD in October 2019.

Methods: This is a longitudinal quantitative retrospective cohort study of clients initiated on ART over a three-year period (2018 to 2020). Data was collected from 58 health facilities that were grouped as district hospitals being secondary level sites (DH=20) or health centers being primary level sites (HC=38). Each facility type implemented the full bouquet of differentiated HIV services including MMD.

The differences between the groups were assessed using population-averaged generalized estimating equations (GEE), controlling for biases of facility hierarchy and available health system structures for HIV services. The primary outcome was ART retention as of May 2021.

Results: A total of 6,709 clients were enrolled, with 4,812 in DH and 1,897 in HC. Overall retention on ART significantly improved from 67% to 98% (p<0.005), with a significant difference in ART retention at HCs compared to DHs (99% and 92% respectively, p<0.001). MMD was the major contributing factor for the significant increase in client retention on ART.

There was no significant difference in MMD across the facility management types (government, faith-based, and private) at each stage of the analysis.

However, there were significant differences in MMD among men compared to women, as men were more likely (6% higher) to receive MMD compared to women.

Other variables influencing MMD were duration on ART, proximity to ART center, commodity security, and adherence to ARVs through self-reporting. Age, educational level, and marital status did not have an effect on MMD.

Conclusions: MMD improves client retention on ART. Program implementers should integrate monitoring systems that ensure proper MMD tracking and provision for

all eligible clients. Policy makers should consider adjusting MMD eligibility to commence within 12 months on ART in resource constrained settings such as Ghana.

EPE177

Providers' perspectives on barriers and facilitators for implementation of differentiated service delivery models for HIV treatment in Beira City, Mozambique

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Background: In 2018 Mozambique's Ministry of Health (MISAU) adopted eight Differentiated Service Delivery (DSD) models to optimize available infrastructure and human resources for HIV service delivery and achieve universal coverage. The models are fast flow (FF) – a semiannual visit scheduling, community ART support groups (CASG), 3-monthly antiretrovirals dispensing (3M), ART adherence clubs (AC), and four integration models: three one-stop models (for tuberculosis, maternal and child health, and adolescents) and the family-oriented approach.
We aimed to identify barriers and facilitators for DSD models implementation – both together and individually – in Mozambique.
Methods: We conducted the study in Beira city, a setting with high HIV transmission and HIV treatment demand. We conducted in-depth individual interviews with service providers from a large urban health facility (n=2), from a small rural facility (n=2), and district health managers (n=2), and two focus group discussions (n=5 in a small facility and n=8 in a large facility).
We used an iterative analytical approach to identify barriers and facilitators of successful DSD models implementation, including deductively applying constructs from the Consolidated Framework for Implementation Research (CFIR) to explore implementation determinants for DSD models, and allowing for additional themes to emerge inductively.
Results: CFIR constructs of relative advantage and patient needs and resources were facilitators, while constructs of planning, engaging, and executing were barriers across all DSD models. Specifically, less facility visits were the main facilitator for FF, 3M, and integration models and lack of training was the main barrier across all models.
Providers considered FF and 3M easier to implement and effective in reducing workload. They deemed AC and CASG complex to implement, thus less preferred. They perceived CASG as a preferred model in rural and 3M in urban settings. COVID-19 (inductively identified theme) facilitated patient eligibility for DSD that limited patient visits (FF, 3M), but temporarily interrupted implementation of community-based models (AC, CASG).
Conclusions: The relative advantage of the DSD models was the main identified facilitator. However, successful implementation requires broadly available and on-going training. COVID-19 has expedited DSD approaches that allow for less regular contact with the health system. Our findings will inform MISAU efforts to improve HIV ART delivery.

EPE178

The impact of decentralized "out-of-facility individual delivery models" in improving retention and viral suppression of people living with HIV in northeast India

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Background: Mizoram, Nagaland, and Manipur are three northeastern Indian states with the highest estimated adult HIV prevalence of 2.4%, 1.4%, and 1.2% respectively. These three states cater to approximately 32,000 People Living with HIV (PLHIV) through 24 antiretroviral therapy (ART) centres. The treatment retention rates vary between 74% to 80% in these states. Common reasons cited for treatment interruption include long-distance travel, transportation costs, difficult terrain, and loss of wages to visit the ART centre. Differentiated Service Delivery Models, such as decentralized out-of-facility strategies, are critical to prevent treatment interruption.
Description: The out-of-facility individual models are established outside of the usual ART centres and provide ART refills to PLHIV either directly at their home by community health workers or through the collection by the PLHIV at specific locations. Seventeen decentralized out-of-facility individual delivery facilities were established between March 2020 and December 2021. Stable PLHIV with CD4>350 cells/mm^3 without known opportunistic infections and on ART for more than 6 months were linked to these decentralized models. We assessed the overall retention rate, viral load testing access, and viral load suppression (<1000 copies/ml) rates.
Lessons learned: We linked 773 of 18774 stable PLHIV including key populations to these facilities. Of these, 98% (761) PLHIV remain engaged in care through December 2021; 92% (699) were retained in the out-of-facility individual model and 8% (62) were retained in the respective ART centres.

During the follow-up period, 2% (12) PLHIV died. Of the 588 PLHIV who were due for a viral load test, 59% (346) have undergone the test and out of this 92% (318) were virally suppressed.

Conclusions/Next steps: Enabling access through community engagement are pivotal to retention. The differentiated out-of-facility individual delivery model improves engagement in care and ART adherence (viral suppression) among PLHIV. The coverage of viral load testing in these remote geographies remains a challenge due to difficult terrain for access and specimen transport, however, the establishment of the decentralized service sites will allow for future viral load testing through dried blood spots in such remote settings.

EPE179

Viral load outcomes and factors associated with viral suppression among HIV-positive patients receiving multi-month dispensing of antiretroviral drugs in the context of COVID-19 pandemic: experience from 7 states in Nigeria

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Background: Innovation in ART type and delivery modality/mechanism has significantly improved the treatment outcomes of people living with HIV (PLHIV). Expanded access to multi-month ARV dispensing (MMD) during the COVID-19 Pandemic helped to mitigate exposure to COVID-19 in health facilities as well as support treatment continuity and viral suppression.

We determined the viral load (VL) testing outcomes among people living with HIV (PLHIV) receiving MMD and factors associated with viral load suppression in health facilities across 7 states (Benue, Ekiti, Ogun, Ondo, Osun, Oyo, Plateau) in Nigeria.

Methods: This is a cross-sectional study of PLHIV receiving MMD in 444 health facilities who were active in care within the period of September 2019 to December 2021. These enrolled clients were categorized based on their ARV dispensing frequency – 1-2 monthly (MMD1-2), 3 monthly (MMD3), 4- 5monthly (MMD4-5) and 6-monthly (MMD6) ARV refill. We determined the VL suppression rate per MMD model and factors associated with VL suppression.

The outcome variable was VL suppression (VL<1000 copies/ml). We extracted data from the Electronic Medical Record and analysis was done using percentages, chi square, and bivariate logistic regression.

Results: As of January 26, 2022, 358,084 patients were active on ART and receiving MMD. Majority 71% (n=358,084) were female. An estimated 0.1% (n=275), 14.1% (n=44,851), 2.4% (n=7,718) and 83.4% (n=265,453) were receiving 1-2 monthly (MMD1-2), 3 monthly (MMD3), 4-5monthly (MMD4-5) and 6-monthly (MMD6) ARV refill respectively. About 89% (n=318,297) of study participants had a recent VL test result. VL coverage rates for patients on MMD1-2, MMD3, MMD4-5 and MMD6 were 74%, 67%, 76%, 95% respectively. VL suppression rates for patient cohorts on MMD1-2, MMD3, MMD4-5 and MMD6 were 76%, 89%, 92% and 96% respectively. Factors associated with VL suppression were age, sex, duration on ART, type of MMD, and ARV regimen type.

Conclusions: Although VL coverage was low, VL coverage and suppression rate among PLHIV receiving MMD-6 was optimal and higher than the third 95% UNAIDS VL target for PLHIV. VL suppression rate for those in MMD1-2 and 3 was sub-optimal. We strongly recommend scale-up of MMD-6 to improve VL outcomes in the national HIV programme in Nigeria.

EPE180

The use of vending machines for dispensing of HIV self-testing kits in Gauteng, South Africa: a pilot study

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Background: Self-care in the age of COVID-19 has come to the fore. HIV programs have suffered major set backs as the focus of the healthcare system in many countries including South Africa has shifted towards COVID-19 prevention, testing, treatment, and vaccination. HIV Self-testing has been demonstrated through many modalities and modes of delivery.

One such delivery method that was tested during the early stages of the COVID-19 pandemic to provide access to HIV self-testing kits was contactless distribution through vending machines.

Description: Between March and May 2021, the STAR-SA team in Gauteng South Africa, partnered with HIV self-test manufacturer, OraSure, to set up three pilot sites for vending machine distribution of HIVST kits. The target population for the pilot was the same as the STAR program i.e. reaching undertested groups such as men, and adolescent girls and young women, and those that have never tested for HIV previously, or not tested in the previous 12 months.

The pilot aimed to assess feasibility, acceptability, and usage of the vending machine in de-centralised testing sites which included a workplace waiting room, a taxi rank, and a private pharmacy.

Individuals were able to access a URL, or QR code that took them to a data free web page to register their demographic information, and receive their unique access code. Thereafter, they would enter the 4 digit number onto the machine to receive their kit.

Lessons learned: Over the course of the 3 months, 900 test kits were dispensed across the three sites, with the majority of kits (91%) dispensed at the taxi rank. Of this, approximately 83% of the kits dispensed to men, were to

men in the age group of 25 - 39. 20% of females that received the test kit in the 15 - 24 age group had never previously tested for HIV. Of the clients followed up through post testing survey, the majority of individuals stated high satisfaction with overall process.

Conclusions/Next steps: Vending machines present an additional approach to distribution HIV self-tests. These outlets can be used for contactless provision of kits to relieve the burden on the system and increase access.

EPE181

Leaving no one behind: The impact of kindergarten ART clinic on HIV treatment outcomes among children enrolled in kindergarten HIV program at Lighthouse HIV care facilities

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Background: Children living with HIV (CLHIV) continue to have poor viral load suppression (VL) rates especially the under 5. To address the gap, Lighthouse Trust implemented a kindergarten ART clinic in its HIV care facilities to improve retention, viral load suppression and mortality among CLHIV aged 0-5 years. Hence, the aim of study was to assess the impact of kindergarten clinic on retention, viral load suppression and mortality among children enrolled in kindergarten HIV program

Description: This was cross-sectional study of CLHIV aged 0-5 enrolled in kindergarten program in four Lighthouse trust HIV care facilities from January 2021 to December 2021. The facilities include Umodzi Family Center (UFC), Tisungane Clinic, Martin Preuss Center (MPC) and Rainbow clinic. The kindergarten clinic was conducted on Saturdays every month. The children and caregivers received client centered treatment adherence, psychosocial and nutritional counselling including ART refills. The caregivers also shared their experiences, ideas and best practices to promote treatment adherence. We calculated baseline cohort VL suppression rate using data from Electronic Medical Record system. After 1 year, we measured overall suppression rate, retention rate and mortality rate and analysis included all CLHIV regardless of ART regimen.

Lessons learned: A total of 433 CLHIV aged 0-5 were enrolled, 142 at UFC with baseline VL-37%, 51 at Tisungane with baseline VL -30%, 99 at Rainbow with baseline VL -23% and 138 at MPC with baseline VL-47%. After 1 year, overall VL suppression rate increased from 23% to 91% at Rainbow, 37% to 81% at UFC, 30% to 76% at Tisungane and 47% to 62% at MPC. The retention rate was 81% at Rainbow (81/99), 98% (139/142) at UFC, 92% (47/51) and 99% (137/138) at MPC. There were 3 deaths at UFC but no death in other facilities.

Conclusions/Next steps: Kindergarten ART clinic as a family centered differentiated care model for CLHIV has the potential to improve VL suppression and other important HIV treatment outcomes. Knowing the challenges faced by CLHIV to achieve optimal viral load suppression, scaling up this initiative in high volume HIV care facilities would accelerate progress towards attaining UNAIDS targets among CLHIV.

Strategies to increase retention and re-engagement in HIV services

EPE182

The impact of implementation strategies on PrEP persistence among female sex workers in South Africa: an interrupted time-series study

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Background: Female sex workers (FSW) make up a disproportionate number of people diagnosed with HIV in South Africa. Pre-Exposure Prophylaxis for HIV prevention (PrEP) is freely available to FSW in South Africa predominantly through TB HIV Care, a local NGO. Trial and real-world data suggest that half of women who initiate PrEP stop by 1-month. TB HIV Care has implemented strategies to improve PrEP persistence among South African FSW, but their impact has not been evaluated.

Methods: We used an interrupted time series design to estimate a level change in the 1-month PrEP persistence associated with rollout of various PrEP delivery implementation strategies (clinical mentoring for providers, SMS PrEP refill reminders, SMS support texts, case management, and loyalty rewards program).

We used routinely collected data from all 9 TB HIV Care FSW sites implementing PrEP between 2016-2021 and adjusted for the monthly count of COVID-19 cases. In sensitivity analyses, we tested the association between each of the strategies and 4-month persistence.

Results: Baseline persistence prior to strategy roll-out was 36% (95% CI: 31.3%-41.8%), with significant heterogeneity across sites. We found that SMS support/refill reminders (IRR: 1.35 (95% CI: 1.20-1.53)) and mentoring for providers (IRR: 1.15 (95% CI: 1.05-1.26)) were positively associated with 1-month persistence among FSW.

The loyalty rewards program was negatively associated with 1-month persistence in the same population (IRR: 0.75, 95% CI (0.67, 0.83)). The strategies that were shown to be useful at promoting persistence at 1-month had no impact on persistence at 4-months.

Conclusions: SMS support, refill reminders and provider mentoring appeared to increase 1-month persistence. Identification and subsequent utilization of these beneficial strategies may improve the utility of PrEP overall to

prevent new HIV infections among FSW. Persistence remains a critical issue, however, and strategies to build on these gains longer term are needed.

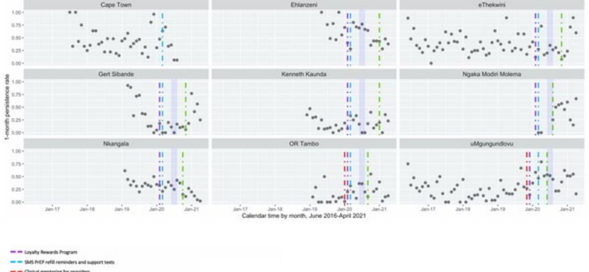

Figure 1. Monthly trends in the 1-month PrEP persistence rate (number persisting/total initiated in the prior month) by site implementing PrEP as part of the TB HIV Care program for female sex workers visualized against the introduction of several implementation strategies designed to promote PrEP persistence.

EPE183

Using Customer retention metrics to design patient-centred interventions for HIV program: a conceptual comparative analysis and lessons learnt from linkage experiences

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Background: In 2019, Anova Health Institute working jointly with the South African government, rolled out an ART initiation project called 'Not-Ready' that saw ART same-day linkage rates improve from 32% to 82%. The 'Not Ready' tool was intended to engage newly diagnosed clients through six pillars, viz, their basic knowledge of HIV, social support, emotional intelligence, personal adaptive skills, mental health, and intrinsic values for themselves and/or families. The 'Not Ready' tool was innovative and provided sustainability in that two years later, linkage rates remained above 95%. Drawing from successes seen with ART Initiations, we asked if the same approaches used to engage clients to start treatment were the same to be used to retain them in care. With scarce systematic reviews that outline proven retention approaches for the HIV program, we compared retention metrics from service industries to search for synergies and possible areas to benchmark and leapfrog.

Description: We conducted a conceptual comparative analysis of the six factors in the customer retention metrics published by Ascarza and colleagues in 2018, namely,

1. Customer satisfaction;
2. Usage Behaviour;
3. Switching costs;
4. Customer characteristics;
5. Marketing and lastly
6. Social Connectivity

Lessons learned: Our conceptual comprehension is that our pillars synergize with three principles mentioned by the metrics, viz, customer characteristics, social connectivity and usage behaviour. Expanding the service quality of our counselling to include psychosocial aspects and screening for mental illness and other disorders added value and inspired confidence to start ART.

For retention to work, engagements with clients would need further layers from targeted marketing, cost-reducing economic reforms that will buffer clients from direct or indirect costs linked with staying in care, and quality-based client assessments aimed to collect patient-level satisfaction feedback.

Conclusions/Next steps: Our study found synergies between corporate customer retention principles and ART initiation approaches which may signal that half of the time, the reasons patients start ART are fundamental and can be expanded towards retention.

Futurist patient-centred HIV retention strategies should be designed to expand to other features not included in our original ART tool, which are mainly around client satisfaction, marketing and addressing costs through socialized incentives.

EPE184

Liberia's successful expansion of antiretroviral therapy refills through community pharmacies and community-based organizations

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Background: Provision of client-centered differentiated service delivery (DSD) for antiretroviral therapy (ART) is recommended by the World Health Organization (WHO). Liberia has about 19,000 people living with HIV (PLHIV) on ART. Treatment interruption, due to stigma and long travel distances to treatment sites, is an enduring concern. The USAID and PEPFAR-funded Meeting Targets and Maintaining Epidemic Control (EpiC) project piloted decentralized drug distribution (DDD) through private pharmacies (PPs) and one community-based organization (CBO) in Monrovia, Liberia, to address these issues.

Description: DDD was piloted in Monrovia beginning in April 2021 in one health facility, and from September 2021 in two health facilities, through a collaborative partnership with the National AIDS Control Program (NACP), Liberia Pharmacy Board, health facility management teams, and the Liberia Network of People Living with HIV (LibNeP+). Health facility and PP providers were trained on DDD. A memorandum of understanding was established

between the three collaborating health facilities, PPs, and the NACP. Clients established on treatment were offered the model and selected one ART pick-up location from 26 PPs and one CBO (a LibNeP+ office) for their next ART refill. The LibNeP+ office was added as an option in October.

Lessons learned: Between April and November 2021,1,314 clients established on treatment were offered enrollment in DDD. One Hundred and twenty-four (9.4%) clients accepted and were enrolled from three high-volume health facilities. Ninety clients (77 [85.5%] female; 13 [14.4%] male) chose PPs, and 34 clients (16 [47.1%] female and 18 [52.9%] male) chose the CBO as their preferred pick-up location.

Despite the high interest in DDD expressed by PLHIV at the health facility (52% of 58 clients established on treatment who were surveyed at baseline), the initial enrollment was slower than anticipated. Client concerns expressed during health talks included fear of confidentiality breach and losing contact with their clinicians.

Conclusions/Next steps: DDD is feasible in Liberia. However, expanded pick-up points and targeted counseling to address client fears regarding confidentiality are necessary to sustain the program in Liberia. More work is needed to understand sex-related differences in model choice.

EPE185

Smartphone ownership, preferences and patterns of use among women living with HIV in Cape Town, South Africa

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Background: Mobile health (mHealth) initiatives are increasingly common in low-resource settings, but the appropriateness of smartphone interventions is uncertain. To inform future mHealth interventions, we sought to describe smartphone ownership, preferences and usage patterns among women living with HIV (WLHIV) in South Africa.

Methods: As part of a smartphone intervention study, we screened pregnant WLHIV in Gugulethu, Cape Town (December 2019 - February 2021). To understand the context of smartphone ownership in this region, we described the sociodemographic characteristics and explored mobile phone ownership of all women screened (n=639), with further description of smartphone use patterns in those enrolled in the study (n=193).

Results: Median age was 31 years (IQR: 27-35), 61% were unemployed and most had completed some high school education.

91% of women screened owned a mobile phone; 87% of those owned smartphones. Among those with smartphones, 92% used Android operating system version 5.0 or above, 98% of phones had the Global Positioning System (GPS), 96% charged their phones less than twice a day, and 86% had their phones with them at the time of screening.

Among 193 women enrolled, 99% owned the smartphone themselves. Only 14% shared their smartphone with someone (71% with a romantic partner), but 96% of these possessed the phone most of the day. Median duration of smartphone ownership was 12 [IQR:5-24] months; median duration of current phone number use was 25 [IQR: 12-60] months. Participants reported a median of 2 [IQR: 1-2] phone numbers in the preceding two years.

Receiving (100%) and making (99%) phone calls were the most common smartphone uses; least used were GPS (55%) and email (47%). Messaging and social media apps such as WhatsApp (94%) and Facebook (58%) were the favourite apps reported.

Conclusions: Smartphone ownership is very common in this low-resource setting. Phone sharing was uncommon, nearly all used the Android system and phones retained sufficient battery life to support mHealth applications. These results are encouraging to the development of mHealth interventions.

Existing messaging platforms – particularly WhatsApp – are exceedingly popular and could be leveraged for interventions. Moderate smartphone and phone number turnover should be a consideration for mHealth interventions in similar settings.

EPE186

Evidence-based brief alcohol reduction intervention in clinical settings among people living with HIV and TB: an Indian perspective

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Background: In India, alcohol use is on the rise. It triples the risk of TB among people with HIV (PWH), leads to poor treatment outcomes, and is an important risk factor for morbidity and mortality. Hence, alcohol treatment is an essential component of comprehensive care for PWH/TB.

We conducted qualitative interviews to culturally adapt an existing cognitive-behavioral therapy (CBT) and motivational enhancement therapy (MET) brief alcohol reduction intervention tailored to PWH/TB in India.

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Methods: We conducted 15 in-depth interviews (IDIs); ten with PWH/TB with unhealthy alcohol use (≥8 on the Alcohol Use Disorders Identification Test) and five IDIs with their family members in Pune, India from March to August 2021. Patients and their family members were asked to describe the motivators for alcohol reduction, barriers to cessation, and cessation strategies. Interviews were transcribed, translated, and coded using inductive and deductive coding and analyzed using rapid qualitative analysis.

Results: Participants and family members reported that the patient's self-motivation, family support, and peer narratives were important for alcohol cessation. Withdrawal symptoms, relapse and peer pressure were major barriers to quitting. Family conflict, financial crisis, mental stress, unemployment, and disease severity were reported as major triggers.

Overall, participants felt that emphasizing the negative consequences of alcohol using images and describing the direct impacts of alcohol use on TB and HIV outcomes were important. Other suggestions included avoiding people who drink alcohol, participating in yoga, eating good food, spending time with family, listening to music, and watching television. Participants also suggested gradual rather than abrupt cessation.

Family members also mentioned that therapy should include discussion of the positive impacts on life after alcohol cessation. Both participants and family members preferred intervention delivery by doctors or counsellors as participants often see them in the clinic. They also recommended involving family members in the counselling, to increase motivation at home, though they noted that the family member should be the decision-maker of the household.

Conclusions: With a contextualization of the local culture, a brief alcohol reduction intervention could be acceptable to PWH/TB patients and their family members.

EPE187

Differentiated models of care combining three-month refills and community ARV drug distribution helped keep patients on care and treatment during the COVID-19 pandemic in Tete province, Mozambique

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Background: To ensure patient stability and reduce antiretroviral therapy (ART) dropouts during the COVID-19 pandemic, the Efficiencies for Clinical HIV Outcomes (ECHO) project worked in Tete province to implement MOH guidelines to avoid spreading COVID-19 while keeping patients on treatment. During this period, patients were afraid to approach health facilities for risk of contracting COVID-19 and were at risk of treatment dropout.

Description: The provincial project team analyzed the number of current active patients on Anti-Retroviral Treatment to see the distribution of patients on 3-month drug distribution (3MDD) and participating in community ARV dispensation in all 33 ECHO-supported health facilities in Tete from October 2020 to September 2021. This was done by triangulating and cross-checking different sources (i.e., EPTS Open-MRS, ARV refill records, clinical chart diaries, ARV logbook, and patient prescriptions) where patient information is regularly recorded.

The project called absentee patients and/or reached them to obtain informed consent before offering them drug distribution at the combined community location, thus improving patient retention.

Lessons learned: Following this data source triangulation and analysis of patients active on ART, the project learned that 84% of 69,087 active patients were on 3MDD and 13% were utilizing community drug distribution during the year under analysis. EPTS data showed that ECHO added about 11,162 patients to treatment and managed to keep them on treatment over the same period.

Community ARV distribution comprised 8% of patient ARV access from October to December 2020 and grew to 10% for the period January to March 2021, to 13% for April to June 2021 and to 16% by the end of September 2021.

Conclusions/Next steps: These results illuminate that combining 3MDD with community ARV drug distribution reduces dropouts and increases the number of active patients on treatment. This dual strategy can be improved with longitudinal follow-up of patients using 3MDD, allowing early intervention to offer community ARV pick-up to those who have failed to receive their scheduled treatments directly from health facilities.

EPE188

Assessing the outcomes of multi-sectoral HIV and TB responses (2017-2019) to achieve UNAIDS 90-90-90 targets in Limpopo, South Africa

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Background: The Provincial performance of Limpopo province in terms of the achievements of the UNAIDS 90-90-90 targets and reduction of mother to child transmission were assessed through the Mid-term Review of Provincial Implementation Plan on HIV, TB and STIs (2017-2022) a 5-year multi-sectoral plan addressing HIV, TB epidemics in an integrated and collaborative manner.

Methods: A consultative-participatory approach and desktop analysis of secondary data obtained from stakeholders used to review performance for period 2017-2019. Steering committee used to collate secondary data and synthesize the findings.

Monitoring and Evaluation committee provided technical support and validation. Quantitative data analysed to determine the epidemiological trends and make recommendations based on the findings.

Results: Province recorded 93%-78%-83% of UNAIDS 90-90-90 HIV targets in 2019. Clients remaining on ART increased from 72,6% in 2017 to 77,8% in 2019 and this was the highest number of clients remaining on treatment in 2018 (356915) and 2019 (373419) as compared to other provinces in the country. In 2019, three of five District municipalities reached 80% plus of PLHIV remaining on treatment and 85% plus for those virally suppressed. Involvement of community health care workers and partners is beneficial in communities.

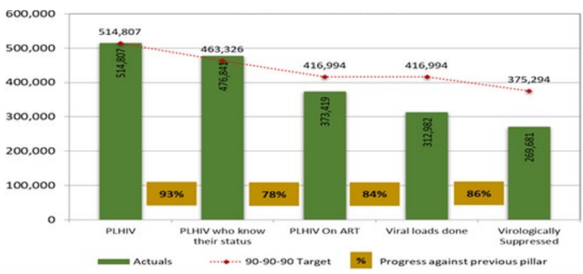

Figure. 90-90-90 Cascade - Total Population
Public sector (Sept 2019 - Limpopo)

Infant Polymerase Chain Reaction test positivity rate around 10 weeks rate declined from 0,83% (123/14768) in 2017 to 0,62% (52/8352) in September 2019. MTCT of HIV declined due to effective implementation of PMTCT interventions including intensified PCR tracking system in 2019.

Conclusions: Limpopo has achieved UNAIDS 1st 90 and is on track to achieve UNAIDS 2nd and 3rd 90 HIV targets due to effective use of community health care workers to promote HIV testing services and retaining clients in care through adherence clubs. Continue to use the multi-sectoral approach in communities to intensify prevention, care and adherence to treatment to achieve the remaining UNAIDS two 90 targets in the era of COVID-19.

EPE189

Strategies to improve Antiretroviral Therapy (ART) initiation and early retention among men in sub-Saharan Africa: a systematic review

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Background: Men are less likely to initiate antiretroviral therapy (ART) and more likely to experience early default (defined as stopped treatment within 6-months) in sub-Saharan Africa. Little is known about effective strategies to promote ART initiation and early retention among men.

Methods: We conducted a systematic review and searched MEDLINE, Cochrane Central Register of Controlled Trials, CABI Global Health databases and IAS and CROI conference archives for relevant articles. Eligibility criteria included: located in sub-Saharan Africa, quantitative data on ART initiation and/or early retention for males, intervention study, published between July 1, 2017-May 9, 2021, data collected after universal treatment policies, and English text.

Results: 4351 unique articles/abstracts were identified and 15 were included in the analyses. Of the 15 studies, 6 (40%) had a comparison group and 10/15 (67%) had verified outcomes with defined time frames. 12/15 (80%) had data on initiation and 8/15 (53%) had data on early retention. (Fig.)

ART initiation ranged from 25-97% and early retention from 47-95%. Five intervention types were identified. Studies with comparison groups provided the strongest evidence that: same-day facility ART initiation increased men's ART initiation but was inconclusive for early retention; and conditional incentives increased both initiation and early retention, although results were only significant in one study. Ongoing peer support interventions showed a high proportion of clients (>85%) initiating and being retained in care, although these studies did not have comparators. Interventions using community services and outreach only reported on initiation and had mixed results.

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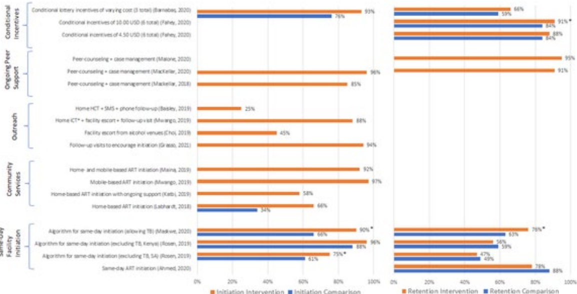

Figure. Reported initiation and early retention rates for men in eligible manuscripts (n=15)

Conclusions: Despite programmatic focus on men's ART initiation and early retention, evidence on effective strategies remains scarce. Additional randomized and quasi-experimental studies are urgently needed.

Current studies suggest same-day initiation in facilities may improve initiation. Ongoing peer support and conditional incentives may improve both initiation and early retention; however rigorous studies are needed to confirm potential trends.

EPE190

The use of SMS to support retention in the HIV-negative cascade: lessons learned from a key population-led health service organization in Chiang Mai, Thailand

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Background: To end HIV, all HIV-diagnosed clients need to start anti-retroviral treatment (ART) as soon as possible. However, those diagnosed HIV-negative also need services to ensure that they stay HIV negative, including repeat HIV testing and access to condoms and PrEP. We present here programmatic data from a short message service (SMS) used to retain over 7,000 HIV-negative clients at Caremat, a key population-led heath service organization based in Chiang Mai, Thailand.

Methods: From October 2020 to September 2021, we sent two types of SMS, one for birthday wishes and the other for regular health check-up invitations, to 3,599 HIV negative clients. Data were collected and analyzed using Caremat's monitoring and evaluation application.

Results: 375 clients or 10% of the population contacted through SMS communications returned for HIV testing during the 1-year period. Over half (56%) of these returned more than 3 months after the initial SMS communication. These 375 tested clients accounted for 16% of annual testing numbers. For those returning, 311 or 83% were MSM, 41 (11%) MSW, 20 (5%) TGW, and 3 (1%) TGSW. 98% of all returning clients (368 clients) obtained HIV negative results. Among all HIV negative clients, 141 (38%) initiated PrEP or 66% of annual PrEP new clients. Out of the 2% (7 clients) who tested HIV positive, 6 were MSM and 1 was MSW.4 out of the 7 HIV-positive clients were initiated on treatment during the study period and 3 were in a follow up process. We further calculated that one care and support staff can call approximately 10-15 clients a day for negative retention while an SMS system can reach out to an unlimited number of clients immediately (we estimated the cost of one SMS as US$ 0.07 compared to one call at US$ 1.80 plus staff time).

Conclusions: SMS can complement in-person case management services for HIV-negative populations by offering an easy-to-use and inexpensive means for regular communications, particularly for organizations with limited human resources. These SMS appear to motivate certain key populations to seek repeat HIV testing where they can then be offered PrEP and other services.

EPE191

Promising OVC comprehensive interventions to increase retention to care for children and adolescents living with HIV in Zambia

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Background: The USAID/Zambia funded, five years Empowered Children and Adolescent Program I (ECAP I), led by Catholic Medical Mission Board Zambia, is implementing family based comprehensive case management as a model of care to improve treatment outcomes by retaining HIV positive children and adolescents in treatment and also ensuring that they have suppressed viral loads.

The project is operating in six high HIV burden districts of Chingola, Kitwe, Luanshya, Mufulira, Ndola, and Solwezi of Zambia.

Description: The process started with training 400 Community Case Workers (CCWs) in family based comprehensive case management from 43 targeted health facilities across the six districts. The CCWs promote viral load (VL), viral load sample collection.For C/ALHIV with high VL, case conferencing is conducted involving clinical partners and other community service partners in order to understand the barriers leading to non-adherence to treatment and how these can be addressed in partnership with the family. The C/ALHIV who have been disclosed to are linked to Adolescent support groups where they learn adherence lessons. The CCW further provide enhanced adherence counselling to the C/ALHIV, they provide treatment literacy to caregivers and C/ALHIV.

Program Results:

- Improved VL coverage for C/ALHIV on ART by 2.8% from 90.1% with some health facilities coverage increased to 100.0% from as low as 40.0%
- Improved VL suppression among C/ALHIV on ART from an average of 82.6% in to 90.0 %
- Improved retention in care from 65% to 100.0%.

Lessons learned: Integration of OVC comprehensive support with HIV treatment and care activities improves retention in care and improves health out comes for C/AHIV.
Key Recommendations:

- Scale-up integration of OVC programs and HIV treatment and care programs to improve HIV retention, care, and support for C/ALHIV.
- OVC programs and HIV treatment and care clinical programs need to jointly manage C/ALHIV to achieve lasting improved health outcomes

Conclusions/Next steps: Intergration of OVC programs and HIV treatment and care programs improves HIV retention in care and treatment. Rentation in Care and treatment is improved through enhenced Case conferences and linking the C/ALHIV to support groups which are particulary for them.

EPE192
Introducing the Mentor Mothers and their impact on PMTCT indicators: a case study of Morogoro districts in Tanzania

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Background: The risk of mother-to-child transmission of HIV (MTCT) can be eliminated when pregnant women are able to access quality and comprehensive PMTCT services. These services include antenatal care (ANC) that offers and facilitates early maternal HIV testing in pregnancy, prompt uptake of lifelong antiretroviral therapy for women who test positive, early infant diagnosis and support services to promote maternal and infant adherence to care and treatment.
In 2019, with support from Ministry of Health, mothers2mother (m2m) introduced a mentor mother program in 10 sites of Morogoro Region to support the PMTCT efforts.
Description: A total of 725 women were enrolled across the 10 sites in Tanzania. The retention -in-care on treatment (RIC) was assessed by reviewing each woman's ART pick up history from facility records for 6 months (From May-sept 2021). RIC data was captured on DHIS 2 during the same period. Early retention was assessed on each visit on monthly basis.
Lessons learned: PMTCT cascade of mother-baby pairs in care in the 10 m2m supported sites indicators improved and increased monthly retention from 81% to over 97% by sept 2021. Resulting in improving quality of care and reduction of HIV transmission to infants following active client follow up and Retention in care. The mentor mother initiative increased adherence to treatment by 99% from an average of 84%. In May 2021, improved documentation, data quality and increased demand for PMTCT services have been attributed by the work of mentor mothers to actively follow up clients, and the provision of psychosocial support. HIV viral load(HVL) coverage increased from 46% to 93% with suppression rate of 98% by sept 2021, and early infant diagnosis (EID) increased from 80% to 93% for the <2months test and only 7% for >2moths test.
Conclusions/Next steps: Mentor mothers offer great potential to empower communities affected by HIV to catalyze positive behavior change. Through the quality improvement (QI) approach, the capacities of the health facility staff strengthened to identify performance gaps in PMTCT services delivery and develop an improvement plan. Leveraging retention and adherence to care in the facilities implementing the mentor mother model initiative.

EPE193
Implementation of telemedicine for HIV Care in the public health system of Buenos Aires, Argentina: a qualitative study based on surveys among health workers to asses acceptability of this strategy

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Background: In October 2020, a research consortium by four HIV and infectious diseases units of general acute public hospitals of Buenos Aires city began an implementation study aimed to analyze obstacles and facilitators of telemedicine in the care of people living with HIV(PLHIV).
Methods: This research aims to analyze changes and continuities in the perceptions of physicians on telemedicine when caring for PLHIV after 6 months of implementation of this strategy. We prospectively collected quantitative and qualitative data through an electronic semi-structured survey delivered at and 6 months after the implementation of telemedicine. The population studied consisted of medical doctors from four public hospitals in the city of Buenos Aires involved in telemedicine care for PLHIV. Instruments collected data on perceptions about:
1. The future use of telemedicine;
2. The obstacles and benefits of this strategy.
The surveys were anonymous and self-administered. The data was stored on Redcap® platform.
Results: 30 physicians completed a questionnaire at baseline and 6 months after the implementation of the telemedicine. 20 (66.7%) were female physicians. Median age was 51 years old (IQR: 44-60).In both periods, all physicians surveyed (100%) stated that telemedicine would remain in the future as a parallel strategy to face-to-

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face consultations. 15 (50%) supported that it should be offered to specific groups of patients, such as those who are asymptomatic.

The perception on the use of computer equipment as an obstacle decreased from 15 (50%) (baseline) to 4 (13%) (month 6). Internet connection in hospitals remained as one of the main barriers (baseline: 23 (77%); month 6: 21 (70%)). Lower rates of spontaneous demand consultations were the only perceived benefit that increased after 6 months (baseline: 15 (50%); month 6: 18 (60%)). Physical examination was the most affected medical practice by tele-care (baseline: 100%; month 6: 80%).

Conclusions: The use of computer equipment and connectivity was a challenge but clearly by the end of the 6 months, still perceived as a valuable tool for physician-patient interaction. All practitioners believed that telemedicine would continue to be provided in the future. Its offer to specific groups of patients could be associated with the acceptability of this strategy.

EPE194

Community provision of ARVs in Niassa: impacts on retention for ART patients

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Background: To maintain social distancing in health units, particularly among persons living with HIV, the Mozambique Ministry of Health (MOH) provided guidance to accelerate the inclusion of clients under differentiated models of care. To support this, USAID's Efficiencies for Clinical HIV Outcomes (ECHO) project developed an alternative model of community distribution of ARVs (CDA), which the MOH then adopted. ECHO designed the CDA model to get antiretrovirals (ARVs) into the hands of those lacking resources. ECHO analyzed the CDA model's impact on increasing and retaining patients active on antiretroviral therapy (ART).

Description: CDA identifies defaulting patients through triangulation of clinical records and data from the electronic patient system (EPTS). In Niassa, this began in June 2020 at 11 health units. The CDA model incorporated patients who had difficulties accessing their local health unit, but excluded patients with no interest in treatment, children under 2 years old, pregnant and lactating women, and patients co-infected with tuberculosis.

When identifying patients, health providers organize clinical records and medication based on CDA eligibility. Through CDA, health providers use motorcycles to reach patients with ARVs. Once ARVs are distributed via CDA, providers upload information into the database and file the patient's clinical record.

Lessons learned: The CDA is popular in communities. It keeps patients on ART, improves trust between health providers and patients, and reduces crowding in health units. Between April and September 2021, 7,511 patients received from CDA, corresponding to 35% of the total number of active patients on ART in the area of implementation. Of those eligible for the CDA model, 85% participated. In the same period, CDA helped the number of patients active on ART to grow by 9%, from 20,008 to 21,729 patients. 33-day and 99-day retention remained above 90%.

Conclusions/Next steps: CDA has been a valuable strategy in Niassa and helped improve ART retention and overall access to treatment. The strategy can be used in other communities, particularly in remote areas where patients face similar challenges.

EPE195

Utilizing telework for continuous access to sexual reproductive health and HIV services among adolescent girls and young women in Zambia

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Background: Between March and August 2021, the Government of Zambia enforced partial lockdowns in response to the Covid-19 pandemic, which adversely affected access of Adolescent Girls and Young Women (AGYW) to sexual reproductive health services (SRH), including HIV information. The restrictions in Zambia, which included closure of schools, contributed towards increased risk of HIV, teenage pregnancies, child marriages and sexual- and gender-based violence.

In response, Charles R. Drew University employed telework strategies through the Rise Up! Project to provide HIV and SRH information to AGYW.

Description: Using email, social media, and telephones to provide SRH and HIV information to AGYW, the Rise Up! Project ensures close communication through peer navigators who provide information and linkage to services. The peer navigators contact AGYW who are HIV-positive and make pharmacy and laboratory appointments with them. The services are then fast-tracked in order to minimize exposure to Covid-19.

Lessons learned: The use of telework strategies successfully built the capacity among the peer navigators to provide linkage and escorted referrals to AGYW reached online. This has strengthened collaboration with facilities to fast-track AGYW accessing SRH and HIV services amidst pandemic restrictions.

During the three-months lockdown from June-August 2021, the Rise Up! Project reached 14,803 AGYW through the Rise Up! Facebook page. The program subsequently linked at least 2,551 AGYW to HIV testing services, of which 262 tested positive and were all linked to care and treatment. The program was used to remind 840 positive AGYW of their clinical appointments, of which 717 (85%) adhered to their appointment while 123 (15%) didn't. Further follow up ensured that 112 (91%) of those who missed their appointment were brought back to care.

Conclusions/Next steps: Telework, including appointment reminders and virtual sessions, were used to reach and support AGYW during the COVID-19 lockdown.
Tailored virtual information dissemination should continue to be tested, refined, and strengthened. This includes the Rise Up! SRH toll free line, SRH cell phone application, podcasts, webinar series, radio, brochures, posters and video animations.

EPE196

Impact of a One-Stop model and its contribution to early retention in Tete province, Mozambique

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Background: Improving 33- and 120-day antiretroviral treatment (ART) retention is one of Tete province's biggest challenges. USAID's Efficiencies for Clinical HIV Outcomes (ECHO) project addressed this through a One-Stop service model, implemented during a patient's first six months on ART, whereby a patient consistently attends consultations with one individual clinician. Results show positive impacts of this One-Stop model on 33- and 120-day patient retention.

Description: ECHO began implementing the One-Stop model in August 2019 across 32 health units. The model is available to new ART patients who have been over 14 years of age for at least six months, though it excludes pregnant patients and those with tuberculosis.
As part of the model, health workers lead patients to a One-Stop appointment, where a clinician provides an ART consultation as well as psychosocial support, adherence follow-up, prophylaxis, and sample collection for clinical analyses. The clinician monitors patients by documenting the consultation and recording contact information, including the client's home address for future follow-up.
ECHO monitors the clinician's schedule both daily and five days in advance of appointments, and further contacts patients directly to schedule appointments with counselors and psychosocial support.
In the case of missed appointments, health workers contact patients and transport them to the health unit the next day. After six months of treatment, clinicians collect viral load samples and share results with patients, who are then referred to follow-up services.

Lessons learned: When patients consistently receive care from the same provider, they have improved clinician-patient relationships, feel comfortable disclosing important lifestyle details, receive individualized support, are monitored more closely, and are more likely to schedule future consultations.
In October 2019, before ECHO implemented the One-Stop model in Tete, 33- and 120-day retention were at just 67% and 79%, respectively. In August 2020, once the intervention launched, 33- and 120-day retention rose to 91% and 90%. By the end of June 2021, 33-day retention was at 97% in Tete, while 120-day retention had grown to 98%.

Conclusions/Next steps: The One-Stop model enabled better clinical follow-up, ensured stronger trust, and improved retention. The model can further be expanded to similar contexts.

EPE197

The impact of a walk-in HIV care model for people who are incompletely engaged in care: the Moderate Needs (MOD) Clinic

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Background: The Moderate Needs (MOD) Clinic provides walk-in, team-based primary care and support services for people with HIV. Patients are referred to MOD based on incomplete engagement in care. We evaluated patients' changes in viral suppression and engagement in care during the year after MOD enrollment and compared these outcomes to eligible controls who remained enrolled in the general HIV clinic.

Methods: In this retrospective cohort study, we conducted two comparisons based on electronic medical records data:
1. Outcomes among MOD patients enrolled 1/2018-10/2020, comparing 12 months post-enrollment vs. baseline and;
2. Outcomes among "MOD-eligible" patients enrolled in MOD vs. those not ("eligible controls") 1/2018 – 10/2020, comparing outcomes 12 months post-eligibility vs. at eligibility.
We defined MOD eligibility as either ≥3 no-shows in 12 months or an 18-month gap between visits.
The primary outcome measure was *viral suppression* [VS; viral load (VL) < 200 copies/mL], defined by the last measurement during the analysis period. Secondary outcome measures were *engagement in care* (≥2 visits ≥60 days apart) and *sustained VS* (≥2 consecutive suppressed VL results ≥60 days apart).We compared pre vs. post-enrollment outcomes using a McNemar chi-squared test and post-eligibility outcomes among MOD patients vs. eligible controls using a chi-squared test.

Results: By 10/2021,213 patients enrolled in MOD. 149 patients enrolled >12 months before study end, among whom VS did not change significantly in the year post-enrollment (73% to 70%, p=0.18). 84% were engaged in care; 54% achieved sustained VS. Comparing 68 "MOD-eligible" MOD patients to 517 eligible controls, MOD patients were less likely to be virally suppressed at eligibility (70% versus 82%, p=0.02) and had lower CD4 counts (p=0.01). VS

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increased among MOD patients (70% to 75%, p=0.7), and decreased among controls (82% to 74%, p<0.001). VS in the total clinic population during the study period was unchanged. Engagement in care 12-months post eligibility was higher in MOD patients than controls (78% versus 64%, p=0.05); there was no difference in sustained VS (43% versus 49%, p=1).

Conclusions: Enrolling in a walk-in HIV clinic improved engagement in care and may have improved VS among persons incompletely engaged in HIV care.

EPE198
The role of community participation in the increase of HIV services uptake by Key Populations in the Fortportal region in Western Uganda

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Background: WONETHA in consortium with Baylor Uganda has been implementing ACE Forte project in the Fort portal region since July 2018.

The Project is to contributing to the Ministry of Health efforts to reduce the Incidence of HIV infections and HIV/AIDS related morbidity and mortality among children and adults in Uganda in line with the UNAIDS 95%-95%-95% targets for the epidemic control. The 5 year project commenced in July 2018, covers the 8 districts of Western Uganda(Fort Portal region) and WONETHA focuses on Key Population. The entire project covers both children and Adults but WONETHA focused on the Key Population.

Project objective:
1. Reduce HIV incidence through targeted, tailored and evidence based prevention interventions for key populations.
2. Optimize interventions that increase identification of undiagnosed KPLHIV and linkage to quality care and prevention services.
3. Intensifying interventions and innovations to provide effective linkage care and Treatment for PLHIV and TB.

Description: WONETHA's role has been mainly conducting, identification, profiling, mobilization, referral and linkage to care for KPs to access comprehensive HIV testing services. This has been done in conjunction with the public Health facilities, using the Peer to Peer Approach.

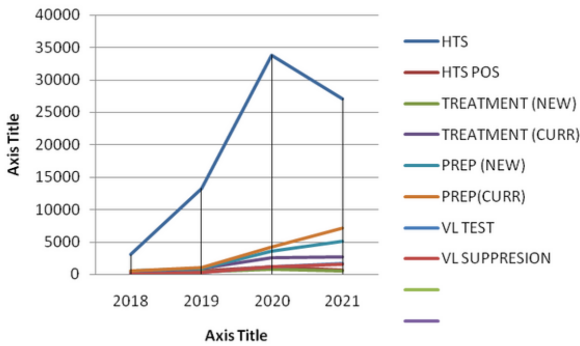

Figure. HIV Service access by KPS in the Rwenzori region 2018-2021

Lessons learned: Results reveal that there has been an increase in service uptake by Key Populations where the sex workers have been engaged in mobilizing their peers and offering some of the prevention services.

The results reveal that the community participation result in increased HIV service uptake.

Conclusions/Next steps: The results indicate that since WONETHA got involved in mobilizing KPS for HIV services, the the service uptake is steadily increasing. While the sex workers are engaged in supporting HIV service delivery, they are not trained.

The Peer Educators should be trained in counseling to effectively support adherence, and HIV treatment and Prevention Literacy such that they give correct information.

EPE199
Implementation of a ridesharing intervention to address transportation vulnerability for people living with HIV in the southern United States: qualitative findings on acceptability and feasibility

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Background: People living with HIV (PLHIV) in the southern United States (US) are more likely to have delayed linkage to care and to fall out of care compared to individuals from other regions. Social determinants of health (e.g., poverty, poor infrastructure) are drivers of these disparities.

The current study sought to reduce transportation vulnerability among PLHIV in South Carolina—a rural southern state. Specifically, we implemented a concierge "app-based" (i.e., LYFT) ridesharing program for PLHIV with transportation vulnerability. We then completed semi-structured interviews to examine feasibility and acceptability of the program.

Methods: First, we enrolled 160 PLHIV in a randomized clinical trial to determine whether a ridesharing program improved viral suppression rates compared to standard transportation over a 12-month period.

We recruited a subset of participants (*N*=20) to complete semi-structured, in-depth interviews about their transportation experiences. All PLHIV were re-engaging with HIV care after $\geq$9 months absence or were engaged in care but not virally suppressed. Interviews were audio-recorded, transcribed, and checked for accuracy.

We used a deductive and inductive approach with two coders to identify themes abound implementation, including participants' views on feasibility and acceptability of the program.

Results: Participants largely described the concierge ride-sharing program as "quick and easy" and indicated they would recommend it to other PLHIV. The program was perceived as safe, with many PLHIV reporting past negative experiences with other forms of transportation. An important theme was concern about program maintenance.
Specifically, multiple PLHIV indicated that while they valued the free program, they could not pay for the service themselves outside of the trial. Many PLHIV also expressed a preference for having clinic staff manage logistical aspects of the program (e.g., ordering rides) due to lack of comfort, access, and/or ease with smartphone technology traditionally used for ridesharing services.
Conclusions: Addressing transportation vulnerabilities among PLHIV in the southern US is critical to reduce disparities and ensure access to HIV care.
An ongoing trial of a ridesharing program will provide insight into novel ways to address transportation vulnerability among PLHIV in the US. Qualitative findings suggest the program is perceived as a feasible approach for helping PLHIV overcome transportation-related challenges.

EPE200
Effectiveness of real-time client tracking tools in reducing Interruption in Treatment: evidence from a low resource setting, Zimbabwe

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Background: Despite the impressive progress on achieving the UNAIDS 95-95-95 goal by 2030, Interruption in Treatment (IIT) remains one of the biggest threats in Sub-Saharan Africa especially due to COVID-19 among other challenges. UNAIDS estimates that one in five experience IIT after being on ART for at least 12 months. In Zimbabwe, IIT is equally high (estimated at 13-20%).
Population Solutions for Health (PSH) with USAID funding, invested in a client-level electronic record management system (Bahmni) that generates real-time data to improve ART retention.
Description: Between February – December 2021 PSH implemented a Continuous Quality Improvement (CQI) intervention utilizing Bahmni to generate real-time ART data from 5 Zimbabwean districts. A weekly electronic line-list of clients due for ART refills was generated to facilitate client follow-up through phone calls and home visits.
The investigators tracked 7,903 clients; Female sex workers (FSW), Men who have sex with Men (MSM), and General Population (GP) on ART from February to December 2021 implementing the CQI strategy and recording month-on-month ITT.
Lessons learned: IIT was 7.1% ((6.1% – 8.2%) 95% CI) at the onset of the intervention, and dropped almost monotonically to under 1% (0.4% (0.3%-0.5%) 95% CI) by December 2021. There were no differences in ITT rates by population type (illustrated in the graph) nor by age and gender.
Real-time data enabled a timely client-provider interaction that resolved challenges faced by the client (including COVID-19 induced travel restrictions). The CQI strategy included differentiated service delivery to improve access to ART medication.

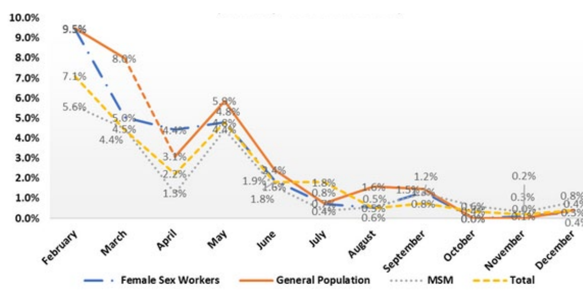

Figure. Month on interrupted in treatment by population type (February - December 2021)

Conclusions/Next steps: The EMR has shown to be an effective tool in tracking clients on ART to reduce IIT. Generating real-time data allows for a much more rapid and effective client-provider interaction that translates into improved ART cohort management.
This innovation must be scaled up especially in low-resource settings where patients face diverse challenges that result in IIT.

EPE201
Quality improvement approaches to optimize care given to children and adolescents living with HIV in Lango sub-region of northern Uganda

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Background: Providing quality care for children and adolescents living with HIV(CALHIV) remains a global challenge and requires development of new healthcare delivery strategies. The USAID Regional Health Integration to Enhance Services-North, Lango (RHITES-N, Lango) project, through a health system strengthening intervention, used targeted quality improvement (QI) methods to accelerate care given to CALHIV.
Description: Between March and November 2021, RHITES-N, Lango invited 59 health facilities in the region to join a 'learning network' based on prescribed HIV care and treatment services. Clinic QI teams, consisting of nurses, counsellors, community linkages facilitators, data clerks, medical and clinical officers met to establish collective and individual performance targets, analyzed facilities' care systems using 'real-time' data feedback from an excel audit tool, were trained on best practices and implemented a set of simple tailored interventions to improve the proportion of CALHIV receiving comprehensive care.

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Some of the interventions included line-listing clients due for appointment and giving them reminders. Facility data was reviewed and summarized weekly.

Lessons learned: 6,257 CALHIV were audited out of a target of 6,142 (102%) by November 2021. The proportion of CALHIV who received all the services they were eligible for increased from 30% in March 2021 to 80% (average) in November 2021. In turn, several service delivery indicators improved. 97% of the CALHIV had been screened and linked to OVC services, 100% were optimized to the optimal regimen, 91% were initiated on TB prophylaxis treatment, and 80% had an up-to-date viral load test.

Improvement was observed across 59 facilities.The proportion of CALHIV receiving all services increased by 50% in eight months.

Conclusions/Next steps:

- System improvement methods, standardized audit tools, use of real-time data, and opportunities for cross learning improve clinic processes and outcomes in a resource-constrained setting.
- The use of multiple stakeholders including health facilities and community members strengthens service integration and improves client care.
- A QI approach, using learning networks to teach simple data-driven methods for addressing system failures, with increased training, replicable best practices and resource inputs, can assist districts to quickly reach universal coverage targets.
- The use of the audit tool enabled the teams to identify and address performance gaps.

EPE202

Patient-initiated clinic appointment enhances retention and adherence to ART among adults living with HIV

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Background: Despite making significant progress in the fight against HIV and AIDS over the past decade, Malawi is yet to meet the World Health Organization (WHO) recommended target of 85% ART adherence. Due to unreceptive clinic environment some patients with HIV are scared to return to the clinic when they miss a scheduled appointment.

In June 2021, the Malawi Ministry of Health with support from Kamuzu University of Health Sciences (KUHeS) piloted a patient-initiated clinic appointment (PICA) strategy at Bwanje Health Center in Ntcheu district of Malawi to allow adult patients to participate in health care decisions and enhance patient retention in HIV care.

Description: The PICA strategy, a patient-centered innovation, empowers individuals who are stable on ART to choose their preferred next clinic appointment based on their schedules. The clinician then gives the patient enough medication to last for the specified duration (maximum of six months). Patients are advised to come earlier to the clinic if they anticipate that they may no longer be available on their scheduled appointment.

Lessons learned: Between June and December of 2021, Bwanje Health Center had 216 patients registered in the HIV program, including 17 new patients. Patient retention during the six months of PICA implementation increased from 87% to 99%. Adherence to ART (estimated by pill count) also increased from 83% to 97%. Only 8 patients missed their scheduled clinic appointments by more than two weeks. 22 patients (10%) came to the clinic earlier (between 1-14 days) before their scheduled appointment due to their anticipated busy schedules.

Feedback from the patients indicates that PICA has improved the interaction between patients and health workers to create a common shared treatment plan and discuss the patient's challenges with treatment adherence. In addition, the patients feel obliged to not miss the scheduled clinic appointment of their choosing.

Conclusions/Next steps: The patient-centered PICA strategy can improve retention and re-engagement in HIV care. When allowed to participate in health care decision-making, patients feel empowered and obliged to honor their decisions. There is need to gather more feedback from the health providers to identify areas for improvement.

EPE203

Interruption in treatment and reengagement of HIV infected children and adolescents in HIV care in Benue State Nigeria: a retrospective cohort study

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Background: The continuity of treatment is key to successful treatment of children and adolescents living with HIV (CALHIV). However, the cascade of HIV care does not account for retention and re-engagement in care.

Therefore, we described the characteristics of patients who experienced interruption in treatment (IIT) and reengaged in HIV care and estimated the factors associated with reengagement among HIV infected children and adolescents receiving HIV care in Benue State Nigeria.

Methods: A retrospective cohort study of CALHIV on antiretroviral treatment (ART) who reengaged in care between January 2021 and December 2021 in 59 health facilities in Benue state Nigeria. These patients and their caregivers were actively tracked by volunteers through mobile phone call and/or home visits. Dis-engagement in HIV care was defined as greater than 28 days of default since

the last clinical or drug refill appointment. The tracking outcomes were re-engagement in HIV care (active on ART or transferred-out to other ART site) and dis-engagement from HIV care (stopped ART or died or true LTFU). Bivariate logistic regression was conducted to determine factors associated with re-engagement in HIV care.

Results: The rate of reengagement in HIV care within 12 months was 71.8% (n=94/131). Of the 94 patients who re-engaged in HIV care, 52.1% (n=49) were male and the mean age was 11 years (SD-4.8). After active tracking for 12 months, 72% (n=94) re-engaged in HIV care.About 47% (n=61) returned to treatment, 4.6% (n=6) died, 3.8% (n=5) stopped ART, 25.2% (n=33) transferred out, and 26% (26) remained LTFU.Of the 131 patients who interrupted their treatment, 91% (116) had a mild HIV disease (WHO stage 1 and II). About 96% (n=90) of patients were tracked at least twice or thrice before they returned to treatment. None of the variables (sex, duration on ART, regimen type, and the frequency of tracking) was associated with re-engagement in HIV care.

Conclusions: Despite active patient tracking, reengagement in HIV care was poor. None of the examined factors explained reengagement in HIV care. Therefore, further research is required to understand the barriers and facilitators of re-engagement in HIV care among CALHIV.

National financing analyses and financing mechanisms for HIV, hepatitis and STI programmes and services

EPE204

HIV trust fund of Nigeria: a private sector driven sustainable domestic financing mechanism and paradigm shift in local funding

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Background: Following the dwindling partner support and funding, in Africa and indeed Nigeria, it became imperative for the National Agency for the Control of AIDS (NACA) to collaborate with the Nigeria Business Coalition against AIDS (NiBUCAA) to establish the HIV Trust Fund of Nigeria (HTFN).

The N62 Billion (US$150 Million) private sector led Trust Fund was established to promote domestic resource mobilization to complement existing external support from our partners for sustained HIV prevention and treatment interventions. HTFN will serve to guarantee sustainable funding from Private Sector led sources for HIV interventions, especially for the elimination of Mother-to-Child Transmission of HIV.

Description: The HTFN strategy is premised on a proven NiBUCAA structure with a Chair and notable global business icons as members of board of trustees. Also in the structure are the technical working group, and an advisory committee that makes recommendation to the board of trustees. The HTFN launch on 1st February, 2022 by the President of Nigeria, demonstrated the commitment, drive and push for implementation.

Lessons learned: HTFN has increased HIV funding and individual participation. Increase in contributions is an outcome of transparency, accountability and value for money in the private sector-led governance structure.

Conclusions/Next steps: The HTFN launch was a landmark event and the gallant step towards securing a financing mechanism to guarantee a generation of HIV free babies via these steps:

1. ALL pregnant women in Nigeria attending antenatal care services (as first visit in that pregnancy) will be provided a HIV test.
2. ALL identified HIV positive pregnant women in Nigeria will have access to lifelong ART services targeting 95% of identified positives and linking them to ART.
3. ALL identified HIV positive pregnant women will be provided partner testing and pre-exposure prophylaxis (PrEP) services where applicable.
4. ALL HIV negative pregnant women will be provided partner testing services.
5. ALL pregnant women living with HIV will have at least one Viral Load test conducted before delivery.
6. ALL HIV Exposed Infants (HEIs) will be provided enhanced Post Natal Prophylaxis at birth to prevent HIV.
7. ALL HEIs have EID services from birth till 18 months of age, identified positives infants are enrolled on paediatric ART.

EPE205

When the only intervention left to optimise is retention: Comparing the 2021 and 2016 South African HIV Investment Cases

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Background: Since 2016, annual updates of the HIV Investment Case have identified the optimal mix of HIV interventions in South Africa. Recommendations changed over time due to novel interventions and increasing coverage.

Methods: We updated Thembisa Optimise, a combination of an established HIV transmission model and an optimisation model incorporating diminishing returns to investment at higher coverage, with recent service coverage, survey and cost data. We assessed the cost per life year saved for each intervention-coverage option and established the optimal intervention package with and without constraining its cost to HIV budgets committed

by government and partners until 2023 (constrained and unconstrained scenario, respectively). Results were evaluated under current and maximal levels of ART coverage in those diagnosed HIV-positive (78% vs 95% by 2025).

Results: Compared to 2016 findings, condom provision continues to be most cost effective, while medical male circumcision became less cost effective at higher coverage levels especially in adolescents (Figure).

Pre-exposure prophylaxis for male adolescents/young men and early infant male circumcision are only affordable under the current budget if ART coverage remains at 78%. HIV self-testing is less cost-effective than conventional HTS but might be required to close last testing gaps.

2016 HIV IC	2021 HIV IC 78% ART coverage	2021 HIV IC 95% ART coverage
Condom provision (95%)	Condom distribution (1bn/year)	Condom distribution (1bn/year)
MMC (550k/year)	ART (95% linkage)	ART (95% linkage)
ART at current guidelines (95%)	Infant testing at birth (95%)	Infant testing at birth (95%)
PMTCT (95%)	PrEP for MSM (50%)	PrEP for MSM (50%)
ART under universal treatment (linkage) (95%)	HTS general population (18.3m/year)	HTS general population (18.3m/yea
PCR testing at 6 weeks (95%)	Medical male circumcision (600k/year)	ART (95% linkage, 95% retention)
SBCC campaign 1 (HCT, reduction MSP) (95%)	HTS adolescents (95%)	HTS adolescents (95%)
SBCC campaign 2 (condoms) (95%)	PrEP for FSW (30%)	HIVST optimized package (3m/year)
HTS General population (18m tests/year)	HIVST optimized package (3m/year)	PrEP for pregnant women (18%)
SBCC campaign 3 (condoms, HCT, MMC) (95%)	PrEP for pregnant women (18%)	PrEP for FSW (30%)
HCT for FSW (95%)	PrEP for female adolescents (18%)	Medical male circumcision (600k/ye
PCR testing at birth (70%)	PrEP for young women (18%)	PrEP for female adolescents (18)
PrEP for FSW (70%)	PrEP for young men (18%)	PrEP for young women (18%)
HTS for adolescents (95%)	PrEP for male adolescents (18%)	PrEP for young men (18%)
PrEP for young women (70%)	Early infant male circumcision (70%)	PrEP for male adolescents (18%)
Early infant male circumcision (70%)		Early infant male circumcision (70%

Unconstrained

Figure. Comparison of ranked intervention-coverage options between 2016 and 2021 HIV investment cases.

Achieving 95% ART coverage could, under the current budget, avert three times as many HIV infections and twice as many AIDS deaths over 20 years, compared to the baseline trajectory of 78% ART coverage (Table).

Baseline (2021-40)		
Total cost of the HIV programme, billions (2021 USD)	41.1	
New infections, millions	3.1	
AIDS deaths, thousands	1,093	
Life years lost to AIDS, millions	38.8	
	78% ART coverage	95% ART coverage
Incremental cost to the HIV programme, billions (2021 USD)		
Constrained scenario	n/a	8.0 (+19%)
Unconstrained scenario	4.0 (+10%)	9.6 (+23%)
HIV infection averted, millions		
Constrained scenario	n/a	2.1 (-66%)
Unconstrained scenario	0.7 (-23%)	2.1 (-66%)
AIDS deaths averted, thousands		
Constrained scenario	n/a	186 (-17%)
Unconstrained scenario	89 (-8%)	187 (-18%)
Life years saved, millions		
Constrained scenario	n/a	7.1 (-18%)
Unconstrained scenario	3.8 (-1.0%)	7.1 (-18%)
Cost per life year saved (2021 USD)		
Constrained scenario	n/a	1,132
Unconstrained scenario	1,045	1,347

Table. Summary of incremental impacts and cost-effectiveness over 20 years (2021-2040)

Conclusions: While most interventions have become affordable under the current budget, only maximizing ART retention will significantly increase the South African HIV programme's impact.

EPE206

Sustainability of community-based social services for key populations in Russia: problems and prospects of national investment programs

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Background: According to the Governmental Analytical Center of the Russian Federation, a small share of spending on HIV prevention in total spending on HIV prevention activities is one of the key characteristics of contemporary HIV funding in Russia. According to the data of the last decade, the largest number of new HIV cases in Russia is among key populations. NGOs play a crucial role in HIV prevention among key populations. It is important to support the sustainable work of NGOs, which is driven by well-developed funding mechanisms at different government levels. One such mechanism is the government procurement system.

The aim of the study was to assess the structure of public spending on HIV prevention programs among key populations by community-based NGOs.

Methods: In 2019 and 2020 monitoring of government procurements for HIV prevention programs was conducted in the most affected HIV-infection regions of the Russian Federation

(N = 24). Key populations were the main focus of monitoring. To interpret quantitative data and obtain information about other sources of funding, interviews were conducted with the heads (N = 5) and focus groups were conducted with specialists (N = 16) of community-based NGOs in 5 regions of the Russian Federation.

Results: Information on 403 procurements in the amount of 641,143,397 rubles (approximately $8,699,367) for HIV prevention programs was analyzed. NGOs from 14 regions of Russia received 79,975,459 rubles for the preventive programs implementation. Only 21.1% of these funds were spent on HIV prevention among key populations. These funds were used to implement 18 prevention projects among key populations. In the volume of prevention goods and services for key populations, more funds are invested in people who use drugs.

Also some NGOs are not always ready to use this funding mechanism because of the bureaucratic system of state organizations that announce auctions for the procurement of goods and services.

Conclusions: It is necessary to develop national funding mechanisms that will contribute to the sustainability of NGOs providing preventive services to key populations. NGOs and the scientific community need to continue working with opinion leaders to develop the most effective methods of HIV prevention among key populations.

EPE207

An analysis of domestic funds on HIV/AIDS intervention from 2010- 2020 by the Nigerian Government

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Background: Nigeria has the third-largest HIV epidemic globally and a relatively high incidence rate. Financing, a fundamental element of the HIV response in Nigeria, has been critical to the significant gains experienced to date. Since 2006, around US$4 billion has been expended on HIV control efforts in Nigeria.
Sadly, about 80% of these funds have been from donors—mainly the US President's Emergency Plan for AIDS Relief (PEPFAR) and the Global Fund to Fight AIDS. Our paper seeks to analyse the domestic funds (Public Source) on HIV response in Nigeria.
Methods: This study utilised secondary data on the Federal Government annual budget in Nigeria. The Federal Ministry of Health Budget were identified, the HIV/AIDS components were selected and exported to Microsoft Excel 2019 for analysis.
Results: From our results, the total domestic funds spent by the federal government on HIV/AIDS-related projects and intervention from 2010 to 2020 is $41 955 964 (Forty-one million, nine hundred and ninety-five thousand, nine hundred sixty-four USD). The average domestic funds spent by the government over the 11 years was an average of 3 million dollars.
The government disbursed the highest domestic funds for HIV/AIDS in 2012 ($8.7 million), about 15% of the national health budget for the year. In 2017, no money was budgeted for HIV/AIDS intervention in the National Health Budget. Most of the funds across the year were spent on establishing comprehensive sites to expand access to treatment and training of healthcare workers, and it appeared consecutively in 2010-2014.
None of the budget's focus through the year addresses critical populations such as people who use drugs, commercial sex workers, etc.
Conclusions: External funding remains critical to many HIV programs in the country and a more significant part of HIV expenditure is from international donors. COVID-19 has orchestrated a global economic meltdown and there has been a backdrop of donor support for HIV with attention shifted to the COVID-19 pandemic.
The Federal Government of Nigeria needs to step up the allotted funding for HIV towards the sustainability of the HIV response.

Transitional financing

EPE208

Resource estimation tool used to develop, monitor, and coordinate sustainable, integrated national and provincial sustainable HIV program financing in Vietnam

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Background: Vietnam has historically relied on donors to fund the national HIV response but graduation to middle-income status led to a sharp decline in funding and increased use of local budgets to sustain HIV programs. The National HIV Strategy for the 2021–2030 sets the goal of ending HIV by 2030. To achieve this goal, the Government of Vietnam (GVN) has increased its HIV budget to cover essential medications such as ARVs and continues to advance policies, regulations, and guidelines that support HIV care and treatment. Among these, the GVN requires all provinces to develop a sustainable financing plan for HIV.
Description: USAID's Local Health System Sustainability (LHSS) project supports the Vietnam Administration of HIV/AIDS Control (VAAC) to create and use a resource estimation tool that helps provincial governments establish sustainable financing for HIV plans through 2030. To date, LHSS has supported 42 of 63 provinces to develop approved plans. Approved plans ensure that provinces allocate local budgets to cover key program areas, (e.g., care, treatment, prevention) and, importantly, include social health insurance premiums and an ARV copayment subsidy for HIV patients unable to afford them.
Lessons learned: Context-specific, evidence-based planning is critical, and the quality of planning depends on the quality of data. A clear understanding of province-specific conditions, requirements, and barriers is necessary to construct realistic and appropriate plans. Similarly, the more that VAAC knows about a province's specific funding trends, commitments, and needs, the better it can support provinces to mobilize, coordinate, and allocate available funds to address resource gaps. A comprehensive and accessible database with accurate financial and epidemiological data is vital to plan for a sustainably financed HIV response.
Conclusions/Next steps: Developing and implementing sustainable financing plans for HIV is critical to promote provincial funding and sustain Vietnam's HIV response. LHSS supports the VAAC to consistently apply a resource estimation tool to coordinate national and provincial financial resources in a timely, systematic manner for sustainable domestic HIV program financing and uninterrupted care as donor financing declines.

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EPE209

Strategies for the transition to sustainable public funding of HIV services in the EECA region

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Background: Over the past several years, the Global Fund has been actively supporting the countries of the EECA region in their transition to sustainable domestic funding for HIV programs. Experts of the Institute of Analysis and Advocacy during 2019-2021 were involved as consultants on technical assistance to countries in advocacy and implementation oftransitionplans.

We were able to identify strategies for countries and highlight the main gaps that impede a successful transition at this time.

Description: The experts' activities were based on a systematic approach: analyzing the situation, forming recommendations, creating an open dialogue, developing plans for implementing changes, providing technical assistance in the preparation of regulatory documents. The main focus was on the analysis of barriers inpubliccontracting mechanisms that countries used to purchase HIV services from NGOs. Another important task was to train NGOs to work on new approaches.

Representatives of the public sector, NGOs were involved in the training and discussion. This helped to establish an open dialogue on a stable basis and to initiate changes, the need for which was shown by the analysis.

Lessons learned: The experience allowed us to identify the specifics of the transition process.Countries are in the process of transforming health systems, and HIV services should not be separate from this.It is important to pay attention which of the approaches will be best for each specific country. You cannot just take the successful experience of a neighboring state and repeat it.

Adaptation and continuous improvement of the regulatory framework and the approaches are key to progress. It is also important to involve in the decision-making process not only the state, but also the civil sector and communities. Open dialogue and accountability mitigate many of the complexities at the planning.

Conclusions/Next steps: Over the past 2 years, it was possible to implement a 3-stage model of transition in Ukraine, pilot the procurement of services in Moldova and Georgia, launch the development of road maps in Kazakhstan and Kyrgyzstan, budget funds for the public contracting in Tajikistan. Further work should be aimed at ensuring that countries draw conclusions and apply this knowledge in further work.

EPE210

Information technology as an assistant in monitoring progress on transition, sustainability and co-financing of HIV in the countries of the EECA region

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Background: The countries of the EECA region are in the process of transitioning to public funding of HIV services and building sustainable HIV systems. The approach of countries may differ due to different geopolitical situations and the peculiarities of medical systems, budgetary processes, and the development of the civil sector. Donors that provide grants to support transition processes should have up-to-date information on the situation within these processes. Communities and NGOs working in the field of HIV should have the same information.

That is why the creation of a portal that has concentrated all the necessary information about the state of transition to public funding in those countries where this is happening has become a priority task for the team of the Institute for Analysis and Advocacy and the Light of Hope.

Description: The portal was created with the support of OSF and continued its development in partnership with organizations that play a key role in the region - Alliance for Public Health, 100% Life.

The structure of the portal is a portfolio of each country, which displays statistical data on key populations and the spread of HIV; key donors and projects that operate in the country; coordination mechanisms and documents regulating the sphere of HIV; transition analytics module (which shows the progress of each country from year to year in 7 key blocks that affect the sustainability of the HIV response system as a whole).

Lessons learned: During the data collection process, a situation was discovered where in many countries there is no consolidated information on some issues. This, in turn, may threaten that several donors may fund similar activities and/or not see problem areas where funding is potentially needed but not allocated.

We also saw that in countries data is collected irregularly or there is no single approach and responsible executor.

Conclusions/Next steps: The filling of the portal is provided on a regular basis annually. This allows to see the changes in the situation in each particular country and its progress or regression.

Such portals have a stimulating effect on the government and allow to attract more supporters for advocacy.

International assistance, frameworks and funding mechanisms for HIV, hepatitis and STI programmes and services

EPE211

USAID/PEPFAR local partner transition realities: salary survey highlights pay imbalance

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Background: In April 2018, PEPFAR announced a goal to direct 70% of USAID/PEPFAR funds to local partners through direct prime awards to achieve country ownership of the HIV response. PEPFAR's local partner transition may be at risk if organizations cannot attract and retain qualified staff to meet the performance targets.

The USAID-funded Accelerating Support to Advanced Local Partners (ASAP) project, implemented by IntraHealth International, provides rapid support to local implementing partners (LIPs) to manage USAID funds as primes.

Description: ASAP identified that LIPs have challenges in attracting and retaining key personnel in a competitive labor market. To assess whether this was linked to salary remuneration, ASAP conducted a salary survey across 24 ASAP-supported LIPs and compared salary scales and benefits against the Birches Group Salary Survey data, which provides multisector labor market information across 150 countries and is the industry benchmark for development in review of salary scales.

Lessons learned: PEPFAR-funded LIPs do not update salary scales every two years per industry standards and the vast majority of salaries are paid below the 25th percentile of Birches' metrics. The discrepancy was most pronounced among senior and technical staff. Comparatively, LIPs with multiple sources of funding paid higher salaries.

Grades	Percentage below 25th percentile	Percentage at 25th percentile or above
9-11 (senior-level)	70%	30%
5-8 (mid-level)	54%	46%
1-4 (lowest-level)	62%	38%

Table.

Conclusions/Next steps: Competitive compensation practices are essential to employee recruitment and retention efforts. It is critical that donors closely monitor LIP performance as it may be stalled while recruiting to backfill positions due to turnover. USAID/PEPFAR investments in reaching 95-95-95 through LIPs could be at risk if local organizations are continually destabilized due to their inability to afford to pay competitive salaries to retain key staff, thus limiting their capacity to deliver on PEPFAR targets. Local organizations need support to better align their current remuneration packages to market rates. Further exploration is needed to understand the impact of disparate compensation on staff engagement, retention, and productivity in PEPFAR's investment in local partners.

EPE212

The impact of shifts in PEPFAR funding policy on HIV services in Eastern Uganda (2015-2021)

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Background: Although donor transitions from HIV programs are increasingly common in low-and middle-income countries, there are limited longitudinal studies assessing medium to long-term impact on HIV services. We examined the impact of changes in PEPFAR funding policy on HIV services in Eastern Uganda between 2015 and 2021.

Methods: We conducted a longitudinal qualitative case-study of four districts in Uganda (Luuka, Bulambuli, Budadiri, Amuru) which were affected by shifts in PEPFAR funding policy. Data were collected in November 2017 (round 1) and January 2022 (round 2).

In-depth interviews were conducted with PEPFAR officials at national and sub-national levels (n=46) as well as district health officers (n=8). We conducted an embedded case-study of four facilities located in affected districts involving 24 semi-structured interviews with HIV clinic managers and eight focus groups with attending patients (68 participants). Data were analyzed by thematic approach.

Results: We identified four significant funding phases:

i. Between 2015 to 2017, PEPFAR officials reported withdrawal of site-level support in 241 facilities following categorization of case-study districts as having a 'low HIV burden'. Post-PEPFAR transition; patients perceived a decline in the quality of HIV care and more frequent commodity stock outs. Health workers reporting a narrowing in the scope of HIV services offered such as cessation of community outreaches.

ii. From 2018-2020, HIV clinic managers in transitioned districts reported a 'donor vacuum' and drastic drops in investments in HIV programming resulting in increased loss to follow-up, declining viral load suppression rates, increased reports of patient deaths and increased community transmissions.

iii. District officials reported a resumption of site-level PEPFAR support in October 2020 with stringent targets to reverse declines in HIV indicators. However, PEPFAR declared less HIV-specific funding in favour of a more integrated health services agenda.

iv. In December 2021, district health officers reported shifts by PEPFAR from routing aid through international to local implementing partners and a return to an intensified focus on HIV and Tuberculosis.

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Conclusions: Changes in PEPFAR funding policy had important impacts on HIV services. Securing the financial sustainability of HIV programming is critical to attainment of UNAIDS' 95-95-95 targets in Eastern Uganda.

Financing HIV within UHC frameworks

EPE214
Accelerate to the Finish: increasing sustainable financing for HIV responses in Asia-Pacific to achieve the 2030 targets

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Background: GFAN AP has been observing the mixed progress against HIV (TB and malaria as well) with concern, which was further compounded by the COVID-19 pandemic. It was therefore urgent to understand what the biggest needs and resource gaps are.
We also wanted to identify best practices and success stories in the AP region we could learn from and which could be replicated in order to accelerate progress in the HIV (TB and malaria) response in AP for UHC.
Methods: GFAN AP therefore commissioned India, Indonesia, Nepal, Sri Lanka and Vietnam to undertake research and analysis to understand the current situation, barriers and challenges, and the investments needed within the HIV responses to reach the goals.
It was done using desk reviews, key informant interviews, and focus group discussions, followed by analysis, with each study documented in a country investment case.
Results:
- Despite some progress against HIV, TB and malaria, countries in the Asia-Pacific are not on track to achieve targets for the three diseases, nor UHC
- Current health funding is insufficient to achieve disease-specific targets, and its sustainability is threatened by decreasing or stagnating domestic financing.
- High and increasing out-of-pocket expenditure for health care threatens the health outcomes of key and vulnerable populations in the region
- The Global Fund has played a significant role in supporting the three responses in AP countries and building effective community systems.
- Improving access to health care by vulnerable and marginalised communities requires addressing systemic, human rights, and socio-economic barriers.
- Domestic financial and political resources are not prioritising the two key solutions to ensuring that vulnerable and marginalised groups are not left behind: community systems strengthening, and a rights-based approach.

Conclusions: This document has attempted to spur us on in the spirit of partnership and with a sense of urgency to reflect on where we are, where we are going, and what we need to get there. This research will inform GFAN AP's advocacy to ensure that the Global Fund and other donors work in partnership alongside implementing country governments, communities that are affected by and/or vulnerable to the three diseases, civil society, and the private sector.

EPE215
Balancing sustainability of Community Based Health Insurance (CBHI) and full coverage of vulnerable persons living with HIV / AIDS (PLWHA): a highway to improved maternal and child welfare

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Background: Payment for healthcare in lower-income countries such as Cameroon is predominantly by Out-of-Pocket Payment (OPP). High cost of healthcare can be devastating to the overall family income resulting in delayed presentation of illnesses which creates a vicious cycle of poverty. Ironically, most CBHI exclude full coverage of PLWHA in order to curb rapid consumption of the pooled premium. This action adversely affects the vulnerable HIV positive mother and child more.
The aim of this study is to evaluate the health outcomes of full CBHI coverage of vulnerable PLWHA while maintaining sustainability and increased enrolment.
Methods: A cross-sectional survey done between October 2019 and September 2021 in two selected Health Facilities, consisted of a total of 250 HIV positive mothers and care givers to positive children. Half (125), were partially covered in one facility, while the other half at Boyo MUHCCOP, a CBHI scheme with donor funding received full coverage.
Sociodemographic data, assessment of OPP, health service utilization and amelioration of health outcomes were collected using a pre-tested semi structured self-administered questionnaire. Analysis was done using (SPSS) Version 20 and Microsoft Office Excel 2016.
Results: Approximately 87% were positive women, while 13% were children. 95% of fully covered participants indicated that OPP had little effect on family welfare while 35 % of partially covered thought same. In Boyo MUHCOOP, PLWHA 110 out of 125 (88.0 %) indicated prompt presentation to hospital when sick, against 47% for the partially covered. In addition 96.8 % and 48% of fully and partially covered respectively indicated overall improved health and quality of life.

At the end of this survey, Boyo MUHCOOP had increased enrolment by 20% and had a positive balance of 13,695,665 FCFA (23,291 dollars), whereas only 2,800,000 FCFA (4,761 Dollars) for non-funded schemes.

Conclusions: Early presentation of illnesses prevents chronicity and it is cheaper to manage. Improved welfare and quality of life is associated with less uptake of pooled CBHI resources.

Sustainability of CBHI schemes can be guaranteed through policy statements backed by local legislative actions imposing proof of donor funding for full coverage of PLWHA as a mandatory condition to go operational.

EPE216

Enhancing the financing of HIV epidemiological control through health insurance integration: a catalyst for sustainability

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Background: Nigeria is dependent on donors for its HIV control financing (83% donor, 17% government), creating a significant funding gap and a low sustainability factor. Integration of HIV into the government's health insurance schemes will help to close this gap and finance the nation's 95-95-95 targets, however little progress was made.

The USAID-funded Health Policy Plus (HP+) has a mandate to advance sustainable HIV financing methods; and provided support to actualize this integration.

Description: HP+ employed a clear strategy with multi-stakeholder involvement and consensus, mutual benefits, and risk management, between April 2019 and December 2021.

A three-pronged approach comprised of:

i. Evidence Generation and Multi-sectoral Stakeholder Consensus Building,

ii. Evidence-based Policy Formulation and

iii. Implementation and Monitoring.

Key stakeholders including government HIV, health insurance and finance agencies, CSOs, parliamentarians, health providers and private sector were galvanized using feasibility studies' evidence, and a phased approach for integration was adopted.

Secondly, The National Blueprint for HIV Integration into Health Insurance policy was developed, which outlines steps for successful integration that includes complement of HIV services, provider payments, and roles and responsibilities of stakeholders.

In early 2020, a specific roadmap for implementation was developed for Lagos state, implemented, and monitored through 2021.

Lessons learned: The integration was successful with HIV services provided and reimbursed by the health insurance scheme. Within months of implementation, 531,213 residents were enrolled in the Scheme- including 3,495 Orphans and Key populations; 216 providers empaneled, trained, providing HIV services, and receiving reimbursements from the scheme.

Over 10,000 HIV tests have been conducted and positive individuals linked to treatment: improving access to testing and treatment, reducing user fees burden for HIV services, while providing financial protection. Key lessons include the importance of evidence-based policy and multisectoral engagement, consensus building, and using a feasible phased approach.

Conclusions/Next steps: Integration of HIV services into health insurance schemes is an effective mechanism for improving financing of HIV epidemiological control.

This successful integration serves as a proof of concept that could be replicated in other LMICs, a game changer in HIV financing sustainability. HIV actors can use evidence-based engagement to achieve integration of HIV into policy reforms in similar settings.

EPE217

Can Indonesia reach sustainable response in 2030? Analysis on National AIDS Spending Assessment in Indonesia 2019-2020

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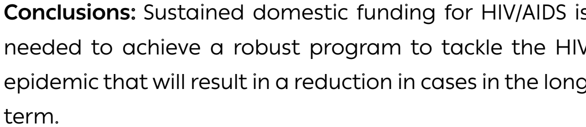
Background: Since the first cases were discovered in 1987 to December 2020, HIV AIDS has been reported in 34 provinces in Indonesia and 474 (92%) of 514 districts/cities across Indonesia. On the other hand, Indonesia has increased its status to an *upper middle-income country* that demands Indonesia to be stronger in its domestic funding.

Methods: The objective of this National Spending Assessment (NASA) 2021 to collect up information on the expenditure of HIV and AIDS programs in 2019-2020 to map out the current resources and their allocation in dealing with HIV AIDS. NASA National 2021 involves 131 international partners, ministries, and institutions from 34 provinces and 227 districts/cities in participatory manner.

Results: NASA 2021 recorded HIV AIDS expenditure of USD 158,360,511 in 2019 and USD 157,725,762 in 2020. Total public financing was USD 70,804,503 (45%) and USD 83,439,233 (53%) in 2019 and 2020. The current availability of funding for HIV AIDS is only half of the actual need as the Ministry of Health estimates that funding needs for these two years are 221,834,192 USD and 379,227,047 USD to aim the mission ending epidemic in 2030. This requirement is far from the budget availability even in 2030.

Based on the projected availability of funds from the current trend, in 2030 the availability of funds is 253 million USD. NASA 2021 also reported almost half HIV AIDS spending comes from international funding where the main areas of HIV AIDS spending were care and treatment at USD 68,011,624 (43%) and USD 91,037,581 (58%).



Conclusions: Sustained domestic funding for HIV/AIDS is needed to achieve a robust program to tackle the HIV epidemic that will result in a reduction in cases in the long term.

The high level of dependence on international funding especially on prevention means that the HIV/AIDS funding architecture needs to be reorganized to protect the sustainability of HIV funding.

Approaches to achieving sustainability, including sustainable financing for civil society

EPE218

HIV budget advocacy efforts, impact and funding: state, lessons and opportunities in South-Eastern Europe, Eastern Europe and Central Asia

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Background: As the international donor funding for HIV is reducing, increasing domestic funding is critical. The Eurasian Harm Reduction Association together with ECOM and EWNA, using Robert Carr Network Fund support, commissioned a study to map civil society efforts, funding and impact in engaging in budget related decision and processes (budget advocacy).

Methods: The assessment reviewed the period between 2018 and 2021, with case studies of 8 diverse countries (different classification of their income level, transition out from the donor funding, geographically representative from sub-regions). The methodology and selection were informed by a multi-stakeholder advisory group. Methods included country and regional interviews, donor scanning, desk review of country and regional information.

Where possible, UN-verified data were used, especially for levels of domestic investments. The report and case studies were reviewed by country stakeholders and regional/ global partners.

Results: Since 2017, civil society capacity for HIV advocacy has grown in quantity and quality. Its annual funding in 8 countries averaged between US$27,000 and US$1.1 million. Global Fund's multi-country grant, OSF were largest contributors. Civil society is an influencer, but so are donors and government champions. Largest cumulative impact is seen in absolute numbers in funding ART (the state share was 66% in 2017 vs 80% of ART budget in 2020, while for prevention 43% vs 63% in 8 countries).

Optimisation and reduced pricing saved estimated US$73.4 million in ARV budgets. Social contracting and domestic funding of key population programming are work in progress and remains the priority. Sub-national funding was important but not systemic. In some countries, HIV activists engaged in procurement transparency work and broader health advocacy to increase prioritization of health in domestic budgets.

Conclusions: International donors should continue prioritizing advocacy for sustainability and successful transitioning of HIV response to domestic funding in its priorities, with greater coordination, geographical coverage and alignment of indicators for measuring influence.

Community groups should be given more opportunities for engaging in budget advocacy (capacity, defining its priority/role in sustainability). As countries transit, international partners should work on better quality, timeliness, consistency, and availability of financial data on domestic funding including for key population programming and civil society.

EPE219

Sustainability of opioid agonist therapy (OAT) programsin 4 Eastern European and Central Asian countries in the context of transition from Global Fund support

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Background: OAT is part of the core interventions for preventing HIV among people who use drugs. In the last decade, sustainability of HIV response dependent on Global Fund's support have risen as a major concern. OAT remains at risk during donor transition, often underfunded and at low scale for impact. In 2019, EHRA commissioned a methodological framework and instruments specifically aimed at measuring the sustainability of OAT in countries.

Description: The purpose of the developed methodology was to generate evidence and practical steps towards establishing OAT policies and programs and strengthen the profile of OAT in the transition-related efforts.

The sustainability framework identified three issue areas (Policy & Governance; Finance & Resources; Services) and nine indicators for measuring sustainability:

Each indicator is further measured through a set of 4-6 benchmarks. Every benchmark is defined through milestones, using the normative guidance and tools. A quantified three-level scale is used to identify the level of sustainability for each benchmark. The methodology was applied in 2020 in Belarus, Moldova, Tajikistan, Ukraine.

Lessons learned: The analysis showed that Moldova received highest scores on OAT sustainability, followed by Belarus and Ukraine. Tajikistan was assessed as overall having OAT at moderate to high risk. A substantial degree of sustainability was reported at least for one indicator in three countries and for the area of Finance and Resources for Moldova.

Moderate degree of sustainability was reported for the indicators of Political Commitment, Service Accessibility and Quality and Integration in all the countries. The greatest risks across countries were recorded for the indicator of Service Availability and Coverage, which reflects low OAT

coverage below 5% in four countries, limited availability of OAT across different settings and low use of take-home dosages.

Conclusions/Next steps: OAT sustainability in four countries remains at risk. The resilience of OAT services and ability to scale up depends on multiple reasons where the political will and continued funding are one of them. There is a need for increased focus on programmatic elements - the resource inputs and service attractiveness. The assessment methodology has been effective in diverse legislative and governance models and health systems, at different stages of donor's transition.

EPE220

Sustaining the operations of Nigeria's treatment programme through the development of an ART management model

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Background: Nigeria is projected to reach HIV epidemic control within the next decade. In consequence, the country would see divestment of donor resources for HIV. Nigeria's HIV treatment programme is donor dependent structurally and financially.

To prevent the collapse of interventions managed by implementing partners (IPs) with reversal of gains made in the country, there was a need to conceptualize a management model that is sustainable for the government of Nigeria.

Description: The National Agency for the Control of AIDS (NACA) led the process of reviewing the management model operated by implementing partners (IPs) to conceptualize the sustainable ART management model in 2021. Stakeholders (national, subnational, donor and implementing partners) were engaged at all levels using a participatory approach involving presentations, group discussions and plenary. A draft model was developed based on findings from consultation with stakeholders. A consultative forum was held thereafter to debate and refine the model. The key feature of the model is the identification and positioning of responsibilities shouldered by IPs within departments and agencies of the State Ministry of Health in line with their mandates. The model was presented to stakeholders in two pilot states and subsequently operationalized.

Lessons learned: Inter-agency consultations revealed the current complexities of the country's health system. Reactions to the model varied among players despite the initial consultations. Newly identified national and subnational government players embraced the model.

Previous subnational governmental and non-governmental players in the HIV space, perceived it as a threat to their current status. The expansion of the model to include community players is emerging.

Conclusions/Next steps: The process of developing a model for sustaining the management of HIV, highlights the need for continuous engagement of stakeholders, sensitivity to the power dynamics and political economy in facilitating a strong coordination mechanism amongst stakeholders.

Continuous engagement with pilot states would inform required modifications to the model. Scale up across the country would be in phases working with states and partners.

EPE221

Key population and local government-led social contracting in Vietnam: a pathway to expanding coverage of publicly-financed HIV services

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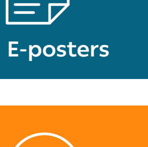
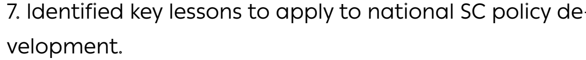
Background: Social contracting (SC) can be an effective tool for sustaining key population (KP)-organization engagement in HIV service delivery as donor funding declines and domestic financing increases. In Vietnam, a novel SC model was piloted in a high-HIV-burden province, Dong Nai (DN), by the local centers for disease control (DN-CDC) and a KP-led social enterprise (SE) with support from the USAID/PATH Healthy Markets (HM) project.

Description: DN-CDC and HM followed seven critical steps to pilot SC from April – October 2021:

1. Mapped government of Vietnam (GOV) SC regulations and developed a pilot SC model;
2. Secured endorsement from the Vietnam Administration for HIV/AIDS Control (VAAC) for the proposed model;
3. Conducted rapid scoping of KP-SE clinics in DN to determine which had sufficient capacity to implement SC;
4. Identified Glink SE clinic as the sole group matching the requirements;
5 Held co-creation meetings between Glink and DN-CDC to agree on a service package, targets, budget and final contract aligning the capabilities of Glink with DN-CDC HIV service needs;
6. DN-CDC then monitored performance and adapted targets as COVID-19 lockdowns were enforced from June – September;





7. Identified key lessons to apply to national SC policy development.

Lessons learned: Key learnings generated through the model were:

1. Securing strong VAAC and DN-CDC buy-in enabled rapid approvals and engagement;
2. Identifying the right contracting mechanism up-front minimized implementation challenges;
3. Focusing on trust generation between DN-CDC and Glink was essential for implementation;
4. Enabling an adaptive approach by DN-CDC and Glink to rapidly respond to the lockdown helped change targets to meet real local needs: increasing home/quarantine site delivery of antiretroviral treatment (ART) and reducing reach and test targets.

As a result, Glink reached 110 KP, with 8 newly diagnosed HIV positive (7.27% positivity yield) and 100% enrolled on ART, and delivered ART and adherence support to an additional 200 ART clients from the DN-CDC HIV treatment clinic.

Conclusions/Next steps: This pilot provides essential learning to inform national HIV SC policies as a pathway for public-sector domestic financing of KP-led organizations. Future efforts need to focus on securing ring-fenced domestic investment in SC and clear regulations for KP-organization SC.

EPE222

Social Contracting to promote sustainability of HIV-based Civil Society Organizations in Indonesia: readiness assessment in 10 districts

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Background: The Indonesia HIV Response relies heavily on the collaboration between the government and Civil Society Organizations (CSO). In the effort of synergizing the works of government and CSO and to support CSO sustainability, the government through the National Public Procurement Agency (LKPP) had issued Regulation No. 3/2021 on Social Contracting Guideline. This regulation, specifically the Type 3, also known as *Swakelola Tipe III* (ST3), allows the CSO to access government funding and contribute to the government's procurement.

As part of Indonesia AIDS Coalition (IAC)'s program to strengthen local HIV-CSO to access government funding through ST3, this initial assessment was conducted to identify districts and CSO for this intervention.

Methods: This assessment was conducted in November-December 2021 towards 10 districts (Medan, Palembang, DKI Jakarta, Bandung, Semarang, Surabaya, Denpasar, Makassar, Jayapura, and Sorong) involving 52 CSOs and aimed to identify their capability and capacity. The data collection was conducted through online surveys and in-depth interviews towards 30 CSOs that qualified through preliminary surveys of Eligibility Survey and Organization Performance Index Survey. Additionally, a Focus Group Discussion (FGD) was conducted in 7 (seven) districts, 63 CSOs, and 35 other local government institutions/agencies.

Results: This assessment signifies the capacity of CSOs (civic space) and the prospect of domestic funding in each district (fiscal space). The assessment elaborates the correlation of these two aspects with CSO's accountability, as well as presents recommendations for the CSO and denotes the fiscal space prospects, particularly on HIV. Additionally, this assessment also identifies 6 (six) most potential districts which are eligible to participate in Social Contracting Type 3 Implementation Research that will be conducted in 2022-2023. The research will be facilitated by IAC as a bridge to advocate and monitor the synergy between CSOs and local government.

Conclusions: The outcome of this research is expectedly in favor to the sustainability of CSOs by fulfilling the needs of communities regarding the procurement of HIV-related logistics, research and development concerning the study on People Living with HIV (PLHIV), and program implementation of HIV prevention for key population communities.

EPE223

Innovative seed grants: a tool for community system strengthening and sustainability at grass root level

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Background: The contributions of Community based organizations (CBOs) working with transgender populations to the community empowerment and reducing vulnerability of the community has been immense and commendable. Various funding agencies have recognized the potential of these CBOs in visibility of the community and advocating for the rights of the community.

Currently most of the funds are primarily for providing health related services and very limited support is available for the CBOs to strengthen their advocacy, governance and human rights related work that can strengthen their HIV prevention programs.

Description: The Humsafar Trust, a CBO working for LGBTQ+ health and human rights has been implementing a project TRANScend since November 2016 with an aim to enhance inclusivity and acceptance of transgender communities in India and support need-based advocacy activities aimed at enhancing transgender inclusion.

The CBOs implemented various advocacy activities such as sensitization with stakeholders, creating legal awareness among community members and designing TG friendly IEC materials on HIV/AIDS, hormone therapy, transgender bill in local languages.

Through the innovative seed grant, a total of 19 initiatives have been supported in various parts of the country. These include an International Film Festival conducted in Delhi, a workshop on gender and sexuality for parents of LGBTQ children, development of Information material on transgender issues, gender-themed poetry and speaker sessions, LBT focused film festivals and sports events etc.

Lessons learned: Advocacy seed grants have helped the smaller CBOs to strengthen their governance and programmatic implementation.CBOs have good networking with stakeholders and communities at local level. However, they lack funds and skilled human resources to sustain health and advocacy programs for community. Innovative seed grant provided them opportunity to strengthen their advocacy for health and human rights of transgender community at their district or state level.

Conclusions/Next steps: It is key that funding agencies provide small funds to CBOs for conducting advocacy activities affecting transgender community and support community system strengthening so that the CBOs can sustain their ongoing work and also strengthen their efforts to reduce vulnerability to HIV, violence, stigma and discrimination and promote well-being among the community.

EPE224
Challenges and opportunities for sustainable community responses to HIV

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Background: Community responses to HIV are critical in addressing HIV/AIDS and COVID-19, particularly among key populations, however they remain on the margins of health systems in a majority of countries and are rarely funded from government budgets. With shrinking fiscal space, particularly due to the COVID-19 pandemic, and countries whose middle income status means a potential reduction in Global Fund and other international funding streams, the need to diversify funding options for community responses to HIV is urgent.

Description: Mapping of civil society and community organisations' work to obtain and sustain financing for HIV services included 22 country and seven regional/sub regional organisations. Desk review and semi-structured interviews with organisations were used to obtain data and seven case studies were developed. Key findings have been validated and piloted during proof-of-concept advocacy projects with five organisations in 2021.

Lessons learned: Although civil society and community organisations are aware of the critical and strategic need to diversify funding sources and increase domestic resource mobilisation, there are still challenges in making concrete progress on these. To support strategies for sustainable financing the following were identified as priority areas:
- Tailored (HIV – specific) on-line training and technical support on domestic resource mobilisation;
- An accessible repository of practical tools (such as service cost calculators), advice and case studies;
- Virtual conferencing that enables the exchange of insights on political and fiscal aspects that frame sustainability of HIV resources in different contexts; and,
- Catalytic flexible grants that enable foundational, innovative and risk-taking work to take place.

Key strategies	Type of Activities	Targets	Lessons learned and key challenges
Organizational strengthening	- Capacity building - Training	- Donor support to organization sustainability - Increased resource mobilization capacity	- Budget advocacy capacity strengthening may be frustrating if resources are not available to implement plans
Advocacy	- Influence policy-decision making (government, parliament, corporations providing health coverage to their employees) - Influence budget allocation	- Increased political and financial support for key populations (KPs) and HIV response, including expanded access to services and social protection policies. - Social contracting policies and mechanisms are in place.	- Better access for KPs to services may not include support for civil society organizations' operational and advocacy work. - Hard to obtain political acceptance for social contracting. - Budget contingent of fiscal space and party politics, these being particularly challenging.
Fundraising	- Sensitization and request to donate from private donors (corporation and individuals, including donations from users)	- Donations from the private sector	- Private sector cherry-picking non-controversial topics and focusses on the general population. - Private sector support volatile by nature.
Self-sustainability	- Sales of products and services, including non-HIV related.	- Strengthen income generation capacity	- Privatization of community services and negative impact on equity. - Financially, better-off populations are willing to contribute to financing services for the less well-off populations, including key populations.

Table 1. Results of the mapping and pilot projects lessons learned.

Conclusions/Next steps: The Mapping identified the most common key strategies, types of activities and targets to achieve more sustainable community response to HIV. Proof-of-concept pilots validated these findings, as well as, identified key lessons learned and challenges that civil society and community organisations encounter when working on sustainable community responses to HIV.

EPE225
Social contracting to ensure the sustainability of services and to overcome funding cuts and limitations on HIV services

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Background: Over the last 4 years, all major types of social contracting (social services order, services procurements, financing statutory activities, providing premises etc.) have been practically tested in Ukraine.

The main task was to identify the pros and cons of each and find out which of the mechanisms best ensures the sustainability of services and cost-effectiveness. According to this, procurement of services was the best.

Description: We conducted an analysis of the legislation regarding the procurement of services and the possibility for municipal institutions, businesses, NGOs participa-

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tion. The main issue was the classification of HIV services. To consider these services as purely medical, it narrows the range of potential providers (medical education and license are required), especially for NGOs that have provided GF-funded services for many years, had expertise but could be out of the procurement process. That is why we with IAA, IRF, "100 percent life" advocate the separation of HIV services into a new category – public health services. A separate structure was established, the Public Health Center, which purchased these services and the basic package of services was determined.

Lessons learned: In 2019, the Public Health Center successfully completed procurements in all regions of Ukraine. We created a new market for services available for municipal institutions, businesses, and NGOs. As the services from basic package are covered from state budget the extended package may be financed through other social contracting mechanisms from local budgets.

Conclusions/Next steps: Procurement in 2019 has been completed and preparations for procurement of services for 2020 started. There will also be an opportunity to apply a framework procedure for signing contracts for 3 years, which will further simplify the purchase of these services. We believe this model can be successfully applied in other countries in the EECA region.

EPE226

Ukraine's model of Transition Plan as an experience that can be piloted in the EECA region

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Background: Implementation of the Transition Plan 20-50-80 (TP) is one of objectives in the Global Fund grant for Ukraine for 2018-2020. To provide services in 2018 and implement the first phase of TP, two models of service delivery have been developed: centralized and decentralized. In 2018 20% of HIV prevention, care and support and TB support services for target groups were provided. The main tasks were to choose the optimal model and then implement it throughout the territory of Ukraine in 2019.

Description: In 2018, 2 regions were selected to pilot the models – Poltava and Sumy regions. Based on the results, our experts, together with Public Health Center and the main GF recipients, have created a model of TP for 2019-2020. In 2019, procurements of services were made through the ProZorro electronic system. The Strategic Group was set up to coordinate the process and deal with operational issues, respond to the challenges arising. About 100 million UAH has been allocated for the procurements of services in 2019. Regionals NGOs became winners of the tenders and started to provide services for state funding.

Lessons learned: We managed to create the model of TP that is the most optimal for the HIV services area. The e-procurement mechanism is transparent and competitive, so we can get the best quality at a reasonable price. Participants in the process are all potential service providers - from municipal institutions to businesses and NGOs. Governmental decision-making structures take into account the experience of NGOs (the work of the Strategic Group). This model is approved in normative acts (MoH orders, Cabinet of Ministers regulations) and can be the basis for adaptation and implementation in the EECA region.

Conclusions/Next steps: The model of services procurements for TP encourages the state to optimize its financing - to buy the necessary services at a reasonable price from quality providers. We don't discriminate representatives of communities or other participants in the newly created market, since the criteria, standards and procedures are clear and approved in normative acts.

EPE227

Key communities change national budgets

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Background: The deficit of funding for social and healthcare programs remains a major problem for many countries. This is a specially urgent problem for countries in the state of military conflict. In these circumstances many communities, particularly those vulnerable to HIV, don't believe that they can change the situation.

Description: Five years ago All-Ukrainian Network of PLWH became one of the key drivers for change in budgeting the HIV related services in Ukraine. The goal of that effort was to make HIV programs in country sustainable in transition from donor to state funding.

To achieve that organization and its partners started a multilevel advocacy campaign. Representatives of PLWH community entered the National working group for Healthcare reform. They advocated for increase of the state budget for healthcare and social programs in general as well as for changes in the format the services were provided. Namely, a major focus was made on ensuring the provision of medical and social services by a wide range of organizations both Government, municipal, private and non-government.

Another important point was ensuring funding from the state budget by National Health Service of Ukraine for all those players. Organization closely cooperated with other key communities, international organizations, Government officials and Parliamentarians.

Lessons learned: Over several previous years advocacy efforts of the organization and key communities resulted in four-fold increase of healthcare funding from the budget. This, in turn, allowed for transition from donor to government funding for HIV program. Today NGOs receive funds from National Health Service for care and support services. Advocacy activities on municipal level are also implemented. Only in the second half of 2021 in 7 regions 11 advocacy initiatives were implemented and a Memo-

randum with the National Health Service of Ukraine was signed; development of a tool for collecting information on allocation of budget funds for an expanded package of services in the TB/HIV field in the context of implementing a plan to move from donor to local funding started.

Conclusions/Next steps: Cooperation of key affected communities with all stakeholders can bring systemic reforms and increase in relevant public funding and must be strengthened and supported in the future.

EPE228

Strengthening women's organizations' institutional capacity to increase their likelihoods to receive donor funding in Africa – Lessons and experiences from ICWEA

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Background: The International Community of Women Living with HIV Eastern Africa (ICWEA) conducted a to determine of the fraction of women's organizations that were receiving donor funding study in Uganda. The study revealed that less than 10% of the organization that were receiving donor funding were women's organization. Causes of this challenge were identified as internal capacity weaknesses in governance, financial management, procurement, project management, MEAL, human resources, resource mobilization/fund raising and leadership among others. ICW
Consortium partners came together as women's organizations to devise means of addressing the internal weaknesses as a process to access donor support.

Description: ICWEA and other ICW Consortium partners received funding from RCNF to strengthen their internal capacity as a process towards receiving donor funding. These institutions also receive core-funding to facilitate day-to-day running of the institutions. The ICW Consortium engaged services of a consultant to conduct organizational capacity assessment focusing on governance, MEAL and financial management. The assessment revealed strengthen and weaknesses in the three areas and later developed individual action plan.

Several consultants were later engaged to work with individual organizations during implement the action points. Following the internal capacity strengthening, 80% of networks have received additional funding and have grown in capacity

Lessons learned: Funding from RCNF strengthened the internal capacity of the ICW Consortium and prepared them for donor funding. 80% of the organizations in the ICW Consortium have received additional donor funding, an indication that institutional capacity strengthening is key to external funding. Core funding is critical for institutional strengthening because it allows young and/or weak organizations to remain functional despite inability to implement activities.

Facilitating the governance board to play their roles is key in organizational growth as they will ensure that the expected standards are adhered to.

Conclusions/Next steps: Development partners make their funding decisions after certifying that grantees have capacity in governance, financial management, procurement, project management, MEAL, human resources, resource mobilization/fund raising and leadership. Attainment of this status requires reasonable resources – that not all organizations can raise. Therefore, it is paramount that development partners/donors invest in organizational capacity strengthening to enable beneficiary organizations to receive external funding.

EPE229

Strengthening Internal Control Systems of Community Based Organization (CBOs)

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Background: The Humsafar Trust (HST) is a Community Based Organization of LGBTQ+ in Mumbai. Since inception it has faced challenges as qualified LGBTQ+ community persons did not want to work with HST owing to the stigma attached and criminalization of same sex behaviors in India. HST became a model of trial-and-error learning from its own experiences and grew manifolds in the last 28 years. With growth came the need of strengthened financial controls and an Internal Auditor was appointed with an aim to evaluate and strengthen internal control and financial systems along with capacity building on financial documentation, risk management strategies, sustainability, and providing unbiased reviews.

Description: HST depends upon multi-source national and international funding for health and advocacy work. It has contractual obligations, public scrutiny, liabilities/responsibilities and substantial reputational risks. Donor specific terms/conditions attached to funding are not always practicable or in the best interest of not-for-profits.

Thus, to contractually obtain indemnity from impractical financial termsand conditions that affect implementation, executing a standard form of engagement with the donor to provide legal immunity is vital. A set of standard forms was recommended for donor engagement, which strengthened internal financial mechanisms. Standard documentation includes representations and warranties made by CBOs with regard to the funding received thereby protecting the CBOs from any future liability.

Lessons learned: Given the sensitive nature of the objectives of HST and other CBOs it is imperative that they are protected and provided support to carry out work in a smooth and effective manner, with proper and standard documentation that will form the basis of such activities. Availability of finance dictates the manner in which equality is understood by CBOs.

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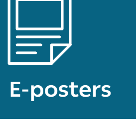
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Conclusions/Next steps: Community-based implementation is susceptible to risks involved given the sensitivity around community-based activities and donor-led financial transparency obligations. Hence it is essential that necessary mechanisms are implemented to provide indemnity from any potential risks/obligation arising out of donor-specific requirements, particularly those that may not be practical or even detrimental to functioning/work.

EPE230
Making medicines affordable: Is the Global Fund a missed opportunity?

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Background: Low- and middle-income countries frequently face inaccessibility of health products due to price barriers or unavailability, as evidenced by COVID-19 vaccines. These barriers are largely related to intellectual property (IP) and patent protection; which prevent access to generics and local production of essential medicines. However, funding for necessary interventions to remove such barriers remains limited and unsustainable.

ITPC engaged in research and advocacy with the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM), given its position as main donor in the fight against pandemics and its capacity to shape markets and influence health products' prices, to explore the potential for the Fund to become a key player in making medicines affordable.

Description: ITPC measured GFATM's IP and access to medicines funding possibilities and appetite through a review of its strategic documents and discussions with its Secretariat and Board members. The evaluation concluded that access to treatments interventions were among the GFATM's strategic priorities, however it evidenced political reluctance to fund such work.

ITPC then developed a guide providing advocates tools to integrate treatment advocacy interventions in the 2021-2023 GFATM grants. A workshop based on the guide was organized in November 2019 for 15 middle-income countries eligible to GFATM funding*.

Advocacy was pursued at country level through meetings with Country Coordination Mechanisms (CCMs) and participation in national grant-making dialogues.

**Thailand, Ukraine, Morocco, India, Vietnam, Russia, Moldova, Georgia, Armenia, Belarus, Kazakhstan, Kyrgyzstan, Guatemala, El Salvador, Honduras.*

Lessons learned: According to a survey conducted by ITPC in the 15 countries:
- 10 succeeded in including proposals on access to medicines in the national dialogue,
- 7 succeeded in including these proposals in the concept note submitted to the GFATM,
- 5 succeeded in having them approved for funding.

Conclusions/Next steps: The advocacy carried out showed results, however obstacles were encountered, in particular low prioritization access to medicines interventions at national level, insufficient funding amounts allocated, and resistance from the GFATM to fund IP. These blockages demonstrate the need to continue to advocate and mobilize donors.

EPE231
Will treatment access advocacy still be funded in the future? An analysis of funding landscape and current challenges

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Background: Middle-income countries (MICs) face specific access to medicines challenges related to intellectual property (IP) barriers.Very often these are excluded from voluntary mechanisms to access more affordable generic versions of life-saving medicines. In the meantime, treatment access civil society organizations (CSOs) challenging successfully patent barriers are confronted to decision-makers and donors' reluctance to support efforts to overcome IP barriers, challenging their ability to pursue their work in a sustainable manner.

Description: In 2021, ITPC conducted an analysis of the IP and access to medicines donor landscape including the political reticence around IP funding, as well as a focus on civil society recipients' experiences, lessons learned and perspectives on financial sustainability of IP funding. Reports of key funders have been reviewed and interviews with key funding institutions and civil society recipients have been conducted.

Lessons learned: The findings reveal a shrinking funding environment compromising sustainability of civil society work. There is low transparency around funding and difficulties in accessing data. The inquiry also shows variable levels of participation among some organizations and donors reticent to share information. Finally, the analysis demonstrates limited, uncoordinated and fragmented donor landscape.

On the CSOs recipients side, the analysis shows overall shrinking institutional funding and difficulties in accessing funding from established donors outside of High Income Countries based CSOs. It also highlights challenges related to short-term funding cycles making it difficult to have programmatic approaches.

Conclusions/Next steps: ITPC developed a policy paper basis on the analysis that received positive reactions and fostered increased mobilization from treatment access CSOs but also from donors. Several donors including UNITAID, Initiative Five Percent and AIDSFONDS have already given results in terms of funding commitments.

The paper will be the basis of further discussions with CSOs, traditional IP funders and other relevant stakeholders and ITPC will convene a think tank meeting in 2022 to

better understand the challenges faced, the implications of the COVID-19 crisis on the sustainability of funding, and develop strategies to overcome the identified barriers and ensure sustainable funding for IP in MICs.

Approaches and evidence from cross-sectoral programming and financing

EPE232
Health-system barriers and opportunities for integrating HIV with four selected health programs in Uganda: a qualitative study

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Background: Integrating HIV with other health programs is increasingly important in the context of calls for universal health coverage and the need to eliminate duplication and the health-system inefficiencies inherent in vertical programming.

Although there is evidence from clinical trials evaluating the feasibility of integrating HIV with other health programs, there is little health systems and policy research in this regard.

This WHO-commissioned study explored the perspectives of policy makers and providers in Uganda on barriers to integration of HIV with four selected health programs (malaria, immunization, maternity services and Tuberculosis) and to identify areas for cross-programmatic synergies.

Methods: Between September and December 2021 we conducted a qualitative study involving 104 participants. In-depth interviews were conducted with national-level Ministry of Health officials (n=8), representatives of bi-lateral and multi-lateral donors(*n=14*), district health team leaders (*n=26*), facility in-charges (*n=36*) and heads of HIV clinics (*n=28*) in the eight sub-regions of Uganda.

Data were analyzed by thematic approach based on WHO's 'building blocks' framework (e.g. financing, health workforce, governance, medicines).

Results: Barriers identified include;

Financing: limited domestic financing of health services which perpetuates a dependence on external donors with narrow disease-specific interests resulting in fragmented programming, donors perceive local health system actors as taking advantage of vertical funding streams for personal and sector-wide resource mobilization ends,

Workforce: workforce Mal-distribution skewed towards 'better-incentivized' (e.g. HIV) programs, limited workforce motivation and skills for integrated health services,

Medicines: parallel and disjointed commodity supply chain mechanisms within and across the five programs and;

Governance: health system governance arrangements which are structured around disease-specific 'silos'. The identified areas for improved services' integration include pooled procurement across the five programs, innovations for improving multi-disease diagnostic capacity, integrating community outreaches and on-site support supervisions.

Conclusions: Although our study unearths internal and external barriers to integrating HIV with other health programs, opportunities for improving synergies across the five programs are identified with potential for cross-programmatic efficiency gains.

EPE233
Progress in peril: impact of the UK Government's aid cuts on HIV & AIDS worldwide

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Background: In 2021 the UK Government made large cuts in funding to multilateral, bilateral and R&D responses to HIV/AIDS after already significant cuts over the past decade.

Description: A desk review of data submitted from a call for evidence examining the impact of these cuts on the global HIV/AIDS response was conducted in July 2021. Data consisted of eight submissions from organisations implementing multilateral, bilateral and R&D programmes impacted by the cuts. A second round of analysis on ongoing impacts has been collected in early 2022.

Lessons learned: Cuts of over 80% to key multilateral organisations affect the international community's ability to get the HIV response back on track and advance UK government and global development priorities, including pandemic preparedness, health system strengthening, and ending preventable deaths. UK aid cuts to bilateral programmes have resulted in adverse effects, including lost opportunities to develop innovative solutions. There is a dangerous scale down of HIV services in the COVID-19 context which could lead to increased HIV transmissions. Abrupt and poorly coordinated cuts have weakened programmatic impact and operations of organisations on the ground. Analysis also highlights that funding for global health R&D has been significantly affected.

Conclusions/Next steps: Data submitted shows the withering of the UK government's commitments to the Busan Declaration principles on aid effectiveness, particularly decreases in quantity and quality of aid. Funding cuts jeopardise decades of progress in the HIV response the UK has been instrumental in delivering, risking a resurgence of the pandemic.

This evidence is a red-flag for other donors for their own spending commitments: reduced funding means more

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HIV transmissions, AIDS-related deaths and a reduced ability to end inequalities that drive the AIDS epidemic.
Data supports the case that governments sustain the quantity and quality of HIV/AIDS aid by reaching the target in the 2021 Political Declaration on HIV to spend 0.7% of GNI on ODA. Data also demonstrates the UK Government's need to revaluate against the impact caused by these cuts and make sufficient provision in the spending review for the seventh Global Fund replenishment as well as the bilateral funding portfolio, considering the catastrophic impact of these cuts.

EPE234
Evaluating the Gilead COMPASS Initiative: funding and building capacity of non-profit organizations to end the HIV/AIDS epidemic in the US South

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Background: Despite significant HIV biomedical advancements, the US South continues to be disproportionately impacted, accounting for over 50% of new HIV diagnoses. This is in part due to socio-structural barriers, including stigma, lack of resources and limited prevention capacity.
To address these issues, the Gilead COMPASS Initiative has committed $100M over 10 years in the South to:
1. Improve access to and improve quality of health care services for people living with HIV (PLWH) ;
2. Increase local leadership and advocacy; and,
3. Change public perception of HIV/AIDS.
Description: Since 2018, Gilead Sciences has funded four coordinating centers (CC), including University of Houston, Emory University, the Southern AIDS Coalition, and Wake Forest University to build the capacity of non-profit organizations to end the HIV epidemic in the South. CCs collaborated to build a standardized model to assist organizations and their communities. The CCs administered coaching, funded community partners through grants and learning opportunities, and provided training to use evidence-based strategies and evaluation.
Lessons learned: To date, collective evaluation shows that the CCs distributed $6,870,814 through 382 awards to 206 funded partners, reaching 204,862 people in the South. The majority (83.06%) of awards funded organizations led by and serving Black and Latino MSM, Black cisgender women, and people of trans experience. Training opportunities offered at each CC resulted in 93% increase in knowledge and skills, 98% increase in organization capacity, and 96% high satisfaction with COMPASS services provided. As of September 2021, the CCs awarded an additional 76 grants and learning opportunities. As COVID-19 continues to impact partners and their clients, organizations struggle through programmatic shifts, burnout, reduced staffing due to illness, and continued loss of loved ones. CCs provided online workshops to increase organizational capacity to engage audiences remotely.
Conclusions/Next steps: The COMPASS Initiative provided many organizations with their first grants, providing validation, increased local visibility, and opportunities to apply for additional HIV-related funding. Program data informs quality improvement and enhances services provided through grants, trainings, consultations, and learning opportunities.
Future evaluation will include a survey to gain insight into the impact of COVID-19 on the provision of HIV-related services.

EPE235
Catalyzing self-reliance and sustainability of HIV control efforts in Nigeria: using evidence-based policy to enhance domestic funding

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Background: Nigeria has a very high HIV burden and is currently ranked second in the World, despite this, financing of HIV control efforts is highly dependent on international donors (over 80%). Domestic Resource Mobilization is being explored as a mechanism to close the financing gap and create a sustainable mechanism for financing HIV control needs towards the 95:95:95 targets.
Health Policy Plus Project supported the Nigerian government in 2020 to assess challenges with HIV financing and identify viable strategies for mobilizing domestic resources for HIV control.
Methods: A strategic multistage approach was used which included stakeholder mapping and key informant interviews of major stakeholders across government, donor, private, civil society, and partner organizations, and desk reviews of relevant literature to generate evidence. Key informants were selected by history of their involvement in health financing and HIV control efforts at the national, subnational and community levels.
Following this, evidence synthesis was conducted with important multisectoral stakeholders; and comprehensive strategies for addressing the gaps identified and used in formulating a national policy

Results: Challenges to HIV financing were identified as inadequate prioritization of HIV financing by government due to the perception that it is a donor's purview, low government allocations and expenditures; allocative and technical inefficiencies in fund utilization; inadequate accountability and governance; low resource mobilization capacity of HIV actors, insufficient private sector engagement, and deficient multisectoral collaboration. A multisectoral group was formed and through a collaborative process, strategies were identified to be used in mobilizing additional 662 million USD of domestic resources from 2021 to 2025; using a National Domestic Resource Mobilization (DRM) Strategy, and implementation has commenced across states.

Major strategies include improving public financing through improved government budgets; integration of HIV into health insurance; increasing private sector contributions; innovative mechanisms like diaspora bonds; local HIV commodity production; improving efficiency; strengthening governance and accountability structures; and improving CSO's accountability role.

Conclusions: Increasing self-reliance and weaning off dependence on external HIV donor funding is a global health call-to-action.

An evidence-based multisectoral approach can be used by HIV stakeholders to advance appropriate DRM mechanisms and policy that improve self-reliance and sustainability of HIV financing globally.

EPE236

Examining the translation of comprehensive intervention packages designed to reduce HIV incidence in adolescents in sub-Saharan Africa to reduce unplanned pregnancy in the same population: a literature review

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Background: Rates of HIV acquisition and pregnancy among adolescent girls and young women (AGYW) in Sub-Saharan Africa (SSA) are high and lead to significant morbidity and mortality[1-6].Globally, SSA has the highest growth rate of adolescents[6]. Comprehensive evidence-based interventions for HIV and pregnancy prevention have similarities in content and delivery.Increasing the efficiency of programs to reduce HIV incidence and pregnancy in AGYW is critical as resources become limited.

Examining the translation of comprehensive HIV-prevention interventions for AGYW to reduction of pregnancy in the same population can lead to unidentified efficiencies in program cost.

Methods: The research question is: do comprehensive, evidence-based packages of interventions designed for reducing HIV incidence among AGYW in SSA also reduce incidence of pregnancy in the same population? A literature search was conducted with specific criteria designated to ensure the rigor of the review. The search identified 431 records. Abstract screening resulted in 45 records to be included in the full-text review.

Results: Records were categorized by type of article (reviews of existing evidence, policy briefs/opinion, original research not meeting review criteria, original research meeting review criteria; and content (solely pregnancy prevention, solely HIV prevention, multi-purpose prevention [both HIV and pregnancy], pregnancy prevention translated to HIV prevention, and HIV prevention translated to pregnancy prevention). No records were identified that translated HIV-prevention interventions to pregnancy prevention. Also, no records were found that translated pregnancy prevention interventions to HIV prevention.

Conclusions: There is a dearth of evidence for the translation of comprehensive HIV-prevention interventions for AGYW to pregnancy prevention in SSA. These findings shed light on the fact that there are gaps in the research and opportunities to identify areas of duplication and strategies to increase efficiency. Interventions designed to prevent acquisition of HIV in AGYW in SSA using a comprehensive package of interventions should consider including tracking pregnancy rates to generate evidence for the translation of interventions.

Findings could lead to a better understanding of potential efficiencies across HIV and MCH sectors, which currently implement separate programs to prevent either new HIV infections or pregnancy among the AGYW population in SSA.

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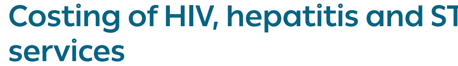

EPE237
Comparing the cost of six-month PrEP dispensing with interim HIV self-testing to the standard-of-care three-month PrEP dispensing with clinic-based testing in Kenya

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Background: In sub-Saharan Africa, cost remains an important barrier to HIV pre-exposure prophylaxis (PrEP) access and delivery. Novel PrEP delivery models are needed that reduce costs but maintain PrEP initiation and continuation. The JiPime-JiPrEP trial tested six-month PrEP dispensing with interim HIV self-testing (HIVST) and found non-inferior HIV testing, PrEP refills, and PrEP adherence compared to standard-of-care (SOC) clinic-based PrEP dispensing every three months. We measured the cost of this model compared to SOC dispensing.

Methods: Using activity-based micro-costing from the payer perspective, we estimated the unit cost of PrEP per person per month (PrEP month) in the intervention and SOC arms. We estimated these costs in two contexts:
1. As implemented the trial, and;
2. As projected in Kenyan public clinics.
We used data from budgets and expense reports, published documents, and key informantinterviews.
We also collected time-and-motion measures to estimate personnel effort on clinical care, HIV testing and counselling, laboratory testing, and PrEP delivery. We estimated costs in 2019 United States dollars and excluded research-related costs.

Results: From January to December 2019, trial participants accrued 644 PrEP visits (enrollment: 304, refill: 340) and were dispended 2952 months of PrEP (intervention: 2039, SOC: 913). PrEP delivery for intervention clients took a median of 152 minutes of personnel time projected over one year versus 216 minutes for SOC clients. In the trial, the unit cost per PrEP month was $27.93 for the intervention and $30.89 for the SOC. Most costs were from personnel (intervention: 25%; SOC: 31%), medication (intervention: 24%; SOC: 22%), and laboratory testing (intervention: 18%; SOC: 12%). The projected unit cost per PrEP month in public clinics was $13.50 for the intervention and $15.53 for the SOC, with higher costs of HIVST kits more than offset by personnel savings in the intervention.In both arms, the majority of costs were attributable to medication (48%) and laboratory testing (22%).

Conclusions: Six-month PrEP dispensing with interim HIVST demonstrated comparable and lower costs than SOC clinic-based dispensing every three months in Kenya, with decreased personnel time. Subsidies to lower the cost of PrEP and HIVST kits may increase the affordability of PrEP and should be considered.

EPE238
Cost versus price of key drugs to treat COVID-19, HIV, HBV and HCV

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Background: High drug prices can limit treatment access. Branded drugs can be sold for prices far higher than the costs of production. This analysis aimed to determine prices currently feasible for COVID-19, HIV, and viral hepatitis B or C treatment, assuming competitive generic manufacture.

Methods: Data on Active Pharmaceutical Ingredients (API) exported from India were collected from an online database (www.panjiva.com) and used to calculate current weighted mean cost/kg of API. Target prices were calculated based on the per-pill cost of API, plus costs of manufacture ($0.01/pill), 10% profit margin, and assumed 27% tax on profit. Current lowest global prices are from public reports and the Clinton Health Access Initiative HIV Market Report 2020. Our target prices were compared with national pricing data from a range of low, medium, and high-income countries.

Drugs	Production Cost (USD)	Minimum Price (USD)	Maximum Price (USD)
Molnupiravir (MOL)	$8.50	$20	$750
Baricitinib (BCB)	$1.96	$4.20	$2,422
Dolutegravir (DTG)	$24	$29	$25,663
Darunavir/ritonavir (DRV/r)	$264	$1,427	$36,550
Atazanavir/ritonavir (ATV/r)	$182	$155	$4,995
TDF/FTC	$45	$37	$21,402
TAF/FTC	$195	$200	$21,827
Sofosbuvir/daclatasvir (SOF/DAC)	$36	$704	$983
Sofosbuvir/velpatasvir (SOF/VEL)	$58	$565	$52,676

Table:

Results: The Table shows current prices of antiretrovirals for COVID-19 (5-14 day course), HIV or HBV (per 365-day course), and HCV treatments (per 12-week course).HIV can be treated with TDF/3TC/DTG for <$70 per year, HBV with TDF/3TC for $37 per year, COVID-19 treated with molnupiravir for $8.5 or baricitinib for $2.HCV could be cured with sofosbuvir/velpatasvir for $58 per patient.
Maximum list prices (typically from US) were up to 1000 times higher than costs of production (e.g. for dolutegravir).

Conclusions: Key viral infections can be treated or cured with generic drugs at prices far below those of branded equivalents.Use of branded drugs at high prices can limit the potential for countries to achieve the UNAIDS 95-95-95 targets.

EPE239

Estimating the costs of comprehensive HIV services for key populations in Kenya and Malawi: an analysis of the LINKAGES program

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Background: Assessments of the cost of providing HIV services to key populations (KP) in low-resource settings are scarce. Most KP costing studies focus on clinical interventions. They fail to consider costs of pre-service delivery activities, actions taken below and above service level, and the structural interventions implemented alongside clinical services to reduce stigma, discrimination, and violence.
We estimated the unit costs of the following clinical services as part of a platform of services provided in the context of the LINKAGES program in Kenya and Malawi: sexually transmitted infection (STI) services, pre-exposure prophylaxis (PrEP), post-exposure prophylaxis (PEP), HIV testing services (HTS), antiretroviral therapy (ART), sexual and reproductive health (SRH) services, and management of sexual violence (MSV).

Methods: Through a combination of top-down and bottom-up approaches, we estimated the economic costs from the provider's perspective during fiscal year 2019.
Data were collected from 30 facilities in Kenya and 15 in Malawi as well as from country offices and program headquarters. Costs were disaggregated by intervention-specific costs, costs for condoms distributed throughout the program, and other program costs including KP size estimation, KP empowerment, structural interventions, peer outreach, management, monitoring and data use, and startup costs.

Results:

	n	Intervention-specific	Condoms	Other program	Total
PEP	25	25	5	16	46
On PrEP	33	89	50	213	352
HIV testing	45	6	5	22	32
On ART	45	206	48	289	542
STI screening	45	8	4	28	39
SRH	34	12	4	28	45
MSV	44	6	6	18	30

Table 1. Unit costs per service provided (USD 2019)

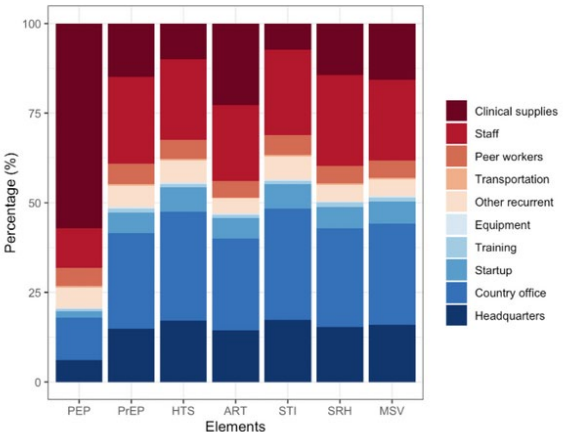

Figure 1. Contribution (%) of inputs per unit cost.

Conclusions: Costing studies that aim to estimate the full (economic) cost of HIV services for KPs need to consider costs of all program components at all levels of implementation, including below and above service level activities. Costing studies that focus on the delivery of clinical services only are likely to substantially underestimate the costs of delivering effective HIV services to KPs.

EPE240

Economic evaluation of improving HIV self-testing among men who have sex with men in China using a crowdsourced intervention: a cost-effectiveness analysis

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Background: HIV self-testing (HIVST) is recommended by the World Health Organization to enhance HIV testing services. Crowdsourcing, an approach that taps into the wisdom of crowds, has been successful in generating strategies to enhance HIVST uptake.

We determined the cost-effectiveness of a crowdsourced intervention (one-off or annual) compared to a control scenario (no increase in HIVST) among men who have sex with men (MSM) living in China.

Methods: We used data from our cluster randomized controlled trial of MSM (NCT02796963). We used a micro-costing approach to measure direct health costs ($USD2017) from a health provider perspective. Using outputs from a dynamic transmission model over a 20-year time horizon, we estimated the incremental cost-effectiveness ratios(ICER) using cost per quality adjusted life years(QALYs) gained with 3% discounting. The one-off intervention increased HIVST by 1.89 (95%CI:1.50-2.38) for one year, whereas we assumed an annual intervention increased HIVST throughout the 20-year time horizon. We defined an intervention as cost-effective if the ICER was <1x gross domestic product (GDP; $8823).

	Cost (USD 2017)	Incremental Cost	Total QALYs	Incremental QALY gained	ICER (Cost per QALY gained)
Guangzhou					
No crowdsourcing	127,213,915		661,837		
One-off crowdsourcing	127,036,559	-177,356	662,383	546	Dominates[1]
Annual crowdsourcing	129,039,133	2,002,574	663,268	885	2,263
Qingdao					
No crowdsourcing	45,502,682		556,347		
One-off crowdsourcing	45,409,229	-93,453	556,492	145	Dominates[1]
Annual crowdsourcing	47,550,238	2,141,009	556,840	348	6,152
Jinan					
No crowdsourcing	37,193,770		225,383		
One-off crowdsourcing	37,224,788	31,018	225,535	152	204
Annual crowdsourcing	38,913,226	1,688,438	225,828	294	5,743
Shenzhen					
No crowdsourcing	346,743,984		1,898,994		
One-off crowdsourcing	346,910,542	166,558	1,899,966	972	171
Annual crowdsourcing	350,323,180	3,412,638	1,902,905	2,939	1,161

[1] Cheaper and more effective than the next best alternative

Table 1. Cost-effectiveness of crowdsourced intervention in four cities in China with a 20-year time horizon.

Results: Table 1 summarizes the ICERs. Costs varied across the four cities with the lowest cost in Jinan, and the highest in Shenzhen. In parallel, QALYs gained was lowest in Jinan, and highest in Shenzhen. Across all cities, the crowdsourced intervention was cost-effective compared to the control scenario. The one-off intervention was cost-saving in Guangzhou and Qingdao. Deterministic univariate and probabilistic sensitivity analyses confirmed the robustness of the findings; specifically, changes in discounting, costs of the crowdsourced intervention, costs of HIV testing and cost of ART did not alter our conclusions.

Conclusions: Scaling up a one-off or annual crowdsourced HIV prevention intervention in four cities in China was very likely to be cost-effective or even cost-saving in some cities.

Further research is warranted to evaluate the feasibility of scaling up crowdsourced HIV prevention interventions in other settings and populations.

EPE241

The cost of facility-based Index testing HIV case detection in Maharashtra

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Background: Maharashtra has the highest number of PLHIV in India across states (396,000), contributing 17% of the total number of PLHIV in the country. To identify new PLHIV and support linkage to treatment, a USAID-funded program implemented facility-based index testing (FBIT) in two districts in Maharashtra. There is limited evidence assessing financial costs of FBIT implementation.

Methods: We estimated the total cost to implement FBIT in Pune and Thane over two years (October 2019-September 2021). Both start-up and recurrent costs were measured at the programmatic level, excluding HIV testing cost. Retrospective expenditure data were collected across cost categories of personnel, training, operations, supplies/equipment, and travel.

The number of contacts elicited from index clients, contacts completed HIV testing, contacts tested positive, and new PLHIV initiated on antiretroviral therapy (ART) were retrieved for each district. Per unit costs were calculated for each outcome.

Results: The total programmatic costs of implementing FBIT in year two (October 2020 – September 2021) compared to year one (October 2019 –September 2020) was 22% lower in Pune ($98,127 vs $76,963), and 18% higher in Thane ($96,172 vs $113,885). Personnel accounted for the majority of implementation costs. From year one to year two, the number of contacts elicited increased by 89% in Pune (1562 vs. 2948) and 75% in Thane (1389 vs. 2425).

The number of contacts tested positive increased by 121% in Pune (199 vs. 440) from year one to year two and increased by 108% in Thane (190 vs. 396). The cost per individual contact tested positive decreased by 65% ($493.10 vs. $174.92) and 43% ($506.17 vs. $287.59) in Pune and Thane respectively comparing year two to year one.

The number of new PLHIV initiated on ART increased by 148% in Pune (166 vs. 411) and 125% in Thane (162 vs. 365), with a decrease in unit cost of 68% ($591.12 vs. $187.26) and 47% ($593.65 vs. $312.01) accordingly.

Conclusions: FBIT implementation in HIV high-burden districts increased efficiency in identifying new PLHIV and linking them to treatment over two years.

Findings demonstrate that FBIT costs per individual are likely to decrease over time as program staff gain familiarity and efficiency.

EPE242

Cost analysis of virtual outreach model to provide HIV services to key populations in India: an implementation research

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Background: There is a shift in practices and avenues for risk-behavior of key populations to virtual spaces. The traditional approaches have limited success in reaching out to these hidden individuals at-risk of HIV.
This partial economic evaluation reports the costs to deliver various provider-initiated HIV services to key populations through a virtual outreach model in India.

Methods: An early implementation, retrospective analysis was conducted to estimate the service delivery costs for various HIV services through a virtual outreach model in India. The service delivery components involved were identified and validated by the implementation teams. The data on costs (infrastructure, human resource, services, technology & training) and outcomes were extracted from project reports and financial documents.
All the costs were converted into International Dollars' 2021 value using implicit price deflators for Purchasing Power Parities. Costs per service delivery outcome were calculated from Payer's perspective for the base case along with one-way sensitivity, and scenario analyses. The analysis was conducted for the time frame between October – December 2021 in MS Excel 365.

Results: A total number of 28859 individuals (belonging to key populations) were reached out on various virtual platforms and 43.8% of the clients were engaged in conversations about their sexual health, risk assessment & HIV testing. 1085 HIV tests were conducted within the timeframe of this analysis. The cost to reach out and engage one person to deliver HIV services was estimated to be 2.65 USD (INR 51) and 6.05 USD (INR 116.7) respectively.
The cost to get one client tested was reported to be 70.48 USD (INR 1360). A cost reduction of 6% was reported to provide these services through a work-from-home approach, while a rise of 32% in costs was reported in the work-from-office approach in scenario analyses. The cost-of-service delivery was reported to be sensitive to the salary of virtual navigators & e-counselors (HR costs) in this model.

Conclusions: Virtual outreach is a cost-saving approach to deliver HIV services to hard-to-reach, hidden key populations in India. Work-from-home is reported as a cost-reduction approach for this model. There is a need to conduct successive comparative analyses in further stages of implementation.

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Estimating program and patient cost-savings from multi-month ARV dispensing in Vietnam's Social Health Insurance scheme: strengthening scale up decision-making

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Background: In 2019, Vietnam's Ministry of Health (MOH) extended a policy permitting multi-month dispensing (MMD) of antiretrovirals (ARVs) to a period of 84 - 90 days in accordance with WHO and PEPFAR recommendations for stable HIV patients. ARVs transitioned to Vietnam's Social Health Insurance (SHI) scheme, so evidence on the cost saving of the new MMD policy is needed to advocate for scaling-up MMD under the scheme.
The USAID funded Sustainable Financing for HIV project supported the MOH to analyze MMD's financial costs and benefits to inform MMD scale-up within the SHI scheme.

Methods: The analysis used retrospective data from a one-year costing exercise covering 103,500 patients who received ARVs through SHI in 2020. The analysis compared costs between standard 1-month dispensing versus 3-month and 6-month dispensing, using a reference of 20% copayment per visit in line with Vietnam SHI regulations. Secondary data on opportunity cost accumulated to patient time and transportation cost from most recent exit interviews were also used.

Results: The analysis found that total SHI liability costs under the MMD 3-month and MMD 6-month scenarios were lower by 13.4% and 16.4%, respectively, compared to single month dispensing due to a reduction in the number of patient visits. Each patient could save approximately $11.20 USD/year in out-of-pocket expenditures using 3-month MMD and $13.60 USD/year using 6-month MMD thanks to the reduction in visits, transport frequency and an increase in the number of working days. From the provider perspective, MMD decreases the number of visits by 55% and 67% for the 3- and 6-month options, respectively. This reduces the workload of providers overburdened by high client volume.

Conclusions: The analysis demonstrated the cost savings of implementing the MMD policy at scale across all three dimensions examined: SHI liability, HIV patient costs, and provider workload. After completing this analysis in September 2020, the MOH officially scaled up ARV MMD in all 63 provinces.
This was especially timely and impactful for people living with HIV given the financial impacts of COVID-19. By the end of December 2021, approximately 35% of Vietnam's estimated 110,000 PLHIV received ARV MMD from the SHI fund.

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Use of generic ritonavir-boosted darunavir and dolutegravir for second line antiretroviral therapy is cost-effective in Zambia: a 10-year modelling analysis

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Background: Zambia has over one-million adults on antiretroviral therapy (ART), with almost 50 thousand accessing second-line (2L) treatment. The national HIV program recently added newly accessible generic ritonavir-boosted darunavir (DRV/r) as a best-in-class protease inhibitor (PI) alternative option to replace lopinavir-ritonavir (LPV/r) and/or atazanavir-ritonavir (ATV/r) for eligible 2L patients. This, together with use of dolutegravir (DTG) in 2L, offers opportunities to optimize 2L regimens.

Methods: We used Zambia program data as of January 2021 (with 80% of 2L patients on LPV/r and 20% on ATV/r), to populate a Markov state-transition model, coded in R. Four likely policy scenarios (Standard of Care (SOC) and three comparators) were defined to compare the cost-effectiveness of 2L ART optimization strategies:

1. SOC: uses LPV/r and ATV/r at their current breakdown in 2L;
2. C1: replaces LPV/r with DRV/r;
3. C2: replaces both LPV/r and ATV/r with DRV/r; and,
4. C3: uses DTG for all non-nucleosidereverse transcriptase inhibitor failures, and DRV/r for DTG failures.

The ART patient cohort transitions through health states including: ART status, viral load suppression status, CD4 cell count, opportunistic infections (OI). Published utility weights were applied to health states to estimate quality-adjusted-life-years (QALYs). Costs included all aspects of treatment from the health systems perspective and used public reference prices for annual treatment costs (DRV/r-$213, LPV/r-$227, ATV/r-$164, DTG-$32). Failure and retention on different regimens were parameterized using published literature, standardized to account for multiple studies. The WHO-CHOICE definition was used to determine cost-effectiveness (US$1050 per capita GDP in Zambia), 3% discounting was applied. Results exclude patients that did not migrate to 2L.

Results: Comparator scenarios C1 and C3 were cost-saving compared to the SOC, QALYs increased by 3% and 5%, respectively, while 10-year costs decreased by 2% and 5%, respectively. Comparator C2 showed increased QALYs (4.5%) with 4% increased costs; the incremental cost-effectiveness ratio (ICER) is considered highly cost-effective at US$411/QALY gained.

Conclusions: DRV/r will improve health outcomes and is cost-effective when replacing LPV/r and ATV/r. Using DTG in 2L offers additional cost savings, and combined with DRV/r presents an optimal approach for 2L optimization, allowing programs to use the best-in-class drug.

EPE245

Cost of caregiver-assisted oral HIV screening of children in Uganda and Zambia

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Background: Caregiver-assisted pediatric oral HIV self-testing (HIVST) presents an alternative to facility-based testing which may improve testing access for children living with HIV (CLHIV) in resource-limited settings and decongest crowded health facilities. Data on cost and cost-effectiveness of this novel approach are scarce. Per person costs of facility-based HIV testing in Eastern Africa range from $3-$21 in 2020 United States Dollars (USD). This study estimated the costs of caregiver-assisted HIVST in Uganda and Zambia.

Methods: Nested in cross-sectional studies assessing the acceptability, feasibility and effectiveness of caregiver-assisted oral HIVST, we used an ingredient-based approach to estimate costs including commodities, labor, and infrastructure inputs from the perspective of the healthcare system from April to October 2021. Resources use and cost data were obtained through interviews with health workers and time-motion studies.

We present the cost per child screened using an oral test kit (OTK) and cost per child identified HIV-positive (excluding confirmatory testing). We conducted one-way sensitivity analyses to assess the robustness of the findings.

Results: HIV-positivity (screened HIVST-reactive and confirmed HIV-positive) was 0.67% among 4,766 children in Uganda (32 health facilities) and 0.43% among 2,649 children in Zambia (15 health facilities). The unit cost of caregiver-assisted oral HIV screening per child was $5.80 in Uganda and $5.12 in Zambia. In Uganda and Zambia, respectively, the largest cost component was the OTKs (44% and 41%), followed by labor (15% and 16%) and infrastructure (9% and 11%). An integrated facility-based program with community follow-up by village health teams (Uganda) or lay counselors (Zambia) where infrastructure, overhead and travel costs are eliminated, would reduce the unit cost to $4.50 and $4.93, respectively. This unit cost is sensitive to HIV prevalence among tested children and cost of OTK. The cost per CLHIV diagnosed was $869 in Uganda and $1,191 in Zambia.

Conclusions: Caregiver-assisted pediatric oral HIV screening in Uganda and Zambia can decrease the number of children needing facility-based testing and offer flexibility and convenience to parents.

Integrating caregiver-assisted oral HIV screening of high-risk children into existing community programs and negotiating lower OTK prices could further reduce the cost per HIV-positive child identified.

EPE246

Costs of pharmacy, workplace and hotspot HIV self-testing in Kenya

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Background: Identifying low-cost strategies for providing HIV testing is important to expand and maintain service coverage among undertested population sub-groups. We conducted a cost analysis to estimate the costs of HIV self-testing (HIVST) implementation through pharmacy, hotspot, and workplace models in Kenya.

Methods: Financial costs of HIVST implementation were estimated from the provider perspective. Expenditure reports were collated for a 17-month time period from May 2019 to September 2020. Line-by-line expenditure analysis was supplemented with an ingredients-based approach. Price of test kits were based on the unit purchase price for community models and the unit net price (e.g., price – revenue) for pharmacy models, since kits were sold to consumers. Total and unit costs were estimated in 2019 US dollars.

Results: The cost per HIVST kit distributed was $20.70 for the pharmacy model, $10.86 for the hotspot model, and $22.69 for the workplace model. Lower unit cost for the hotspot model was likely driven by the higher volume of kits distributed. Largest contributors to costs were personnel followed by HIVST kits.

Compared with the community model, personnel costs were higher for the pharmacy model due to more intensive monitoring by project personnel. Costs of HIVST kits were also lower due to revenue generated from sales to pharmacy distributors and higher number of oral fluid-based kits, which were priced lower than blood-based kits.

Conversely, costs of HIVST kits were higher for community models, which mostly included blood-based kits. Across models, varying the volume of HIVST kits distributed yielded the largest changes in unit costs.

	Pharmacy model		Hotspot model		Workplace model	
	Cost	%	Cost	%	Cost	%
Start-up	$14,679	1.8%	$8,977	1.8%	$4,033	1.5%
Equipment	$9,304	1.1%	$4,241	0.9%	$2,696	1.0%
Recurrent	$798,055	97.1%	$473,689	97.3%	$270,205	97.6%
Total costs	$822,038		$486,908		$276,935	
Number of kits distributed	39,709		44,822		12,207	
Blood-based (unit price: $4.79)	9,975		31,655		9849	
Oral fluid-based (unit price: $2.93)	29,734		13,167		2,358	
Cost per kit distributed	$20.70		$10.86		$22.69	

Table 1. Total and unit costs by HIVST distribution model

Conclusions: Pharmacy models reliant on user initiative reached fewer clients and yielded higher unit costs compared with outreach-based hotspot models, even with recovered costs from earned revenue.

Despite the additional investment, strategies incorporating demand creation components could potentially be more efficient.

EPE247

Financial cost of a PrEP program among adolescent men who have sex with men and transgender women in Brazil

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Background: PrEP is offered as a taxpayer's money program since 2017 for adults 18 years old (yo). or older. Moreover, PrEP is cost-effective in preventing HIV infections in adults.

Nevertheless, it is important to expand PrEP to youth at high risk of HIV such as adolescent men who have sex with men (aMSM) and transgender women (aTGW). We aimed to estimate the costs of scaling-up PrEP to adolescents aged 15 to 17 years in Brazil.

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Methods: PrEP1519 is a demonstration cohort study of daily TDF/FTC as PrEP among aMSM and aTGW aged 15-19 yo. It is ongoing in three Brazilian capital cities (Salvador, São Paulo, and Belo Horizonte).
We used data from two cities of PrEP1519, the Brazilian National Health System (*SUS*) databases for prices of commodities, and conducted interviews with health providers to assess the use of resources.
We assessed the costs into three main categories: set-up, capital, and recurrent costs. Set-up and capital costs were annualized using a discount rate of 5%. Costs were estimated as total costs to the health system and average costs per patient.
Results: The total cost of PrEP in Salvador was estimated at US$ 272 thousand and in São Paulo at US$ 437 thousand, with an average cost per patient of US$ 860 and US$ 783, respectively. Recurrent costs responded to 87% of the total costs in Salvador, and 80% of the costs in São Paulo.
The components of demand creation of the PrEP1519 study (through social media and other networks), and peer-counseling time are the main cost categories for PrEP to be fully scaled up in the *SUS*.
Conclusions: Although the cost per patient in the two Brazilian settings is considerably high, most of these costs are already integrated into the*SUS*, and at scale, cost per patient tends to decrease substantially. Demand creation and peer counseling are the elements that would require the greatest cost increase to expand the PrEP program and to improve HIV treatment adherence as an added value. Further analysis is being conducted to estimate the cost per patient when PrEP is offered at scale.

Assessments of cost effectiveness: Provider and community perspectives

EPE248
A shift from onsite to online dissemination of new WHO treatment guidelines for HIV and TB through short interactive courses for health workers. Is it cost effective?

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Background: The infectious diseases institute (IDI) was mandated by the Ministry of health Uganda to provide continuous professional development for the health workforce in HIV, TB and related illnesses. Among IDI's core duties is the dissemination of new treatment guidelines. The World Health Organization (WHO) always updates and releases new treatment guidelines that are to be implemented by all health providers. The ministry of health conducts trainers of trainers (TOT) workshops for the implementing partners that include IDI. IDI then organizes teams that conduct onsite trainings per health facility. This arrangement was quite unfavourable because it was costly and time consuming. It also interrupted activities at the health centres as patient queues accumulated during the onsite trainings. In addition, the health workers' attention was divided.
Description: In 2018, IDI through its open access website piloted the online dissemination of treatment guidelines. The key content was converted into illustrative and animated sessions with narrative audio and launched as an online course. The sessions included knowledge checks and a post-test. Upon accomplishment of the pass mark of 80%, participants were able to download a certificate with 6 continuous professional development (CPD) points. A toll free number was provided for health workers to consult a doctor and eLearning specialist for any clarifications and technical challenges.
Lessons learned: To date, 304 certificates have been downloaded. The interactive sessions provided motivation for learning. One staff commented "I was glued to my phone, the audio narrations and illustrations were very catchy." The online dissemination course reached 1,007 health workers in a month compared to the average 220 through onsite trainings.
The strategy was cost effective in expenditure and time and caused minimal disruption to the health workers' schedule. The health workers appreciated the certificate and CPD points as a great motivation for completing the course. The toll free line provided a platform for consultations all which provided a good learning experience.
Conclusions/Next steps: In summary, it is essential to innovate cost effective measures that address learning needs of health workers but are at the same time favourable for the patients. IDI will cascade interactive online learning for most of its courses.

EPE249
Affordability of integrating early childhood development into PMTCT programs

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Background: Integrated health services can improve client experiences and maximize clinic resources, health system efficiency, and health outcomes for patients. We analyzed the incremental cost associated with including Early Childhood Development (ECD) in government and NGO clinical prevention-of-mother-to-child-transmission (PMTCT) services in Malawi.

The aim was to examine program feasibility and cost effectiveness, with a view to promoting its uptake by government and other healthcare providers in the country.

Methods: The intervention incorporated ECD training sessions into routine clinic visits for mothers enrolled in PMTCT at 6 health facilities in Malawi. Data presented previously demonstrated that mothers attended sessions regularly, with high retention of mothers and infants in ART services. We estimated the additional financial cost of delivering the intervention from the provider perspective. Cost data were collected prospectively using timesheets, staff interviews and expenditure categorization to distinguish between research and implementation costs. An ingredients approach was used to estimate the implementation cost per activity. These data were used to calibrate a costing model to investigate changes in input costs if the intervention is replicated. We analyzed the cost per ECD session across different delivery scenarios to provide a measure of relative efficiency.

Results: The incremental cost per mother per intervention session ranged from US$2.2 (delivered at government clinic) to US$6.3 (delivered at NGO run clinic). The cost implication of expanding such a service is determined by the structure of health care delivery: what level of existing cadre can implement the service, how much they are paid, and the level and cost of supervision they require. Lower wages/stipends lowers costs significantly, as would lower levels of supervision, but we have seen this compromises quality.

A key consideration is the opportunity to use staff downtime: if implementing staff can provide other clinical services while not busy with the ECD intervention, the intervention becomes more efficient.

Conclusions: We have demonstrated previously that ECD integrated into PMTCT resulted in better clinical outcomes for mothers and infants. Determining whether these clinical outcomes result in further cost savings should be investigated. Further investigation is required to determine optimal delivery design for scale-up from a demonstration project to a government program.

EPE250

Cost-benefit analysis of investments made in Morocco since the creation of the Global Fund (2002 - 2020) for HIV control

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Background: 2021, marks the 20th anniversary of the creation of the Global Fund. During two decades, remarkable progress in HIV control has been made in Morocco by Ministry of Health and its partners, particularly those from civil society.

This study aimed to determine the cost-benefit ratio and evaluate the costs of all investments made over the past 20 years for HIV control, as well as the advantages obtained based on the achievements in terms of reduction of new infections and AIDS-related mortality.

Description: This was a retrospective study that analyzed expenditures of interventions to control HIV at the national level from 2002 to 2020. Evolution of new infections and HIV-related deaths was also determined.

Two scenarios were compared with or without financing, the following issues were analysed:

1. Incremental cost, namely expenditure in terms of prevention, care and treatment, social protection, services and program management.

2. Advantages in terms of HIV related-deaths avoided (role of antiretrovirals) and new HIV infections avoided, taking into account the GDP rate and life expectancy at birth.

Lessons learned: Since the creation of the Global Fund in 2002, Morocco has started implementing national strategic plans for HIV control. A total of 321.796.092 US$ have been invested by the Ministry of Health and its partners for HIV control, including 130 million US$ by the Global Fund. AIDS-related deaths have fallen by 46% and new infections by 55% since 2002.

Over 20 years, these investments have averted 27 743 deaths and 51 909 new HIV infections. This has contributed to save 1.867.205.463 US$: 1.774.146.311 US$ saved thanks to deaths avoided and 93.059.152 US$ thanks to new HIV infections reduced. The return on investment (ROI) was determined at 5.80.

Conclusions/Next steps: Every dollar invested for HIV control yielded 6 US$ in benefits by saving lives. As a result, the net benefit from the health impact of HIV prevention and care programs in Morocco amounts to over 1.5 billion US$.

Economic evaluation and affordability assessments

EPE251

Decentralized drug distribution of antiretroviral therapy in Eswatini: cost-saving or cost-shifting?

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Background: Decentralized drug distribution (DDD) is an approach to support people living with HIV and other chronic conditions who need periodic drug refills in low- and middle-income countries. It has the potential to preserve facility-based resources (especially labor) and reduces crowding in facilities (particularly important during the COVID-19 pandemic).

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This analysis documents how the DDD approach in Eswatini changed the flow of resources during implementation and service delivery and who bore the costs/savings.
Methods: Activity-based costing of DDD was conducted todocument the resources required to support service delivery through DDD, how DDD impacted the source of resources, and how DDD impacted the cost to service clients. Resources were valued from a financial perspective for monetary transactions or as opportunity costs if no transaction took place but how an existing resource was being used changed. The latter included the value of time for facility-based staff who were redeployed, or changes in the time clients spent seeking refills (valued at the hourly equivalent of gross domestic product per capita). Antiretroviral costs were excluded, as overall use did not change.
Results: During service provision, for every US$1.00 of financial costs incurred, ~US$0.75 in opportunity costs were incurred for redeployed resources to support CDPs. These were almost equally divided between the Ministry of Health (55%) and donor-funded implementing partners (45%). Clients had a modest financial cost savings (~US$2.40/refill) but substantial opportunity cost savings (~US$47.87/refill). The ongoing financial and opportunity costs of DDD per month and refill for stakeholders are shown below (US$).

	Donor Resources		Ministry of Health Resources		Client Resources	
	Per Month	Per Refill*	Per Month	Per Refill*	Per Month	Per Refill*
Financial	$27,261	$33.25	nil	-	-$1,972	-$2.40
Opportunity	$9,085	$11.08	$11,282	$13.75	-$39,250	-$47.87
Total	**$36,346**	**$44.32**	**$11,282**	**$13.75**	**-$41,222**	**-$50.27**

**Based upon ~820 refills dispensed per month (17.7% of all ART refills)*

Conclusions: DDD of antiretroviral therapy is feasible and can reduce pressure on facility-based resources. The savings to clients largely offsets the additional costs associated with DDD for antiretroviral refills. Understanding how DDD introduction impacts the flow and source of resources required can inform scale-up and ongoing support of these programs.

EPE252

Socio-economic impact of HIV and AIDS in Ghana: a review of the out-of-pocket expenditure of people living with HIV in Ghana

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Background: The survival and health status of People Living with HIV and AIDS (PLHIV) have significantly improved over the years with the introduction of Antiretroviral Therapy (ART). ART remains a major driver of the total cost of caring for PLHIV although its introduction has substantially reduced the cost of hospitalization.
This study identified major areas of expenditure requiring funding by PLHIV as a direct result of their condition as well as ascertain the extent of out of pocket payments made by PLHIVs.
Methods: The estimation of the household out-of-pocket expenditure on HIV and AIDS was assessed within the framework of the Cost of Illness (COI) approach given as Cost of illness of HIV and AIDS in the household = direct cost of care + indirect costs associated with HIV and AIDS illness.
The study was conducted in 6 sites based on the 2016 sentinel survey and involved 600 households with at least one HIV and AIDS patient from October to December 2017. Data was analyzed using descriptive statistics.
Results: The major areas of expenditure as Out-of-Pocket (OOP) payment for PLHIVs were clinical tests, expenditure on Antiretroviral Treatment (ART) in terms of medication, medical expenditure on opportunistic infections, hospital fees, transport cost to and from the ART facilities, nutritional supplement due to ARVs, cost of hospitalization, diet/lodging expenses for caregiver and other expenditures. The highest expenditure borne by PLHIVs in Ghana are those associated with medicals on an annual basis with a mean annual expenditure of $70 as well as $12 on a monthly basis for nutritional supplement due to ARVs against the background of an average income of $344.
Conclusions: The high cost involved in ART may hinder the poor among PLHIVs from receiving quality health care and hence policy initiatives aimed at offsetting out-of-pocket payment for infected HIV persons in lower socio-economic classes must be prioritized.
Additionally, effort must be in place to court more donor funds or public/private funds to subsidize the cost of accessing ARVs and also explore building drug pick up zones closer to patients to ensure easy and low cost access to ARVs.

EPE253

Factors influencing economic stability of households affected by HIV: a case of Lea Toto Program, Kenya

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Background: Households affected by HIV are frequently more vulnerable to economic shocks than other households. This study examined the factors influencing economic stability of households affected by HIV using the case of Lea Toto Program (LTP), Nairobi City, Kenya. Specifically, the study sought to examine the effect of caregiver income, education, occupation and Household Economic Strengthening (HES) interventions on economic stability of LTP households.

Methods: The study was conducted between July-September 2021 in eight Lea Toto programs in Nairobi, Kenya. This study employed cross-sectional descriptive design. A total of 4,647 HIV affected households were sampled using census technique. Data was collected through questionnaires, coded, entered and analyzed through descriptive and inferential statistics using Statistical Package for Social Sciences (SPSS) version 25.

Results: The key finding was that caregiver income, education and occupation, as well as household economic strengthening interventions were key determinants of economic stability among HIV affected households.

The study also found that education of female caregivers (p=0.000), occupation status of male caregivers (p=0.000), occupation status of female caregivers (p<0.000), microcredit support (p=0.047) and business training (p=0.025) were significant predictors of economic stability among households affected by HIV.

Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	241.309[a]	.000	0	.
Education of female caregivers	336.561[c]	95.252	8	**.000**
Occupation of male caregivers	320.778[b]	79.468	10	**.000**
Occupation of female caregivers	287.233[b]	45.923	10	**.000**
IGA	247.410[b]	6.101	2	**.047**
Business training	248.717	7.408	2	**.025**

Table 1: Likelihood Ratio Tests

Conclusions: The study concluded that caregiver education, caregiver occupation status, microcredit support, and business training help HIV-affected households achieve economic resilience.

Thus, organizations that work with HIV-affected households should take these factors into account when promoting the economic well-being of HIV-affected households.

EPE254

Cost-effectiveness of HIV drug assistance programs in the United States: a systematic review of economic evaluations

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Background: As part of the United States' Ryan White HIV/AIDs Program, the AIDS Drug Assistance Program (ADAP) is a large federally-funded, state-administered program to assist states in providing prescription drug medications, including antiretroviral therapy, for people with HIV (PWH) who lack adequate access from Medicaid or other forms of health insurance. Expenditures from ADAP are approximately $2.4 billion per year, but there has been a dearth of formal policy and economic analysis supporting the societal impact.

The objective of this study was to conduct a systematic review of economic analysis of HIV drug assistance programs in the United States to establish future research priorities based on gaps in knowledge.

Methods: Six electronic databases were searched for articles published up to Jan 15, 2022 that met inclusion criteria. The Consolidated Health Economic Evaluation Reporting Standards (CHEERS) checklist 2022 was used to assess the quality of reporting of the economic evaluations. Data were extracted into categories to assess gaps and needs for future economic evaluation.

Results: Only 6 studies met our inclusion criteria, and 2 of those studies used the same modeling approaches but were published with slightly different outcomes of interest.

The few economic analysis that focused solely on ADAP clients were conducted based on 2008 or older data. The most recent study modeled the net cost per quality-adjusted life-year (QALY) secondary to reducing new HIV cases among those that are virally suppressed, but did not include the economic or health benefits for PWH.

Author, Year	Type of economic evaluation	Perspective	Sample	Comparison	Cost data	Model Outcome	Horizon	Study Funding Source
Goyal et al., 2021 (a)*	Agent-based stochastic model	US Health Care System	Overall HIV burden in US	Simulates the 5 types of Ryan White HIV/AIDs Program	RWHAP and ADAP	Proportion of people with HIV virally suppressed, deaths, cumulative health care costs, ICER, QALY	50 years	HRSA
Goyal et al., 2021 (b)*	Agent-based stochastic model	US Health Care System	Overall HIV burden in US	Simulates the 5 types of Ryan White HIV/AIDS program	RWHAP and ADAP	HIV incidence for MSM, mortality rate, average life expectancy for low CD4, lifetime care costs	50 years	HRSA
Snider et al., 2016	Ordinary least squares regression model and simulation	State ADAPs	ADAP clients	ADAP Policies (income limit, medical requirements, enrollment cap, asset limits)	Literature Review (Staszewski et al., 1996, Freedberg et al., 2001)	ADAP clients served, survival benefits (QALYs and $), and cumulative healthcare costs	Lifetime	Bristol-Myers Squibb
Pinkerton et al., 2013	Transmission mathematical model	Societal	ADAP clients	ADAP clients	Kaiser Foundation ADAP Fact Sheet (2008 dollars)	Cost of reduction in new secondary cases each year for those who are ADAP clients (Net cost per QALY)	Lifetime	NIH; RWJF
Johri et al., 2002	State transition model with Monte Carlo Simulations	State ADAPs	ADAP clients	(1) "High efficacy", (2) "Low efficacy" ADAP policy scenarios	AIDS Cost and Services Utilization Survey	Projected life expectancy, cumulative healthcare costs, ICER, QALYs	Lifetime	CDC; NIAID; NIH; NIMH
Schackman et al., 2001	Markov state-transition and microsimulation	Government/ payer and societal	People with HIV who present for medical care with CD4 counts of 500	(1) Immediate ART, (2) ART initiated at CD4 count of 200 (3) no ART	AIDS Costs and Services Utilization Survey	Incidence of opportunistic infections, years of life, QALYs gained, lifetime costs	Lifetime	NIH

*Same modeling approach, reporting on different outcomes

Abbreviations: **ADAP** – AIDS Drug Assistance Programs; **RWHAP** – Ryan White HIV-AIDS Program; **QALY** – Quality-adjusted life-year; **ICER** – Incremental cost-effectiveness ratio; **CDC** – Centers for Disease Control and Prevention; **HRSA** – Health Resources and Services Administration; **NIH** – National Institutes of Health; **NIAID** – National Institute of Allergy and Infectious Diseases; **NIDA** – National Institute on Drug Abuse, **RWJF** – Robert Wood Johnson Foundation; **NIMH** – National Institute on Mental Health.

Figure 1. General characteristics of included studies.

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Conclusions: Updated person-centered cost effectiveness models assessing the ADAP program are needed on a national, regional, and state-by-state level to guide policy decisions and coverage determinations.
Some of the person-centered outcomes that should be considered for assessment include reduced complications, reduced hospitalizations, and increased health-related quality of life.

EPE255
Costs and benefits of community responses for sexual and reproductive health and the societal enablers: a scoping review

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Background: Evidence shows that promoting community leadership and creating rights-protective environments increases the effectiveness of other interventions aimed at ending HIV and preventing deaths from AIDS. This evidence underpinned the adoption by UNAIDS of the community-led service delivery components of the 95-95-95 targets and the 10-10-10 societal enabler targets. Although progress on these two sets of targets is fundamentally interdependent they are commonly assessed in isolation from one another.
Because of this, we have integrated the literature on the costs and benefits of these interventions and set their findings in dialogue and contestation with another.
Methods: Focused on HIV/AIDS as well as the sexual and reproductive health rights (SRHR) of key and vulnerable populations, our research is based on three interrelated scoping reviews on:
1. Benefits of policy and social environments that promote SRHR;
2. The costs of criminalisation, discrimination and stigma that run contrary to SRHR; and,
3. The costs/benefits of community services addressing SRHR.
Results: Using a mapping of the key concepts, research, and evidence gaps in literature, we have procedure a broad synthesis of the costs, benefits and resources required for community led service delivery and societal enabler policies that promote SRHR in the context of HIV/AIDS. then analyse commonalties, distinctions, and research gaps.
Preliminary findings indicate broad consensus in favour of the cost-effectiveness and other benefits of the interventions and policies under review for which there is available evaluation as well as corollary evaluations of the costs and other harms from discrimination, stigma and criminalisation. economic evaluation and assessment, to give a broad indication of the findings in the literature. Through synthesis of our findings, we are still analysing shared benefits of progress the costs and cross-cutting costs of neglecting the interrelated targets set by UNAIDS while also assessing learns for the effectiveness of siloed targets.
Conclusions: Our findings provide a novel contribution to the literature and should help inform future research on the health and societal challenges experience by key and vulnerable population as well as provide evidence in favour of increased investments in community services addressing HIV-related SRHR, societal enablers and scaled-up community leadership.

Supporting effective linkages between maternal child health and HIV services

EPE256
Ensuring timely access to Nevirapine at birth for HIV Exposed Infants (HEI) at Antiretroviral Therapy Clinics without delivery services, TASO Mbale experience

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Background: The World Health Organisation recommends all HEIs receive Nevirapine (NVP) prophylaxis as a preventive measure for HIV infection at birth. However, at TASO Mbale by March 2021 only 50% of the HEI born to mothers receiving ART care had NVP at birth; this is because TASO offers antenatal care (ANC) services but not maternity services, so our mothers deliver from public health facilities, which sometime lack supplies such as the NVP syrups.
This gap was identified and addressed through continuous quality improvement with an objective; increasing the proportion of HEI receiving NVP at birth monthly from 50% by March 2021 to 100% by Sept 2021.
Description: Pregnant HIV positive women were cohorted by age of pregnancy and expected delivery date (EDD) in 7 monthly cohorts (March to September 2021). The women were tracked and monitored during ANC visits. Their phone and physical addresses were regularly updated and NVP syrups dispensed at last ANC visits. The NVP syrup was pre-packed in the 'mama kit' and health talks on administering the prescription delivered. Follow-up phone calls made around the EDD to confirm delivery and initiation of the NVP.
Lessons learned: The facility's proportion of HEI receiving NVP at birth monthly improved from 50% by March 2021 to 100% by Sept 2021. The improved performance was majorly attributed to the, frequent data use, health talks

to mothers about the importance of giving NVP timely at birth plus administering process coupled with the actual dispensing of the syrup during last ANC visit among other changes; especially during the COVID-19 period where there were restricted travels affecting access of the ART clinic for this specific prescription.

Conclusions/Next steps: Cohorting', monitoring and tracking all pregnant mothers and follow-up phone calls helps in booking for timely 1st PCR.

Timely dispensing of necessary prescriptions (NVP in this case) coupled with enough sensitization of its benefits and demonstration of administering procedure to the end users is key in yielding positive health outcomes.

Approaches to supporting resilient health systems

EPE257
Building a well-trained and resilient health workforce to end the HIV/AIDS epidemic

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Background: A well-trained nursing workforce is vital to ending the HIV/AIDS epidemic. Yet in low-income, high HIV-burden countries like Malawi, there is a chronic shortage, with only 44 nurses per 100,000 people and 62% of nursing positions in public facilities vacant. Moreover, workforce entry is hampered by deployment delays. With prevention, testing and treatment tools available, the greatest threat to continued progress in the battle against HIV is lack of skilled personnel.

Description: GAIA works with the Malawi Ministry of Health and key partners to build a competent workforce through nursing scholarships and fellowships. Since 2005, GAIA has provided scholarships,(tuition, stipends, material/psychosocial support, licensure preparation) to 574 socioeconomically disadvantaged students*(80% female; 60% lost one or more parents)*, committed to working in Malawi post-graduation.

GAIA has deployed 45 new nursing graduates as fellows (*73% female*) to work in rural health facilities in Mulanje District to bridge critical staffing gaps. Fellows received government-scale salaries, HIV-related in-service training, and support applying for permanent nursing positions nationwide.

In 2021, USAID made a five-year investment to expand these programs – funding an additional 200 scholarships and 240 fellowships. Fellows will be trained in antiretroviral therapy, maternal, newborn and child health and deployed to public health facilities, serving vulnerable high HIV-prevalence communities.

Lessons learned: By 2022, 498 scholars had graduated, of which 420 are deployed, 34 are preparing for licensure and 29 are awaiting permanent deployment. The table below shows deployed scholars' status, demonstrating that GAIA scholarships help nurses develop confidence and skills to lead, educate and serve on the frontline to end the HIV epidemic.

	Working in the public sector	Hold leadership positions	Working as educators
Deployed GAIA Scholar Graduates	82%	55%	9%

Fellowships grew Mulanje's health workforce by 11% and supported a 23% increase of people living with HIV initiated on treatment. All fellows secured permanent employment within six months of fellowship completion.

Conclusions/Next steps: Ending the HIV/AIDS epidemic demands robust investment in human resources for health. GAIA programs provide pathways out of poverty and produce competent nurses equipped to respond to global health threats.

Further, through education and economic opportunity, supported individuals and their families are able to reduce their risk of HIV transmission.

EPE258
Professionalization of lay health cadres: replacing volunteer Expert Clients with fully employed Patients Supporters in Malawi

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Background: Expert Clients (ECs) have played important roles in HIV treatment programs in sub-Saharan Africa, successfully providing peer support, health education and counseling at community and health facility level. However, increasing workload and complex tasks available for lay cadres in HIV services caused challenges for ECs because they are part-time volunteers and often have low education level. During the first Covid-19 wave in April 2020, ECs were suspended from work due to increased risk of severe Covid-19 disease. We describe how our program transitioned to a new lay health cadre named Patient Supporters (PS).

Description: Partners in Hope is a PEPFAR/USAID-funded Malawian non-governmental organization with Christian background, supporting HIV services for ~22% of the ART population in Malawi. In October 2020, we introduced PS as a new, formally employed lay cadre. Unlike for ECs, PS selection was independent from HIV status and required

completion of secondary school. After a one-week training, PS took over former EC tasks. In addition, PS were deployed as advanced counselors and case managers for clients with high risk of loss to follow-up. With the transition to PS, the volume of community tracing of clients who missed appointments increased: mean tracing 1,727/month by ECs vs. 5,595/month by PS, a 52% increase when corrected for available full-time equivalent of each cadre. ECs and PS achieved good tracing outcomes (percentage Alive/Back-To-Care/Transferred-Out): 79% and 85% respectively (Figure).

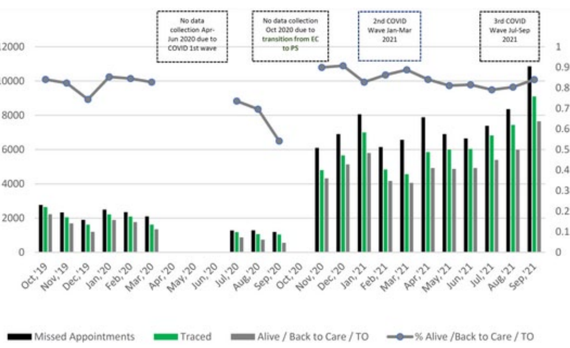

Figure. Trends in community tracing of missed appointments (October 2019-September 2021) in relation to the transition from ECs to PS and Covid-19 waves.

Lessons learned: PS have a formal contract that provides employment assurances, motivation to work and establishes adherence to specific organizational policies and performance expectations. With higher background education and full-time employment, PS expanded quantity and quality of EC tasks and added more complicated services, including advanced counseling.

Conclusions/Next steps: After successfully introducing PS, next steps will be standardization of job title and – description across PEPFAR implementing partners and ultimately, transition to employment under Ministry of Health.

EPE259

Effect of Stepwise Laboratory Quality Improvement Process Towards Accreditation (SLIPTA) implementation on laboratory management and Key HIV laboratory quality indicators in East Central Uganda

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Background: Quality laboratory services play a central role in the cascade of HIV prevention, testing and treatment services. However, effective laboratory service delivery is often hamstrung by deficiencies in laboratory quality management systems (LQMS). In East Central Uganda, a baseline assessment in March 2017 identified only one laboratory hub out of nine (11%) that attained LQMS three-star rating out of the maximum of five stars. The USAID Regional Health Integration to Enhance Services in East Central Uganda (USAID RHITES-EC) aimed to improve the quality of HIV related laboratory services at nine laboratory hubs and to evaluate the impact on key HIV laboratory quality indicators, including reducing HIV viral load (VL) specimen rejection rates.

Description: The USAID RHITES-EC implemented the WHO/AFRO Stepwise Laboratory Quality Improvement Process Towards Accreditation (SLIPTA) approach to improve the LQMS status of the nine laboratory hubs serving the twelve districts in East Central Uganda. We aimed to achieve a rating of at least three stars out of the maximum of five stars for all the hubs.

The technical support provided included training workshops, monthly on-site mentorships, quarterly collaborative learning meetings, monthly assessments on HIV VL specimen rejection rates, and annual assessments of LQMS star status.

Lessons learned: By December 2021, five out of the nine (55%) laboratory hubs attained the target of three- stars and above. One laboratory (Jinja Regional Referral Hospital laboratory) also attained international accreditation by the South African National Accreditation System (SANAS). The remaining four of the laboratory hubs also improved to two-stars. Staff transfers to lower-level facilities hindered achievement of the three-star target for the laboratory hubs that attained two-stars. This is being mitigated by supplementary LQMS trainings.

Alongside the improvement in LQMS status, there were improvements in key quality indicators overall, including a reduction in HIV VL specimen rejection from an average of 4.7% (March 2017) to 0.1% (December 2021) against a target of ≤1%.

Conclusions/Next steps: The SLIPTA approach significantly improved LQMS and the quality of HIV laboratory services delivered at the nine laboratory hubs serving East Central Uganda.

EPE260

Drone technology to facilitate access to medical supplies and commodities for maternal, child and HIV treatment in East and Southern Africa Region

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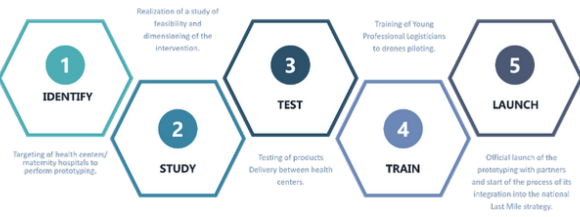
Background:

The Government of Botswana's commitment to provision of universal healthcare services in demonstrated by inter alia the wide-reaching distribution of health facility network. 84% of the population live within a 5km radius from a health facility, while a further 965 live within a 15km radius.

Botswana has however seen steady decline in its Maternal Mortality Ratio (MMR) - in 2013 Botswana's MMR was 182.6 but had dropped progressively to 133.7 in 2018 (Statistics Botswana, 2021). A worrisome development is that these apparent gains were reversed as MMR climbed back to 166.3 in 2019 (Statistics Botswana, 2021). This warrants immediate intensified intervention aimed at turning the trend back on track even as this trend is being closely watched.

Description: UNFPA ESARO is working with identified Country Programmes to pilot a medical drone delivery project in the region to prove the feasibility of using drones in the supply chain of health products to be integrated into the national Last Mile strategy. UNFPA in collaboration with the Ministry of Health and Wellbeing and the University of Science and Technology in Botswana.



Lessons learned:

1. Drones accelerate reduction of preventable maternal deaths by delivering blood and emergency obstetric care drugs and commodities and bridge the distances, reduce current transportation costs, defective products, overcome road infrastructure challenges, and contribute significantly to the timely availability of essential emergency obstetric care drugs, commodities and supplies.
2. People on lifelong medications such HIV, chronic non-communicable conditions and those seeking services such as family planning and condoms for routine refills can do this without direct human intervention and efficiently.
3. The outbreak of COVID-19 further reminds us that crisis such as communicable disease outbreaks may require innovative ways of reaching clients, suppliers and health care facilities.

Conclusions/Next steps: Drone technology although not new, is relatively novel in Africa and must be pursued.

EPE261

Using demand creation strategies to increase access to differentiated models of care

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Background: Antiretroviral therapy (ART) services in Sub Saharan Africa are often provided in basic and inefficient ways, making long-term adherence to care challenging. Differentiated Models of Care (DMOC), provides tailored ART support and the foundation for patient-centred chronic disease wellness systems. Right e-Pharmacy provides one such solution: Collect & Go smartlocker pick up points for chronic medication. However, patient awareness of the DMOC options available to them is limited and hampered by low literacy levels and access to information.

This results in not all patients benefiting from available programs, especially newly introduced options such as the smartlockers.

Description: Using impactful, non-conventional marketing strategies, can reach more patients in different ways to effectively disseminate health information. The Collect & Go smartlocker program employed a multi-angled approach to reach different population groups within target communities. A needs assessment identified viable communication channels for reaching patients. A phased strategy was utilized by deploying live community events, radio discussions, television adverts, and targeting of public transport information sharing in local languages.

The campaign also involved distributing specially designed printed materials, use of WhatsApp, provision of free Wi-Fi, and the recruitment of taxi drivers as ambassadors. A campaign ambassador who understands the HIV/AIDS journey, stigmas, demands and message processing trends was employed to promote information sharing.

Lessons learned: A rapid uptake in Collect & Go patients was observed after each phase. Each phase targeted a specific demographic requiring a combined approach. The combined reach for the multi-channel media campaign was 13666 192. A phased approach layers messaging within the community, creating a strong information hub around health topics. In this case, more knowledge was generated within the different audiences and the audience response, in turn, guided marketing messages and future channel selection.

Conclusions/Next steps: A direct correlation was observed between demand creation activities and uptake of the Collect & Go smartlocker solution. It is critical to shape dissemination strategies to the target population for maximum impact.

Demand creation is a strong tool that can greatly benefit other DMOC programs when applied strategically and combined with specific healthcare messaging, marketing channels and demand drivers.

EPE262

PEPFAR's contribution to global health security, FY2018-FY2020: mapping expenditures that support the Joint External Evaluation capacities for preventing, detecting and responding to public health emergencies

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Background: As evidenced by the response to the COVID-19 pandemic, PEPFAR supported countries have responded to global health security threats by leveraging many of the same public health and clinical platforms that have been invested in over nearly two decades to address the HIV epidemic. To assess the extent to which PEPFAR's investments have supported global health security, an analysis was conducted using the Joint External Evaluation (JEE) tool (1st ed., 2016), a globally accepted framework for measuring capacities for preventing, detecting, and responding to public health emergencies in compliance with the World Health Assembly's International Health Regulations (2005).

Methods: PEPFAR expenditures from FY2018-FY2020 were mapped to the JEE capacities based on the definitions used in PEPFAR's financial classification system. Direct support was defined as expenditures that directly benefited global health security (e.g., non-service delivery expenditures on system strengthening, training, supportive supervision, etc.). Indirect support included expenditures that had a primarily HIV-related focus but were tangentially related to the JEE capacities or could be further leveraged in the event of a public health emergency (e.g., service delivery expenditures on health care workers, laboratory services, etc.).

Results: A total of $6.4B (54%) of PEPFAR expenditures from FY2018-FY2020 were mapped to 9 of the 16 JEE capacities, including $3.4B in direct support and $3.0B in indirect support. Expenditures fell under all three goals of preventing ($264.5M), detecting ($6.0B), and responding ($133.3M) to public health emergencies. The majority (92%) of mapped expenditures supported the workforce development ($5.0B), national laboratory systems ($491.2M) and real time surveillance systems ($358.6M) capacities. $5.5B (46%) of PEPFAR expenditures remained unmapped and consisted of expenditures for commodities ($657.2M), other site-level costs ($3.5B) and indirect charges ($1.3B).

Conclusions: This analysis demonstrates that the direct and indirect spillover benefits of PEPFAR's investments in platforms to address HIV have contributed significantly to partner countries' capacities for protecting against and responding to global health security threats**.** Indeed, capacities that received the most support (workforce, laboratory, and surveillance systems), were readily adapted for COVID-19 response activities. Further improvements in these capacities will thus likely require only a marginal increase in investment.

EPE263

Understanding the impacts of climate change-related events on HIV care and prevention services: a qualitative analysis of provider perspectives across California

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Background: Natural disasters related to climate change (e.g., wildfires) have increased in both frequency and severity in recent years. The impacts of these events on healthcare systems and client engagement in care are not yet well understood. To understand adaptations needed to ensure continuity of HIV care and prevention efforts amid future climate-related disasters, we explored provider perspectives on HIV service disruptions during and in the wake of recent natural events in California.

Methods: From October 2021-January 2022, we conducted in-depth interviews with 15 HIV clinical and service providers in 6 California counties and one Indian Reservation. We targeted regions showing both high incidence of climate-related events over the past 5 years and high prevalence of HIV and associated epidemics, including substance use and Hepatitis C. Interviews lasted 60-90 minutes and topics included climate-related events, impacts on services, staff/client needs, and policy recommendations. We used a rapid thematic analysis to analyze findings.

Results: Among participants, 4 were clinical HIV providers, 6 were HIV program managers or staff, and 5 led HIV prevention services. All reported severe climate-related events in their service catchment areas—primarily wildfires, floods, and increasingly extreme seasonal weather patterns. Participants were most concerned about barriers related to:

1. Client isolation, trauma, and mental health;
2. The high stakes of interrupting care for clients with critical acute daily needs; and
3. The disproportionate impact of disruption on clients who have precarious social support structures and/or housing, and whose ability to remain engaged with HIV care or prevention is likely to fail if those supports are lost.

Participants described effective adaptive strategies they employed—expanding capacity for virtual services, activating community networks to maintain client contact, and developing creative mobile service delivery methods—as well as challenges for which there were not yet solutions.

Conclusions: Climate events create, exacerbate, or trigger barriers to clients' continued engagement in HIV care and prevention services. Health care and social service systems must proactively plan for climate-related disruptions. Creative strategies are beginning to emerge, but gaps remain. Further development and broader dissemination of adaptive strategies may benefit a range of HIV medical and social service providers.

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EPE264

Promoting approaches that enable integration and sustainability of VMMC: early learnings in Zimbabwe

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Background: The first decade of Voluntary Medical Male Circumcision (VMMC) implementation was a partner-driven approach where sexually active males were prioritized to enable reduction in HIV incidence. VMMC program in Zimbabwe is transitioning to government-led "sustainability" phase aiming to move toward routine VMMC to maintain long-term impact of circumcision on HIV incidence.
With funding from the Bill and Melinda Gates Foundation, PSI through Population Solutions for Health (PSH) implemented a user-centred design approach to support the Ministry of Health and Child Care (MoHCC) and its partners to develop, test and lead processes required for districts to shift from a catch-up model towards a more sustainable, integrated model. Sustainability implementation had to be rigorous, measurable, district led, user centred and district specific.
Description: The collaborative user-centred design workshops enabled district specific planning using insights gathered from health system players and key program users and influencers including parents, boys, community leadership and educators to build a relevant transition plan as in a 5-step process shown below.

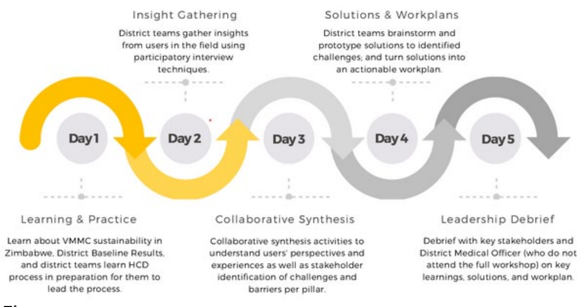

Figure.

Lessons learned: The approach fostered buy-in to the phased approach for transitioning to more integrated and sustainable models of implementation, and subsequent ownership to the developed plans.The workplans followed a standard format but allowed for flexibility to address the district-specific operating environment as quoted below:
"If I'm asked to mention one thing, I enjoyed in the past four days, it's the four days. It was reflecting what we are seeing and hearing. We were producing our own. This is my workplan, not prescribed."- Kingford Chivende, District Nursing Officer, Zvimba District
Conclusions/Next steps: A toolkit was developed providing step-by-step guide for health systems and programs intending to implement user-informed processes to guide the development of sub-national implementation models. PSI and PSH supported MoHCC to extend toolkit use through developing sustainability models in PEPFAR and USAID funded districts approaching saturation.

EPE265

Advancing the HIV response and pandemic preparedness together: a policy and advocacy agenda

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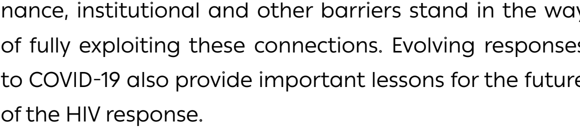
Background: COVID-19 tested the resilience of the HIV response. A growing body of literature demonstrates that the people and infrastructure involved in the HIV response made significant contributions to national COVID-19 efforts in many countries in areas such as community systems, laboratory testing, public health management, clinical trials, and surveillance capacity.
However, no roadmap has been developed to ensure that lessons learned from these critical contributions inform and are mainstreamed across efforts to prepare for future pandemics.
With policy makers now considering the architecture and financing of future pandemic preparedness systems, we developed a concrete action agenda to simultaneously strengthen pandemic preparedness and advance progress towards HIV-specific targets.
Description: We reviewed and synthesized the literature where the HIV response could potentially strengthen pandemic preparedness, including primary health care, procurement and access to essential medicines, health insurance and finance, community systems, surveillance and political mobilization. Key guidance documents were analyzed from global HIV program funders (e.g., PEPFAR, Global Fund) to understand policies that incentivize or inhibit building out from the HIV response to strengthen preparedness-relevant aspects of health systems.
Key informant interviews in six countries further informed the development of an actionable roadmap for leveraging HIV-related investments to build robust, people-centered pandemic preparedness capacity.
Lessons learned: There are multiple ways in which the infrastructure and human capacity built to support the HIV response can strengthen pandemic preparedness in low- and middle-income countries.
In addition, key principles or "values" of the HIV movement such as human rights-based services, community systems and building trust with communities are critical foundations for scaling up capacity. However, legal, policy, fi-



nance, institutional and other barriers stand in the way of fully exploiting these connections. Evolving responses to COVID-19 also provide important lessons for the future of the HIV response.

Conclusions/Next steps: The roadmap we developed identifies specific actions and an advocacy agenda to translate HIV responses and lessons learned into systems, policies and implementation science research for pandemic preparedness while advancing progress on HIV targets. Safeguards must be put in place to ensure closer integration of HIV and pandemic preparedness systems advance, rather than weaken, progress on HIV.

EPE266

Online training is effective in building the capacities of the HIV Service Providers of the National AIDS Control Program in India

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Background: India tests around 30 million individuals for HIV annually through 33,320 Integrated Counselling and Testing Centres (ICTC) and treats >1.4 million PLHIV through 645 ART Centres and 1,265 Link ART Centres (LAC). GFATM funded SAATHII to support the National AIDS Control Programme in building the capacity of 16,000 health care providers (HCP) of the public health system for improving quality of services through a blended approach comprising online and in-person training.

This abstract reports on the effectiveness of online training in increasing knowledge among 6,826 doctors, nurses and laboratory personnel trained during 2019-21.

Description: The online training was delivered through the Learning Management System (LMS) platform with facilities for course authoring, management, and delivery and trainee tools for enrollment, bookmarking, progress tracking, evaluation, providing feedback, and generation of completion certificates. The LMS can be accessed at any time, place, and pace through the web, mobile, and tablets.

The project developed and uploaded the course content comprising 159 high-quality video modules in English and 10 local languages. Among these 49 were for medical officers, 39 for nurses, and the rest for lab technicians. Pre and Post scores of 6,826 trainees were downloaded from the LMS and analyzed using paired t-tests.

Lessons learned: Online training resulted in a significant ($p < 0.001$) increase in knowledge among all cadres of HCP (see Table) and the increase was higher among doctors compared to nurses and laboratory personnel. The difference may be due to prior training received by different cadres and the number of modules. Around 64-70% of the trained reported the training to be excellent and 22-26% reported to be very good. Module quality, user-friendliness of LMS, and ability to undergo training at their convenience were cited as major reasons for satisfaction.

Conclusions/Next steps: Online training of HCP is cost-effective, replicable, scalable, and sustainable.

	N	Pre-Test Mean	Pre-Test SD	Post-Test Mean	Post-Test SD	Difference in means	SD	t Statistic	P-value
ART Specialists	201	20.6	6.5	33.1	8.9	12.5	10.9	16.1	<0.001
Medical Officers of ICTC	416	16.8	7.7	29.5	9.7	12.6	11.6	22.3	<0.001
Medical Officers of STI, OST and Link ARTC	272	18.0	8.9	30.3	9.1	12.2	10.9	18.5	<0.001
Medical Officers of ARTC	647	22.6	8.5	31.9	8.0	9.3	9.1	25.8	<0.001
Nurses of ART and Link ARTC	573	11.9	4.7	16.9	3.5	5.1	5.2	23.1	<0.001
Lab Technicians of ICTC	4010	17.0	4.3	22.0	5.2	5.9	5.4	57.4	<0.001
Lab Technicians at National and Regional Reference Laboratories	106	26.1	5.6	30.9	7.7	4.8	7.0	7.0	<0.001
Lab Technicians of ARTC	601	16.0	3.8	20.0	5.6	4.0	5.9	16.8	<0.001

Table. Comparison of Pre and Post Test Scores among Health Care Providers who received Online Training

EPE267

New Kid on the Block – integrating cholera and COVID-19 in the HIV response through the Chigubhu gear in Sanyati District

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Background: Following the continued outbreak of cholera in various districts Zimbabwe over the years, the National AIDS Council with support from UNICEF introduced various interventions to build community capacity to prevent and identify early, cholera and other diarrheal outbreaks and care for people living for people with HIV who get infected.

The interventions were integrated with HIV in view of evidence that when HIV infected clients get co-infected by infectious diseases such as cholera, it further compromises their immune status and disturbs the treatment uptake absorption and even adherence to HIV treatment. COVID-19 response activities were also integrated.

Description: Interventions introduced included the chigubu gear, which is a simple mechanical instrument made of two or five litre empty plastic container filled with water and hung on supporting pieces of wood or metal near

toilets and entry into homes and or houses. A foot pedal, when pressed causes the container to tilt and let water pre-diluted with a detergent out. The project has been implemented in Sanyati district starting January 202. Its implementation is pivoted on trained community volunteers, who mobilise communities, demonstrate the concept and serve as the link between stakeholders.

Lessons learned: Although an overall effectiveness assessment has not been done yet, 25 households in Kayimbanemoyo, 28 in Kasingwindi and 13 in Mapani villages had incorporated the chigubhu gear within six months.

Over 3000 information, education and communication materials, integrating HIV prevention and treatment and cholera as well as COVID-19 were produced and distributed. In the 12 months following implementation of the intervention, no cholera and covid-19 cases were reported in the wards among people living with HIV and the general community.

Key lessons from the intervention were that integration with HIV helps to reach a captive audience and avoid parallel structures. The involvement of local leadership helped the community uptake. One of the success factors of the concept seemed to be its use of cheap locally recyclable materials.

Conclusions/Next steps: The intervention has demonstrated the importance of integration and use of local resources to tackle global pandemics at a local level. Following its success, the intervention is currently being scaled up to other districts

EPE268

Remote mentorship and assessment of medical laboratories to achieve ISO 15189 accreditation in Malawi: the UMB Malawi experience

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Background: The University of Maryland (UMB) Center for International Health, Education, and Biosecurity (CIHEB) provides technical support to all 10 molecular laboratories in Malawi as part of the CDC-funded laboratory strengthening program referred to as AMPLIFY. AMPLIFY intended to mentor and present five laboratories for ISO 15189 accreditation in October 2020. Mentorships and assessments had to be conducted remotely using internet-based strategies due to the COVID-19 pandemic and travel restrictions. We describe the implementation of this strategy, successes, and challenges.

Description: The remote virtual strategy required laboratories to present updates during weekly Zoom calls and share supporting documents electronically with mentors. All trainings with pre- and post-test evaluations were conducted virtually. Virtual internal and mock audits were scheduled three weeks before the initial assessments to prepare for the assessments by the Southern African Development Community *Accreditation* Services (SADCAS), which were also conducted virtually as a result of the pandemic.

Lessons learned: By October 2020, AMPLIFY conducted a total of 16 virtual mentorship calls and 6 virtual trainings for a total of 24 laboratory-quality personnel. In November 2020, 4 (molecular laboratories) out of 5 (80%) laboratories were recommended for accreditation by SADCAS after a successful virtual assessment.

The support and engagement of the leadership from the hospital and laboratory is critical to reach this level of accreditation. Despite this success, major challenges encountered included poor internet connectivity and transition from an in-person to a virtual mentorship.

Identifying optimal connectivity options, engaging leadership from the hospital and laboratory, and supporting access and use of virtual learning platform can help overcome these major challenges.

Conclusions/Next steps: We demonstrated that remote mentorship and assessment is an effective strategy towards ISO accreditation. This strategy provided comparable outcomes to in-person mentorship at a significantly.

EPE269

Strengthening the TBHIV cascade with Tuberculosis Clinic-Laboratory Interface for continuous quality improvement in a secondary facility in Benue, Nigeria

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Background: Tuberculosis (TB) remains a significant public health concern in Nigeria with attendant programmatic challenges of low TB case detection due to poor TB case finding. Despite efforts to institute a quality assurance system for intra-facility presumptive TB case identification, and prompt diagnosis, the challenge of incomplete referrals of samples for diagnostic evaluation persist.

The TB Clinic-Laboratory Interface (TB-CLICQI) strategy aims to improve sample collection and referral processes from the Direct Observed Therapy to the laboratory unit.

Description: Working in partnership with the Benue State Ministry of Health (SMOH), sites with poor TB sample referral indicators were identified and selected. The project

activities included pre-assessment of sites, 2 workshops, follow-up assessment, and active onsite mentorship of Health Care Workers (HCWs).
A 3-month retrospective data was collected, triangulated, and analyzed using National presumptive TB, Laboratory, and central TB registers in a secondary health facility with 4850 patients on antiretroviral treatment.
The diagnostic cascade evaluation (DiCE) toolkit was used in baseline assessment, Institute for Health Improvement model was used for Root-Cause Analysis, Improvement, and Performance Review, in three Plan-Do-Study-Act cycles.
The TB/HIV diagnostic cascade specific for sample collection, documentation, and linkage for diagnostic evaluation at the laboratory was evaluated, gaps identified, and specific interventions developed. Process measures were monitored weekly using runs chart, and outcomes measured monthly.
Lessons learned: TB CLICQI enhanced the clinical-laboratory interface for continuous quality improvement by focusing on deploying strategies aimed at strengthening identified gaps, building the capacity of HCWs, and improving the system of care across the TBHIV diagnostic cascade.
Modifying the presumptive TB patient clinic flow improved patient documentation, sample referral completion, and reduced patient waiting time.
The TBHIV diagnostic cascade for the collection and referral of sputum samples for diagnostic evaluation improved from 34% to 100% and 84% to 100% respectively in 4 months.
Conclusions/Next steps: The TB-CLICQI strategy contributed to a significant improvement along the TB/HIV diagnostic cascade. The project's next phase will scale-up to additional facilities in Benue State.
Deploying these CQI strategies in the management of chronic illnesses could strengthen health care systems, improve quality of care and treatment outcomes.

EPE270

Integrating mental health care into primary HIV care treatment programs in Zambia using telemedicine: Challenges and opportunities

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Background: Zambia has made substantial progress towards ending the HIV epidemic due to investments in effective prevention and treatment initiatives. However, these investments will not end the HIV epidemic without addressing mental health (MH) disorders. There is compelling evidence regarding the link between MH conditions and poor health outcomes at every stage of the HIV care continuum, necessitating the inclusion of universal MH screening and linking those with identified MH conditions to specialized care.
Description: We worked with the Ministry of Health and implemented a Telemedicine program using a hub-and-spoke model in Lusaka, Zambia. We integrated MH screening and treatment into the Telemedicine workflow. We ensured continuity of care for recipients of care (RoC) on antiretroviral therapy (ART) in one tertiary and four secondary hospitals serving as hubs and eight primary healthcare clinics serving as spokes. From July 2021 to January 2022, we screened 89 adults and three adolescent girls on ART for MH services.
Of these, 23 adults and two adolescent girls received MH services via Telemedicine. The MH screening was conducted in partnership with Lusaka Provincial Health mental health specialists.
Lessons learned: There are limited human resources for mental health care in the Lusaka district and a scarcity of data to inform programmatic planning and action. Telemedicine has the potential to expand access to MH specialists for RoC in settings with limited trained MH specialists.Mental health specialists have self-reported that Telemedicine is an effective, useful, and acceptable way to deliver treatment, especially during the COVID-19 pandemic. Clients have also self-reported advantages such as privacy, convenience, and accessibility.
Conclusions/Next steps: Depression and anxiety was the primary mental health diagnosis in adults and both adolescent girls were diagnosed with substance misuse after multiple telemedicine sessions. Zambia has the potential to integrate MH services into primary HIV care programs. These opportunities include capacity building for clinicians to screen for MH and to effectively deliver care via Telemedicine.
Multiple barriers and challenges exist at the patient-, community-, and system-level, including stigma, limited human resources, policy gaps, and research gaps. Telemedicine has potential to address these gaps.

EPE271

Experience of creating LGBTQ Welcoming Space across various HIV health care systems

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Background: Creating a safe environment is key to engaging individuals into health care. For PWH who is also a member of a sexual or gender minority (SGM) (ie Lesbian, Gay Bisexual Transgender Queer/Questioning /LGBTQ), prior health care system alienation must be countered via a welcoming health care environment. Via HRSA's SPNS funding, the STI SPNS Project tested the capacity and effect of creating an LGBTQ Welcoming Space in various HIV health care systems. The capacity of each site was

measured based on the implementation of 12 LGBTQ Welcoming Space Indicators while the effect was measured via patient and provider anonymous survey.

Methods: Over 18 months, 3 RWHAP Part C Louisiana clinics were tasked to implement 12 specific interventions to maximize its welcoming capacity for SGM PWH. Each site represented a unique healthcare organization eligible to receive Part C funds: an FQHC, an academic medical center, and an independent nonprofit community health clinic.

Ongoing monitoring documented when a specific intervention was implemented. Via an ACASI Client Satisfaction Survey (CSS), consented patients reported the impact of interventions on their clinical experience. Providers from each clinic reported their impression of the environmental and system changes on patient care.

A qualitative analysis explored the process of implementation while a Kruskal-Wallis test determined the differences in effect at the different sites as measured via the CCS and providers report.

Results: One site was able to implement all 12 LGBTQ Welcoming Space Indicators. The remaining sites experienced implementation barriers at higher organizational level. 075 CSS were completed by 566 PWH (40% female, 3% transgender, 37% SGM). Regarding environment and system changes, <1% of the CSS respondents described any as "I noticed and I did not like it" while the clinical providers reported the interventions as having a positive on patient care.

Conclusions: Despite higher-level organizational barriers, all health care systems were able to implement environmental and system changes to maximize their welcoming capacity for SGM PWH while maintaining or improving patients' over satisfaction and providers' acceptability. Though specific sites may experience unique barriers, it is within the capacity of all health care organizations to engage SGM populations into care.

EPE272

Strengthening community structures to improve service delivery for children and adolescents living with HIV

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Background: According to Ministry of Health, Uganda (2019 MoH PMTCT Report), HIV services for children and adolescents living with HIV (CALHIV) lag behind those of adults. The quality of services received by CALHIV determines their treatment outcomes, thus providing all the services they are eligible leads to improved treatment outcomes. The USAID funded Local Service Delivery for HIV/AIDS Activity (LSDA) implemented interventions to strengthen community structures in order to improve service delivery for CALHIV along the HIV continuum of care. We describe lessons learnt in improving service delivery for CALHIV.

Description: Between October 2021 through January 2022, ten health facilities were supported by LSDA to implement a community Quality Improvement (QI) collaborative. Health facilities in collaboration with Community Based Organisations, implemented a modified Community Client Led Antiretroviral Delivery model (MCCLAD) where CALHIV living in a particular village were attached to a Community Health Worker (CHW). CALHIV were scheduled to receive services in the community, followed-up and contacted by CHW's to ensure they received all the services they were eligible for.

CALHIV with a suppressed viral load were followed-up monthly while those with an unsuppressed viral load weekly. Services offered were tracked weekly using a reporting template and data entered into the national QI database.

Lessons learned: The percentage of CALHIV scheduled for contact with a CHW improved from 49% (start of October 2021) to 100% in the 3rd week of January 2022 while that of CALHIV with an unsuppressed viral load improved from 33% to 100%. The percentage of CALHIV with a suppressed viral load scheduled for contact with a CHW and attached to a CHW averaged 96% while that of CALHIV with an unsuppressed averaged 91%.

The percentage of CALHIV with a suppressed viral load scheduled for a contact, attached to a CHW and received all services averaged 92.7% while that of CALHIV with an unsuppressed viral load averaged 93% over the period.

Conclusions/Next steps: Attaching CALHIV to a CHW enabled them receive services they are eligible for in the community. Deliberate efforts should be made to strengthen health facility community collaborations so as to improve treatment outcomes for CALHIV.

EPE273

Performance assessment: an approach to achieving HIV epidemic control in Nigeria

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Background: In Nigeria, several HIV programmes have been designed and implemented without an end-of-project assessment. The National Agency for the Control of AIDS (NACA) embraced Performance Assessment to address this gap and improve effectiveness and efficiency of HIV programmes in Nigeria.

Description: In the last quarter of 2021, Performance Assessment was carried out in 12 HIV comprehensive facilities (2 per geopolitical zone of the country). A pre-tested

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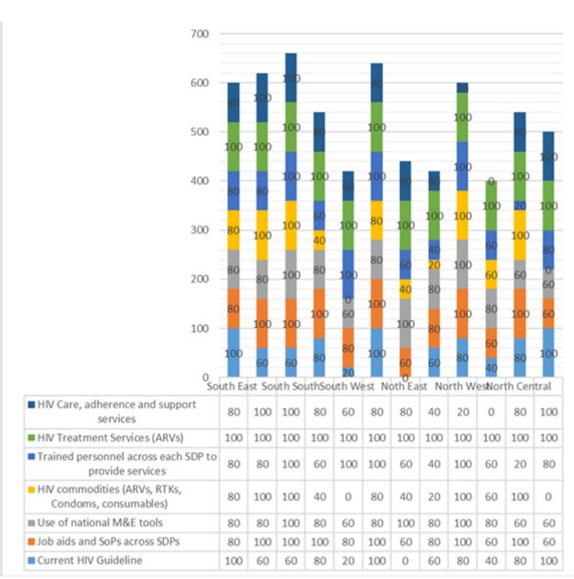
checklist with sections addressing different thematic areas was administered to the healthcare workers in each of the service delivery point (SDP) in the facilities.

Lessons learned: Across all SDPs, HIV treatment services had the highest score followed by availability of Job aids and SOPs while the least is the availability of HIV commodities. Five (5) facilities experienced stock-out of HIV commodities and consumables thereby causing critical delays in confirming HIV infection and commencing life-saving HIV treatment and care.

The findings of the assessment revealed that despite the uptake of HIV treatment services as reflected in the 100% score for all 12 facilities visited, several barriers have continued to hinder effective HIV care, adherence and support services and achievement of the 3rd 95 especially in the North West and North East zone of Nigeria.

Overall, the South East zone had the highest score and the North East zone had the least score for insecurity reasons while the North Central zone lacked adequate trained personnel.



	South East		South South		South West		Noth East		North West		North Central	
HIV Care, adherence and support services	80	100	100	80	60	80	80	40	20	0	80	100
HIV Treatment Services (ARVs)	100	100	100	100	100	100	100	100	100	100	100	100
Trained personnel across each SDP to provide services	80	80	100	60	100	100	60	40	100	60	20	80
HIV commodities (ARVs, RTKs, Condoms, consumables)	80	100	100	40	0	80	40	20	100	60	100	0
Use of national M&E tools	80	80	100	80	60	80	100	80	100	80	60	60
Job aids and SoPs across SDPs	80	100	100	100	80	100	60	80	100	60	100	60
Current HIV Guideline	100	60	60	80	20	100	0	60	80	40	80	100

Figure. Performance assessment score of HIV service delivery points.

Conclusions/Next steps: The challenges facing PLHIVs on treatment adherence require effective coordination and continuous performance assessment of HIV programme implementation to achieve optimal viral suppression rate and greater impact.

The adoption of the mechanisms put in place for strengthening identified gaps will serve as a panacea to past poor performance, limit wastage, improve service delivery and hasten progress towards achieving HIV epidemic control in Nigeria.

Making health systems work for adolescents

EPE274

Improving treatment outcomes among adolescents and young people living with HIV in the coastal region of Kenya through operation triple zero (OTZ)

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Background: Kenya has a high HIV incidence among adolescents and young people (AYP) aged 15-24 years, contributing to 42% of all new infections annually. Sub-optimal treatment outcomes are documented among adolescents and young people living with HIV (AYPLHIV). The 2018 Kenya Population-based HIV Impact Assessment (KENPHIA) showed low viral suppression among adolescents at 61.4% (70.9% females and 52.0% males).

Between 2018 and 2021, Pathfinder International jointly with Ministries of Health and Education, implemented operation triple zero (OTZ) under the USAID Afya Pwani (AP) project in four Kenyan coastal counties (Kilifi, Kwale, Taita Taveta, and Mombasa) to improve treatment outcomes among AYPLHIV.

Description: OTZ is an asset-based approach engaging AYPLHIV as active stakeholders in their health, nurturing them to actively participate in their well-being. AYPLHIV commit to achieving "three zeroes": zero missed appointments, zero missed medications, and zero viral loads (VL).

The AP OTZ clubs comprised several approaches focusing on:

AYPLHIV (treatment literacy, periodical analysis viral load data to identify OTZ leaders, leadership empowerment, use of social media to enhance adherence and peer-peer support);

healthcare providers (training on adolescent package of care, provision of youth-friendly services, case management);

rewarding and awarding top performers; OTZ graduates (champions) mentoring the new enrollees in treatment adherence;

modification of clinics to be adolescent-friendly and caregiver support (caregiver literacy, teleconsultation).

USAID AP initially implemented 8 OTZ clubs in 2018 gradually scaling up to 84 clubs in 2021.

Lessons learned: Total adolescents enrolled in OTZ clubs increased from 379 in 2018 to 2,806 in 2021. Viral suppression among AYPLHIV improved from 76% (966/1232) in 2018 to 90% (2424/2684) in 2021; p<0.001. Similarly, retention rates among AYPLHIV enrolled in the OTZ clubs increased from 88% (1112/1256) in 2018 to 91% (2534/2782) in 2019, and 96% (2684/2806) in FY 21.

Overall, viral suppression and retention rates among AYPLHIV in OTZ clubs were higher than the national average. Adoption of innovative digital platforms and strengthened multi-month dispensing helped overcome COVID-19 challenges for sustained gains.

Conclusions/Next steps: These results substantiate the implementation of OTZ to improve HIV treatment outcomes among AYPLHIV. We recommend scale-up, with fidelity, of this model among AYPLHIV cohorts.

Community participation in systems for health, including community-led and key population-led health systems

EPE275
The final stages of an epidemic? Learning from London's community-led HIV response

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Background: London (UK) is a world-leading city in HIV elimination efforts. To 'get to zero' HIV transmission, the multi-partners, cross-sectoral London's Fast Track City Initiative (FTCI) recognised the need to work collaboratively and embrace the success and expertise of the HIV voluntary sector. FTCI identified dedicated cross organisational funding for a novel "Improvement Collaborative" (IC).

Description: The IC of 20 partners developed 12 community-led collaborative projects in key areas of HIV service delivery, with Quality Improvement (QI) methodology and shared learning between statutory and voluntary services. The IC seeks collaborative solutions to complex problems faced by specific populations in key areas of HIV service and delivery. To support marginalised populations to test, reduce HIV viral load to undetectable levels, and have a better quality of life, FTCI commissioned and empowered a strong HIV voluntary sector with decades of expertise to lead collaborative change projects. The IC facilitates the spread and adaptation of existing and emerging knowledge in multiple settings to accomplish common aims. All projects are underpinned by the ethos of looking after *the whole person*, focusing on *people* rather than *conditions*, and avoiding simplistic separations between physical and mental health.

Lessons learned: In the past year, across all 12 projects, over 2,500 HIV tests have been carried out with and people testing positive navigated into ongoing care. Post diagnosis patient retention and peer support projects have become integrated into clinical pathways with an eight-fold increase in referrals. Over 500 care plans have been created and PLWHIV have been supported to reach U=U status. Over 75% of people have reported decreased loneliness and better quality of life. Over £750k in welfare benefits has been accessed by PLWHIV through bespoke advice and guidance. PLWHIV have been involved in the entire project selection, leadership, management and delivery process, including deliberate recruitment of members of racially minoritised communities.

Conclusions/Next steps: The experiences from the IC with regards to partnerships across sectors need not be limited to extending HIV services. Prioritising community co-production and leadership, with appropriate funding and training, strengthens the relationships between clinical and voluntary services and is applicable to multiple contexts of complex care delivery.

EPE276
Community-led integrated care outreach clinics as a capacity building strategy to expand access to sustainable, integrated healthcare in remote areas of Uganda

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Background: In Sub-Saharan Africa, transportation barriers limit care-seeking behavior and reduce access to HIV services, immunizations, malaria treatment, etc. Achieving 95-95-95 depends on health systems sustainably serving populations in remote areas. Grant-supported outreach work fails to provide continuity of care and provide for the range of needs that communities require.

Description: Remote communities (>5km from nearest health facility) can be sustainably served with ART and other primary healthcare services by establishing community-led monthly, integrated outreach clinics. Community wealth pooling improves livelihoods and access to healthcare.

In areas without access to transportation, microfinance is used as a tool to ensure reliable service. Health Access Connect (HAC) is a Ugandan NGO that has been imple-

menting the Medicycles program since August 2015, and this model has been adopted and adapted by the AIDS Control Program of the Ministry of Health in a nationwide pilot.

PROBLEM	SOLUTION
Free health services are difficult and expensive for residents of remote areas to access at the health facility.	**Set up monthly or bimonthly outreach clinics in remote communities.**
Transportation expenses of outreach clinics are cost-prohibitive and dependent on short-term grants.	**Set up community contribution system (USD 0.55/patient) to cover transport costs.** This fee is 1/2 to 1/10 of what each patient would spend to use public transportation to reach nearest health facility.
Workers at some health facilities do not have access to a reliable means of transportation. Vehicle grants are expensive and fall into disrepair.	**Use a microfinance loan for locally appropriate means of transportation** to a local entrepreneur and make health service to communities a condition of the loan.
Health campaigns (e.g., immunization, HIV, maternal and child health, neglected tropical diseases) **are expensive and reliably fail to cover residents of remote areas.**	**Integrate campaign services into a network of ongoing (bi)monthly outreach clinics.**

Lessons learned: Between August 2015 and Jan 2022:
1,038 outreach clinics
58 remote villages
40,256 total patient services (41.8 per outreach, 41.4% male)
10,587 ART refills (45.6% male)
5,990 tested for HIV
1,041 viral load tests conducted

- By using local health, transportation, and community wealth pooling, service delivery can sustainably meet patient needs and strengthen the health system.
- Learning from local innovations and adapting policy for a nationwide initiative can improve service delivery at scale in the long term.

Conclusions/Next steps: Combining community wealth pooling and reliable transportation can provide continuity of care to difficult-to-reach populations. Adaptation of model into nationwide pilot has demonstrated that the model can be adapted to many contexts.

EPE277

Improving client-centered HIV services through community-led monitoring in Nepal

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Background: To achieve and sustain HIV epidemic control, services must be differentiated to respond to the preferences and needs of underserved populations facing the greatest HIV infection risks. With support from the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) and the United States Agency for International Development (USAID), the Meeting Targets and Maintaining Epidemic Control (EpiC) Project in Nepal supports community-led monitoring (CLM) to ensure that services are continuously accountable to clients.

Description: In October of 2020, the EpiC team introduced community scorecards and an electronic client feedback system to implement CLM in Nepal. Scorecards are generated from a structured quantitative questionnaire with rating scale and qualitative interviews. The client feedback system, called LINK, is promoted through service sites and push messaging to clients, and can be anonymously accessed by scanning posted QR codes or clicking embedded weblinks. Both the community scorecard and LINK results guide project-facilitated quality improvement consultations that engage program managers, site-level staff, and community members in the development of action plans.

Lessons learned: From October 2020 to September 2021, clients submitted feedback 3,512 times through LINK, with 90% of entries expressing service satisfaction. Complaints were registered in only 212 entries, and clients provided constructive suggestions about more convenient service operating hours; expanded availability of sexually transmitted infection services; improving the quality of counseling; ensuring client confidentiality; and clinic cleanliness. Scorecards were generated from assessments at 26 sites. Sites scored an average rating of 83 out of 100 on the quantitative assessment tool, but this average varied across sites for specific service components.
Clients gave index testing services the lowest average score (74%) and gave the highest average score (87%) to components focused on commodity access and on reducing stigma and discrimination.

Conclusions/Next steps: CLM identified specific opportunities to improve and differentiate services to be more responsive to clients while providing a platform for both community members and providers to develop and advance improvements. Virtually all sites implemented actions in response to CLM results. Going forward, sustained engagement in CLM should help to evaluate the potential impact of these improvement efforts.

EPE278

Community accountability methods improve HIV services in Gauteng province

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Background: The Ritshidze project was started by groups of People living with HIV and activists to address healthcare service accessibility and quality through evidence-based advocacy.In the Gauteng province, Ritshidze is implemented in 144 clinics.

Description: Ritshidze is a community led monitoring program where People Living with HIV(PLHIV) collect data at clinics on availability and quality of HIV services.

Data is used to advocate for improvement of services by holding duty bearers accountable.

The model has 5 stages:

Data collection

PLHIV sector members collect data through interviews, group discussions and observation.

Data analysis

Data is analysed and interpreted, highlighting key areas and challenges.

Solution generation

Members come up with solutions to the challenges.

Stakeholder engagement

Members present reports, with solutions generated with the community to duty bearers and advocate for improvement.

Monitoring improvement

Members seek commitment from duty bearers to resolve the challenges, note what they commit to improve and keep monitoring for the desired improvements.

Advocacy

Continued advocacy is done if the challenges are not addressed, starting from clinic to district and sometimes provincial levels, using different methods, e.g. protest marches, litigation and meetings.

Lessons learned:

Lessons

The following improvements were achieved between 2020 and 2021:

ARVs availability

- Percentage of patients receiving supply of one month or less declined from 18% to 10%
- Patients receiving 3 months' supply increased from 27% to 42%
- Patients sent home without ARVs because of stock outs declined from 39% to 18%

Confidentiality

There was an 8% increase in the number of patients with knowledge that they could refuse to give details of sex partners for index testing.

Staff attitudes

There was a 5% increase in patients reporting that healthcare workers were friendly and professional.

Conclusions/Next steps:

- Data collection needs to be a continual process, 2021 data will be instrumental in holding decision makers accountable.
- Community driven solutions are key, for example the project's recommendation for longer supply of ARVs proved fruitful as more patients received 3 months' supply increased by 15%
- It will be crucial to do more advocacy for improvement of staff attitudes to enhance adherence.

EPE279

Community-led, comprehensive service delivery models address the healthcare needs of transgender communities: implementation experience from Hyderabad, India

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Background: In India, transgender communities face a disproportionate HIV burden (3.1% vs. 0.22% in general population) and structural barriers to access health care and social services. Community-led models providing access to comprehensive health care (including assistance with social entitlement schemes) are one approach to overcome these barriers.

Description: The *Mitr* Clinic, a PEPFAR/USAID funded, community-led transgender clinic, was established in Hyderabad in January 2021.Community consultations with 48 key stakeholders informed development of the clinic. Staff were recruited from the community – 91% of staff self-identify along the transgender spectrum. Services provided at the clinic include condom distribution, HIV testing/treatment, sexually transmitted infection testing/treatment, gender-affirming hormone therapy (GAHT), counselling, and support to access social entitlements. Clients are referred to community-preferred providers for laser hair removal and gender-affirming surgery (GAS).

Lessons learned: From March 1, 2021 – Jan, 20 2022, 772 clients (86% transgender women; 3% transgender men; 2% gender diverse; 9% cisgender partners) were registered. 670 (87%) had previously not been registered with government HIV programs. About 29% reported transactional sex and 41% reported inconsistent condom use. The median number of sexual partners in the prior year was 3 (interquartile range: 1-25). The clinic provided access to GAHT to 82 clients and supported 11 clients to undergo GAS. Of all registered clients, 498 clients (65%) were aware of their HIV status of whom 71 clients were positive at enrollment and 9 were newly diagnosed at the clinic. Of the 80 clients living with HIV, 91% were currently on ART. Eight percent (26/312) of clients screened positive for syphilis and underwent treatment. 289 clients (37%) were referred for laser hair removal and 508 (66%) were linked with social entitlements. 89% of clients self-reported that they were satisfied with quality and service options in a client satisfaction survey; a suggestion was to extend hours.

Conclusions/Next steps: The *Mitr* clinic reached a large proportion of the transgender community currently not registered with the targeted-interventions program of India's National AIDS Control Program. It is likely that the availability of non-HIV services served as the gateway to these populations, which highlights the importance of comprehensive integrated service models.

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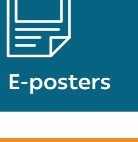

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EPE280

Community antiretroviral therapy dispensation in Cameroon associated with improved perceived service quality: a national evaluation

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Background: The USAID- and PEPFAR-funded Meeting Targets and Maintaining Epidemic Control (EpiC) project and the Government of Cameroon developed and evaluated a model in which some health facilities providing antiretroviral therapy offered clients the option to receive antiretroviral (ARV) drug refills at community-based organizations (CBOs). We describe the impact of the model on clients' perceived quality of HIV services.

Methods: The evaluation was conducted from October to December 2020 in10 regions of Cameroon. We compared measured wait time for HIV services and perceived client satisfaction with services as proxies for service quality between clients receiving ARV refills at health facilities (n=557 clients) vs. at 50 CBO pick-up sites (n=293 clients). Wait time and satisfaction among clients were also assessed at three matched pairs of health facilities: three facilities offering the CBO pick-up option ("offering facilities") (n=170 clients) and three facilities that did not offer the CBO option ("non-offering facilities") (n=170 clients). Perceived satisfaction and wait time were collected through a client survey and a time log. Descriptive and inferential analyses were conducted.

Results: CBO dispensation was associated with shorter wait times. Mean difference in wait time for clients receiving ARV refills from CBOs was 37.5 minutes less (CI:29.05–45.95, p-value=0.000) than at health facilities.

Between the matched pairs, wait time for clients receiving refills at offering facilities was 12.9 minutes less than at non-offering facilities (CI:26.29–44.31, p-value<0.000). Clients receiving refills at CBOs were 4.5 times more likely to report satisfaction with services than those at offering facilities (97.3% vs. 89.1%, CI:2.12-9.42, p-value ≤0.000).

Similarly, clients receiving refills at offering facilities were 6.26 times more likely to report satisfaction with services than those at non-offering facilities (94.4% vs. 73.1%, CI: 3.13 - 12.54, p-value <0.000).

Conclusions: Community ARV dispensation through CBOs was associated with shorter wait times for HIV services and higher client satisfaction than in offering facilities, and higher client satisfaction in offering facilities than non-offering facilities. ARV dispensation through CBOs has the potential to improve perceived service quality both for clients who receive ARV refills at CBOs and those who continue to obtain refills at the offering facilities.

EPE281

Advancing the sustainability of key population-led organizations in Vietnam through a social enterprise approach

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Background: Despite Vietnam's persistent HIV epidemic among key populations (KPs), external donor financing has declined markedly over the past decade, putting at risk the long-term viability of KP-led organizations that drive community HIV service delivery. A social enterprise (SE) approach may allow KP-organizations to self-sustain and grow their impact and income.

Description: From 2014-2021, the USAID/PATH Healthy Markets project partnered with KP-organizations to support them in advancing along a continuum of business development.

A package of support was tailored to assist KP-organizations wishing to develop SE-clinic models. This included:

1. Conducting market and consumer surveys, using results to inform targeted market entry for HIV/health goods and services;
2. Collaborative assessment of KP-organization capabilities;
3. Assisting KP-organizations to develop initial business plans, register as SEs, and establish clinics;
4. Delivering technical assistance for marketing HIV/health goods and services;
5. Facilitating mentoring, coaching, and training from a local SE incubator; and,
6. Mapping financing options and supporting groups to access capital. We measured progress toward sustainability through a tailored organizational capacity assessment and investment readiness tool.

Lessons learned: A 2021 assessment evaluated the organizational capacity and financial viability of three private clinics operating under SE arms: Glink Vietnam, Galant, and Alo Care. Their mean profit and revenue increased from US$32,934 and $191,964 in 2018, to $44,677 and $442,292 in 2020, respectively. As of June 2021, the clinics' annual revenues were 35-54% lower than expected due to COVID-19 social distancing, though Glink and Galant remained in-profit. Glink, Galant, and Alo Care's total client bases (a key indicator of market growth) grew by 250%, 200%, and 173%, respectively, from 2018-2020. During this period, all groups scaled their models: Galant and Alo Care each opened two new clinics, while Glink opened six. The clinics attribute service and client diversification as most valuable for enabling increases in revenues, profits, client base, and scale.

Conclusions/Next steps: Operating private clinics is one way for SEs to generate sustained income while serving their social missions. Moving forward, it will be important to provide continued capacity-strengthening and investment-readiness support to assist KP-SEs in navigating their way toward financial independence, especially as COVID-19-related disruptions continue.

EPE282

Lifting up key populations voices and increasing quality of HIV services in Malawi: using community led monitoring to strengthen services for KPs and people living with HIV

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Background: Over the last 10 years, access and uptake of HIV testing services and antiretroviral therapy (ART) in Malawi has improved,though HIV incidenceamong key populations, such as men having sex with men, female sex workers, and transgender people (MSM, FSW and TGs, respectively) remains high.

Community-led monitoring (CLM) is an important evidence-informed approach to reaching key populations; it ensures that their voices are heard by duty-bearers to ensure improved HIV service delivery shifts that will increase access and utilization.

Description: Liu Lathu, 'Our Voices' in Chichewa, is the Malawi CLM Program established in 2020,currently being implemented in 29 health facilities across 6 districts in Malawi. It is led by a coalition of civil society organizations representing key populations, people living with HIV and AGYW. During the first year of implementation, six District Coordinators and 18 Community Monitors were trained in qualitative and quantitative data collection methods and have so far completed three cycles of data collection. In total, 867 PLHIV interviews were completed and 240 focus groups with KP were conducted.

Lessons learned: The interviews with PLHIV helped uncover issues that cannot be captured by routine health facility monitoring including: FSWs reporting being discriminated by medical personnel (e.g. being called prostitutes) and being denied access to ARVs.

Additionally, numerous MSM reported negative health care provider attitudes towards them once their sexual identities were revealed. KPs interviewed recommended among other health care provider training on Sexual Orientation, Gender Identity and Expression (SOGIE)as well as clinics to assign KP-specific health facility personnel as a solution to address this issue.

Conclusions/Next steps: Health Facility Managers committed to monitor and confront stigma, discrimination, and denied access to commodities and services for KP. In Year 2 of CLM implementation, Liu Lathu will follow up with facility managers and track which commitments were implemented.

EPE283

Uniting civil society to improve accountability and accessibility of HIV and TB service delivery: lessons learned from year one of community-led monitoring implementation in Uganda

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Background: Community-led monitoring (CLM) is a social accountability model that aims to hold duty bearers and health facilities (HFs) accountable for improved quality of HIV and TB service delivery. In October 2020, ICWEA, HEPS, and SMUG jointly implemented CLM in Uganda, covering 108 districts (85%) and 432 HFs in total.

Using a set of standardized data collection tools, program monitors visited HFs to directly observe and collect qualitative and quantitative data.

Description: The first year of program implementation was evaluated in December 2021. The evaluation assessed timeliness and completeness of program activities, and was guided by two research questions:

1. Was the program implemented in accordance with the operational plan?
2. Did program implementation achieve any unexpected or unintended outcomes?

To answer these questions, 25 stakeholders were interviewed (including program staff, partners, advocates and duty bearers).

Lessons learned: The evaluation revealed three major areas of learning. Firstly, to optimize program governance, there is a need to improve efficiency of communication and coordination through inclusive leadership and decision-making. A key learning was the importance of continuously aligning expectations between program implementers, donors, and technical partners, to avoid scope

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changes and implementation delays, which the program experienced during set-up (e.g., in finalizing the program protocol), and which impacted resource allocation.
Secondly, greater emphasis must be placed on the quality (rather than quantity) of CLM data generated, and on building staff's analytical capabilities to provide evidence-based insights in real-time.
Thirdly, while the program's advocacy and accountability efforts are bearing fruit, establishing a system to routinely identify issues, develop solutions, and monitor progress is essential to achieve long-term impact, as is working with duty bearers to utilize program findings.
Conclusions/Next steps: Key learnings from the first year of program implementation provide valuable insights for CLM initiatives globally in terms of mobilizing civil society and affected communities; operationalizing governance and technical structures to scale-up CLM; and, orienting program activities toward national HIV/TB service delivery goals.
Moving forwards, the program will need to effectively harness CLM data to advocate and hold duty bearers accountable for sustainable improvements in HIV/TB service delivery.

EPE284
Implementation of Faith Community Initiative to engage faith leaders in HIV epidemic control interventions: experience of Institut pour la Santé, la Population et le Développement (ISPD) in Haiti

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Background: With USAID funding, ISPD implemented the Faith Community Initiative (FCI) which aimed at encouraging the involvement of faith leaders and CSOs in a joint effort to increase access to HIV services. It has been shown that Faith-based organizations can potentially play a key role in preventing the spread of HIV/AIDS. They can help model a culturally and religiously sensitive package of HIV services. From April 2020 to December 2021, ISPD worked with faith leaders of various religious denominations in selected communities of Delmas, Cap Haitian and Jérémie to sensitize them on HIV prevention, ART treatment, stigma and discrimination.
This collaboration helped design interventions that are deemed appropriate and acceptable for the faith leaders and their followers leading to an increase in access of underserved populations to HIV services.
Description: In collaboration with local faith organizations, ISPD contributed to the implementation of a Steering Committee to lead FCI activities nationwide. ISPD adapted the Messages of Hope and an HIV Educational Update training curriculum to sensitize faith leaders on HIV and improve their skills to assist those in need for HIV testing and prevention services, and those on treatment or who have interrupted their treatment. Treatment adherence in the context of Faith Healing was discussed.
Around 9,977 faith leaders and followers were trained. Afterwards they conducted sensitization campaigns in their communities. Twenty-nine peer educators were recruited to conduct sensitization sessions, conduct HIV risk assessment, assist with HIV self-testing, and link clients with reactive results to sites for follow-up. The sensitization campaign included radio broadcasts, educational brochures, flyers and diverse articles with printed Messages of Hope.
Lessons learned: With appropriate trainings addressing the taboos, various faith organizations can engage in HIV interventions. They reached over 30,607 individuals through sensitization campaigns, individual or group discussions. Due to FCI activities, 2234 individuals underwent HIV risk assessment, 817 were tested for HIV; 70 confirmed HIV-positive were referred for ART enrollment, 63 on treatment interruption have returned to care while 291 were referred for PrEP and other services.
Conclusions/Next steps: An impact evaluation will be conducted to measure changes in attitudes and practices of faith leaders toward HIV issues following the intervention.

EPE285
Feasibility and effectiveness of using an electronic client feedback tool to improve HIV service quality at six high-volume health facilities in the Democratic Republic of the Congo

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Background: Engaging communities in the design, implementation, and monitoring of HIV services is essential for delivering high-quality services that bring in and keep clients engaged in the HIV care continuum, ultimately leading to improved client health outcomes and progress towards epidemic control goals.
The USAID-funded Integrated HIV/AIDS Project in Haut-Katanga piloted an electronic client feedback tool to gather client feedback to improve delivery of HIV services.
Description: Through stakeholder mapping and focus groups, PATH and IntraHealth worked with facility-based providers, peer educators, civil society, and government representatives to co-design a service quality monitoring system. The group opted to use an anonymous electronic exit interview to gather client feedback, and developed an interview questionnaire, informed by an issues identification exercise. Peer educators were trained to administer an exit interview with people living with HIV or their caregivers following clinical appointments, and record responses in

the KoBo Toolbox app using project-supplied tablets. IHAP-HK shared client feedback with facility quality improvement teams and discussed remediation steps for inclusion in site-level improvement plans. We looked at the impact of this system on reducing wait time and stigma at six high-volume facilities in Haut-Katanga province.

Lessons learned: Feedback collected from 2,306 clients from May through December 2021 highlighted wait time and stigma as top issues.

Actions taken to address these issues included:

1. Pre-packaging refills prior to client appointment;
2. Using peer educators to conduct preparatory tasks (distributing refills; pulling client files) while waiting for physician or triaging and escorting clients to the consultation room or laboratory; and,
3. Coaching providers on providing services in a non-stigmatizing manner.

Due to these actions, the percentage of clients reporting stigma decreased (5.4% [May] to 1.04% [December]), and wait times were consistently shorter (between 1 to 90 mins [May] to averaging 10 minutes [December]).

Conclusions/Next steps: Our results showed the feasibility and effectiveness of using an electronic client feedback tool to collect client perspectives on and suggestions to enhance service quality, leading improved HIV service delivery at pilot facilities. IHAP-HK plans to extend this system to additional facilities in Haut-Katanga to continue engaging clients in service quality monitoring and ensure services meet client needs.

Approaches to effective paediatric HIV services

EPE286

Implementation of a pediatric and adolescent risk screening tool to improve HIV case finding: findings from selected facilities in South Africa, 2020-2021

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Background: South Africa (SA) had an estimated 7.9 million people living with HIV (PLHIV) in 2020, including approximately 386,000 children and adolescents living with HIV (CALHIV) aged 0-19 years. Although SA launched the Universal Test and Treat strategy in 2016 to improve HIV case finding and early linkage to treatment, identifying undiagnosed CALHIV remains a significant gap.

Description: We implemented and tested an HIV risk-based screening tool, the Pediatric and Adolescent HIV Testing Eligibility Screening Tool (PATEST), as a quality improvement intervention to improve case finding among CALHIV in 15 CDC-supported facilities in SA between October 2020 and September 2021. The tool comprises of 12 screening questions on HIV exposure and clinical/social factors.

Enrollment for screening occurred at various entry points within facilities. HIV counsellors/healthcare providers ascertained clients' status from the caregiver or adolescent to determine whether they had a known HIV-positive, negative, or unknown status.

Only clients with unknown statuses completed the full battery of screening questions. Clients who answered "Yes" to at least one of 12 questions were eligible and recommended HIV testing. Process measures were monitored throughout implementation of the tool; screening and testing outcomes are reported below.

Lessons learned: Among 190,805 clients aged ≤19 years accessing services at participating facilities, 42,739 (20%) had their status ascertained; 10,154 (24%) were excluded from further screening due to known HIV-positive (4%) or HIV-negative (20%) statuses.

We screened 28,211/32,585 (87%) clients with unknown status using the PATEST, of those 21,644/28,211 (77%) were eligible for HIV testing with 19,899/21,644 (92%) receiving testing. In total, 98 CALHIV were newly identified, translating to an HIV positivity rate of 98/19,899 (0.5%). Even in a high HIV prevalence setting, testing and identification of CALHIV attending facilities remained low, highlighting the need for innovative case finding for CALHIV.

Successful status ascertainment by counsellors/healthcare providers improved from 5% to 33% due to ongoing capacity building efforts with staff to move from universal testing towards targeted screening.

Conclusions/Next steps: The PATEST could streamline and increase efficiencies for HIV case finding among CALHIV in low-and-middle-income settings.

EPE287

Strategies for improving viral suppression among children in Akwa Ibom, Nigeria: a before and after study

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Background: One global AIDS target is for 90% of people receiving antiretroviral therapy (ART) to have HIV-RNA viral suppression (VS). However, VS among children 0-14 years is only 84% in Akwa Ibom State, Nigeria, compared to 93% among adults living with HIV in the state. We de-

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scribe the implementation of an individualized viral load (VL) strategy and assess its effect on VS after six months of implementation.

Methods: The Meeting Targets and Maintaining Epidemic Control (EPIC) project's quality assurance/quality improvement team monitors quality across HIV/AIDS thematic areas. EpiC collaborated with the state pediatric task force supporting pediatric ART management to address VS.

An individualized care plan using the assess-implement-evaluate model was developed. In the assessment phase, the health needs of HIV-positive children on ART up to six months and with unsuppressed VL (≥1,000copies/ml) were reviewed across 49 facilities. Evidence-based practices were identified and implemented from January through July 2021 to address those needs.

During the evaluation phase, we assessed ART optimization in terms of regimen (dose, frequency, refills), access to appropriate care and support services (opportunistic infection [OI] prophylaxis, family/social support for disclosure and adherence), enhanced adherence counseling (EAC), and post-EAC VL monitoring.

Multivariable logistic regression was used to analyze for demographic and clinical factors associated with post-EAC VL suppression (<1,000 copies/ml) using SPSS v26 at<0.05 significance levels.

Results: Of the 312 children enrolled, median [IQR] age was seven years (IQR 4-10 years), 50.6% (156/312) males, median [IQR] duration on ART was 19 months (IQR 12-44 months), and 154 (49.4%) were on combination zidovudine-lamivudine-lopinavir/ritonavir.

We observed significant improvements from baseline in uptake of OI prophylaxis (p=<0.001)], access to family/social support for disclosure (p=<0.001) and adherence (p=<0.001), multimonth drug dispensing (p=<0.001), and transitioning to appropriate regimen (p=<0.001); 98.1%, 94.9%, and 94.1% completed one, two, and three EAC sessions, respectively. Post-EAC VL testing uptake was 92.3% (264/288), and VS among those tested was 91.3% (241/264). VS post-EAC was significantly lower among males (p=0.012) and in primary health care facilities (p=0.031).

Conclusions: Our strategies ensured viral resuppression. Implementing holistic, client-focused interventions can significantly affect virologic outcomes.

EPE288

Listening to children living with HIV and their caregivers: understanding barriers and enablers to improve care for children living with HIV in five rural Ugandan Districts

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Background: Despite remarkable progress made by Uganda in the fight against HIV, Antiretroviral Treatment (ART) coverage among children living with HIV (CLHIV) still lags behind that for adults. It is estimated that 85% of adults living with HIV are on ART compared to 65% CLHIV under 15 years.

We explored barriers and enablers to access and retention of children in HIV care and generated lessons for strengthening the delivery of HIV care for children

Methods: We conducted a qualitative study in five rural Ugandan Districts of Soroti, Mubende, Mityana, Ntungamo and Kyenjojo as part of the Towards an AIDS Free Generation project.

Data were collected through 7 in-depth interviews with CLHIV and 10 caregivers; 10 focus group discussions (FGDs) with CLHIV, 24 FGDs with village health teams (VHTs), 1 FGD with a network of people living with HIV, 9 FGDs with women in a PMTCT program and 63 key informant interviews with health workers and district officials involved in HIV care. Content thematic approach was used for data analysis.

Results: Widespread stigma at home, in schools and communities perpetrated by peers and adults, limited family support due to poverty, lack of food and non-disclosure of HIV status made access to treatment and adherence to HIV care difficult for children.

Distant and understaffed health facilities and stock out of critical supplies were key structural barriers to children's initiation and continuity in care.

The key enablers of children's access and retention in HIV care were: follow-up and referral by village health teams, availability of support groups for children and caregivers at some health facilities and support to meet food and education needs of children by TAFU programme.

Conclusions: The narratives of children, caregivers and health workers in this study depict the intersectionality of vulnerabilities at family, community and health facility levels including stigma, poverty, food insecurity and constraints at health facilities as hindrances to children's access and retention in HIV care. Empowering community health workers as linking pins between families and

health facilities, expanding peer support groups for children and caregivers and strengthening the health system are critical for better outcomes for CLHIV.

Getting policies into practice

EPE289
Provider perspectives on ideal candidates for long-acting injectable antiretroviral therapy (LAI ART) for HIV treatment: a multi-site qualitative study in the United States

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Background: Since long-acting injectable antiretroviral therapy (LAI ART) was approved in the U.S. in January 2021, clinics have been developing approaches to facilitate its distribution and implementation. While highly anticipated, existing inequities in treatment access may limit LAI ART uptake, particularly among the most marginalized. Medical and social service providers play a key role in determining LAI ART access as they evaluate patients and are primary prescribers.
It is therefore necessary to understand how providers perceive and determine patients' LAI ART candidacy, and how this may influence who is offered LAI ART as it is being scaled-up.
Methods: Starting in Sept 2021, we conducted 35 in-depth interviews with HIV providers across 4 U.S cities. Providers shared how they decided which patients should be offered LAI ART and reasons why they may not offer it to patients with clinical indications. Interviews were recorded and transcribed; thematic content analysis was used to identify key findings.
Results: Provider perspectives regarding who should be offered LAI ART reflected three main themes:
1. Suppression-based eligibility: patients struggling with viral suppression on oral ART may benefit most from LAI ART but are ineligible under current guidelines. While acknowledging the risks of drug resistance, providers wanted more flexibility in prescribing to non-suppressed patients ("Anybody that's positive is the ideal candidate"). Providers also worried that some virally suppressed patients may struggle with LAI ART ("They know that what they're on works, and don't want to mess with it");
2. Patient assessment: Providers preferred to assess patients individually based on their structural barriers and co-occurring health issues ("Each provider has to know their patient to know if this would be an option for them");
3. Gender differences: Providers described female patients as more reliable ("[Men] aren't as attentive as women"), which might affect success on LAI ART, but were concerned with limited pregnancy-related data.
Conclusions: Providers utilized multiple factors in assessing patients for LAI ART. There is immediate need for standardized guidance and decision support tools that incorporate these factors to ensure consistent implementation and equitable offering of LAI ART to all patients.

EPE290
Prepping for PrEP: a readiness assessment among health facilities in Blantyre, Malawi

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Background: Malawi continues to experience a high number of new HIV infections, particularly among adolescent girls and young women (AGYW), female sex workers and men who have sex with men (MSM). PrEP was first endorsed by the Malawi Government in 2019 and but was only offered specialized drop-in centers serving key populations. Integrating PrEP into health facilities requires integration of screening in service entry points where those eligible receive services.
To prepare for PrEP scale-up in Blantyre, which has Malawi's highest HIV seroprevalence rate, a readiness assessment was conducted, led by the District Health Office (DHO), among 17 health centers and hospitals in December 2020, during which time only 3 people were documented to have been prescribed PrEP.
Methods: A formal assessment was designed to measure organizational and provider readiness to begin PrEP services, conducted by a team from DHO and MaiKhanda Trust through interview of 3 key individuals at each facility. Questions focused on training of staff cadres, ability to stock and dispense medications, documentation systems, conduct of routine sexual history taking and availability of mental health services, among others.

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Results: Of 17 facilities, only 12 had staff who had been trained on the PrEP guidelines and were prepared to package and dispense PrEP medications. Two facilities reported staff were not prepared to routinely conduct sexual histories.

Mental health services were available in 7 sites, and youth-friendly services in 13. PrEP registers had not yet been distributed but were to be located in one room in the clinic. Rapid HIV testing was available at all sites.

Conclusions: Preparing facilities to integrate PrEP in multiple service entry points is critical for scale-up and requires planning for service integration. Training of staff to assess eligibility, offer, package and dispense PrEP is necessary, including all staff who have contact with potential candidates in multiple service areas.

Available co-located mental health services to address depression and anxiety, and youth-friendly services to attract at-risk AGYW and young MSM will prepare facilities to address common co-morbidities and reach youth. Registers need to be available at multiple service entry points and include fields for assessment to determine PrEP eligibility.

EPE291

PrEP Up! A quality improvement collaborative (QIC) to scale-up PrEP in health centers in Blantyre, Malawi

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Background: Although Malawi continues to experience high numbers of new HIV infections, uptake of PrEP has been slow. In Blantyre, PrEP was introduced in 2020 as a pilot in drop-in centers (DICs) for key populations but was not being offered in health centers or hospitals where eligible people seek routine care.

As part of the Blantyre Prevention Strategy, under the leadership of the Ministry of Health, with technical support from a consortium of partners, QIC was launched by the District Quality Improvement (QI) unit in 21 facilities in 2021, including 3 hospitals, 14 health centers and 4 DICs.

A readiness assessment conducted in December 2020 showed that only 3 clients were on PrEP in hospitals and health centers, with 891 on PrEP in DICs.

The initial focus of facility QI activities was to identify service entry points for assessing patients who would be PrEP-eligible for formal screening according to national guidelines, including HIV testing.

Methods: Facilities apply standard QI tools for root cause analysis, process mapping and testing of team-identified changes through Plan-Do-Study-Act cycles.

Coaching provided by a team of district health officers guided by expert QI mentors (MaiKhanda Trust) occurs both in-person and virtually. Nine basic indicators are measured monthly spanning from assessment to monitoring and continuity of care.

Results: Early results from facilities show rapid increase of patients being assessed for PrEP, of eligible candidates screened. Monthly PrEP initiation jumped in hospitals and health centers from 36 in April to 249 in November 2021, with a total of 1042 people initiated over 8 months, with an additional 713 initiated in 4 drop-in centers.

Redesign of clinic flow was the most common QI intervention which centralized HIV testing as the focal point for decision-making to offer ART as either treatment or PrEP.

In larger facilities, PrEP teams were created, champions were identified to create demand in service areas, including STI, youth, ophthalmology and medical clinics. Educational talks and materials are also routinely made available in health center waiting areas.

Conclusions: Quality Improvement Collaboratives are an effective strategy to accelerate PrEP uptake in diverse facilities through integration into multiple service delivery points.

EPE292

Implementation of new Cryptococcal Meningitis screening, prevention, and treatment guidelines in Tanzania

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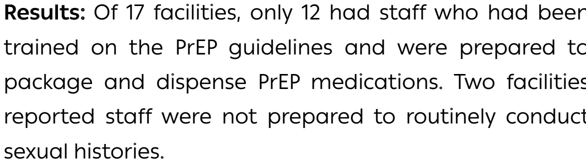
Background: Cryptococcal meningitis (CM) causes approximately 15% of HIV-related deaths globally, the majority in sub-Saharan Africa.

We describe findings from a technical assistance program supporting implementation of new CM screening and treatment guidelines in Tanzania.

Description: Activities included dissemination of new CMguidelines, supply chain support, and mentoring at 15 health facilities in November 2019, February 2020, and March 2021. Staff surveys assessed facility procedures, supplies, and implementation challenges. Three-months of outpatient records were abstracted at each visit to assess screening of HIV clients; inpatient records were



reviewed for CM diagnosis, treatment, and clinical disposition. Data were summarized using counts and proportions.

Lessons learned: Overall, 2,181 inpatient and outpatient clients with advanced HIV disease received cryptococcal antigen (CrAg) serum screening; 270 (12.3%) were positive. Of the 112 outpatient clients who tested positive for CrAg, 73 (65%) were screened for symptoms of meningitis. More than half (55%) of the 27 clients who were symptomatic were hospitalized for CSF testing.

Among the 46 asymptomatic clients, 43 (93%) started pre-emptive therapy with Fluconazole. More than half (53%) of facilities reported frequent fluconazole shortages in 2019, but only 1 (7%) continued to report shortages in 2021. All 15 facilities reported shortages of Amphotericin B and 5FC in 2021.

Data between inpatient and outpatient departments could not be linked due to separate records systems. A total of 268 clients were treated for CM in inpatient settings. Fifty-eight (21.6%) inpatient clients received a lumbar puncture (LP) for cerebrospinal fluid analysis and cryptococcus testing; 26 (44.8%) were positive.

Patient files did not include a reason for not performing LP diagnostic confirmation in 210 (78.3%) clients. Staff surveyed listed patient condition, lack of equipment and failure of patients to pay as reasons for not conducting LP. Inpatients were treated with Fluconazole monotherapy (76.9%), Fluconazole and Amphotericin B (7.1%), and Amphotericin B alone (0.3%).

Conclusions/Next steps: Implementation challenges following adoption of new CM guidelines in Tanzania include supply shortages, data linkage limitations, few LP procedures and inadequate management of Cryptococcal meningitis. Ongoing support is needed to address barriers and increase successful screening and treatment of clients with advanced HIV disease.

EPE293

TB preventive therapy (TPT) service delivery at HIV clinics: results from a global cross-sectional survey within the International epidemiology Databases to Evaluate AIDS (IeDEA) Consortium

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Background: Tuberculosis (TB) preventive therapy (TPT) is an evidence-based, yet under-utilized, intervention to reduce risk of TB disease among people with HIV (PWH). As rifamycin-based short-course regimens for TPT are scaled up as an alternative to isoniazid monotherapy for 6 or 9 months, we sought to evaluate TPT service delivery within the International epidemiology Databases to Evaluate AIDS (IeDEA) global HIV consortium.

Methods: HIV clinics serving adults (≥20 years of age) that participated in an IeDEA-wide cross-sectional survey reflecting 2019 service delivery were eligible. We collected site-level information about TPT regimens and routine approaches for assessing TPT contraindications and adverse events. Results were summarized using proportions.

Results: Of 215 eligible clinics approached, 204 (95%) across 39 countries responded. Of these, 143 (70%) reported providing TPT to patients screening negative for TB disease. 9% (n=13) of the clinics that reported providing TPT were in North America, 3% (n=4) in Latin America, 8% (n=11) in Central/West Africa, 66% (n=95) in East/Southern Africa, and 14% (n=20) in the Asia-Pacific. Of 143 clinics, 16% offered≥1 rifamycin-based short-course regimen; 84% only offered 6-36 months of isoniazid (Figure).

Less than 10% (n=13/143) of clinics offered the 3-month regimen of isoniazid and rifapentine (3HP) as an option; though this regimen was available at 62% (n=8/13) of North American clinics.Prior to TPT prescription, 72% of clinics screened for peripheral neuropathy and 92% for jaundice/liver disease. Post-TPT initiation, the vast majority of clinics screened for adverse events, including peripheral neuropathy (88%) and hepatitis symptoms (90%).

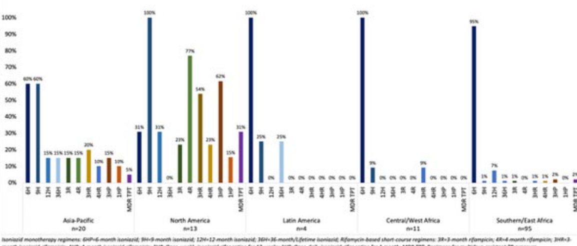

Figure. TPT regimen availability by region (n=143)

Conclusions: Across IeDEA HIV clinics serving adult PWH, we observed variability in TPT regimen availability. Access to short-course TPT regimens was uncommon, particularly in resource-constrained settings. Scaling up access to short-course regimens may improve uptake and treatment completion, leading to reductions in TB-related morbidity among PWH.

EPE294

Uptake of TLD-based regimens in South Africa: implications for national policy and HIV epidemic-control

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Background: In 2016 the World Health Organisation (WHO) recommended TLD (Tenofovir, Lamivudine, Dolutegravir) as an alternative fixed-dose combination (FDC) first-line HIV regimen to the commonly used TEE (Tenofovir, Emtricitabine, Efavirenz). The TLD-based regimen has shown more effective viral-suppression capabilities and lower-cost in comparison to TEE. As a result, South Africa revised its 2019 ART-guidelines to recommend the transition to TLD-FDC first-line regimen away from Efavirenz containing regimens with guidance on transitioning existing stable first-line clients. This study seeks to understand progress in transitioning patients to TLD regimens within South Africa's public and private healthcare-sectors.

Methods: We conducted a quantitative analysis on secondary TEE- and TLD-FDC volumes data representing total packs distributed/sold (1-pack=1-month supply) between January-2020 to December-2020 in the public and private-sector. Utilisation-patterns and proportional (%) distributions of TLD to TEE volumes at country-level was evaluated and supplemented with a 12-month provincial-level analysis. Public-sector volumes data was obtained from the NDoH's CCMDD program, this excludes the Western-Cape Province. Private-sector volumes for Anatomical-Therapeutic-Chemical (ATC) category JO5A Antiretrovirals (ARVs), representing pharmaceutical sales and distribution across South Africa, was purchased from IQVIA.

Results: Results indicate that TLD-FDC uptake gained traction more rapidly within the public-sector overtaking TEE-FDC demand by August-2020 and continuing on that trajectory to make up approximately 60% of volumes by December-2020. Kwa-Zulu Natal province showed the greatest progress in public-sector TLD uptake by December-2020 (67%). In comparison private-sector TLD uptake was lagging. TEE still made up 95% of analysed volumes at country-level by December-2020 and at least 93% of volumes across all provinces. Although the private-sector displays increasing TLD prescribing and dispensing trends, the transition remains slow, with volumes well below TEE for the analysis-period.

Conclusions: Concerted efforts are required to harmonise and strengthen policy uptake along the HIV/AIDS care-continuum, across both South African health-sectors.

To achieve HIV epidemic-control under the UNAIDS 95-95-95 goals, results suggest a need to identify and address barriers in private-sector TLD uptake which could include a lack of awareness and/or monitoring of policy changes and other existing market-dynamics. This becomes critical for coordinated contracting between the public- and private-sector as South Africa moves towards National Health Insurance.

EPE295

Unprecedented uptake and transition to generic pediatric dolutegravir in low- and middle-income countries enabled by early planning, comprehensive partner coordination, and ongoing community and national program engagement

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Background: Development and introduction of novel pediatric ARVs has historically lagged behind adult ARVs and suffered from substantial delays preventing treatment innovation and rapid access for children. Dolutegravir 10 mg dispersible, scored tablets (pDTG) offer an example of accelerated timelines in stark contrast to past pediatric ARV introductions.
Understanding the factors making pDTG introduction unique is essential to ensure it sets an example for future pediatric product introduction.
Description: PADO's 2014 DTG prioritization encouraged strategic collaborations between ViiV Healthcare, IMPAACT, and PENTA, allowing rapid evidence generation and triggering WHO guidelines revision in 2018. WHO recommendation set the basis for a unified partner position shared by global donors, implementing partners, and civil society, prompting widespread guideline updates by national programs ahead of pDTG approval. In parallel, generic pDTG development progressed in record-breaking time thanks to development incentives and an innovative partnership between Unitaid, CHAI, ViiV, Viatris, and Macleods, and existing licensing from ViiV via MPP. The expeditious work of the USFDA led to ViiV's approval in June 2020, quickly followed by tentative approval of Viatris's generic version only 5 months later.
PEPFAR worked with global and local stakeholders to accelerate planning and introduction via pDTG readiness questionnaires and by offering support with stock analysis and formulary-driven procurement guidance, priming country programs for introduction. CHAI and Unitaid negotiated a pricing agreement, which allowed pDTG to be available at USD $4.50 per bottle, 75% less than the standard of care. As a result, PEPFAR-funded orders and CHAI/Unitaid catalytic procurements arrived in the first half of 2021, driving early access to pDTG across seven countries.CHAI- and AfroCAB-developed training and awareness materials were complemented by intensified action of partners including EGPAF, DNDi, and ICAP to prepare countries for rapid introduction.
Lessons learned: Political commitment, partnerships, and coordinated efforts between stakeholders resulted in rapid introduction of optimal pediatric ARVs.
Conclusions/Next steps: In just over one year after generic tentative approval, pDTG was introduced in 25 countries. The speed of introduction was driven by unprecedented coordination, continuing under GAP-f, with the hope that pDTG can set an example for accelerating future product introduction to improve virological suppression and save lives.

EPE296

Translating policy to practice: expanding differentiated service delivery for children and adolescents living with HIV in Johannesburg, South Africa

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Background: Differentiated service delivery, including ART delivery modalities, improve client experience of care, retention and reduce system burdens. Children and adolescents living with HIV could experience similar benefits, however these strategies tend to be adult focused.
We describe operationalizing updated South African National Adherence Guidelines, which recently expanded access to repeat prescription collection strategies (RPCS) to children and adolescents.
Description: Updated National guidelines were released in 2020, wherein age eligibility criteria for enrolment onto RPCS was expanded to include children 5-17 years old, from the previous cut-off of 18 years. Although guidelines were available, operational uncertainties for this age-group affected implementation. District health management and implementing partners thus developed an implementation plan to operationalize the guideline, which included stakeholder and client engagement, resource assessment, approach to rollout, pharmacy and supply chain complexities and additional guidance needed for implementers. Support was ongoing between May 2020 and August 2021.
Lessons learned: Concerns raised included uncertainty over underdosing due to longer intervals between visits, maintaining psychosocial support (PSS), enrolment documentation required and the centralised chronic medication distribution formulary not including paediatric formulations. Advisors shared information on typical weight changes per age compared to dosage adjustments, which built clinicians and pharmacy teams' confidence. Implementing partners investigated supporting community-based organisations to register as pick-up points but this was challenging due to the requirements. Instead, we emphasized available community services for support be-

tween clinic visits and virtual PSS. Pharmacy teams sought clarity on age cut-offs for children to collect medication without caregivers, and documentation needed for enrolment and collection, in light of most children not holding identity cards. The provincial formulary was adjusted to include paediatric formulations in October 2021.

Finally, a standardized operating procedure and training slides were compiled to guide staff. Two trainings were held in May and October 2021. Approximately 5% of 4000 virally suppressed older children and adolescents have been enrolled.

Conclusions/Next steps: Although policy expanded differentiated models of ART delivery to children and adolescents, implementation lagged due to uncertainties, concerns and operational barriers. A multi-disciplinary stakeholder approach ensured that a broad range of factors were addressed. Further on-site support will be key to ensure quality and scale-up.

Systems serving underserved populations

EPE297

Changing time changing approaches: exploring the use of mobile libraries in the dissemination of HIV/AIDS awareness information

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Background: In 1983, AIDS was diagnosed in Uganda and has since reached epidemic proportions. Although the government and its partners came up with preventive education and services, patterns of sexual behavior, unless changed, threaten to thwart the success that has so far been achieved. The problem is exacerbated in rural areas given the massive information gap, heightened by poverty. With this study, we explore the mobile library approach as a necessary avenue to bring information to the people, within fishing communities in Uganda.

The objective was to find out whether this Mobile Library Information Sessions Initiative (MLISI) would help in narrowing the distance and gap (and indeed can be adopted) to getting HIV/AIDS-related information to the rural masses.

Methods: This concept of a mobile library was developed and implemented, with a van carrying health-related materials, mainly those about HIV/AIDS. The van was equipped with a public address system, had 7 library attendants, and a team of counselors. We visited three landing sites, spending a week on each site. Questionnaires were used for pre-and post-intervention assessment. The MLISI covered areas of transmission, prevention, and perceptions and attitudes held on PLWHIV. MLISI attendees were tested on the subject matter.

Results: At the end of the visits, of the (n=300) attendees' 70% revealed that they had gained some knowledge concerning HIV aids and were willing to adhere to that knowledge. 90% admitted that the knowledge gained about HIV/AIDS and attitude toward PLWHIV was useful. 90% embraced the idea of a mobile library. Librarians who guided the attendees on how to access this information got an approval rate of an average of 8 out of 10, from 80 % of the attendees on the way they conducted their work.

Conclusions: The MLISI is and may yet be an innovative and in fact a viable and reasonable approach that can be used to disseminate HIV-related info to the rural masses. This librarians-led approach proved to compel users to seek more information where they find it easy under the guidance of a professional librarian.

EPE298

Automated sign language recognition system for deaf people in need of HIV and SRH counseling and testing services in Ethiopia

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Background: There are very few sign language interpreters in Ethiopia in hospitals and interpretation prices are very high, in addition to the cost of interpreters, there is a series problem related to SRH (Sexual Reproductive Health) services where a deaf patient's personal information is exposed to the interpreter which could be a family member or a friend of the patient in most cases, so the patient will not tell some of the required sensitive information specially related to HIV to the doctor due to the third-party interference.

The project was funded by ECDD (Ethiopian Center for Disabilities and Development) and Packard Foundation to be implemented in Ethiopia as a pilot project and is intended to reduce this problem by using a real-time isolated word sign language recognition system for selected SRH and HIV related words using Kinect and ML techniques.

Methods: Signer-dependent and independent recognition experiments were made by professional and local signers using KNN-DTW and Random Forest Algorithms. Microsoft Kinect was used to capture skeletal data of the signers in real-time and translations were made on the fly for selected SRH/HIV words.

Results: Among the experiments carried out, using 1NN-DTW technique we have achieved a total accuracy of 93.75 for signer-dependent scenarios and an average accuracy of 85% for signer-independent systems. The result of the experiment's made by using random forest ML algorithm for classification purposes using signers considering both

sex, body, and age variations we have achieved an average accuracy of 75%. This shows that RF algorithm is best suited for real-time application compared to DTW which is a matching algorithm causing computational complexity for an increasing number of words while RF is less susceptible to such problems.
Conclusions: We have built a system that helps underserved deaf communities in need of HIV/SRH related consultancy and testing services so that they can freely and directly communicate with the doctor helping them get the proper medication.
It's a system that works in real-time and converts the patient's signing into text/voice for the doctor so that the patient's personal information will be kept private.

EPE299

Central Dispensing Unit (Bonolo Meds) as a differentiated care model in Lesotho

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Background: Lesotho is an HIV burdened country with over 340 000 people affected and about 220 000 currently enrolled for ART. The integration of ART services into primary healthcare facilities has left the healthcare workers in these facilities overburdened with the high volumes of patients. To alleviate this burden, differentiated models of care are considered and funded to decentralize patient care. One of the strategies includes the external packaging of chronic repeat medicines via a Centralized Dispensing Unit (CDU) and dispatching of these medicine parcels to alternative pick up points (PuPs) outside of facilities. PuPs can include alternative counters at facilities, private pharmacies and e-lockers.
Description: Meeting Targets and Maintaining Epidemic Control (EpiC) is a global project funded by the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) and the U.S. Agency for International Development (USAID), dedicated to achieving and maintaining HIV epidemic control.
Through this program, a CDU model (Bonolo Meds) was established in Maseru, Lesotho in 2020 with a network of 21 PuPs. Bonolo Meds serves 8 health facilities, allowing the decanting of HIV and other chronic patients to the program. This means patients only return to their facilities every 6-12 months for clinical evaluation and re-scripting, alleviating the patient burden on these facilities.
As an additional leg to the project, Collect & Go Smartlockers were installed as electronic PuPs at 5 locations. This is a first of its kind project in Lesotho.
Lessons learned: Since inception Bonolo Meds enrolled 3537 patients with rapid uptake for HIV patients. Alternative PuPs allow patients to quickly collect medication outside of clinic queues. Further benefits are realized in a predictable supply chain using a 'Port 2 Patient' strategy which helps for demand planning. Previously, manual systems in the primary health clinics, often resulted in stock-outs and patients not always receiving their medication on time.
Conclusions/Next steps: The CDU as a differentiated model of medicines delivery has proved effective in increasing ease of access, adherence, and retention on treatment.
Patient & commodity tracking has improved due to use of integrated WMS & EMR systems with a centralized data repository allowing faster and efficient programme decisions.

EPE300

The current situations and the factors associated with challenges and difficulties for providing medical services for the migrants living with HIV in Japan: findings from a nationwide survey

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Background: Studies conducted in 2013 found that the number of HIV-positive migrants (HIVPM) increased in Japan as their nationality became more multifaceted. Those who spoke neither Japanese nor English tended to delay their first visit to medical facilities. The number of migrants has since further increased.
To improve HIVPM's access to medical services, we conducted a nationwide survey investigating the current situationand factors associated with challenges in providing medical services for HIVPM in Japan.
Methods: We sent a self-administered questionnaire to the person in charge of clinical services for people living with HIV at AIDS base hospitals and the medical facilities registered to provide services under the Services and Supports for Persons with Disabilities system. Three hundred ninety-one such facilities were the major medical service providers for PLHIV in Japan.
The questionnaire addressed the number and nationality of the HIVPM treated between 2013 and 2018, their experiences with HIVPM, whether they could use interpretation services, and their perceptions toward treating HIVPM. The survey was conducted from December 2019 to October 2020.
Results: Three hundred thirty-two (84.9%) facilities participated in the survey. Of these, 169 (50.9%) facilities treated 1,033 HIVPM in total. By region of origin, the largest group of HIPVM were from Southeast Asia (33.5%), followed by East Asia and Pacific (26.5%). Two hundred fifty-five (76.8%) facilities responded that they would have challenges and difficulties treating HIVPM if they spoke neither Japanese nor English.
A logistic regression analysis revealed that the facilities that had no experience of treating HIVPM who spoke neither Japanese nor English in the past six years (AOR 4.46; 95%CI 1.78-11.16), the facilities that had no access to medi-

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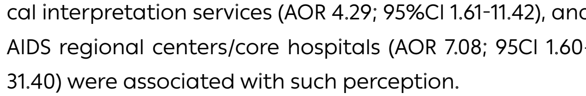

cal interpretation services (AOR 4.29; 95%CI 1.61-11.42), and AIDS regional centers/core hospitals (AOR 7.08; 95CI 1.60-31.40) were associated with such perception.

Conclusions: More migrants from Asian countries are expected to come to Japan when the COVID-19 pandemic is over.

The study revealed a need to urgently create a multilingual system to improve the access of migrants to HIV testing and treatment in Japan.

EPE301

3-monthly ART dispensing for isolated PLWHIV in French Guiana: the results of a community-based advocacy work

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Background: In France, antiretroviral therapy (ART) is dispensed every month. Studies show the negative impact of a monthly dispensing on retention in care for people living with HIV (PLWHIV) far from health facilities, especially in French Guiana, a French oversea department in Amazonia, where the supply of care is poor and unequally distributed. A project conducted by the French association AIDES with delocalized centers for prevention and care (CDPS), aiming at developing health autonomy on the Maroni border river, corroborated these risks.

On this basis, AIDES together with the regional HIV coordination committee (COREVIH) and prescribers launched a community-based advocacy work that resulted in experiencing a 3-monthly ART dispensing for isolated PLWHIV in French Guiana.

Methods: The advocacy methodology included gathering information on PLWHIV's needs, meeting actors working in HIV field, collectively reaching decision-makers, establishing a follow-up protocol.

AIDES brought together infectious disease specialists, French Guiana health agency, civil society organizations and the COREVIH. A flash survey addressing doctors and pharmacists' expectations regarding 3-monthly ART dispensing was conducted by the latter. It pointed out high expectations from prescribers on the basis of geographical isolation or difficulties in maintaining close consultations. A request was sent to the regional health insurance organization and led to an authorized protocol between prescribers, dispensers and the local health insurance organization.

Results: 3-monthly ART dispensing for isolated PLWHIV in French Guiana at risk of treatment interruptions is temporarily authorized since July 1rst, 2021. The dispensation protocol is based on a document drawn up by prescribers and forwarded to pharmacists through PLWHIV, then sent to the local health insurance organization by the dispensing pharmacy. Of the 92 PLWHIV, 9 people currently receive this service in this territory.

Conclusions: 3-monthly ART dispensing in French Guiana has its origins in a community based advocacy work in conjunction with the COREVIH and prescribers. COVID and previous initiatives were levers for the protocol implementation. This project questions the inadequacy of laws with PLWHIV's needs, despite existing data and recommendations. The experiment should serve as an example and lead to the generalization of a 3-monthly ART delivery in France and remote area.

EPE302

Designing for underserved patients - improving the collection of PROMs within an academic HIV outpatient clinic from an industrial design-driven perspective

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Background: The HIV outpatient clinic of Amsterdam University Medical Centers (AUMC)is implementing digital patient-reported outcomes measures (PROMS) in routine care to improve the quality of life (QoL) for people living with HIV (PWH). We were asked to design tools to promote the participation of patient groups from Ghana and Nigeria.

Methods: Two sets of methodologies were used: qualitative research methods informed the development of a 'patient journey' and design-thinking methodologies informed the tool development. Participant observation and in-depth semi-structured interviews were conducted to gain insights into patient- and system-related characteristics. Design-thinking methodologies facilitated the transformation of qualitative data into insights that drove design concepts. Three ideation methodologies were used to create four concepts, leading to the final concept.

Results: Observations of 17 individual consultations (6 female, 11 male) at the HIV outpatient clinic resulted in six recurring themes. These themes were: Personal relationship; Disclosure; Impact of the diagnosis; Health literacy & Health involvement; Communication; No-shows. The observations and additional literature research informed the development of an interview guide. Seven interviews (5 female, 2 male) were conducted with participants from Ghana and Nigeria. The observations and interviews informed the patient journey (PJ). The PJ showed that patients experience stress and anxiety prior to and during their hospital visit but fully trust doctors and nurses. Based on the insights the design challenge was addressed, leading to the following concepts: "Peer support community"; "Wellbeing Diary"; "Waiting Room Inspiration"; "Hospital Roadmap".

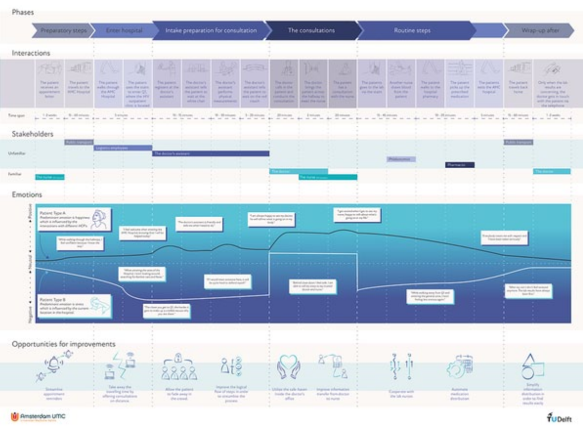

Figure. A patient-centered healthcare journey of people living with HIV. The results of an exploratory interview study with people living with HIV with a migration background originating from Nigeria or Ghana (n=7)

Conclusions: Amsterdam UMC will adopt the "Wellbeing Diary" which embodies the following characteristics: independence from relying on other organisations or infrastructure for implementation; a visual design that can be used independent of literacy level; and its affordability. The paper diary will provide a low-threshold tool for people to record PROMs-like experiences that will prepare them for their consultations at the outpatient clinic.

EPE303

Perceptions of older people living with hiv towards alcohol consumption and haart adherence in Southwestern Uganda

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Background: While the global burden of alcohol consumption is 2.3 billion people drinking alcohol, Uganda has a heavy episodic drinking prevalence of 56.6% for age groups of 15 years and above. Alcohol consumption is associated with reduced HAART adherence. This is likely to worsen treatment outcomes among HIV/AIDs patients. However, among the older HIV/AIDs population in most LMICs, the impact of alcohol on HAART adherence is not known.

This study explored the perceptions of older persons living with HIV/AIDs towards alcohol consumption and HAART adherence in Southwestern Uganda.

Methods: A Phenomenological study design was employed among 38 purposively selected older persons living with HIV/AIDs enrolled in care in health facilities in Southwestern Uganda. A total of 6 focus group discussions were held at the selected Health Centers, Data was collected using audio recorders and notebooks for file notes, and data were then transcribed, coded, and categorized into themes. Thematic analysis was used to give meaning to the information given by the participants.

Results: All participants who consumed alcohol were men (10 of the 38). Some of the participants perceived alcohol to be beneficial in providing nutrients, increasing sexual libido, and relieving stress. Many of the participants also mentioned that alcohol increase the virulence of HIV in addition to causing other diseases like liver disease reduced the effectiveness of ART, and caused the consumers to miss taking pills.

Conclusions: Alcohol consumption is common among older patients living with HIV/AIDs and is associated with non-adherence to HAART. There is need for incorporation of counselling on effects of alcohol in the care patients receive from HIV care facilities.

EPE304

Building and implementing Le Cercle Orange: creatively responding to the needs of people living with HIV in the Montreal region without access to healthcare

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Background: Up to one-third of people newly diagnosed with HIV in Montreal do not have a provincial health card or access to healthcare (INSPQ, 2019). It is extremely difficult for this underserved population to navigate or pay for essential medical visits, routine tests, and HIV treatment. Existing sources of support have traditionally been scattered and hard to find. In response, Le Cercle Orange brings these resources together in a vast "network of care."

Leveraging the power of this harmonized network, Le Cercle Orange can ensure that People Living with HIV (PLHIV) without access to healthcare receive cost-free health services, medication, legal resources, and community support.

Description: Sine its conception in late 2019, Le Cercle Orange supports the population in two ways: first, the project assembles and harmonizes the services of many partners who commit to offering services free of charge, currently including eight private clinics, four hospitals, treatment access programs, and several community and legal resources. Second, the project accesses individuals requiring support, connects them to this network, and ultimately supports them in fully entering the public healthcare system. Le Cercle Orange officially operates in Montreal, and has supported PLHIV farther afield.

Lessons learned: Le Cercle Orange has supported over 75 PLHIV without access to healthcare, of which 100% have received cost-free access to a healthcare provider and cost-free medication. 100% of current participants maintain an undetectable viral load (more statistics to be presented at the conference). We have addressed the challenge of knowledge gaps between institutions and the community by encouraging communication between stakeholders. We have continually developed our internal systems and community partnerships to address difficulties accessing the population.

Conclusions/Next steps: This innovative project successfully connects an underserved population to care and helps many individuals maintain an undetectable viral load. Now that our pilot phase has ended, at AIDS 2022,

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we wish to provide a detailed road map of how the project was conceived and implemented, reinforcing our future goals: supporting other regions wishing to integrate components of the project, expanding Le Cercle Orange past Montreal, growing our partnerships, and improving our internal processes to better advocate for long-term change at the governmental level.

EPE305

Client satisfaction with antiretroviral treatment services in public health facilities south Ethiopia: institution based cross-sectional study

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Background: HIV/AIDS remains the leading cause of morbidity and mortality throughout the world.Moreover, Sub-Saharan countries, including Ethiopia, are highly affected by HIV/AIDS pandemic. Ethiopia's government has been working on a comprehensive HIV care and treatment program, including antiretroviral therapy. However, evaluating the client satisfaction with antiretroviral treatment services is yet not well studied.
The objective of this study was to assess client satisfaction and associated factors with antiretroviral treatment services provided at public health facilities in South Ethiopia.
Methods: A facility-based cross-sectional study involved 605 randomly selected clients using ART services at public health facilities of Southern Ethiopia. A Structured questionnaire was used to collect the data. The data were entered, cleaned using EPI Info and analyzed by SPSS 21 software package. A multivariate regression model was used to see an association between independent variables and the outcome variable. The odds ratio with 95% CI was computed to determine the presence and strength of association.
Results: Four hundred twenty eight (70.7%) clients were satisfied with an overall antiretroviral treatment service, which included significant variations ranging from 21.1% to 90.0% among health facilities. Sex [AOR= 1.91; 95% CI = 1.10 - 3.29], employement [AOR= 13.04; 95% CI = 4.34 - 39.22], clients perception on the availability of prescribed laboratory services [AOR= 2.56; 95% CI = 1.42 - 4.63], availability of prescribed drugs [AOR= 6.26; 95% CI = 1.42 - 4.63] and cleanliness of toilet in the facility [AOR= 2.83; 95% CI = 1.56 - 5.14]were factors associated with client satisfaction with antiretroviral treatment services.
Conclusions: The overall client satisfaction with antiretroviral treatment service was lower than the national target of 85%, with a marked difference among facilities. Sex (being male), occupational Status (employed), client's response on the availability of comprehensive laboratory services, standard drugs, and cleanliness toilets in the facility were factors associated with client satisfaction with antiretroviral treatment services. Sex sensitive services needed to address and sustained availability of laboratory services and medicine recommended.

EPE306

Lost to HIV care in the context of deep-rooted inequities in Winnipeg, MB, Canada

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Background: Despite public health efforts and improved treatment, HIV continues to be a major infection of concern in Manitoba, Canada. Manitoba has the second highest rate of HIV transmission in Canada. The Province's largest city, Winnipeg, holds the burden of most new transmissions.
In the past few years, exacerbated by the COVID-19 pandemic, Winnipeg has seen an influx of people recently infected with HIV who are not engaged to care.
Description: In 2021, the Healthy Sexuality and Harm Reduction (HSHR) team, Population and Public Health Program, WRHA, conducted a review of newly diagnosed cases of HIV that were not connected to care over a one-year period. The aim was to understand the social epidemiology acting as the backdrop to their (dis-)engagement in HIV care.
This review revealed that over 30 percent of cases had never presented or had attended less than two appointments for care. It was found that female and younger individuals were more likely to be "lost to care". Co-infections with other STBBIs, mental health issues, problematic drug use, homelessness, and incarceration were key aspects of the personal and social history among this cohort.
Further, many of these clients had been tested in emergency departments, suggesting that emergency departments served a primary care function for this population. A lack of access to primary and preventive care, a toxic drug supply and late presentations to acute care may have also contributed to a significant number of fatalities (19%) related to HIV.
This analysis has become the flashpoint for an enhanced collaboration across partners situated in key positions throughout the healthcare system.
Lessons learned: Over the years, the HSHR team and the Manitoba HIV Program have collaborated to address the needs of people living with HIV who are lost to care. Renewed efforts are required to reimagine what support to

and engagement of individuals and communities deeply affected by ongoing socio-economic and political inequities, facing systemic racism and drug-use stigma entails. Collaboration must include the community affected by HIV.

Conclusions/Next steps: Partnerships in addressing HIV lost to care need to revisit and renew the ways in which healthcare systems approach emerging syndemics.

EPE307

Cracking the access rock: GIS hotspot and priority population mapping to enhance targeted condom last mile distribution and accountability in Uganda

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Background: Uganda's HIV prevalence still high (6%), higher among key/priority populations. Condom use is a priority HIV prevention intervention, however, data shows declining trends at high-risk sexual encounter though slightly higher among key populations. MOH condom needs assessment revealed barriers to condom use including; social stigma linked to conservative sex and sexuality cultural and religious beliefs and values; inconvenient access points; Efficacy misbeliefs and low-risk perception. Access Inequities programmatically result from lack of; user targeting, inadequate stock Monitoring and accountability and people-centered condom programming. Currently, condom Distribution (CD) and utilization falls below the target needed for desired impact. While Uganda's annual universe of need is250 million, only 177M condoms were distributed in 2021 and utilization estimated at only 53%.

The MOH, with support from UNFPA, USAID, Global Fund and JMS, warehouse supporting alternative distribution system (ADS) explored digital solutions to improve accountability and last mile CD to priority population hotspots.

Description: A digital application was developed (jms.nftmobility.app) and used to GIS-Map hotspots collecting basic information including; hotspot type, functional status, contact person, GPS-location, estimated use, quantity distributed and dispensers. This was guided by District focal persons identifying hotspots. JMS transported condoms to regions and distributed to hot spots. Resupply is done upon call orders through a toll-free number and data is entered in the system in real-time

Lessons learned: Overall, 14,175 hotspots mapped across 120 districts covering 90% of districts and Distributed 26,373,000 condoms in one round within 60 days, with most Urban Districts (Kampala and Wakiso), taking 30% of condoms. For the first time, the country registered limited stock-out reports during 2021 end-of-year festive season.

The mapping also revealed that 8,713 (71.3%) Hotspots lacked condom dispensers. Learnings from First Roll-out phase are being utilized to improve the mechanism including; approaches to reduce resupply time, exploiting the mechanism to increase dispenser network, disseminate user information and strengthen automatic data transmission and sharing with the MOH HMIS.

Conclusions/Next steps: Digital solutions offer an opportunity for effective last mile CD, improves CD, user targeting, data availability, stock monitoring, and management, and accountability of condoms distributed through the ADS hence improving access and utilization, reducing stock-out and wastage.

EPE308

A comprehensive package of HIV interventions for transgender people in the post-soviet region

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Background: Transgender people belong to one of the five key populations recognized by UNAIDS as particularly vulnerable to HIV, HIV prevalence among transgender women can be up to 49 times higher than the prevalence in the general population. However, in the post-Soviet region, with the exception of Kyrgyzstan, transgender people are not identified as a key group, and their specific needs are not taken into account when developing HIV prevention and treatment programs. Medical professionals involved in prevention programs rarely understand how trans-specific and trans-competent services should be built.

The proposed comprehensive package of activities aims to fill these gaps.

Methods: The data collection method is a desk analysis. The first project of a comprehensive package of services created was piloted in five countries of the region: Armenia, Georgia, Kyrgyzstan, Russia, Ukraine, reaching 50 transgender people through a facilitated focus group discussion, where transgender people gave their feedback. Feedback was taken into account when finalizing the comprehensive package of services.

Results: The set of activities as a whole corresponds to the international recommendations and expertise. Among the differences, the following can be noted:

a. The classification of activities is based on the Health Impact Pyramid;

b. A wider range of gender transition activities are included, which are seen as preventive strategies and motivational activities;

c. The social and legal specifics of the countries of the post-Soviet region are taken into account.

The package presented below contains the most complete set of activities and in this sense is the "ideal" option to strive for.

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Conclusions: The created package of comprehensive services is not only designed to fill the gap associated with HIV activities for trans* people in the post-Soviet region, but also provides for the specifics of the region for subsequent implementation. The package provides recommendations for creating an environment free of discrimination and violence, provides for long-term preventive measures, which include activities that are carried out one-time or infrequently and have a long-term effect on preventing HIV infection. The package details clinical regulatory activities, the Implementation chapter with practical recommendations, and M&E chapter.

Evidence on task sharing

EPE309

Synergizing Health Interventions for Toronto GBMSM (SHIFT): clinicians' and community workers' perspectives on task shifting HIV prevention services in Toronto, Canada

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Background: Several factors place gay, bisexual and other men who have sex with men (GBMSM), particularly those further marginalized by other identities/experiences, at disproportionate risk for HIV in Canada. These include limited access to culturally competent HIV prevention services, including HIV/STBBI testing and PrEP. Given close ties to communities, AIDS service organizations (ASOs) could be well-positioned to provide some of these services. Task shifting has been utilized in low- and middle-income settings to provide HIV-related services but has yet to be adopted widely in high-income countries.
We investigated clinicians' and ASO community workers' (CWs') perspectives on the prospect of task shifting HIV prevention services in Toronto, Canada.
Methods: We conducted semi-structured interviews with 19 clinicians (e.g., psychologists, nurses, physicians) and 14 CWs who worked with GBMSM in Toronto and Ottawa, Canada. Participants represented a variety of sexual orientations, sex/gender identities and races/ethnicities.
Interviews were transcribed verbatim and then analyzed via NVivo, using direct content analysis and constant comparison, to answer the following question: Which HIV prevention services could be shifted from clinicians to CWs and how could this be supported? A community consultation with key stakeholders was then conducted to assess the ecological validity of our findings.
Results: There was substantial agreement between clinicians and CWs in terms of task shifting various aspects of HIV/STBBI testing and PrEP services. Most respondents indicated that ASOs could be ideal sites for community workers to perform rapid HIV testing and provide resources for GBMSM to conduct self-testing for STBBIs. Most participants were also in favour of CWs providing nearly all non-clinical services related to PrEP (e.g., pre-counselling, follow-up, case management), other than prescribing or interpreting laboratory test results.
Several respondents felt that CWs might be better equipped than clinicians to provide client-centered, culturally competent, sex-positive care to clients. Participants stated that proper supports should be in place, including adequate training, supervision, and compensation for task shifting to be successful.
Conclusions: Our results suggest that there is widespread support and varied opportunities for task shifting HIV prevention care to CWs.
These findings could serve as the foundation to implement community-based, culturally competent services to GBMSM in high-income settings.

Systems to deliver effective, long-term chronic care

EPE310

Experiences of people living with both HIV and diabetes trying to access essential medications and care: a scoping review

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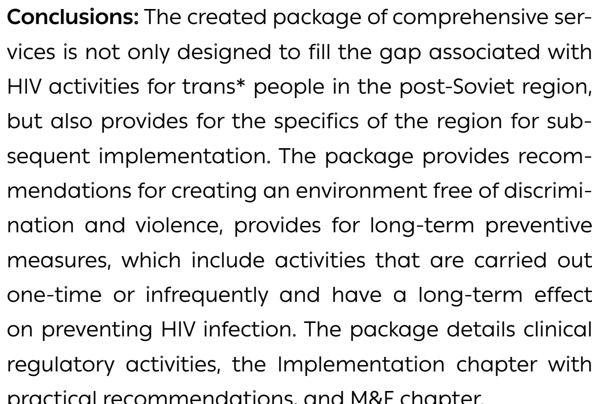
Background: Both diabetes and HIV are lifelong conditions requiring reliable access to essential medicines, education, and care to survive. The experiences of people living with both conditions are insufficiently understood.
This study aimed to describe the experiences of people who are living with both HIV and diabetes when trying to access essential medications and care.
Methods: A scoping review of available literature was undertaken. Studies were included if they explored the attitudes, experiences, feelings, perceptions, satisfaction, interactions with stigma or stereotyping, of people simultaneously living with diabetes and HIV in trying to obtain essential medicine or care.
Studies were included if they were published in English between January 2021 and December 2000 and a member of the study team could obtain the article in full. Studies were excluded if they solely concerned people who were



not simultaneously living with diabetes and HIV, did not address essential medicines or care, were written solely from the healthcare provider perspective. Reviews and secondary data were also excluded. Multiple databases were searched.

Results: A total of 1,426 articles were identified with 724 remaining after removing duplicates. A total of 17 studies were included after abstract and full text review. Study geographies most represented were South Africa (n=5), the United States (n=4), Malawi (n=2) and Kenya (n=2). Cambodia, Zimbabwe, Thailand and Morocco were also represented with one article each. Seven key themes were identified: uncoordinated care, female, and gender-based discrimination, stigma and disclosure, poverty, mental health. Patients reported HIV was easier to live with than diabetes, likely due to better access to care rather than a biomedical difference. Better integrated care could include better clinical scheduling, a focus on non-urgent transportation and a removal of out-of-pocket costs associated with accessing care.

Limitations of this study include a lack of literature found on this specific patient population, a lack of specificity regarding diabetes type, and potential for sampling bias.

Conclusions: Health system integration, patient burden, stigmatization and elimination of out of pocket costs associated with obtaining care are clear targets for improving the access to essential care for people living with diabetes and HIV.

EPE311

A pharmacy intervention programme for ART adherence considering UNAIDS targets in the interior provinces of Argentina: long term sustainability including COVID-19 pandemic context

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Background: According to official statistics approximately 70% of HIV-infected patients in Argentina reside in interior provinces (IPVs). HIV care and ART adherence constitute a challenge due to adverse geographical conditions, long distances to pharmacies/healthcare institutions and high levels of stigma/discrimination. COVID-19 pandemic lockdown increased this already complex scenario. Our institution as main provider for health insured patients in Argentina developed a pharmacy intervention programme (PIP) tailored to achieve ART adherence considering UNAIDS targets in IPVs.

Description: PIP was implemented in 2017 and consisted in:

1. *Traceability checklist* of ARVs through specific pharmacy software;
2. *Pharmabox:* all patient`s ARVs (medical electronic prescription) are monthly sent in a personalized box;
3. *Real time communication:* patients receive automatic SMS/WhatsApp messages when pharmabox is delivered from central pharmacy, when arrives to local pharmacy and when available for pick-up;
4. *Adherence reminders:* patients with no pharmacy withdrawals within 15 days after arrival of pharmabox are contacted by an adherence team. PIP was supplemented in COVID-19 pandemic (PIP+) with:
5. *Enhanced pharmacy delivery:* pharmabox delivered for >1 month;
6. *Home delivery:* delivery to patient's home when unable to circulate due COVID-19 disease, contact or lockdown measures;
7. *Telemedicine services:* when a patient was unable to contact a local physician for HIV follow up, teleconsultation with a central referral physician was provided.

Lessons learned: Since implementation of PIP a significant >10% increase in adherence (pharmacy withdrawals) was observed comparing 2016 vs 2018 (p<0.001) and was sustained during COVID pandemic with addition of PIP+. A similar pattern was observed for virologic suppression rates. Results are shown in Table 1.

	2016	2017	2018	2019	2020	2021
Patients (n)	2030	2480	2907	3367	3775	4614
ART coverage (%)	100	100	100	100	100	100
ART adherence by pharmacy withdrawals (%)	86.7	91.9	98	97.8	98.9	99.4
Viral load < 200 c/mL (%)	77	77	87	86	85.6	88
Pharmacy Intervention Programme (PIP)	None	PIP early implementation	PIP	PIP	PIP+	PIP+

Table 1.

Conclusions/Next steps: A PIP was a highly successful strategy for achieving and sustaining levels of adherence considering UNAIDS targets in IPVs, with a parallel increase in virologic suppression rates. Additional services (PIP+) included in COVID-19 pandemic lockdown logistical challenges may contributed to preserve such outcomes.

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EPE312

Acute Respiratory Infection Incidence and outpatient antibiotic prescription patterns in people living with or without HIV infection: a virtual cohort study

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Background: Acute respiratory infections (ARIs) account for most outpatient antibiotic prescriptions in adults. Inappropriate antibiotic use for ARIs is a major public-health concern and data in people living with HIV (PLWH) are limited. We evaluated ARI incidence and antibiotic prescribing in the Department of Defense (DoD) HIV Virtual Cohort Study (VCS).

Methods: The VCS is a retrospective cohort of adult DoD beneficiaries. Male PLWH cases (n=2,413) were matched 1:2 to controls without HIV (n=4,826) by age, gender, race/ethnicity, and beneficiary status. ARI ICD-10 diagnosis codes between 2016-2020 were captured and antibiotic use was characterized as "always", "sometimes", or "never" appropriate based on a previous study. Bivariate analyses compared ARI incidence and antibiotic appropriateness. Cases were also evaluated by CD4 count, viral load (VL) suppression on antiretroviral therapy (ART), and by "optimized" treatment status (VL<200 c/mL on ART with CD4 ≥500 cells/uL).

Results: Most subjects were non-active duty retirees or beneficiaries (66.3%) with a mean age of 45.9 (±12.8) years and were commonly Caucasian (43.8%) or African American (43.6%). Among cases, the mean CD4 count at first encounters was 651 (±330) cells/uL with 87.4% on ART. Mean ARI encounters were similar for cases and controls, however rates were higher among certain PLWH subgroups (Table). Antibiotic use was "never" appropriate in approximately 45% of encounters in both groups.

Among cases, antibiotic appropriateness did not differ by demographics, smoking history, or HIV characteristics (data not shown). Compared to controls, cases received more fluoroquinolones (14.2% vs 11.0%; p=0.033) and sulfonamides (5.5% vs 2.7%; p=0.001) and less macrolides (35.0% vs 39.5%; p=0.043).

Characteristics	Cases	Controls	p-Value
Mean ARI encounters/1,000 person-years			
All subjects	1,066 (4,285)	1,010 (8,379)	0.821
VL non-suppressed	2,018 (9,929)	--	<0.001
VL suppressed	865 (1,096)	--	--
CD4<500 cells/uL	1,878 (9,049)	--	<0.001
CD4≥500 cells/uL	847 (1,021)	--	--
Non-optimized	1,532 (7,279)	--	<0.001
Optimized	836 (1,073)	--	--
Total number of encounters	4,962	6,225	--
Encounters with antibiotics prescribed	1,298 (26.2)	2,127 (34.2)	0.951
Most frequent ARI ICD-10 codes			
Acute upper respiratory infection (J06.9)	1,018 (17.4)	1,236 (21.1)	--
Pneumonia unspecific organism (J18.9)	876 (15.0)	507 (8.6)	--
Acute pharyngitis (J02.9)	678 (11.6)	688 (11.8)	--
Antibiotic appropriateness			0.733
Always	180 (13.9)	190 (8.9)	--
Sometimes	528 (40.7)	984 (46.2)	--
Never	590 (45.5)	955 (44.9)	--
Data expressed as number (%) or mean (±SD).			

Table.

Conclusions: There was no difference in mean outpatient ARI encounters between cases and controls, however PLWH with lower CD4 counts and/or non-suppressed VLs had more frequent ARI visits. Inappropriate antibiotic use for ARIs was high in both groups and interventions promoting antibiotic stewardship should also target clinicians caring for PLWH.

EPE313

From heuristics to an evidence-based approach: allocating health workers for clinical services in Mozambique

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Background: USAID's Efficiencies for Clinical HIV Outcomes (ECHO) is a multi-year project providing clinical services in four provinces in Mozambique. High quality service delivery is crucial to meet the 95-95-95 targets, and is dependent on having an adaptive health workforce. Mozambique faces high turnover, poorly trained health workers (HW), and substantive misalignment between health needs and allocation of human resources. To overcome these challenges, ECHO hires, deploys, and manages additional HWs in 148 supported health facilities (HFs).

This study shares how ECHO shifted its HW allocation model from one based on HF complexity to a data-driven model based on costs, efficiency, and target populations.

Description: Existing data in Mozambique was insufficient to inform ECHO's HW allocation decisions. Instead, we adopted several principles for deploying HWs: (1) dis-

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tribution of HWs based on evidence (HIV outcomes); (2) an adaptive management approach that considers cost-efficiency; (3) the continuum between community health systems and formal health systems; (4) ongoing calibration based on evidence. ECHO mapped HFs into quadrants where the X-axis defined the volume of each HF, and the Y-axis distributed the performance of HFs based on an index consisting of selected indicators (test; linkage; retention; PMTCT; viral load; TPT). ECHO deployed a different HW package to HFs in each quadrant.

Lessons learned: After 18 months of implementation, ECHO observed the number of some cadres (psychosocial staff and maternal-child health nurses) had more impact than others on improving health outcomes, so the project hired more of these staff to improve HFs with poor retention and preventing maternal-to-child transmission results.ECHO has since used implementation science to adapt its HW approach based on results by adding additional cadres and modifying HW distribution.

Conclusions/Next steps: ECHO's approach increased the proportion of 148 HFs with positive outcomes from 14% to 59%. Regular monitoring and use of real-time data has allowed ECHO to make informed decisions on allocating HWs and helped the project to advocate for the use of this approach with local health authorities to achieve better outcomes.ECHO's experience is relevant for similar low-income settings where the public sector plays a significant role in health service delivery.

EPE314

Hypertension management practices across 10 HIV clinics in Uganda: perceptions of health care providers and people living with HIV and hypertension

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Background: Access to antiretroviral therapy (ART) and innovations in care have made HIV an example of successful care for chronic diseases. Access to quality hypertension (HTN) care among people living with HIV (PLHIV) however, remains suboptimal. This is despite available guidelines for the integration of non-communicable diseases (NCD) in HIV care.

We explored PLHIV and their health care providers' perceptions of current hypertension care and management practices at 10 HIV clinics in Kampala and Wakiso districts, Uganda.

Methods: We conducted 40 semi-structured interviews with hypertensive PLHIV and 40 with health care providers involved in patient care. Interviews were audio recorded and later transcribed. The findings generated were analyzed inductively.

Results: HTN management and control practices varied across facilities. HTN services were of low priority in HIV Clinics. HTN practices such as BP measurement, treatment and monitoring were not routinely conducted. Where these practices existed, they were conducted selectively for patients that were symptomatic and/or perceived to be at risk.

Several barriers to HTN care were highlighted by health care providers. These included lack of BP machines, existence of non-functional BP machines, limited supply and range of anti-hypertensive medications, and low prioritization of HTN in HIV clinic settings. PLHIV reported difficulties in accessing HTN care; lack of HTN medications at public health facilities, treatment interruptions due to side effects from the commonly prescribed anti-hypertensives, high costs of medications, use of herbal remedies and rationing HTN treatment when they felt better.

Conclusions: This formative assessment identified gaps in current hypertension management and control practices in HIV clinics of urban and peri-urban Uganda.

These findings will be used in a stakeholder engaged design of HIV-HTN care integration implementation strategies that will be tested in a cluster randomized clinical trial.

EPE315

Knowledge, attitudes and practices related to hypertension management and control among PLHIV with hypertension accessing care at HIV clinics in Kampala and Wakiso districts in Uganda

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Background: Despite guidelines recommending integrated HIV and hypertension (HIV-HTN) care, several barriers hinder implementation. Understanding patient-level barriers is crucial for improved delivery of integrated HIV-HTN care. We assessed knowledge, attitudes and prac-

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tices (KAP) of people living with HIV (PLHIV) with hypertension (HTN) towards HTN at PEPFAR supported HIV clinics in Uganda.

Methods: From June to November 2021, we administered a pre-tested KAP survey to PLHIV with HTN receiving care from 10 HIV clinics in Kampala and Wakiso districts. The survey assessed socio-demographic characteristics, medical history, knowledge, attitudes, and practices about HTN, including diagnosis, risk factors, complications and treatment. For each KAP survey domain, a composite score of correct answers was expressed as a percentage of the total number of items. Comparisons were made using either χ^2 or Mann-Whitney test.

Results: A total of 394 (325- Kampala; 69-Wakiso) PLHIV were enrolled. Median age was 52 years (IQR 44-59), and 76% were female. A third and a quarter of the participants correctly identified normal ranges for systolic (80-140mmHg) and diastolic (60-90 mmHg) blood pressure, respectively. Although 87% of the participants knew that HTN could be treated, only 62% knew that treatment is lifelong, and only 56% were on HTN medicines. Although only 5% were currently using herbs, nearly one third believed they could treat HTN.

Over a quarter of the participants believed they could stop medications when symptoms subside, while 39% only took medicines when they felt unwell. Two-thirds of the participants reported engaging in physical exercise lasting ≥30 minutes for a minimum of four days a week.

Across the three KAP domains, participants had a median combined score of 49% (IQR 35-59%). Respondents from Wakiso had a modestly better knowledge median score of 29% (IQR 21-36) vs 26% (IQR 21-32%) for Kampala, P=0.022, while attitude and practice scores did not differ between districts, with an overall median score of 75% (IQR 72-80%) and 50% (0-70%), respectively.

Conclusions: In Uganda's urban and periurban settings, PLHIV with HTN had insufficient knowledge about HTN and its risk factors, treatment, and complications. Strategies to improve these among PLHIV may improve uptake of integrated HIV-HTN care outcomes in similar settings.

Public-private partnerships

EPE316

Public-private sector partnerships: Contracting with private sector laboratories in Botswana to close viral load testing gaps during COVID-19 and beyond

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Background: Challenges around viral load (VL) testing include equipment breakdowns, reagents stock-outs, shortages of trained staff, and long turnaround times (TAT) for results. These challenges prevent timely decision-making around client care. In Botswana, routine public sector VL testing was drastically affected at the national level by COVID-19 response measures, exacerbating existing challenges.

The USAID/PEPFAR-funded Meeting Targets and Maintaining Epidemic Control (EpiC) project piloted VL testing through private laboratories.

Description: EpiC contracted with a private laboratory to conduct VL testing at US$20 per test—comparable to public laboratory testing but less than half the usual cost in private laboratories.

From October 2020 to September 2021, health providers in 12 clinics across 10 districts in Botswana collected VL samples at the health facilities or referred clients to their choice of one of the nation's 25 private lab-operated depots for VL sample collection, which clients could schedule at convenient times, including weekends.

The private laboratory transported and processed samples, then returned the results to the referring provider through a secure electronic portal within 24 hours

Lessons learned: VL testing through private laboratories offered clients more location and scheduling options for sample collection, improving VL testing coverage among key population (KP) individuals who may not have received a VL test otherwise due to challenges in accessing services. From October 2020 to September 2021, 5,123 VL tests were conducted via private laboratories, 20% of which (1,042) were from KPs.

At the 12 participating clinics, VL testing coverage increased significantly from 83% to 90% for KPs and slightly among the general population (90% to 91%). In addition, the TAT of results decreased from one to six weeks before the intervention to 24 hours following the intervention.

Conclusions/Next steps: VL testing through private laboratories was feasible in Botswana at costs similar to public laboratory testing in the country. Countries with strong private laboratory systems should consider private-public partnerships to increase national VL testing capacity

during COVID-19 and beyond. This model could help close VL testing gaps for KPs and other groups who face challenges in accessing HIV services.

EPE317

Reaching the unreached informal labours for HIV/AIDS services: experience from the Employer Led Model under National AIDS Control Programme in India

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Background: Evidence suggests that HIV/AIDS affects the most productive age-group, with the industrial sector equally vulnerable to HIV/AIDS. Based on the heterogeneous nature of epidemic in India and to expand the coverage of informal labourers, NACO developed a partnership model called "Employer Led Model" (ELM) to leverage support of industries.
Description: ELM has been designed to provide HIV/AIDS prevention to care services to informal labourers including Migrants and Truckers, linked to industry directly or indirectly. Industries were engaged through a signed MOU with State AIDS Control Societies (SACS) to implement activities including HIV/AIDS awareness through mid-media, treatment of sexually transmitted infections, referral & testing, ART, condom promotion, health-camps, and creating a cadre of peer volunteers for cascading knowledge transfer.
ELM aims to help prospective employers to implement comprehensive HIV prevention to care service delivery within the existing systems which is low-cost and extends beyond geographical reach of traditional service outlets such as Targetted Intervention (TI), Link Worker Schemes (LWS) and Workplace interventions.
Since the launch of ELM in 2014 under NACP, total of 868 Industries have signed MOU in 24 states (as on March-2021) and have reached out to more than 2 million informal labourers with comprehensive HIV services. A total of 473 labourers were detected HIV positive, out of which 456 labourers were linked to ART services.
Lessons learned: Collaboration of Indian Industries by way of prioritizing the population, has led to recognition of their vulnerability to economic and social impact of the epidemic. The engagement resulted in investment by business houses to achieve efficient and effective HIV interventions. The strategy for HIV prevention and care through this model has led to adaption of similar approaches by national health programs like National Tuberculosis Elimination Programme (NTEP). While number for HIV testing is high, there is still a gap in improving ART linkages.
Conclusions/Next steps: ELM highlights the importance of engagement and collaboration with business and industries in the fight against HIV/AIDS and to attain the goal of elimination of HIV/AIDS by 2030 in India.

Combination programming on social drivers of HIV (including education, violence and workplaces)

EPE318

Confronting the infodemic and fake news to end stigma and discrimination in HIV/AIDS: the first zero discrimination Massive Open Online Course (MOOC) in Brazil

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Background: The UNAIDS Global Strategy 2021-26, the Sustainable Development Goals and WHO statement about infodemics point to the need to produce innovative, accurate and people-centered strategies education strategies. In Brazil, disinformation, the lack of access to evidence-based knowledge and fake news are still barriers that affect the reduction of inequalities, contribute to violent situations and hinders progress in preventing HIV and ending AIDS as an epidemic.
Description: The work comes from the partnership between UNAIDS Brazil, Brazilian Association of Public Health and Federal University of Rio Grande do Sul developed during the years 2020 and 2021. The initiative aimed to produce a tool that could translate evidence-based policies and initiatives on HIV and AIDS for a large set of health professionals across Brazil. During this period, the pedagogical concept and content definition for a Massive Open Online Course (MOOC) on Zero Discrimination and HIV/AIDS were developed using content that included scientific evidence and effective community responses for HIV and AIDS. It included information produced directly by social movements and civil society, researchers, people living with HIV and activists.
Lessons learned: The MOOC was the first to be offered in this format in Brazil. It contains 90 course hours that can be taken when convenient, without a time limit, free of charge and accessible on any tablet, smartphone or computer. The intervention expanded health professionals' access to content on HIV prevention, care and treatment, HIV-related violence, LGBTQIA+ violence, gender-based violence, racism and how to reduce inequities, especially in marginalized and key populations. The first edition of the course had 1,500 registrations. Since the launch in October 2021, more than 500 people have concluded the course.
Conclusions/Next steps: The free, massive offer to healthcare professionals across the country was important especially during the period of the COVID-19 pandemic due to a demand for an online learning strategy. A completion rate of more than 30% is above international standards.

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The possibility to use the MOOC content tailored to each health professional's necessity proved to be powerful. The next phases include expanding the dissemination of the course and analyzing the pre- and post-tests completed in the course registration.

EPE319

School-entry age and HIV risk in adulthood: evidence from Lesotho

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Background: Children with birthdays just before school-entry cut-offs progress through school as the youngest in their grade. These students may perform worse in school and have lower educational attainment, a risk factor for HIV acquisition.

Methods: We investigated the impact of Lesotho's age-at-school-entry policy on educational attainment, HIV risk factors, and HIV status in adulthood, analyzing nationally representative data from the Demographic and Health Surveys (DHS) of 2004-05, 2009-10, and 2014 (adults 15-59) and Multiple Indicator Cluster Survey (MICS) of 2018 (all ages). In Lesotho, children are eligible to start school (in January) if they will turn six years old by June 30th.

We compare respondents with birthdays just before vs. just after the June 30th cut-off using a regression-discontinuity design (RDD). HIV biomarkers were collected as part of the DHS.

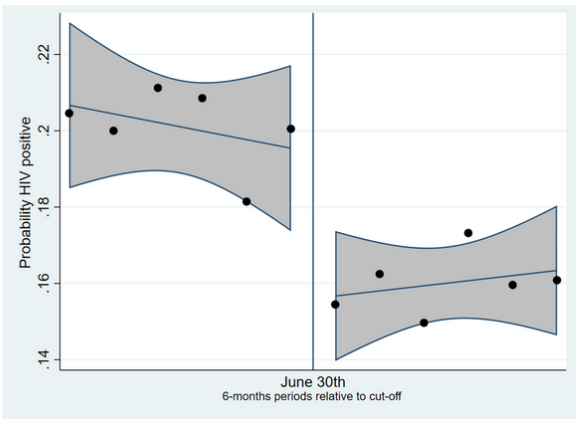

Figure. HIV prevalence among men in the DHS, by date of birth

Note: Sample includes men ages 15-59 in the DHS 2004-05, 2009-10, and 2014 with a valid HIV test result (*N*=8,082). Lines show the relationship between month of birth and probability HIV positive, with lines fit separately on either side of the June 30th cutoff. Shaded regions are 95% confidence intervals. Dots shows the unweighted observed probability of being HIV positive by month of birth. In Lesotho, children born before June 30th are eligible to start school earlier and progress through school younger.

Figure. HIV prevalence among men in the DHS, by date of birth.

Results: The sample included 18,269 (DHS) and 11,865 (MICS) respondents. Children born just before the June 30th cut-off entered school at age 5.3 years; those born just after entered school at age 5.8, a difference of 0.5 years (95% CI 0.2, 0.8). Although they started earlier, children born before the cut-off completed 0.3 fewer total years of schooling (95% CI 0.1, 0.5) by adulthood. Women born before the cut-off were 2.7 percentage points (95% CI 0.0, 5.1) more likely to have a child before age 18. Men were 3.3 percentage points (95% CI 0.2, 6.5) more likely to be HIV infected (*Figure*); however, there was no association with HIV infection for women.

There were no differences in HIV knowledge, despite differences in math and reading skills. We show that RDD assumptions hold, supporting a causal interpretation of this natural experiment.

Conclusions: Entering school early reduces educational attainment and increases men's risk of HIV acquisition in Lesotho. Policies that improve educational experiences in primary school may reduce HIV risk in HIV endemic settings.

EPE320

Grow, learn, own: empowering sex workers to reduce their HIV risk through economic empowerment programming in two districts of South Africa

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Background: In South Africa, sex workers (SW) remain at high risk for HIV, with prevalence at 62.3%[1]. NACOSA piloted a SW economic empowerment programme called Grow Learn Own (GLO) in two districts during 2020-2021. GLO aimed to empower SW with skills to diversify their income, reduce reliance on sex work as the only means of earning an income, whilst reducing HIV risk.

Description: GLO implementation targeted 80 female SW between the ages of 25-35 with minimum completion of grade 9 schooling. Activities included group mentorship, financial literacy skills, savings clubs, and then streaming into either entrepreneurship or work readiness training, followed by referrals to opportunities. Qualitative information was extracted from case studies and de-identified data from a centralized programmatic database.

Lessons learned: Of the 80 recruited SW, 96% (n=77) were reached with the minimum package of services (financial literacy training + three mentorship sessions). 98% of the SW (n=78) completed 3 sessions of mentorship, 96% (n=77) of the SW participated in the savings clubs, saving 78% of the target. 88% (n=70) of the SW completed work readiness or entrepreneurship training.

Health services have been offered alongside GLO, with HIV prevalence of the GLO SW at 38% (n=30), with 90% of the HIV+ SW (n=27) on Anti Retroviral Treatment (ART). Of the SW reached, 62% (n=50) are HIV-, with 70% (n=35) on Pre-Exposure Prophylaxis (PrEP).

Case studies demonstrate that in parallel to positive health outcomes, SW have started businesses or secured employment and learnt how to save with plans through the support of the mentors, training and referrals in the GLO programme.

Conclusions/Next steps: The GLO programme pilot demonstrates that the retention of SW in a formal economic empowerment programme is possible, alongside improved uptake of HIV services. Qualitative data shows positive changes to the lives of sex workers as a result of the GLO programme, through diversified income, skills building and empowerment - ultimately reducing HIV risk.

EPE321

Implementation of Multi-Month Drug Dispensing to improve retention in care by reducing interruption in treatment among HIV-infected patients on Antiretroviral Treatment across APIN-supported States in Nigeria

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Background: The national HIV programme has adopted Differentiated ART Service Delivery which includes multi-month drug dispensing (MMD) model for people living with HIV (PLHIV) to increase access to antiretroviral treatment (ART) and improve treatment outcomes. Therefore, we implemented MMD3-6 model to improve retention in care among PLHIV on ART in 7 APIN-supported States. MMD3-6 model refers to 3-6 months antiretroviral drug refill to treatment naïve and experienced PLHIV.
Objective: To assess interruption in treatment (IIT) rates among PLHIV on ART on MMD3-6.
Methods: We extracted data from the electronic medical records for PLHIV on ART and enrolled on MMD between October 2019 to April 2021 (18 months i.e. 6 quarters). We collected aggregate data of PLHIV eligible and enrolled on the different models of MMD and determined the average rates of IIT among these PLHIV during the period of intervention.
Results: Between October 2020 and June 2021, the IIT rates for the patient cohort in MMD 3 was between 0.2% (x/y) and 36.5% (x/y), that for MMD4-5 was 0.2% (x/y) and 4.5% (x/y) while for those in MMD6, IIT rates was between 0.1% (x/y) and 0.6% (x/y). For MMD3, MMD4-5, and MMD6, the average IIT rates were 15.6%, 2.9%, and 0.53% respectively.

Figure.

The trend of reduction in IIT rates over the review period for MMD3 was from a baseline of 8.1% to 0.2%, for MMD4-5, it was from a baseline of 4.5% to 0.2% while for MMD6, IIT rates reduced from a baseline of 0.6% to 0.1%.
Conclusions: The mean of patients who interrupted in treatment on MMD6 is lower compared to MMD4-5 and MMD3. Thus, MMD6 improved retention in care among PLHIV enrolled in the HIV programme in Nigeria. Thus HIV program implementer are encourage to move all clients who meets MMD6 eligibility criteria to MMD6.

Delivering gender-transformative programmes and tackling violence against women and girls: Programmatic lessons

EPE322

Gender-based violence service integration in HIV/AIDS care during COVID-19; lessons learned from an HIV clinic in Malawi

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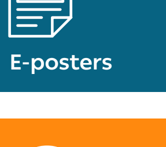
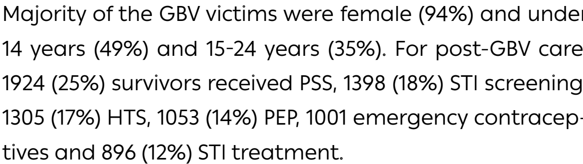
Background: People most vulnerable to acquiring HIV and PLHIV are stigmatized populations and at high risk of experiencing gender-based violence (GBV). GBV may also lead to HIV acquisition by being a barrier to accessing and using preventive interventions such as PrEP and condom use. To address this, the Lighthouse Trust (LH), a WHO-recognized Center of Excellence, began offering comprehensive GBV screening and care services in its COEs across Malawi. The COEs are located next to tertiary central hospitals that also have one-stop-centers (OSC) for comprehensive GBV care.
Description: Following WHO guidance, LH does not conduct universal screening, but routine screening in specific services such as active index testing/partner notification services, PrEP, and teen clubs. Clinical providers are trained to identify potential signs of GBV when providing routine ART care. Once a client is identified as a GBV survivor, they receive appropriate clinical care such as STI testing and HTS and PEP for survivors. Extreme physical and sexual violence survivors are referred to the central hospital for specific care.
Survivors are also offered psycho-social counseling and support (PSS). LH developed a GBV register in the facilities to monitor and track GBV care offered. All healthcare workers (HCW) were trained on the WHO LIVES (Listen, Inquire, Validate, Enhance Safety, Support) method for GBV care and support.
Lessons learned: From January 2020-December 2021, there were 3179 GBV cases reported, of which sexual violence (53%) was the highest reported followed by combination of physical, sexual and emotional violence at 19%.





Majority of the GBV victims were female (94%) and under 14 years (49%) and 15-24 years (35%). For post-GBV care, 1924 (25%) survivors received PSS, 1398 (18%) STI screening, 1305 (17%) HTS, 1053 (14%) PEP, 1001 emergency contraceptives and 896 (12%) STI treatment.

Conclusions/Next steps: Training HCWs on LIVES method improved identifying GBV cases. Staff attitude and sensitivity with survivors improved over time through continued mentorship. Though OSCs were closed and repurposed to COVID19 treatment rooms in mid 2020, we continued to see an increase of GBV cases. Integrating GBV services in an HIV clinic using existing staff is possible and an essential service to strengthen overall care.

Social protection: New evidence and programmatic lessons

EPE323

Impact of a conditional cash transfer on AIDS incidence, hospitalizations and mortality in Brazil: a nationwide longitudinal study

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Background: Brazil has long been recognized for its strong response to the AIDS epidemic. However, one of the biggest challenges of this response has been reaching the poorest people. The country implemented one of the world's largest Conditional Cash Transfer programmes, the *Bolsa Familia Programme* (BFP), which targeted poor individuals earning between US$18–36 per person per month. The monthly cash benefits range from US$17 to a maximum of US$41, which contributed to the improvement of their socioeconomic conditions.

The conditionalities for continuing to receive the benefit are that parents comply with health care and education requirements for their children. This study aims to evaluate the impact of BFP coverage on AIDS incidence, hospitalizations and mortality in Brazil.

Methods: This study uses panel data from 5,507 Brazilian municipalities over the period 2004 to 2018 and fixed effects multivariable negative binomial regressions to estimate the effect of BFP coverage - classified as low (0% to 29%), intermediate (30% to 69%), and high (≥70%) - on the main AIDS outcomes (i.e., incidence, hospitalizations and mortality rates) adjusting for all relevant demographic, socioeconomic and healthcare covariates.

Results: A high BFP coverage was associated with the reduction of AIDS incidence (Rate Ratio – RR:0.94; 95%CI:0.90-0.99), AIDS-related hospitalizations (RR:0.85; 95%CI:0.79-0.91) and AIDS mortality rates (RR:0.88; 95%CI:0.81-0.94). The effect on incidence was more pronounced in municipalities with higher AIDS endemicity levels (RR:0.86; 95%CI:0.80-0.94), among adult women (RR:0.85; 95%CI:0.77-0.93) and in children under 14 years old (RR:0.75; 95%CI:0.57-0.99).

Conclusions: This is the first study to comprehensively evaluate the impact of a Conditional Cash Transfer on AIDS in a LMIC over a 15-year period and have important implications on the reduction of AIDS-related indicators for countries with social protection measures such as conditional cash transfers. The effect of BFP coverage on incidence, hospitalizations and mortality rates from AIDS in Brazil could be explained by the reduction of households' poverty and by BFP health-related conditionalities. During the current dramatic rise in global poverty due to the COVID-19 pandemic, the protection of the most vulnerable populations through conditional cash transfers could avert potential changes in the trends of AIDS in LMIC.

EPE324

Delivering 'Game Changer' combination HIV prevention interventions for Adolescent Girls and Young Women (AGYW) to promote epidemic control in South Africa

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Background: Adolescent Girls and Young Women (AGYW) bears the brunt of the HIV-epidemic in Sub-Saharan Africa, 3-5 times more than their male counterparts. Prioritising HIV prevention through a combination of biomedical prevention, behaviour change and addressing structural drivers could prove to be a game changer in South Africa (SA). SA National Strategic Plan (NSP) 2017-2022 notes that epidemic control of HIV, TB and Hepatitis is possible by 2030 if we deliver Game Changer interventions, defined as: "thoughts or ideas if implemented well, will contribute to epidemic control".

Description: NACOSA implemented a ‚My Journey' programme for 15 – 24 year-old AGYW (2019 – 2021) via The Global Fund. Game changer strategies implemented included: Focused for impact in four high-risk communities; mainstreaming of HIV, TB and STIs through inter-sectoral frameworks and partnerships with government; developed and facilitated risk assessments for AGYW (n = 127 635); offered tailored services to mitigate individual risks; universal test-and-treat for HIV; HIV self-testing; community-based provision of PrEP and adherence to ARVs; targeted distribution of condoms; Comprehensive Sexuality Education in secondary schools and piloted an economic strengthening.

Figure.

Lessons learned: NACOSA provided behavioural (598), biomedical (77931) and structural (21557) tailored, human rights-based and evidence-informed services, resulting in understanding the local epidemic and meeting the needs of AGYW. This HIV-prevention game changer approach allowed us to implement pilot projects, which could be scaled up for vulnerable AGYW, to contribute to epidemic control by 2030.

Conclusions/Next steps: Implementing Game Changer interventions are imperative if we hope to end HIV in the next generation. Next steps include

1. Focusing on AGYW feedback surveys to improve programmes offering and reward regular health-seeking behaviour.
2. Scaling up economic empowerment and human rights packages as part of tailored approaches for current communities.
3. Identifying new high-risk communities to deliver 'Game Changer' interventions, to promote epidemic control of HIV in South Africa by 2030.

EPE325

HIV-sensitive Social Protection: Qualitative evidence from Ghana, West Africa

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Background: In Ghana, despite accomplishments in terms of treatment access which have led to a reduction in the number of AIDS-related deaths, food insecurity and poverty remain serious concerns for many HIV-affected individuals and households. Though investments in social protection (SP) have shown to have sustainable impacts on poverty reduction, many barriers exist that prevent people living with, at risk of, or affected by HIV from accessing social protection services. These barriers could be policy or programmatic, or a combination of the two. Evidence to support decision-making in strengthening the HIV sensitivity of SP schemes to better reach PLHIV is inadequate.

Methods: A cross-sectional study design using qualitative data collection techniques was adopted to elicit respondents' perceptions of the social protection interventions available to persons living with and affected by HIV in Ghana from February through May 2021. Twenty-nine (29) semi-structured in-depth interviews were conducted with PLHIV and other key stakeholders involved in social protection interventions. National-level stakeholders' engagements were held. Audio recordings were coded and analysed using a thematic analytical framework.

Results: Respondents reported that SP interventions are somewhat HIV-sensitive but persons living with, affected by and at risk of HIV are not prioritized. "*Our organization does not single out PLHIV, the programmes implemented are designed to benefit vulnerable persons in the community" (Indicated by a respondent from an NGO).*

PLHIVs are not wholly involved in the development of social protection interventions and the identification of targeted beneficiaries. The age criterion used for Livelihood Empowerment Against Poverty does not allow an orphan above 14 years to benefit.

A substantial proportion of respondents reported that common barriers hindering vulnerable populations' access to SP interventions include inadequate knowledge on interventions, stigma and discrimination, and gender discrimination.

Conclusions: Ghana AIDS Commission and its partners agree that inclusive SP systems contribute to holistic responses to the needs of PLHIV to better address the different dimensions of poverty and vulnerability. To reduce vulnerability, the Commission will work to develop and promote HIV-sensitive SP interventions. Also, ensure the meaningful involvement of the vulnerable groups and other stakeholders in the planning, implementation, monitoring and evaluation stages at all levels.

EPE326

Ending inequalities facing people living with, at risk of or affected by HIV in accessing social protection: HIV and social protection assessments analysis results from 18 countries

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Background: The UNAIDS strategy for 2021-2026 recognizes that inequalities impede the Global efforts towards ending AIDS as a public health problem by 2030. Addressing inequalities in the AIDS responses requires HIV inclusive social protection programs.

Studies are needed to identify if existing social protection policies, programs, and schemes need modification to make them HIV inclusive.

Description: We reviewed HIV and social protection assessments reports conducted by governments with UNAIDS support in 18 countries from 2016 to 2021 to assess how HIV inclusive these programmes are and if not, what modifications are required.

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The countries included Cambodia, Dominican Republic, Ghana, Jamaica, Kenya, Latin America and the Caribbean Islands, Lesotho, Liberia, Malawi, Nigeria, Mali, Namibia, Sierra Leone, Tanzania, Togo, Uganda, Zambia, Zimbabwe.

Lessons learned: All the countries reviewed have a range of social protection programs, which do not mention HIV nor discriminate based on HIV. For instance, 85% of the programs captured by the assessment in Uganda do not discriminate against people with HIV. In practice, HIV vulnerable populations faced barriers to accessing these programmes. The populations were key and vulnerable populations, including PLHIV, Men who have sex with men, intravenous drug users, transgender people, sex workers, prisoners, adolescent girls and young women (AGYW), pregnant women and lactating women living with HIV, People 50 years and older, orphans and vulnerable children, Cross-border, Ebola Survivors (in Liberia and Sierra Leone) and, Housekeepers in Mali .

Conclusions/Next steps: The recommendations were, expansion of short-term HIV-specific cash transfer programs, case management, insurance, nutritional support, housing, education, employment, economic empowerment. Train social protection workers on ways to support people living with HIV, at-risk and affected by HIV, address stigma and discrimination, Simplify the enrolment processes, electronic national registries, moonlight services for sex workers, and improved coordination and policy.

Innovations in behavioural data collection and use

EPE327
Quality of life and stigma assessment using PROMs and PREMs in PLHIV: E-RES-HIV program

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Background: E-RES-HIV is a healthcare outcomes measurement program implemented at 4 public hospitals in Madrid. The objective of this project is to analyze PROM and PREM in PLHIV. Understanding patient's unmet needs related to their outcomes and experiences is essential to improve PLHIV care services.

Methods: We evaluate PROMs and PREMs in PLHIV in PLHIV through E-RES-HIV program. Quality of life (QoL) and stigma were annually assessed using previously validated questionnaires (EQ-5D-5L, WHOQOL-HIV-BREF and HIV-specific Stigma validate scale), from January 9, 2020 to September 2021. Subjects answered questionnaires patient's portal [an application through which the patient has all his medical history, and through which he can interact and communicate directly with the hospital services (e-PROMs)].

Results: We attend 3990 PLHIV; most of them (91.1%) are male. The age distribution is 9.7% in people <30 years, 61.3% in patients between 31 and 50 years and 26.9% in people between 51 and 70 years. 89% of them (3552) have the patient's portal active and 33.2% (1179) answered any questionnaires. Regarding quality of life, only 7.7% considered their quality of life fair or very poor.

However, 41% described dissatisfaction with the quality of their sleep, 31% were dissatisfied with their sexual life, 38.4% felt moderate or very tired in their daily activity and 49.1% described feelings of sadness, anxiety or depression moderately, frequently or always. 42.1% of subjects had also frequent feelings of concern about the future.

Regarding stigma, 76.3% made an effort to keep their HIV status secret. 70.6% felt embarrassed when disclosing their HIV status to other people. 72.9% were afraid of rejection when describing their serological status. Despite this, 72.7% had maintained their social relationships and 81.3% reported not having suffered rejection when revealing their serological status.

Conclusions: Patient reported outcomes are crucial to provide information for the decision-making process and carry out a patient-centered care strategy in PLHIV. Aspects related to quality of life and stigma show important concerns and needs of people living with HIV for which we have to implement measures.

Innovative approaches to track individuals

EPE328
Unique identifier codes to track AGYW across service providers for DREAMS programming in Malawi and Zimbabwe

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Background: AGYW suffer disproportionate burden from HIV. PEPFAR's DREAMS program aims to empower and equip adolescents to remain HIV-free. Each partner has independent funding agreements, M&E systems, and reporting structures. This makes analyzing which services an individual girl has received difficult. While digital systems can automate unique identifier codes (UIC), DREAMS is often paper-based and paper-first making automated UICs not possible.

Description: UICs are challenging: Need to avoid duplicate entries; avoid data entry issues (misspellings or duplicates); readily available ID numbers e.g. national ID compromise privacy; need to limit the use of personally identifiable information. PSI was tasked in Zimbabwe and Malawi to track AGYW nationally across implementing partners (IPs) and agencies to ensure that those enrolled are receiving the core primary package of services as well as additional services that they should receive.

Lessons learned: Due to IPs being paper-first, PSI adopted a written UIC algorithm that had been demonstrated effective in other countries for KP programs. This is valuable in situations where national ID is avoided to protect anonymity and safety such as KP and AGYW programming. The UIC is completed by asking the AGYW details that are then concatenated.

The UIC was tested with client data and was found to have <2% collisions. In order to further ease the UIC, an app was created to help those with phones to compose the UIC correctly and consistently. The algorithm was revised and adopted when implementation began in order to create a consistent length to support data quality and cleaning. This put in place a UIC for the first time across all IPs and required collective approval and uptake among partners.

Conclusions/Next steps: Through the implementation of this UIC algorithm PSI has been able to track 1,455,797 unique profiles since FY16 in Zimbabwe across 5,382,319 service events and 307,872 unique profiles since FY18 in Malawi across 2,369,405 service events. The unified approach to UIC development and a support tool to generate UICs which reduces errors allows accurate tracking of service uptake across multiple independent partners and should be scaled up nationally.

EPE329
Development and rapid scale up of a standardized individual level client tracking system for HIV: experience from 11 countries

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Background: Health information systems (HIS) that enable the longitudinal follow-up of patients can improve quality of care by allowing HIV programs timely access to data. However, these systems can be costly, time consuming to deploy, and require significant technical skills to adopt. To overcome these barriers, we developed a standardized metadata package for HIV programs in DHIS2, an open source, web-based HIS platform. This metadata package is available to download for free.

Description: The metadata package supports data collection across the continuum of HIV services, comes preconfigured with over 70 standard HIV indicators, and was designed to support data use and case management. Built-in dashboards enable real-time notification of clients that may need extra support- such as clients who are out of pills, missed appointments, or need to be linked to care (Figure 1). Additional modules are available for hotspot mapping and peer worker management. The package can be installed as-is, or can be customized to meet local needs.

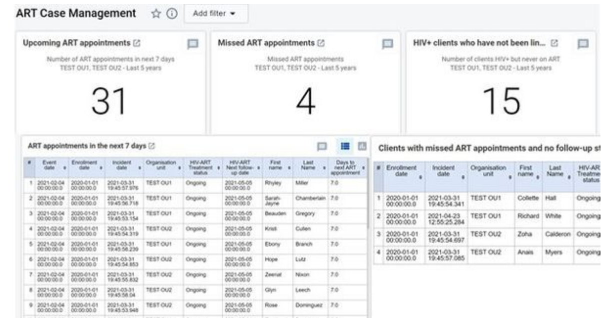

Figure 1: ART case management dashboards available in the HIV Metadata Package.

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Lessons learned: By introducing standardized metadata, we were able to rapidly customize individual-level HIS across 11 countries, tracking ~120,000 clients. Customization ranged from 3 weeks to 6 months, whereas some prior systems required over a year to develop from scratch. Customization time varied based on country requirements, availability of in-country hosting, and existing capacity. Regular access to up-to-date data and dashboards helped promote utilization.

In many countries, buy-in expanded beyond the project, promoting uptake by other partners, donors, or the national government, helping to integrate existing fragmented systems.

Conclusions/Next steps: The HIV Tracker Package is an open-source global good, available to enable rapid deployment of individual-level data collection systems for HIV. Initial use of the system has shown the package can be rapidly customized to meet local needs while maintaining the benefits of standardization.

EPE330

Recounting and returning the lost: an innovative utilization of basic data systems and tools for enhanced tracking of ART clients during COVID at 30 high-volume HIV facilities in Zimbabwe

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Background: In Zimbabwe, COVID-19 lockdowns and travel restrictions disrupted HIV services resulting in reduced access to healthcare facilities by PLHIV. After the first hard lockdown, reported losses to follow-up (LTFU) among clients on ART more than doubled. To mitigate LTFUs, PLHIV were allowed to access ART at health facilities of their convenience as "visitors" limited to <28 days of ART refills, alternatively transfer-in if issued ART resupplies ≥28 days. Between April-June 2021, 6,431 LTFU clients were reported in 15 TASQC supported districts, against 315,595 clients retained on ART.

We describe a data-based remediation exercise conducted to track and establish the status of these LTFU clients.

Description: Thirty high-volume facilities contributing 80% of LTFUs were selected for the exercise. The process included in sequential order: i) line-listing in MS-Excel of all LTFUs and "visitor clients" at each facility ii) internal facility triangulation of LTFUs with the pharmacy dispensing register in case of fast-track refills followed by updating of patient ART files iii) ≥4 follow-up phone calls to outstanding LTFU clients and iv) triangulating remaining LTFUs with "visitor clients" identified at other facilities.

Lessons learned: A total of 6,431 clients were declared LTFU, with 4531 (70%) being part of the remediation exercise. They had a median age of 35 years (IQR,27-44) of whom 2,892 (64%) were females. Overall, 1,380 (30%) were identified as currently on ART care of which 780 (57%) were documented in pharmacy dispensing registers, 511 (37%) were follow-up through phone calls and 89 (6%) were visitor clients elsewhere. The remaining 170 (3.4%) had relocated to neighbouring countries.

Conclusions/Next steps: Covid-19 lockdowns and travel restrictions adversely affected client movement and facility documentation processes leading to erroneous reporting of client outcomes as LTFU whilst clients were still in care. To mitigate LTFU in the Covid-Era, the OPHID consortium will:

i. Improve documentation and routine triangulation of "visitor clients" across all 15 supported districts;

ii. Update ART resupply visits patient ART files which were abandoned due to fears of contracting COVID-19; and,

iii. Triangulate client follow-up with all pharmacies.

Innovative uses of data to strengthen systems and programmes

EPE331

The representative studies rubric: 12 steps to address underrepresentation in HIV clinical research

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Background: HIV clinical research often fails to enroll samples of participants that are representative of the HIV epidemic. Failure to include representative study populations results in compromised generalizability, misclassification of study populations, disparities in PrEP regulation and coverage, safety and efficacy uncertainties of ARV use in pregnancy and breastfeeding, and undermined efforts to address health disparities. The underrepresentation of certain participant populations in HIV research occurs as a constellation of systemic processes, many of which are institutionalized within the field of clinical research. The presenters developed a tool, the Representative Studies Rubric (RSR), consisting of a 12-item questionnaire that can be applied to study protocols to facilitate enhanced inclusion of underrepresented populations.

Description: The RSR examines individual study protocols for their representativeness in terms of age, ethnicity, gender, injection drug use, pregnancy, race, and sex assigned at birth. The presenters pilot tested the RSR in a retrospective analysis of 100% of study protocols (47) conducted by the NIH-funded HIV/AIDS clinical trials networks that were actively enrolling study participants in September 2021: AIDS Clinical Trials Group (21 studies); COVID-19 Prevention Network (1 study); HIV Prevention Trials

Network (5 studies); HIV Vaccine Trials Network (5 studies); HPTN/HVTN (3 studies); International Maternal Pediatric Adolescent AIDS Clinical Trials (10 studies); and Microbicide Trials Network (2 studies). Findings were presented to research leadership to activate process improvement.

Lessons learned: The systematic exclusion of underrepresented populations is widespread, and it most often occurs passively through ambiguous and exclusionary definitions of study populations. Too few studies prioritize representative sampling through the use of population-specific enrollment goals, and stigmatizing language is ubiquitous. However, research staff are highly committed to enrolling more representative study populations.

Conclusions/Next steps: Institutionalized barriers in HIV research perpetuate the exclusion of underrepresented populations. The RSR should be implemented proactively in the development of study protocols to help correct these institutionalized barriers, advance scientific integrity, and facilitate equitable representation of study populations. The NIH-funded HIV/AIDS clinical trials networks are currently working to implement the RSR as a protocol development tool. Research entities outside these networks should consider implementing the RSR as well.

EPE332

Under-reporting of antiretroviral treatment coverage among diagnosed HIV patients in Bangkok, Thailand

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Background: Use of accurate data are critical to reach 95-95-95 by 2025. The ART coverage for diagnosed people living with HIV (PLHIV) in Bangkok reported through the National AIDS Program (NAP) database was 57% in 2020. We conducted a data quality assessment (DQA) to investigate data quality issues related to the number of PLHIV receiving antiretroviral treatment (ART) and developed a method to adjust ART coverage from November 2020 – January 2021 in Bangkok.

Methods: A single-stage cluster sampling technique was used to randomly select a facility from each managing authority. We randomly selected 5% or 10% of patients who picked up ART during last 30 days from hospitals with >1,000 and <1,000 ART patients, respectively. We reviewed their hospital electronic medical records and NAP database entries to verify completeness and accuracy of HIV case registration in NAP, including last ART pick-up date and next appointment date.

A multiplier method was developed to estimate the number of cases missed through under-registration in NAP, under-reporting of ART data, and delayed reporting. Multipliers disaggregated by facility type and health insurance scheme were pooled using random effect model regression to further adjust the number of HIV patients currently receiving ART.

Results: From a total of 59 facilities providing ART services and reporting ART in NAP, 11 health facilities (5 public, 5 private, and 1 research hospital) completed the assessment. All HIV infected patients in hospital databases were registered in NAP.

The pattern of ART underreporting varied by hospital type and health insurance scheme with the most significant under-reporting found in private hospitals and patients under the civil servant medical benefit scheme (CSMBS). Reasons for under-reporting included delay in data entry, insufficient understanding of reporting requirements, and no mandatory data entry requirement for PLHIV under CSMBS. We estimated 79% of diagnosed PLHIV received ART using the pool multiplier, an increase from the unadjusted 57% figure.

Conclusions: Our results demonstrate completeness of HIV registration and under-reporting of ART coverage by one-third. Data quality assurance trainings should be conducted to improve data quality, strengthen reporting systems, make informed adjustments and decision-making.

EPE333

Estimating the sizes of key populations for HIV in Singapore using online surveys

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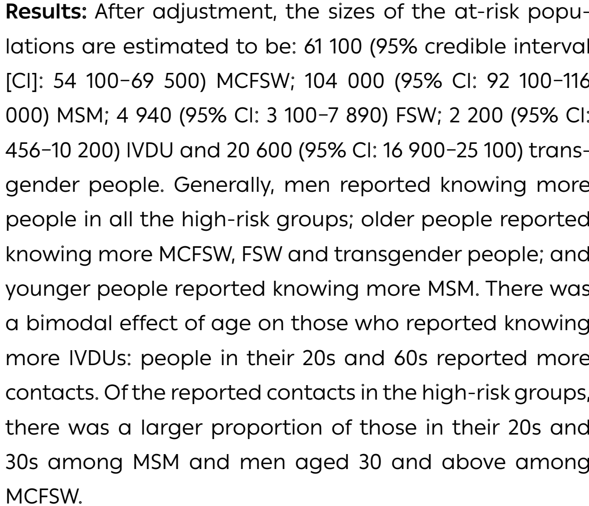
Background: Singapore lacks robust data on the sizes of the key populations that are most at risk for HIV. Using the network scale-up method for hidden or hard-to-reach populations, we estimate the sizes of five key populations—male clients of female sex workers (MCFSW), men who have sex with men (MSM), female sex workers (FSW), intravenous drug users (IVDU) and transgender people—and profile the ages and ethnicities of respondents and their high-risk contacts.

Methods: We conducted a cross-sectional online survey between March and May 2019 (n = 3068) using a network scale-up instrument previously developed for Singapore. Participants were recruited using an existing panel and online advertising, and the sample weighted by age, sex, ethnicity and education attained to represent the general adult population. We built a Bayesian hierarchical model to estimate the sizes of the five key populations for HIV in Singapore.



Results: After adjustment, the sizes of the at-risk populations are estimated to be: 61 100 (95% credible interval [CI]: 54 100–69 500) MCFSW; 104 000 (95% CI: 92 100–116 000) MSM; 4 940 (95% CI: 3 100–7 890) FSW; 2 200 (95% CI: 456–10 200) IVDU and 20 600 (95% CI: 16 900–25 100) transgender people. Generally, men reported knowing more people in all the high-risk groups; older people reported knowing more MCFSW, FSW and transgender people; and younger people reported knowing more MSM. There was a bimodal effect of age on those who reported knowing more IVDUs: people in their 20s and 60s reported more contacts. Of the reported contacts in the high-risk groups, there was a larger proportion of those in their 20s and 30s among MSM and men aged 30 and above among MCFSW.

Conclusions: This study demonstrates that a size estimation study of hidden populations is quickly and efficiently scalable through using online surveys in a socially conservative society, like Singapore, where key populations are stigmatised or criminalised. The approach may be suitable in other countries where stigma is prevalent and where barriers to surveillance and data collection are numerous.

EPE334

In-service HIV training through a mobile distance learning platform

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Background: USAID's Efficiencies for Clinical HIV Outcomes (ECHO) project, in coordination with various provincial health directorates in Mozambique, directly contracted health facility providers to strengthen the health system and improve quality of care. ECHO created a distance learning platform, accessible via simple mobile phones, to give these providers trainings, assess their technical knowledge, and provide important updates related to HIV care and treatment.

Description: Since February 2021, 148 health facilities across four provinces in Mozambique (Manica, Sofala, Niassa, and Tete) have implemented the distance learning platform. The platform targets health technicians, ranging from monitoring and evaluation specialists to lay professionals.

Since implementation, ECHO has launched seven modules on a variety of topics: viral load testing and suppression, counselling and health testing (HTC), pediatric antiretroviral treatment, prevention of mother-to-child transmission, psychosocial support, TB and HIV co-infection, and a mixed module incorporating each aforementioned module).

These modules include multiple-choice questions to test mastery of the training material presented that utilize interactive voice response messaging. Each module was "live" for four weeks, allowing providers to answer questions as they were available. The project also created a dashboard to analyze and present results, which displayed health provider participation levels, correct answer rates, and groups with the greatest need for knowledge reinforcement.

Lessons learned: Through the distance learning platform, technicians were kept informed on HIV and ART topics. In total, 89% of eligible technicians utilized the platform. These results strengthen the case for technical assistance (TA) targeted at technical groups and focus areas.

For modules such as HTC and TB/HIV co-infection, however, average scores were below the minimum acceptable score of 80%. ECHO is currently implementing actions to address these findings that the platform illuminated.

Conclusions/Next steps: The ECHO distance learning platform saw high technician uptake, helped to highlight areas where staff were struggling, and allowed the project to target activities accordingly. Similar programs are recommended to steadily monitor health professionals and understand their needs related to HIV and beyond.

EPE335

Insights from collecting health worker performance data to inform index testing service delivery in Senegal

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Background: Health workers are essential to epidemic control. Projects implementing index testing, especially among key populations, often rely on staffing that spans the community and facility and cadres with differing skill levels and training. It is critical to examine how staffing configurations can help reach epidemic control.

Description: In October 2021, IntraHealth International conducted the PEPFAR HRH Inventory in 13 districts across Senegal under the USAID-funded Neema project. The PEPFAR HRH Inventory collects detailed demographic information on PEPFAR-funded health workers (clinical, ancillary (e.g. community health workers, peer navigators/educations, and social service workers), program management, and other staff). We enhanced this inventory with questions about staff training and supervision and enumerated staff funded by other donors. We analyzed the results against indicators of district-level service delivery such as achievement of targets, retention in treatment, and index testing service delivery.

Lessons learned: Neema relies on a combination of Ministry of Health (MOH) and PEPFAR-funded staff with few staff funded by other donors. The MOH supports the majority (78%) of clinical staff whereas PEPFAR supports the majority (69%) of ancillary staff. The ratio of HIV clients on treatment to ancillary staff is 38 clients to 1 ancillary staff (38:1, range: 21:1-82:1). Higher ratios of HIV clients on treat-

ment to ancillary staff were weakly associated with reduced retention of the treatment cohort (Figure 1). Supervision showed a mixed association with district outcomes measured. Health care worker level outcomes may have been more directly associated with outcomes measured than district level data alone.

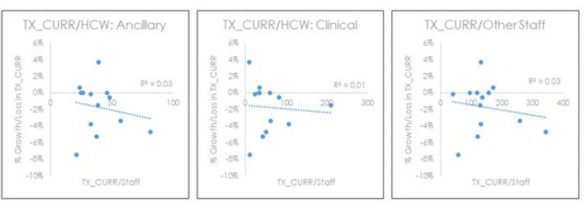

Figure 1: Ratio of clients on treatment (x-axis) to staff in each district (dots) by category (e.g. ancillary, clinical and other staff) to percent growth or loss in the treatment cohort (y-axis) between FY21/COP20 quarters 3 and 4.

Conclusions/Next steps: We found that it was feasible to collect information on supportive supervision, training, and performance monitoring along with the PEPFAR HRH Inventory. Analysis of staffing ratios, supportive supervision, and performance monitoring enhanced our understanding of PEPFAR service delivery and illuminated opportunities for optimizing implementation.

EPE336

Sustained viral suppression among HIV positive women through a robust peer approach in m2m countries during COVID-19 Pandemic

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Background: The impact of Covid-19 on health services areas resulted in catastrophic impacts for the most marginalized and vulnerable people. Starting march 2020 COVID 19 was declared a pandemic across the continent with most of m2m countries announcing lockdowns and heavy restrictions. Our peer cadres known as Mentor Mothers were declared essential workers, enabling continuity of services during the full lockdown and restricted access periods imposed in response to Covid-19. Within three weeks, the m2mhybridmodelwas introduced, which included a new type of eservices: Peer via Phone (PvP) using m2m's FLWs to deliver an average of 5 structured monthly calls ranging from education, psychosocial support, adherence and self-care support and follow up/support for clinical services. In some cases, Mentor Mothers delivered pre-packed ART to defaulting clients in the community.

Description: From inception in Apr-2020 to Dec 2020, over 208, 321 m2m clients were reached through PvP eService across Ghana, Kenya, Lesotho, Malawi, Mozambique, South Africa, Uganda and Zambia. Using case based DHIS2 tracker cumulative number of clients receiving PvP disaggregated by call type, client risk profile and receiving the first, introductory Call and at least one other PVP call.

Lessons learned: The algorithms show that HIV-positive clients were prioritized **34%** pregnant, **64%** breastfeeding, and **2%** in General ART. HIV serostatus remains a key determinant in client risk profiles and PvP eService delivery algorithms with **71%** of the clients were HIV positive.

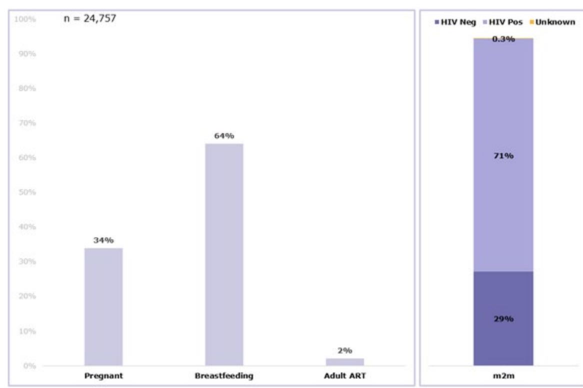

Figure 1: m2m's Total Clients Reached through Peer via Phone (PvP) eServices.

Conclusions/Next steps: m2m's PvP were effective at reaching high risk clients such as HIV pregnant and breastfeeding mothers.
The results underscore the importance of having the risk profiling variables enhanced to ensure that all vulnerable clients are provided with differentiated care by m2m peer models.

EPE337

The Uganda HIVDR Database: a data information exchange platform to improve HIV drug resistance (HIVDR) monitoring

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Background: The Uganda HIVDR Database was commissioned by the Ministry of Health as part of a national HIVDR improvement program in 2018 and was deployed in May 2021. Before the Database, turnaround time was as high as 8 months, and it was hard to identify where the delay was. We describe implementation, immediate benefits, and a future outlook of the HIVDR Database.

Description: The Uganda HIVDR Database is a PEPFAR funded online system developed by the Ministry of Health in 2021 with support from CHAI to expedite HIVDR monitoring. In Uganda, HIVDR testing is performed after a repeat viral load (VL) > 1000 copies/ml following intensified adherence counselling. Each VL result goes through an HIVDR testing eligibility algorithm and profiles of eligible samples are exchanged with the HIVDR Database that also pushes them to the HIVDR testing laboratories' systems. After testing, laboratories automatically push the results back to the Database. Through the Database interface, clinicians can access the results in real-time, add client medical and social histories, discuss results, make ART recommendations, and monitor clients started on new regimens.Each stage is timestamped, and clinicians are notified through email.

Lessons learned: The Database received 3,575 sample profiles collected between February and September 2021 and 303 results discussions were conducted via the Database interface. Real-time data exchange with the laboratories and clinician notifications at each stage have facilitated a reduction in results handling latencies by an average of 174 days from 247 days. Timestamping every stage allows for targeted quality improvement interventions at inefficient stages. In addition, the Database provides better client data security and privacy through data encryption.

Figure. Monthly average turnaround time (TAT) from sample collection to Switch Committee decision.

Conclusions/Next steps: The HIVDR database has facilitated the use of data exchange to improve turnaround time for HIVDR results. However, continuous quality improvement is needed to further reduce the turnaround time to expedite timely switch decisions and patient management.

EPE338

Using routinely collected blood donation data for expanded HIV and syphilis surveillance in Blantyre District, Malawi

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Background: WHO recommends all blood donations be screened for transfusion transmissible infections. However, these data are not incorporated into national surveillance systems in Malawi. We set out to use routinely collected data from blood donors in Blantyre district, Malawi, an area of high HIV and syphilis prevalence, to explore current HIV and syphilis prevalence and identify recent sero-conversions among repeat donors.

Methods: We conducted a retrospective cohort analysis of blood donation data collected by the Malawi Blood Transfusion Service (MBTS) between October 1st 2015 and May 31st 2021. All blood donations were routinely screened for WHO-prioritized transfusion-transmissible infections, including HIV and syphilis. We characterized donor demographics as well as screening outcomes, including identifying sero-conversions among repeat donors who previously tested negative. Logistic regression was used to model the impact of individual level covariates on the probability of sero-conversion.

Results: A total of 93,199 donations from 5,054 donors were recorded, with 7 donors (0.1%) donating a maximum of 24 times. The majority of donors were male (4,294; 85%) and students (3264; 64.6%) at the time of their first donation. Of those screened for HIV and syphilis, 126 (2.5%, 126/5,049) and 245 (4.9%, 245/5,043) tested positive respectively.

Among repeat donors who previously tested negative, 87 HIV sero-conversions and 195 syphilis sero-conversions were identified over the study period, indicating an HIV incidence rate of 6.86 per 1,000 person-years and a syphilis incidence rate of 15.37 per 1,000 person-years. Donors who were female or aged 16-19 at the time of first donation had a higher risk of HIV or syphilis sero-conversion.

Conclusions: Routinely collected data from national blood donation services may be used to enhance existing population-level disease surveillance systems, particularly in high prevalence areas. While blood donors are generally considered a low-risk population for HIV and syphilis, we were able to identify and characterise blood donor populations at increased risk of sero-conversion over the study period.

This information will provide insight into priority prevention areas in Blantyre district and help to inform targeted interventions for improved prevention, testing and treatment.

EPE339

Preliminary outcomes from the Routine Electronic Mother-Infant Data (REMInD) study to support maternal retention in HIV treatment and early infant diagnosis in South Africa

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Background: HIV vertical transmission prevention (VTP) remains a priority but monitoring continuity of care through VTP programs is challenging. The REMInD study aims to validate the use of routine electronic health records to identify gaps in routine VTP and facilitate relinkage to care of mother-infant pairs (MIPs) in Cape Town, South Africa.

Methods: We followed a prospective cohort of mothers and infants (born March-Nov 2021) accessing public VTP services in Gugulethu using routine electronic reports from the Western Cape (WC) Provincial Health Data Centre. Gaps were defined per national guidelines as missing infant HIV test (delivery, 10 weeks[w]), missing maternal viral load (delivery), or >3 months without maternal ART dispensed (delivery, 10w). We validated gaps using source data and participant telephone calls. Where true gaps were identified, we initiated tracing and relinkage to care.

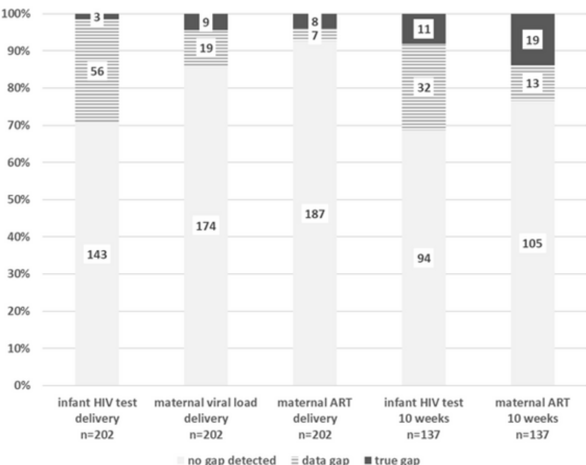

Figure. Gaps in routine HIV vertical transmission prevention among mothers and infants at delivery (n=202) and 10 weeks postpartum (n=137)

Results: 202 MIPs (137 with data through 10w) were included (median maternal age 32 years, 87% started ART before pregnancy). One infant was diagnosed with HIV at birth and initiated ART. At delivery and 10w, 84/202 (41%) and 62/137 (45%) of MIPs had gaps identified, respectively. Of 177 gaps (Figure), 127 (72%) were data gaps (services completed but not showing in routine reports), including four MIPs accessing care outside of WC. Fifty true gaps (43 MIPs) were confirmed, 21 MIPs (49%) were successfully contacted, and 16 gaps were filled. Incorrect contact details and privacy concerns presented challenges to tracing. Reasons for true gaps included patient (travel, fear of returning to the clinic) and health service (laboratory tests not done) factors.

Conclusions: The relatively low numbers of true gaps in early VTP among MIPs in this cohort is reassuring. Ongoing work is needed to strengthen the quality of routine electronic data, including patient contact details, to facilitate streamlined identification and tracing of MIPs with true gaps to care.

EPE340

Relevance of HIV prevention self-assessment tool in identifying gaps in national key population programming in Africa

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Background: HIV disease burden in 2020 was 37.7 million, with key populations (KP) and their sexual partners accounting for an estimated 62% of new infections globally. The HIV Prevention Self-Assessment Tool (PSAT) was created in collaboration with global prevention stakeholders to support countries in assessing and monitoring their progress toward comprehensive key population prevention programming, and identifying program areas for strengthening.

This process facilitated by the South-to-South Learning Network aimed to identify the strengths and weaknesses of KP prevention programs in nine selected African countries.

Description: The PSAT is a self-reflection tool that provides a snapshot of the national prevention landscape through investigation of key prevention elements in the domains of program management, implementation and outcomes. Nine selected countries across south, east and west Africa nominated country champions to complete the KP PSAT. Country champions comprised a wide range of technical experts representing key constituencies within the KP prevention landscape. The PSAT scores were validated by country technical working groups (TWG). The scores for each prevention domain were analyzed using Power BI and included data visualization.

Lessons learned: Results indicated that financing of KP programs remains a gap across countries. Areas for strengthening included:

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i. Monitoring of budgets at all levels as budgets are not disaggregated to KP groups.
ii. Unit costs per KP are not well documented, leaving gaps in accurate cost estimates for service delivery to female-sex-workers and men who have sex with men.
Amongst all countries, standardization of costs between programmatic and national levels was an area for strengthening. In three countries, there was insufficient information to fully understand the financial gaps.
Conclusions/Next steps: The PSAT enables the development of action plans to address country-specific program management and implementation issues. This is evident in the cases of Uganda and Kenya, where, after identifying financing gaps through PSAT, we assisted them to identify their exact technical assistance requirements to close the gaps, as well as KP program unit costs at the country level in Kenya, resulting in an estimate of total resource needs.
These findings demonstrated that budgeting and financing of KP programs are still areas that need to be improved in Sub-Saharan Africa.

EPE341
Lack of knowledge, stigma and discrimination are key barriers for people living with HIV and key populations in accessing social protection: A 12-country study in West and Central Africa (WCA)

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Background: Scarcity of evidence regarding HIV-sensitive social protection led the UN Regional Joint Team on AIDS's social protection sub-group to launch an initiative in 12 WCA countries.
The aim was to collect information about existing social protection programs, their sensitivity to HIV; and to better understand the knowledge of people at risk, living with or affected by HIV about social protection and access to such services.

Methods: A three-pronged approach was implemented between June and October 2021:
1. A desk review about social protection systems and programmes was conducted for Burkina Faso, Cameroon, Central African Republic, Côte d'Ivoire, Chad, Ghana, Guinea Bissau, Mali, Nigeria, Senegal, Sierra Leone, and Togo.
2. A survey was conducted among rights holders and duty bearers using online questionnaires that reached 1467 persons.
3. A workshop on "Enhancing inclusive, people-centered social protection for vulnerable PLHIV and key populations (KPs)" allowed to discuss and endorse the information collected.

Results: Nine of the twelve countries have a validated and operational social protection policy but only three have ratified ILO's Convention 102 on Minimum Standards of Social Security.
Among the *1299* rights holders surveyed (*45% women, 45%* men, 10% did not say) including 881 young and adult PLHIVs, 216 KP representatives, and 244 people affected by HIV, more than half did not know if a social security system existed in their countries and three quarters were not registered for it.
Almost *80%* did not have health insurance**,** *77%* were unaware of any existing social safety net programs in their country, and *80%* did not know if the law on social protection was inclusive or not.
The main barriers listed to accessing social protection services were the lack of knowledge and information, unemployment and poverty, and stigma and discrimination.
Conclusions: The study findings and workshop discussions confirm the huge lack of knowledge, mechanisms and access to social protection systems and services among people at risk, living with or affected by HIV in WCA. There is a need to intensify advocacy with authorities and capacity development of community partners, disaggregated data collection, and dialogues around removing barriers to existing schemes and making them more inclusive.

EPE342

Operationalizing Ethiopia's ARV Pharmaceutical Management Information System (PMIS) for rational use of ARVs and optimized supply chain decision making

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Background: In Ethiopia, the antiretroviral (ARV) pharmaceuticals management information system (PMIS) has been implemented to capture information on patients and ARVs, guide patient treatment follow-up, ARV dispensing, and supply chain decisions.

However, an assessment conducted in 205 health facilities (HFs) in 2018 indicated that only 21% of the facilities generated an ARV therapy (ART) monthly report and its utilization had declined.

Description: The USAID Global Health Supply Chain Program-Procurement and Supply Management (GHSC-PSM) project collaborated with the Ethiopian Ministry of Health (MOH) to revitalize use of PMIS and address gaps in ART data visibility. GHSC-PSM conducted a baseline assessment in 389 HFs in December 2019 that indicated only 32% of facilities submit an ART monthly report and identified workload, inadequate PMIS knowledge and follow-up, and non-availability of reporting tools as factors for underutilization of PMIS.

To strengthen the system and increase visibility on ART in Ethiopia, GHSC-PSM:

1. Developed a plan of action;
2. Revised, printed and distributed PMIS tools, standard reporting procedures and job aids;
3. Reintroduced the reporting system by conducting training, supervision, advocacy, and review meetings; and,
4. Developed a long-term strategic plan that includes requirements for digitalization.

Lessons learned: These efforts revitalized PMIS at 1200 ART sites and helped avail organized ART and service data for supply chain decision making. PMIS monthly activity reporting increased from 92 facilities reporting in September 2020 to 618 facilities by September 2021, an improvement because of the project's interventions.

Newly available monthly report data from 618 high-volume facilities indicated that 272,175 adult ART clients and 9,340 pediatric ART clients were being served at the HFs.

PMIS helps monitor implementation of differentiated service delivery (DSD) models and its revitalization has helped avail dispensing and stock information. PMIS gives access to real time ARV data, that has helped improve follow up with ART clients, monitoring adverse drug interactions and transition to TLD at HFs.

Conclusions/Next steps: The revitalization of PMIS has contributed to evidence-based supply chain decisions and rational ARV dispensing and use. GHSC-PSM will continue work with the MOH to scale up, automate, and effectively use the data for decision making.

EPE343

Sparking innovation with the integration of novel data visualization and geo-mapping tools into capacity building coaching sessions

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Background: Cicatelli Associates Inc. (CAI) operates the Technical Assistance Provider-innovation network (TAP-in) funded by the U.S. Health Resources and Services Administration HIV/AIDS Bureau, to provide tailored technical assistance to prioritized local or state health jurisdictions. We will present TAP-in's innovative use of data visualization tools and publicly available data to describe jurisdictions' HIV care systems and priority populations during technical assistance sessions.

This data-driven approach reveals gaps in the system of care and supports decision-making as jurisdictions refine strategies to implement their local work plans and strive to achieve the U.S. goal of ending the HIV epidemic by reducing newly-reported cases by 75% by 2025.

Description: Using Tableau (data visualization software), we developed system of care (SOC) geographic maps depicting data on HIV service locations, funding streams, and priority populations' demographics for select jurisdictions with identified needs for strategic planning and development.

Using two real-life case studies, we will illustrate TAP-in's capacity building approach for guiding jurisdictions through review, analysis, and uncovering of gaps in SOC, using the maps, and identifying ways to strengthen the system for greatest impact on improving linkage, retention, and viral suppression.

Lessons learned: Using data and data visualization and geomapping tools during TA was effective for jurisdictions in strategizing on how to best leverage their funding and implement their workplans to best reach their priority populations and get to next level outcomes.

For example, one "lightbulb" moment happened when we showed jurisdiction staff a map depicting the concentration of African Americans (AA) living in neighborhoods by zip code overlaid with the current SOC; the map revealed a lack of medical HIV care services available in neighborhoods where there are a greater number of AA residing.

Connecting this lack of services with data visualizations showing the high number of AA not linked to care and not virally suppressed in the jurisdiction, helped them gain a clear understanding of where EHE funding could make the greatest impact.

Conclusions/Next steps: Data and innovative data visualization techniques can be used effectively with jurisdictions in describing their service delivery network and identifying enduring disparities to inform development of more responsive systems.

EPE344

Using activity-based costing and management to better understand HIV disease control costs in East Africa

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Background: Traditional costing studies simplistically assume homogeneity across patients and providers or only examine costs of one level at a time. Using an Activity-based Costing and Management (ABC/M) approach can generate better understanding of the true cost of a country's disease control program by:
a. Revealing what and how many resources are used in practice, and
b. Stacking costs of above-site, facility, community, and client levels.

Methods: USAID and PEPFAR's Sustainable Financing Initiative for HIV/AIDS funded the Health Policy Plus (HP+) and Uganda Health Systems Strengthening (UHSS) projects to conduct two ABC/M studies in summer 2020 in Tanzania (seven regions) and Uganda (eight districts). Using time-driven activity-based costing (TDABC), HP+ and UHSS analyzed the flow of adult clients (1,197 in Tanzania, 1,508 in Uganda) through the care cycle of HIV treatment, testing, and preventive services.
Facility-level costs were estimated by quantifying all resources consumed during the client's facility visit. Above-site costs were estimated from expenditures reported to PEPFAR's Resource Alignment Initiative and allocated to HIV program areas.
Community-level costs were estimated from implementing partner-reported expenditures and client volumes. Client-level costs were calculated from client-reported transportation, out-of-pocket costs, and estimated opportunity costs.

Results: In both countries, significant variations were observed across and within facilities for service delivery. Lower-level facilities tend to have truncated patient care processes and often deviate from clinical protocol. Clinical contact time is shorter than optimal and wait time represents 38 percent of time spent in an HIV facility visit. Personnel expenditures appear to be low in both countries, contributing to relatively low service delivery costs, but absenteeism could lead to significant inefficiencies. Stacking costs together, an individual on antiretroviral therapy costs an estimated US$237 annually in Tanzania and US $255 in Uganda. Commodities comprise over 50 percent of the total cost. Non-service delivery and program management costs comprise 30 percent. Service delivery, community and above-site program costs comprise 18 percent.

Conclusions: TDABC results reveal efficiency and quality improvement opportunities along the client care process. A fuller picture of the actual cost of disease control across patients and providers would inform more efficient and equitable resource allocation.

EPE345

Implementation and impact of a digital patient management system to deliver differentiated HIV care services in Uganda: the ARTAccess application

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Background: In 2016, the Infectious Diseases Institute operationalized a nurse-led paper-based differentiated service delivery (DSD) model where patients stable on HIV treatment accessed ART refills at private community pharmacies. We developed and piloted a web-based application (ARTAccess™) interoperable with existing patient management system (Uganda EMR) to document patient refills.
This study assessed the impact of the ARTAccess™ application by comparing outcomes for patients in DSD sites using ARTAccess™ to sites using paper-based system.

Methods: We undertook a non-inferiority study comparing the ARTAccess™ with the paper based system. We analyzed routine quantitative data from two health facilities using ARTAccess™ (Kiswa and Kawaala) and two health facilities using the paper based system in Kisenyi and Kitebi. Data extracted from health facility records, private pharmacy records and ARTAccess™ database was analyzed using descriptive statistics at univariate level to assess differences between study outcomes of patients on the two models using a chi-square test. All p-values were considered significant if $p<0.05$ using Stata version 16.0

Results: Baseline characteristics are similar for both models (mean age 41.3 years; 74.1% of clients on ARTAccess™ were female compared to 68.6% on the paper based system) as shown in table below.
Late attendance/ missed appointment was higher in the ARTAccess™ arm than the paper based arm but lost to follow up rates and mortality were similar in both arms. Discontinuation rates from DSD model was similar for both models, but those on the paper system had more than twice the number of high viral loads as compared to

those on ARTAccess™. Fewer clients attended to using the ARTAccess™ system opted out of the program compared to paper based model.

CHARACTERISTIC	PAPER BASED SYSTEM N=4,831	ART ACCESS SYSTEM N=5,011	TOTAL N=9,842	P Value
Age; median (inter-quartile range)	41.3 (35.3 – 48.1)	41.3 (35.3 – 48.1)	41.3 (35.3 – 48.1)	0.419
Female n(%)	3,313 (68.6)	3,715 (74.1)	7,028 (71.4)	0.000
Death; n(%)	35 (0.7)	42 (0.8)	77 (0.8)	0.522
Lost to follow up; n(%) (More than 3 months missed clinic visit after scheduled return date)	503 (10.4)	590 (11.8)	1,093 (11.1)	0.077
Late/missed appointment; n(%) (More than 2 weeks but less than 3 months missed clinic visit after scheduled return date)	594 (12.3)	1,143 (22.8)	1,737 (17.6)	0.000
Discontinuation from DSD model	1,074 (22.2)	992 (19.8)	2,066 (21.0)	0.003
High viral load	140 (13.0)	59 (6.0)	199 (9.6)	0.000
Opted out voluntarily	36 (3.3)	13 (1.3)	49 (2.4)	0.002

Table.

Conclusions: The lost to follow up and mortality outcomes in patients on the ARTAccess™ system are non-inferior to paper system showing that mHealth tools are a safe alternative for documentation of patient refills in DSD models.

EPE346

Barriers impeding care for people living with HIV: early findings from Community-Led Monitoring in Haiti

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Background: Community-led monitoring (CLM) is an emerging and powerful approach to improving the quality of health care for people with HIV (PWH), and members of key populations (KP) and other affected groups. CLM consists of a routine cycle of civil society-led monitoring and advocacy with the aim of improving services for PWH and promoting accountability for the communities receiving care.

In 2020, the Community Observatory for HIV Services (OCSEVIH) launched a CLM project in Haiti to identify barriers to HIV care and to advocate for better health services.

Description: Surveys were conducted in 41 healthcare facilities in the Nord, Artibonite, and Ouest departments from April to June 2021, including 41 observation-based surveys of facilities, 41 facility manager interviews, and 980 patient surveys (including 689 PWH). Data were collected by a team of PWH and KP community monitors. Separately, 6 focus groups and 45 semi-structured individual interviews were conducted in the broader community. Qualitative data were analyzed using a thematic codebook developed by the monitors and other CLM team members.

Lessons learned: 60% of patients surveyed reported traveling long distances to clinics, despite 59% having facilities closer to home. Wanting to avoid being seen was cited by 44% of these respondents as the primary reason for traveling to remote facilities. Monitors observed at least one privacy concern in 22% of clinics, such as consulting multiple patients in one room.

Other concerns included buildings in bad condition (29% of clinics), feeling unsafe (24% of patients surveyed), and staff reprimanding patients for missed visits (11%). Qualitative data reveal violations of privacy (described in 31 out of 45 interviews) and disclosure of HIV status (21 out of 45) in clinics, mainly via separation of PWH from other patients in waiting rooms, counseling and discussions of health information in public spaces, and disclosure of HIV status by health personnel to community members.

These findings are being used in advocacy with duty bearers to address these barriers.

Conclusions/Next steps: Ensuring confidentiality and privacy is critical, particularly in settings where HIV-related stigma is high. Improving treatment initiation and retention for PWH is critically dependent on improving patient confidentiality and acceptability of healthcare services.

EPE347

Demonstrating DHIS2 tracker success in large scale longitudinal client level service data and referrals for AGYW in DREAMS service delivery

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Background: One of the underpinning components of a successful PEPFAR DREAMS program is ensuring adolescent girls and young women (AGYW) receive all services in the primary prevention package and clinical services that meet each AGYW's individual HIV risk. This relies on "active referrals" by DREAMS implementing partners to ensure that not only are they identifying which services the AGYW needs from another partner but to actively support and follow that referral to linkage. Paper vouchers passively provided have never managed to accomplish this task.

Description: PSI leveraged the DREAMS DHIS2 database in Malawi and Zimbabwe to manage referral workflows using a tracker program shared across partners. Partners issue referrals, indicating the service needed and receiv-

ing partner. To close referrals, the referring or receiving partner is able to confirm the outcome (whether linked or lost to follow up). Partners can view referrals received and linkage status of outgoing referrals in real-time.

While the referral program is shared, the service outcome data captured in DREAMS relies on separate DHIS2 programs for each partner to maintain confidentiality.

Lessons learned: The scale of this implementation using DHIS2 tracker has demonstrated the ability of DHIS2 to stand up to this volume of longitudinal client tracking, providing an important use case for the new feature development in analytics and referrals workflow in DHIS2.

The ability to seamlessly track data across partners allows for a deeper analysis into barriers to linkages: which services are slow to link, which geographic regions have the biggest challenge, and how community and facility partners are working together to support bringing the right care to the right clients.

Conclusions/Next steps: Despite a robust referral system the biggest lesson is that on the ground efforts by partners are still key to manage linkages. This system exposed where referrals needed strengthening and will continue to allow programs to increase layering and linkage rates across IPs in support of DREAMS programming.

Now that it's demonstrated that it is possible to leverage DHIS2 at scale for referrals and linkages, the PSI's development team shared the configuration as use cases with UiO to support the next round of DHIS2 innovations.

EPE348

Sex Workers Murder Monitoring Tool in Africa. A tool for HIV treatment and prevention among sex workers collective in Africa

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Background: Sex workers are considered a key population for HIV. According to the 2016 UNAIDS Prevention GAP Report, HIV prevalence among sex workers is 10 times greater than among the general population. Even in very high prevalence countries, such as most countries in the African region, HIV prevalence among sex workers is much higher than among the general population.

A combination of biological, social and structural factors interact to heighten sex workers' vulnerability to HIV. According to the UNAIDS Gap Report (2014), the top four reasons why sex workers are being left behind are: violence, criminalisation, stigma and discrimination; and lack of programs and funding.

Description: Sex Workers Murder Monitoring Tool is an innovative initiative in 35 countries of sub-Saharan Africa to systematically monitor, collect and analyse reports of murders and violence against sex workers in Africa. The tool is an online platform made for sex workers who remotely uses an online open-source platform that is easily accessible on smartphone and the ASWA website. All cases of violence are reported on the tool.

The data analysts are able to monitor and track the cases reported and make reports. Updates of the preliminary results are published on sex workers' websites in Africa. Violence escalated during the COVID-19 pandemic, heightened by the loss of livelihoods among sex workers.

Lessons learned: In Kenya, 500 sex workers have faced violence cases and 135 were murdered since COVID-19. In Uganda,50 sex workers were murdered. In Cameroon, sexual violence was 44.1%,35 sex workers were murdered. In eSwatini15 Sex workers were murdered. In Angola, Sex workers murdered were 30.

Conclusions/Next steps: The data from the tool has been presented for data-driven advocacy for health and HIV/AIDS policy shift, change of punitive laws, practices, and enactments against sex work. Advocacy for decriminalisation of sex workers resulted in declassifying sex work from petty offenses statutes in Zimbabwe. The data on violence was used to advocate for the rejection of Uganda's Sexual Offence Bill, targeting sex workers.

The data was also used by human rights defenders to petition Ghana's Parliament not to pass a bill targeting the LGBTI sex workers in Ghana.

EPE349

Innovative use of supply chain data to strengthen HIV commodities management in Apac district of northern Uganda

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Background: Antiretroviral (ARV) commodities supply chain management ensures optimal and uninterrupted supply of quality medicines to implement HIV care and treatment. The implementation core players include the facility staff, medicines management supervisors, the District Health Team, central warehouse and the Ministry of Health. The efforts to achieve a resilient supply chain system in the Lango sub-region of northern Uganda were affected by COVID-19 pandemic, inadequate funding, poor order fulfillment rates, poor logistics management by facilities and inadequate data use for decision making.

Description: The major interventions supported by the JSI-led USAID Regional Health Integration to Enhance Services - North, Lango (RHITES-N, Lango) project include annual procurement planning, ordering and reporting for resupply, rational medicines use, stock status monitoring, and data use to inform timely decisions. Despite the support, between January 2020 to January 2022, Apac district experienced stock-outs of ARVs among other commodities. To address this, RHITES-N, Lango supported the district to undertake the following activities and approaches:

- Review of all vital commodity data, including consumption, days stock out, losses and adjustments, stock balances, months of stock available, quantities to order,

and order fulfillment rates from sources like HMIS 105, order reports, weekly real-time ARV stock status and monthly stock evaluation

- Monthly commodity meetings to review progress, challenges and actions
- Intensify use of data to inform actions that included redistribution, emergency orders, targeted capacity building mentorship.

As a result, there was stabilized stock availability during the period of review. All five ART sites in the Apac maintained optimal stock level for all key commodities like ARVs, TB medicines, laboratory and other commodities.

Lessons learned: Data ownership enables use for decision making. Furthermore, the DHO's commitment and stewardship optimizes responses by all key players of commodity management.

Conclusions/Next steps: ARV Stock stability is a critical prerequisite to successful HIV prevention, treatment and achieving the 95-95-95 target. The best practices from Apac will be cascaded to other districts in the Lango subregion to ensure sustained stock stability.

Approaches to using data to improve programming

EPE350

Improving HIV case finding through index testing: findings from CDC-supported health facilities in South Africa, October 2019—September 2021

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Background: Index testing, defined as offering HIV testing to biological children, needle-sharing or sexual partners of HIV-positive clients, is recommended as a targeted testing approach to increase newly diagnosed case finding to achieve the 95-95-95 goals for HIV epidemic control was introduced in South Africa in 2018. Prior to 2018, a generalized testing approach was used.

Description: We analyzed aggregate quarterly facility data reported from 784 South African facilities which offered index testing across the four CDC-supported Provinces from October–December 2019 (Q42019) to July–September 2021 (Q32021). Data included numbers of overall and index HIV tests performed and new HIV-positive tests to assess growth and contribution of index testing to the overall testing program. Chi-squared analysis was used to assess differences between Q42019 and Q32021 among provinces, sex, and age group.

Lessons learned: Index testing implementation significantly improved (0.05%) between Q42019 and Q32021, overall HIV tests increased from 1,119,101 to 1,244,296 (11.2%) and those from index from 21,238 to 50,516 (137.9%). Overall HIV-positive tests decreased from 58,351 to 41,280 (-29.3%) while positive index tests increased from 3,018 to 4,998 (65.6%). The proportion of overall HIV tests and new positive tests contributed by index testing increasing from 1.9% to 4.1% and from 5.2% to 12.1%, respectively.

Eastern Cape and Kwa-Zulu Natal were successful in testing and new case finding from index due to early government buy-in, rigorous focus on training, tools, monitoring and strong engagement with community partners for outreach/tracing/tracking index contacts. Gauteng experienced declines primarily due to outward migration because of COVID-19.

	Overall Testing Program				Index Testing			
Province & Demographics	Number & % Change of HIV tests performed	P-value	Number & % Change of new HIV-positive tests	P-value	Number & % Change of HIV tests performed	P-value	Number & % Change of new HIV-positive tests	P-value
Eastern Cape	-29.7% (n=-44,854)	0.00	-36.1% (n=2,266)	0.00	460.5% (n=5,112)	0.00	407.3% (n=2,464)	0.00
Gauteng	-0.1% (n=-300)		-46.3% (n=-11,782)		-43.5% (n=-3,135)		-38.1% (n=-1,757)	
Kwa-Zulu Natal	51.6% (n=165,199)		0.0% (n=-8)		237.2% (n=26,522)		207.4% (n=13,708)	
North West	1.9% (n=5,150)		-30.6% (n=-3,015)		44.8% (n=779)		51.7% (n=727)	
Female	14.7% (n=111,203)	0.00	-28.4% (n=-10,465)	0.012	126.0% (n=13,788)	0.00	79.4% (n=1,222)	0.00
Male	3.8% (n=13,992)		-30.8% (n=-6,606)		150.4% (n=15,490)		51.3% (n=758)	
<15	32.5% (n=31,759)	0.00	-47.3% (n=-629)	0.00	49.8% (n=3,685)	0.00	-29.5% (n=-61)	0.00
15+	9.1% (n=93,436)		-28.8% (n=-16,442)		185.0% (n=25,593)		72.6% (n=2,041)	

Table 1: HIV tests and positives overall and from index testing by province, sex, age, South Africa, Q42019 to Q32021

Conclusions/Next steps: Index testing performed better than the general testing program due to strong partner engagement and rigorous focus on the program proving to be an important case finding strategy in South Africa.

EPE351

Improving cardiovascular health for aging patients living with HIV: a Boston University Medical Center Quality Improvement Initiative

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Background: The prevalence of cardiovascular comorbidities among people living with HIV (PLWH) have increased over time as the population ages. PLWH experience greater a burden of cardiovascular diseases (CVD) compared to people without HIV infection, even in the

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setting of viral suppression. Despite growing CVD morbidity in PLWH, known preventative strategies are under-implemented in the infectious disease clinic setting, including screening for risk factors, and statin utilization. The BUMC Center for Infectious Disease project team set a quality improvement (QI) aim to increase the proportion of high ASCVD risk (≥ 7.5%) PLWH prescribed a statin from 57% to 75% by May 31, 2022.

Description: From January to December 2021, the team carried out a QI project leveraging the Institute for Healthcare Improvement's Model for Improvement. The team obtained demographic and prescribing data from the health record and generated control charts. Patients aged 40-75, virally suppressed, with a recently completed appointment in the Center for Infectious Disease with their PCP were included.

The team performed a gap analysis to identify root causes of barriers to preventative interventions. Frontline clinicians identified, co-designed, and piloted practice changes using the Plan-Do-Study-Act cycle.

Lessons learned: Based on gap analysis findings, the project team implemented an automated ACC/AHA 10-year risk calculator that harvests data from the health record and trained the team on its use. This improved risk score calculation from 10% to an average of 71%.

To improve appropriate statin prescribing, we created opportunity reports, pharmacist and nurse-driven flagging of eligible patients, and developed screen capture animation patient education video in the top five languages to address prescribing disparities by preferred language found in our gap analysis. We do not yet observe a sustained increase in the percentage of high ASCVD risk* PLWH that have a prescription for statin therapy.

Conclusions/Next steps: The automated calculator reduced reliance on provider memory and increased accessibility to ASCVD risk information at point of care. Supportive workflows that facilitate shared decision-making conversations may be key to sustainably increasing appropriate statin prescribing.

Centering equity through data disaggregation uncovers important disparities, and is essential for informing culturally and linguistically tailored cardiovascular health interventions.

EPE352

Improving HIV outcomes in Nigeria using a technology-enhanced "situation room" approach

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Background: Despite substantial investments in systems to collect and manage HIV data, information gathered is poorly used to manage program performance due to government's inability to synthesize data across multiple information systems, the lack of access to real-time data analyses and visualizations, and poor accountability mechanisms to track implementation of prioritized actions.

The USAID-funded Data for Implementation (Data.FI) project developed an automated system for HIV program implementing partners (IPs) to report key indicators for weekly reporting, ensure data completeness and quality—particularly for clients newly testing HIV-positive, newly linked to, and currently on HIV treatment.

In Akwa Ibom, the state with the highest prevalence of HIV in Nigeria, Data.FI set up an HIV "Situation Room" (SR) with the state government to convene weekly data review meetings, allowing service providers, IPs, and decision-makers to closely monitor data in real-time, identify gaps, and agree on and triage solutions.

Description: Data.FI developed a standardized, action-oriented, technology-enabled SR methodology, leveraging the Automated Partner Performance Reporting (APPR) platform, which integrates and triangulates data from multiple sources (IPs' electronic medical records, laboratories, pharmacies, censuses, and routine PEPFAR reports) reviewed weekly for strategic planning and program improvement. The SR approach includes processes for identifying critical information needs, developing standard visualizations to facilitate problem identification, analyzing root causes of identified issues, and strengthening feedback mechanisms.

In collaboration with IPs, performance tracking and accountability tools are used to follow up on action plans, monitor performance improvements, and improve transparency, enabling continuous feedback and learning as a catalyst for ongoing program adaptation.

Lessons learned: A structured mechanism for regular and rapid review of data can help programs quickly identify HIV cascade inefficiencies, understand reasons for underperformance, and course-correct service delivery to improve HIV outcomes. Implementation of the SR approach in Akwa Ibom has led to improvement in outcomes across the HIV 95:95:95 cascade that have been well documented in published briefs disseminated in Nigeria and uploaded on USAID's Development Experience Clearinghouse to encourage learning.

Conclusions/Next steps: Building on the demonstrated success of the Akwa Ibom SR, the approach is being replicated in other states across Nigeria.

EPE353

Using the service quality assessment tool as a strategy to advance pediatric and adolescent HIV services progress towards the 95 95 95 goals for Uganda

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Background: In Uganda, treatment cascade for children and adolescents across 95 95 95 cascade continues to lag behind adults. By 12/2020, 66% of children (0-9 years) and 57% of adolescents (10-19 years) knew their HIV status. Of these, 66% of children and 97% of adolescents were on antiretroviral treatment (ART). Viral load coverage was 74% for children, and 81% for adolescents with a viral load suppression of 37 and 67% for children and adolescents respectively, (DHIS 2020). The proportion of children and adolescents on optimal treatment was 73%.
This sub-optimal performance is partly attributed to absence of a simple tool to identify gaps. Ministry of Health (MOH) with support from Clinton Health Access Initiative developed the service quality assessment (SQA) tool and piloted it in selected regions with ≥70% of all children living with HIV.
Description: The SQA tool is modelled after six service standards for pediatric and adolescent HIV i.e., outpatient department screening and testing, same day ART initiation, optimal ARV regimens, updated viral load, adolescent responsive services, psychosocial support, and commodity ordering. Healthcare workers were trained on the tool and guided on routinely abstracting data using the tools dashboard to identify and address gaps. Mentorship and supervisions were conducted quarterly by MOH.
The tool was deployed in 603 health facilities in 27 districts in 01/ 2021 and data abstracted from 4,600 files in 03/2021. Analysis informed rapid mentorships addressing screening, linkage, retention, viral load collection and documentation gaps.
Lessons learned: By September 2021 compared to 12/2020, treatment cascade across all indicators improved within pilot regions; children 0-19 years who knew their status increased from 69% to 78%, ART initiations from 81% to 92%, ART optimization from 78% to 99%, viral load coverage from 78% to 91%, viral load suppression from 58% to 91%, and 12-month retention from 82% to 90%. SQAs allowed monitoring of paediatric and adolescent service standards to identify gaps for timely interventions.
Conclusions/Next steps: Regular SQAs that are easy to use and implement by healthcare workers can contribute to Uganda's achievement of the 95-95-95 goals.
SQAs should be scaled-up nationally for quality-of-care improvements for children and adolescents.

EPE354

Measuring what matters for COVID-19 responses: evidence on HIV related outcomes for adolescent girls

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Background: Adolescent girls and young women comprised an estimated 10% of the population in sub-Saharan Africa but accounted for 59% of new HIV infections (UN, 2019).
Evidence on the effectiveness of short-term and the long-term mitigation strategies for COVID-19 is still limited. To better characterize the historical evidence on interventions and outcomes for adolescent girls, we conducted a structured review to advance four goals:
- Identify high-potential interventions to be replicated to reduce girls' risk of contracting COVID-19.
- Identify short-term emergency interventions to mitigate the secondary effects of COVID-19 on girls.
- Identify longer-term interventions that hold promise for "building back better" with and for adolescent girls.
- Map and visualize the evidence gaps by assessing the concentration of evidence across interventions studied, outcomes prioritized, girl sub-populations and in contexts of instability.

Methods: To answer these questions, we conducted a structured review that resulted in the selection of 171 studies from 25,000+, including 32 reviews and 139 evaluations.
Our systematic inquiry resulted in an *Evidence Gap Map* on the amount of evidence on interventions with demonstrated outcomes for girls.
This submission is on a subset analysis of referenced HIV outcomes in these studies to identify some gaps in our responsive interventions to girls and HIV.
Results: Using 3ie EGM platform, we found that 132 publications reported outcomes on girls health, 87 have included reference to HIV outcomes for adolescent girls.
The gap was demonstrated among interventions such as economic empowerment, schools, mental health, cash transfers, safe spaces, gender empowerment, GBV, menstrual health, teen pregnancy and, harmful practices such as child marriage.
These results were surprising as these interventions could be effective for HIV prevention and response among girls during COVID-19.
Conclusions: The available evidence and gaps on HIV studied outcomes for girls demonstrate the need for evidence-informed HIV interventions and for more research to address the gaps.

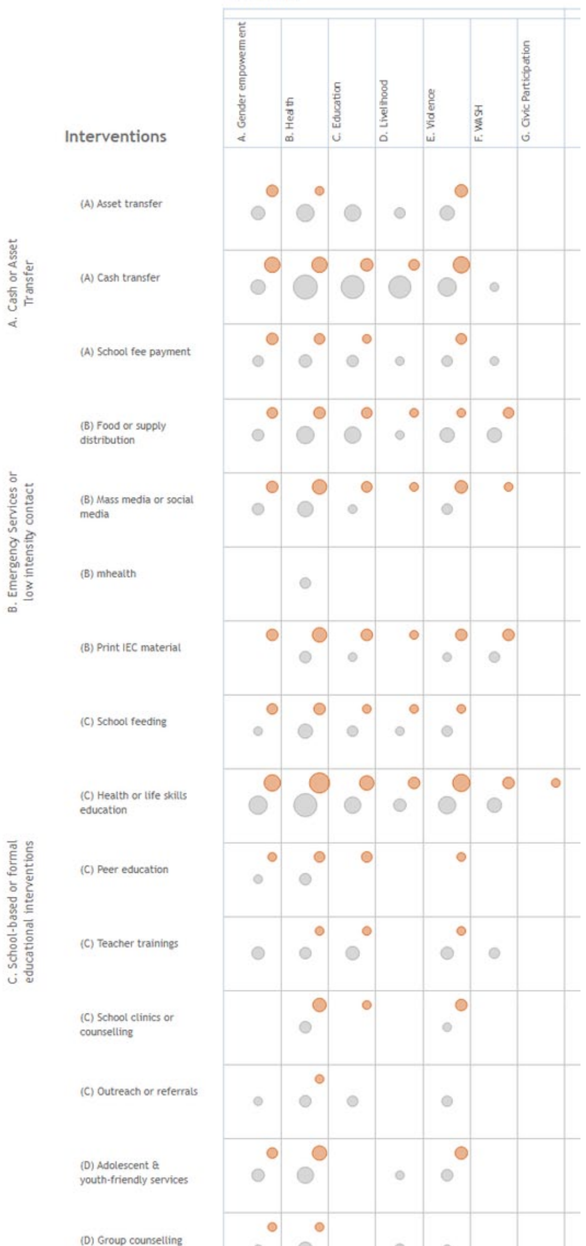

Figure. Evidence Gap Map on adolescent girls interventions and outcomes in low-resource settings in the era of COVID-19.

EPE355

The impact of human resource support on HIV care continuum indicators in four provinces in Mozambique

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Background: To support Mozambique in achieving HIV epidemic control, the Efficiencies for Clinical HIV Outcomes (ECHO) project deploys technical assistance (TA) and health providers in health facilities in four provinces. To inform the allocation of additional health staff to ECHO facilities, this analysis assessed the association between ECHO project inputs—TA visits and the clinical staff support—and performance on key HIV care continuum indicators.

Methods: A hybrid panel regression model was used to estimate the effect of ECHO human resource support on HIV key performance indicators in supported facilities from October 2019 to September 2020. The model used lagged independent variables to account for the delayed effect of project inputs on HIV continuum care indicators, and controlled for facility catchment population and HIV prevalence using proxy variables. Data for this analysis was obtained from Mozambique's DHIS2 database and ECHO project databases.

Results: Each additional TA visit provided by the ECHO project was correlated with an increase of 6 patients receiving ART, while deploying each additional clinical staffer was correlated with an increase of 135 patients receiving ART. Both TA visits and clinical staff support were correlated with a decrease in the number of ART patients lost to follow-up (LTFU), by 7 and 71 patients respectively. Additional clinical staff support was also correlated with a 3.2 pecentage point increase in the percentage of ART patients with suppressed viral load. However, TA visits were correlated with a decrease in HIV positivity yield by 0.1 percentage points, and a decrease in patients newly enrolled in ART by 2 patients. Clinical support was also found to be negatively correlated with these indicators, but the correlation was not statistically significant.

Conclusions: Our results suggests that the ECHO project was successful in increasing the number of patients receiving HIV treatment and reducing the number of patients LTFU. Decreases in HIV positivity yield and the number of people newly enrolled in ART may be related to approaching ART saturation in each facility's catchment population. Additional data to extend the analysis beyond the one-year time frame is needed to better understand underlying trends in health facility performance.

EPE356

The total package: an integrated monitoring, accountability and quality improvement (IMAQI) system to link participatory community monitoring of service delivery to quality improvement of health facilities

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Background: Since 2017, Positive Vibes has supported key populations in seven East/Southern Africa countries to monitor health facilities and dialogue with healthcare workers, programmers and policy makers around quality improvement. Methodologies and strategies have evolved to deepen and extend the impact of monitoring at facility level through a comprehensive system of tools that supports engagement and accountability, substantiates community advocacy with authoritative data, and links monitoring with practical quality improvement.

Description: Cooperating communities and facilities progress systematically through the IMAQI system that supports joint analysis, diagnostics, design, remedial action, and ongoing monitoring of user-satisfaction.

1. Applied annually, *"Setting The Levels"* is a process where discrete populations and healthcare workers reflect on their subjective perceptions of services, coming together to compare/contrast perspectives, and dialogue;
2. *ma'Box* is an online virtual suggestion box. Clients give real-time feedback on their user-experience and generate data;
3. Trusted, community-identified *Peer Monitors* stationed at facilities encourage and assist clients to rate their experience on the ma'Box platform;
4. Communities participate in a *Quarterly Review of ma'Box data,* preparing, analysing and interpreting data, generating findings and recommendations;
5. Communities present data to monitored facilities as the departure point for Quality Improvement. *"A Better Place"* is a tool to support priority-setting and Quality Improvement Plan and budget development.

The IMAQI system is cyclical; the effects of quality improvement recognisable in improved satisfaction levels reported in routine ma'Box data.

Lessons learned: Monitoring is a powerful practice for marginalised, disenfranchised communities. It grows confidence for expression, raising expectations for quality and dignified care. Service uptake improves as facilities respond positively to feedback. Monitoring can, however, become problematic. When accountability is too strong -- exclusively negative and critical -- monitoring based in contestation becomes counterproductive; accountability breaks the relationships necessary for cooperative solutions. Alternatively, healthcare workers, better informed by feedback, may wish to do better; they may want to improve, but not know how. Intention does not automatically confer direction.

Conclusions/Next steps: Monitoring that achieves the most effective results supplements critique with solutions. It links communities and facilities into a plan and resourcing (human, technical, programmatic, financial) to implement quality improvement within a finite timeframe.

EPE357

Optimizing Electronic Medical Record System-EMasterCard and granular data driven evidence to support program improvements in an expanded geographical area

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Background: Electronic medical record (EMR) systems have been important in electronic granular data capture solutions for Point of care real-time program and epidemic surveillance. Granular data reporting by age and sex was observed challenging in Malawi. In September 2019, Malawi expanded EMR system from 206 to 724 (99.3%) using hybrid electronic system-EMasterCard.

We describe how Partners In Hope (PIH) transitioned from paper based data capturing and reporting on an expanded geographical area to using E-mastercard system.

Description: Malawi Health system has largely used paper based record management system. In 2006 Malawi national EMR system on HIV & AIDS programming was launched and has evolved significantly overtime. PIH is a Malawian non-governmental organization supporting HIV care and treatment supporting 123 facilities in 9 districts. In September 2019, PIH adopted, supported and expanded roll-out of E-Mastercard from 35.6% to 100%.

The transition involved hiring and deploying of 212 facility based data clerks. PIH also provided training to both data clerks, and ART providers including developing standard operating procedures. While it would take 21 days to manually collect and report data at 32 facilities on quarterly basis, it is currently taking 5 days to collect and report data at 123 facilities on monthly basis. PIH has also increase frequency of granular program data review meetings from once a quarter to monthly.

Lessons learned: Optimizing EMR usage has seen significant time saving and human resource which was initially required is now being used for other Care & Treatment activities including viral load monitoring and back to care programs. Granular data review meetings have resulted in PIH introducing other care and treatment initiatives such as Risk Stratification and Advanced HIV Disease as part of quality of improvements.

Conclusions/Next steps: PIH will advocate to Malawi Ministry of Health through E-Health technical working group to incorporate other health care service delivery points currently not included in EMR such as Cervical Cancer, STI, and COVID 19.

EPE358

Advancing LGBTQI+ Health in India: evidence, and research and policy/program priorities from the 'Second National Symposium on LGBTQI+ Health'

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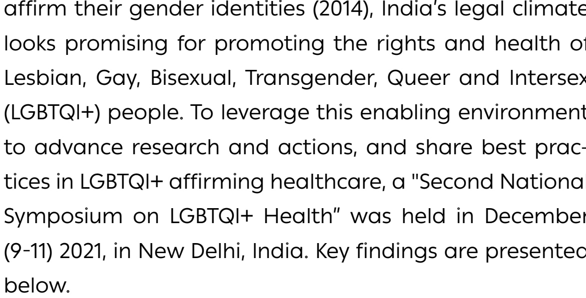
Background: With Supreme Court verdicts decriminalizing adult consensual same-sex relationships (2018) and recognizing the rights of transgender persons to self-



affirm their gender identities (2014), India's legal climate looks promising for promoting the rights and health of Lesbian, Gay, Bisexual, Transgender, Queer and Intersex (LGBTQI+) people. To leverage this enabling environment to advance research and actions, and share best practices in LGBTQI+ affirming healthcare, a "Second National Symposium on LGBTQI+ Health" was held in December (9-11) 2021, in New Delhi, India. Key findings are presented below.

Description: In this hybrid mode-symposium with 14 sessions, 130+ persons attended in person and 1000+ people watched the live-streamed proceedings. Speakers/panelists identified several gaps in LGBTQI+ health research, policies and programs. In relation to men who have sex with men (MSM) and transfeminine people, the government's focus has been on HIV prevention and care, with inadequate attention on mental health, alcohol/substance use, online HIV prevention interventions.

Only a few state governments reimburse costs of or provide free gender-affirmative hormones/surgeries for transgender persons. Limited understanding of the health needs of LGBTQI+ people, secondary to misinformation in medical curricula, lack of institutional policies on gender categories in outpatient/inpatient intake forms and access to restrooms were discussed. Intersex activists reported ongoing practice of medically unnecessary surgeries on children with intersex variations and conflation of intersex people with transgender people. The lack of reliable estimates of LGBTQI+ populations poses a challenge for planning and budget allocation.

Lessons learned: Current evidence and national programs focus on HIV-related issues of MSM and transfeminine people, with little work in relation to mental health, stigma reduction, and health of lesbian/bisexual women, transmasculine people and people with intersex variations. There is a need to support research programs and build the capacities of young researchers in health research, especially researchers from the LGBTQI+ communities.

Conclusions/Next steps: This national symposium helped bringing together diverse key stakeholders and provided a snapshot of the progress and gaps in LGBTQI+ health. An action plan for various stakeholders is being finalized to improve LGBTQI+ health, especially in relation to creating LGBTQI-specific policies, programs and research agenda.

EPE359

Ensuring HIV commodity availability in Ghana through effective data analytics for informed decision making: the case of Western and Western North Regions

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Background: With funding from the U.S. President's Emergency Plan for AIDS Relief (PEPFAR), GHSC-PSM provides support to Ghana's National AIDS Control Program to strengthen HIV commodity management in the Western Region and Sefwi-Wiawso district of the Western-North Region. To ensure a reliable supply of HIV program commodities, the project regularly monitors supply chain performance and uses results to address identified gaps. GHSC-PSM employs data analytics as a key mechanism to drive evidence-based decision-making and improvements in commodity availability at health facilities.

Description: GHSC-PSM's data analytics program analyzes and triangulates monthly HIV consumption data, regional warehouse stock reports, HIV-supportive supervision data to identify facilities with supply management challenges and initiate actions to fill gaps. The project conducts a comparative data analysis of these data sources, using advanced excel analytic tools to generate outputs and create dashboards that help identify potential risks of overstock, expiry, or stockout.

GHSC-PSMshared data analytics outputs with regional supply chain coordination mechanisms to inform discussions and promote the use of data for decision-makingandfacilitated learning and experience sharing by collaborating with the regions to disseminate analytics outputs during regional HIV review meetings.

Using data analytics, partners have conducted emergency central-to-regional level distribution and inter-facility redistribution to improve commodity availability at health facilities. From July 2020 to June 2021, TLD availability increased from 84% to 100% in all ART sites.

Lessons learned: Analyzing and triangulating data at various levels of the supply chain can provide useful information for evidence-based decision-making. In Ghana this approach revealed challenges with the supply management and use of HIV commodities, leading to the adoption of corrective measures to help address gaps. Using supply chain data for intervention-targeting and decision-making can support broader HIV care and treatment goals.

Conclusions/Next steps: GHSC-PSM expects to improve the triangulation of logistics data with service data and strengthen data analytics with the introduction and use of the automated platform Power BI to speed up turnaround time of analytics outputs and visualization. Supply chain actors can utilize data analytics as a tool for driving performance improvement and ensure sustained availability of HIV commodities at the last mile.

EPE360

The impact of seroconversion date estimation on seroconversion rates: analysis of routine HIV test data among female sex workers in Zimbabwe

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Background: Estimates of HIV incidence among female sex workers (FSW) in Sub-Saharan Africa remain challenging to obtain, potentially impacting programming and policy decisions. One approach is to calculate seroconversion rates from routinely collected HIV test data, however these data are susceptible to irregular testing patterns leaving uncertainty around the time of seroconversion. We applied four methods to estimate seroconversion dates between HIV tests to understand how these influenced seroconversion rates.

Methods: We analysed HIV test data from Zimbabwe's national sex work programme between 2009-2019, including all women with an HIV-negative test before 2018 and one or more subsequent tests at least one month later. We assigned a date of seroconversion between last HIV-negative and first HIV-positive test using four methods:

1. Randomly generated,
2. Midpoint,
3. Two weeks before an HIV-positive test, and;
4. Two weeks after a last HIV-negative test.

We used lexis expansion to split our data by two-year calendar periods and calculated rates of seroconversion for these with each method.

	Estimation Method							
	Randomly generated date		Midpoint date		Two weeks before HIV-positive test date		Two weeks after last HIV-negative test date	
Year	HIV+/ person years	rate/100 person years	HIV+/ person years	rate/100 person years	HIV+/ person years	rate/100 person years	HIV+/ person years	rate/100 person years
2009-2011	25/4.6	5.5 (3.4-9.1)	24/4.6	5.2 (2.8-10.5)	17/4.7	3.6 (1.8-7.7)	33/4.4	7.5 (4.6-12.5)
2012-2013	49/11.3	4.3 (2.7-6.8)	45/11.4	4.0 (2.6-6.0)	28/11.6	2.4 (1.6-3.9)	67/11.0	6.1 (4.0-9.2)
2014-2015	118/32.6	3.6 (3.1-4.3)	120/32.6	3.7 (3.2-4.2)	103/33.2	3.1 (2.6-3.7)	141/31.8	4.4 (3.8-5.3)
2016-2017	157/46.6	3.4 (3.0-3.8)	166/46.7	3.6 (3.2-4.0)	160/47.7	3.4 (2.8-4.3)	120/45.9	2.6 (2.3-3.1)
2018-2019	15/8.7	1.7 (1.2-1.6)	10/8.7	1.2 (0.7-2.2)	57/8.9	6.4 (4.8-8.6)	4/8.7	0.5 (0.2-1.3)

Table 1: Seroconversion rates by method of seroconversion date estimation

Results: Among 5,054 women with an initial HIV-negative test, 365 (7.2%) subsequently tested HIV-positive with a median seroconversion interval of nine months (273 days, IQR 140-529). Each method produced similar seroconversion rates for the time period 2009-2019: 3.4/100py (two weeks before), 3.5/100py (midpoint, random), 3.6/100py (two weeks after). Rates calculated for shorter periods showed greater variation, ranging from 3.6/100py (two weeks before) to 7.5/100py (two weeks after) for 2009-2011, and from 1.2/100py (midpoint) to 6.4/100py (two weeks before) for 2018-2019 (Table 1).

Conclusions: Estimating HIV seroconversion rates from routinely collected data is a resource-efficient approach that could become increasingly applicable as regular HIV testing coverage of FSW is optimised. To inform timely and appropriate programming decisions the method of seroconversion date estimation needs to be considered as this could influence calculated rates over shorter periods, potentially under or overestimating the true rate of seroconversion.

EPE361

Engagement in a digital health intervention for young Black and Latinx men and transwomen who have sex with men

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Background: Digital HIV interventions (DHIs) have demonstrated efficacy in increasing social support, reducing stigma, and promoting engagement in care among sexual minority populations, yet challenges persist in sustaining participants' use of DHIs. To address a gap in the understanding of DHI engagement, we examined correlates of engagement within a randomized controlled trial among young Black and Latinx men and transwomen who have sex with men (YBLMT) participants.

Methods: HealthMpowerment 2.0 was designed to promote HIV prevention behaviors among YBLMT (ages 15-29). Over the study period, participants' interactions with the DHI were collected in real time. In this study, we summarized 427 participants' weekly time spent on the DHI over 12 weeks. We used t-tests and chi-square tests to compare engagement.

Results: The average total duration of use was 30.67 minutes (range 0.05-574.2). 38.4% of the intervention participants and 15.5% of the control participants used the DHI for more than 30 minutes (active users) across their first 12 weeks in the trial ($p<0.0001$). Participants in the intervention arm spent twice as much time within the DHI as those in the control arm (40.64 minutes vs. 18.90 minutes; $p<0.0001$) over 12 weeks. Engagement for both arms was the greatest in week 0 and week 1 and the difference between the study arms was also the greatest during those weeks (see graph). Participants with an annual income

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below $20,000 were more likely to be active users compared to non-active users (58.0% vs. 46.1%; p=0.02). At the 12-week follow-up assessment, active users reported higher usability and engagement with various intervention features than non-active users (p<0.01).

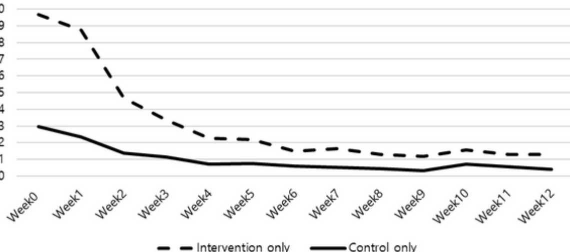

Figure. Weekly minutes spent on the HMP 2.0 by intervention arm.

Conclusions: Participants' DHI engagement declined after 2 weeks of the trial. Given the importance of intervention engagement in DHI, design thinking approaches that consider variabilities in needs and usage could promote the overall engagement and efficacy of DHIs.

EPE362

Improving viral load suppression in four provinces of Mozambique using a tool for early identification of unsuppressed patients

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Background: According to the World Health Organization, the viral suppression of people living with HIV defines the success of antiretroviral therapy. Patients with a viral load (VL) above 1,000 copies/ml must be rigorously monitored to identify the causes of non-suppression and consequently reinforce adherence to treatment.
To facilitate this process, the Efficiencies for Clinical HIV Outcomes (ECHO) Project created a tool that generates weekly alerts to psychosocial support services (PSS) with the aim of reducing the time between receiving the unsuppressed result and implementing follow-up interventions, which continue until viral suppression is achieved.
Description: The project implemented this instrument in March 2020 at 58 health facilities in Tete, Sofala, Manica and Niassa provinces and expanded it to an additional 90 health facilities between April and September of the same year. All unsuppressed VL results, after being entered into the Open MRS system, are then populated into a weekly list that clinicians and PSS staff use to enforce adherence. The planned activities follow national testing algorithms. Prior to the tool's implementation, the project carried out in-service training for clinicians and those responsible for monitoring in each province.
Lessons learned: Reminders delivered make it possible for caregivers to quickly identify patients who need specific interventions such as PSS consultations, clinical consultations, requests for a new VL test, new sample collection, and access to results. This has contributed to an improvement in viral suppression in the four targeted provinces. General VL suppression among the four provinces was 68% in March 2020, rising to 80% in August 2020, after the tool's implementation. In December 2021, the average VL suppression rate was 90%.
Conclusions/Next steps: This tool has proved to be useful in the follow-up of patients who were not suppressed as data shows. The tool makes it possible for caregivers to quickly identify patients who need targeted interventions.
Its implementation could contribute to improved VL outcomes at the national level for patients with unsuppressed viral loads.

EPE363

Introducing a data-driven district-level planning process to strengthen HIV programming, with a vision to achieve 95-95-95 in the state of Andhra Pradesh, India

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Background: Regular analysis and use of programmatic data for planning has the potential to optimize service delivery and program outcomes. Under the CDC-funded Strengthening Strategic Information Management System (SIMS) Project, PATH supported the Andhra Pradesh State AIDS Control Society (APSACS) to roll out a granular data-driven district-level planning process to improve district-level HIV programming to achieve the first 95.
Description: Continuous quality improvement mentors trained and mentored seven District AIDS Prevention and Control Units (DAPCU) to analyze routine data from national HIV information systems reported by service delivery sites/providers (e.g., Integrated Counseling and Testing Centers, link workers); highlight gaps in reaching targets; develop and implement an action plan; and review progress against action plan (see figure).
The DAPCUs implemented this process from August through December 2021. We compared performance data from this period to data from August through December 2020 to understand if this process led to improved performance against HIV testing indicators.
Lessons learned: There was an observed increase in achievement (table) for annual HIV testing targets (39.7% versus 20.5%; p<0.001) and partner testing (45.0% versus 40.4%; p<0.001). There was no change observed in linkage to treatment (97.7% during both time periods).
Data-driven monthly discussions with DAPCUs and site-level teams enabled mid-course adjustments and informed district-level decisions. Monthly review meet-

ings provided a valuable opportunity for cross-learning; exchanging experiences with peer groups; and refining data required to measure and evaluate specific activities.

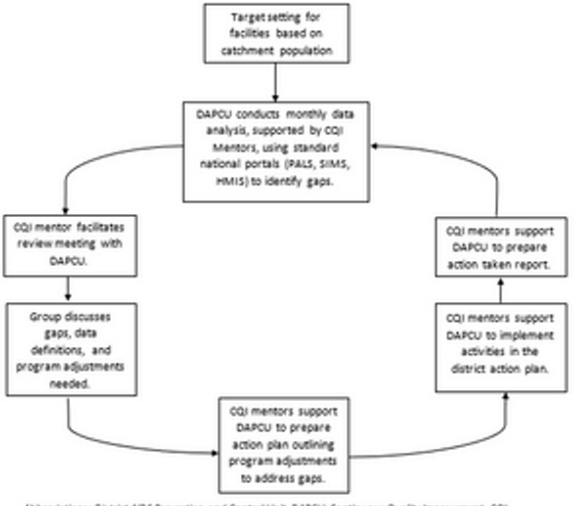

Figure. Flowchart pf data-driven district action planning process.

	Percentage achievement for annual HIV testing targets	Percentage linkage to treatment	Percentage of partners of newly-diagnosed HIV positive people tested
August-December 2020	20.5% (81,109/394,643)	97.7% (2,169/2,221)	40.4% (877/2,169)
August-December 2021	39.7% (156, 671/394,643)	97.7% (3,035/3,105)	45.0% (1,365/3,035)

Table.

Conclusions/Next steps: Application of the data-driven district-level planning process led to improved performance in HIV testing (number of people tested and percentage of partners tested), leading the APSACS to now expand its use across all districts of Andhra Pradesh. Data-driven decentralized program planning is essential to ensuring that programs at all health system levels progress towards epidemic control targets.

EPE364

"We should have access to information at our fingertips" – results of a mixed methods study of data availability and use by decision makers for HIV programs in Blantyre, Malawi

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Background: Timely and high-quality data are key to maximizing the efficiency of HIV programmes. Decision makers need the right data at the right time to make informed decisions. However, data use for decision making in HIV programmes is poorly understood in Blantyre.
We performed a data user study in Blantyre which mapped the key decisions, data, and the information systems decision-makers use for HIV prevention.

Methods: We drew a sample of 71 decision makers. These people leverage data for policy, management, or delivery purposes. We deployed app-based questionnaires collecting both quantitative and qualitative information.
We asked about their decisions, the indicators they use, and what HIV prevention services they focus on. We generated descriptive statistics and used thematic analysis to analyze qualitative data.

Results: Respondents came from civil society (42%), government (38%), and private sector (20%) and represented a variety of organizational levels including the city or district (37%), national (25%), community (23%) and facility (15%). The program areas that most frequently reported for decision making included condoms (54%), adolescent girls and young women (AGYW) (48%), and both STIs and HIV treatment (44% each). Paper based sources such as reports (54%) and registries (49%) were most commonly used while the District Health Information System (or DHIS) was the most commonly used digital data source (28%). Although over 1,000 indicators were reported as available, decision-makers reported using only 93 to support their work. Thematic analyses indicated digital literacy, access to digital systems, and availability of data are critical challenges that hinder data-driven decision making. The community-level was commonly reported as needing capacity building as a data collector as was the facility-level.

Conclusions: A diverse sample of decision makers reported a complex picture of accessing and leveraging data for decisions. Improvements are needed in digital data collection, reporting, and analysis to meet the needs of decision makers. Capacity building in data collection should prioritize the community. Future refinement of

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routine data collection should focus on improving alignment of data needs of decision makers with available indicators. Further inquiry into the sufficiency and value of available and future data sources is needed.

EPE365
The first multi-sectoral, user-driven data pipeline to adaptively manage HIV prevention programs in Malawi

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Background: In Malawi, HIV prevention data are fragmented, managed by different custodians, and are difficult to analyze and interpret nationally and by frontline workers. District, city, and health facility managers have limited views and ownership of HIV data, both within the formal health system and in the community. Despite the importance of social determinants on HIV risk, available data are typically summary statistics without context. This results in underused data and missed opportunities for more targeted and effective prevention activities.
We integrated HIV-related data sources into a 'data pipeline' with real-time, web-based, automated analyses and visualizations for decision makers in Blantyre, Malawi.
Description: We developed the Prevention Adaptive Learning and Management System (PALMS) for Blantyre. PALMS is a data pipeline which leverages the country's existing programmatic, surveillance, research, and donor data sources. As new data are available, PALMS ingests, transforms, analyzes, and visualizes the results. All PALMS development is driven by Blantyre leadership with processes to incorporate feedback, shifting priorities, and new data systems. To improve ease of use, PALMS data are automatically mined to highlight concerning statistics and notify users. Finally, PALMS is developed to 'plug and play' with the national enterprise architecture and is being absorbed by MOH technicians to improve sustainability and facilitate uptake to other interested districts.
Lessons learned: PALMS was rapidly adopted by decision-makers and used to monitor site performance, anomaly detection, and identify hotspots. Systems notifications are the most popular feature and have helped focus attention on facilities and programs that need the most support. The biggest barriers to PALMS development were not technological, but rather involved navigating the complex data ownership landscape and eliciting and integrating user feedback.
Conclusions/Next steps: PALMS will expand to include additional data sources, multi-platform notifications, and interoperate with a new HIV incident management tracker. We believe PALMS will help usher in a new data-driven, event-based surveillance approach to HIV prevention in Blantyre. The PALMS approach can be generalized to other settings and can hone attention and support resource allocation efforts.
Such user centered designed, sustainable, and scalable data systems that satisfy user expectations are feasible and desperately needed for HIV programmes throughout Africa.

EPE366
Data for action - developing a multi-country CLM dashboard for visualization, reporting, and program management

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Background: Community-Led Monitoring (CLM) is a key way to improve healthcare quality and accountability. Despite considerable early successes and impact by CLM projects, an emerging challenge in many programs is the need to rapidly conduct analysis of large volumes of data, produce easily understood visualizations, and develop reports that facilitate real-time advocacy and accountability interventions.
Description: Since 2019, the Ritshidze programme in South Africa has developed an online CLM data dashboarding system to automate critical data functions. Adapted versions of this platform are in use in Haiti, Malawi, Uganda, and Zimbabwe. The system provides near real-time data and analytical support across all stages of CLM implementation including data collection, warehousing, analysis, visualization, report generation, advocacy, and project management.
Lessons learned: Partnership: The data and reporting needs of CLM projects are dynamic and must be responsive to the advocacy needs of civil society. As such, long-term partnership between CLM programme staff and developers of CLM support tools is essential.
Data Warehousing: Recognizing the need to ensure data ownership by the community, CLM tools targeting support for multiple projects should not store multiple project's data together in a single database.
Indicator Analysis: Automated scoring systems for each CLM developed indicator are essential for rapid analysis and tracking of results over time, accounting for unequal sampling sizes and lack of predefined performance targets.

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Data Visualization: CLM projects are inherently focused on fixing issues at the local level. Data visualization systems must direct the analysis towards the lowest possible level where issues need to be resolved, namely identifying facilities that require intervention.
Automated Reporting: High-quality reports at facility, district, and provincial levels are an indispensable tool for routinely sharing findings with health officials, conducting advocacy efforts, and obtaining buy-in from health facilities, without overwhelming the project's staffing and capacity. Reports that contextualize successes and challenges relative to peers are the most effective.
Project Management Tools: Large-scale CLM implementation is administratively complicated. Project management tools for tracking data collection completion and administer users and facilities are essential.
Conclusions/Next steps: Iteratively developed CLM data tools are essential for rapidly moving from data collection to advocacy and accountability.
Ritshidze Dashboard: http://data.ritshidze.org.za

EPE367

The Global HIV Prevention Coalition (GPC) scorecards: a framework for analyzing progress and performance of national HIV prevention responses

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Background: Before the launch of the GPC in 2017 there was no common framework for assessing progress in HIV prevention responses. UNAIDS developed a prevention scorecard with a prevention results logic from outputs (prevention programme coverage) to outcomes (service use / behaviour) and impact (estimated new HIV infections).
Description: Scorecards were produced annually from 2017-2021 for five priority pillars:
1. Prevention among adolescent girls and young women,
2. Prevention with key populations,
3. Condoms,
4. Voluntary medical male circumcision (VMMC),
5. ARV-based prevention.

The scorecard covers indicators on structural and policy barriers to HIV prevention. Scorecards are based on country reporting within Global AIDS Monitoring and include data from population-based surveys, programme records and UNAIDS epidemiological estimates.
Lessons learned: Scorecards revealed large variation in HIV prevention coverage, outcomes and impact across 28 GPC countries (19 in Africa and 9 in other regions). Median coverage of prevention programmes for sex workers was 36% (interquartile range 20-58%), for men who have sex with men 28% (24-60%), for people who inject drugs 27% (5-56%) and for young women in areas with high HIV incidence 35% (22-70%). Median condom use was 79% (63-91%) among sex workers, 67% (54-78%) among men who have sex with men, 50% (35-59%) among young women and 62% (48-75%) among men with non-regular partners. Median progress against 2016-2020 cumulative VMMC targets was 58% (45-99%). The median number of people on PrEP relative to epidemic size (per 100 new infections) was 26 and varied strongly (13-111), while median national ART coverage was 75% (60-86%). On average, new HIV infections declined by 40% between 2010-2020 in GPC countries, ranging from 72% decline in Côte d'Ivoire to 84% increase in Pakistan. Findings suggest that there are high-performing and low-performing countries with all five pillars and structural barriers. Large gaps in prevention coverage exist in most countries. Data gaps were largest for key population programmes.
Conclusions/Next steps: GPC scorecards proved to be a useful instrument to systematically track progress and promote accountability. The application of the scorecard approach will be expanded beyond the 28 GPC focus countries and sub-national scorecard tools developed.

Evaluating large-scale programmes: Approaches to rigorous evaluation

EPE368

Electronic laboratory information system and HIV data quality: time-series analyses at eight public health laboratories in Côte d'Ivoire

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Background: Laboratory services are essential to HIV programming, and lack of functional laboratory information systems (LIS) and quality data is one of the main barriers to service delivery and data-driven decision making in low- and middle-income countries (LMICs). The OpenELIS

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Global software is an open-source LIS tailored for LMIC public health laboratories. The Côte d'Ivoire Ministry of Health and the United States President's Emergency Plan for AIDS Relief have been collaborating since 2009 to implement OpenELIS for HIV data management. This study aimed to quantify the initial and enduring effects of OpenELIS on HIV data quality.

Methods: We performed interrupted time series analyses using negative binomial mixed-effects regression to estimate the effect of OpenELIS implementation on monthly CD4 testing data quality outcomes defined as timeliness, completeness, and validity. We obtained de-identified individual laboratory records from paper registries for 12 months before OpenELIS adoption and from OpenELIS servers since adoption until December 31, 2020. Data were from three reference laboratories and five district laboratories that adopted OpenELIS in 2015, 2018, and 2019 and serve approximately 38,100 people living with HIV in five regions. Each laboratory record was assessed on the primary outcomes and analyzed at the laboratory level. We estimated relative risks representing monthly outcomes compared with counterfactual outcomes had the laboratories not adopted OpenELIS.

Results: There were 79,975 individual laboratory records during the study period, including 57,877 (72.3%) after OpenELIS adoption. A 28.5% increase (95% confidence interval [CI]: 1.026, 1.608) in timeliness, a 1.3% increase (95% CI: 1.001, 1.024) in completeness, and a 0.3% increase (95% CI: 1.000, 1.006) in validity were detected shortly after laboratories adopted OpenELIS. The improvements were sustained throughout implementation.

Conclusions: OpenELIS has improved HIV data quality at public health laboratories in Côte d'Ivoire, particularly in the early stage of implementation. Data in higher quality are more likely to be used and useful in HIV care and treatment. Ease of implementation, continuous technical support, and relative advantage of OpenELIS compared to paper registries have facilitated routine use of OpenELIS. The findings from this study provide evidence for future scale-up of OpenELIS in LMICs to serve HIV surveillance and disease management.

EPE369

The journey of postal testing for HIV and sexually transmitted infections in Wales

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Background: In response to the COVID-19 pandemic and closure of walk-in sexual health clinics across Wales, a postal testing service (Test and Post) was established allow individuals to continue testing for HIV and other sexually transmitted infections (STIs). Multiple evaluations and projects have been undertaken reviewing the service to identify its strengths and improve its provision.

Description: Test and Post is run by Public Health Wales (PHW) and incorporated into an existing online service that provided information related to sexual health and wellbeing in Wales. Postal testing allows for service users to order tests for Chlamydia, Gonorrhoea, Syphilis, HIV and Hepatitis B & C.

Results are communicated via text message for negative results and a phone call for positive/reactive results where follow-up tests and treatment are organised. The service was available from May 2020 and continues to run.

Lessons learned: From a service user perspective, Test and Post has been a great success. With feedback identifying the service targeting a real need, providing easy access and encouraging more to get tested through the removal of barriers. An increase in testing for Chlamydia and Gonorrhoea from pre-Covid levels was identified, supporting the service provision.

The quick set-up required in the circumstances resulted in the limitation of data management being poor at first. Data linkage for orders, results and linkage to care was not possible but PHW have addressed this since the evaluation. There are still issues within local clinics around using the correct coding to allow for data feedback to PHW.

Public perception around branding was found to be an issue. The integration of postal testing into an existing website (Frisky Wales) resulted in some confusion, with the public thinking the Test and Post was called Frisky Wales. This name was deemed inappropriate by some (mostly healthcare professionals), and has since been changed to Sexual Health Wales.

Conclusions/Next steps: PHW continue to develop the service and methods for testing. Issues with data linkage need to be overcome if accurate estimates of HIV and STI incidence in Wales are to be obtained and achieve the aim of the zero new HIV transmission's goal agreed by UK governments.

EPE370

Designing for impact: rigorous evaluation of two implementation models of a human-centered designed, direct-to-consumer digital intervention to prevent HIV and improve sexual health for Rwandan youth

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Background: Human-centered design (HCD) has been increasingly used to design HIV-related interventions, but rigorous evaluations of these interventions are scant. We designed a robust hybrid effectiveness/implementation impact evaluation of CyberRwanda, a direct-to-consumer digital health platform created using HCD to improve HIV prevention and overall sexual and reproductive health (SRH) among Rwandan youth.

Description: CyberRwanda provides age-appropriate adolescent health and employment information for 12-19 year olds at schools using webcomics and linkage to high-quality, youth-friendly pharmacy services providing access to SRH products (e.g., oral contraception, condoms) through an online shop. Two implementation approaches are being delivered: self-service (independent use of CyberRwanda) and a more resource-intensive facilitated version (student groups with a peer facilitator and activity booklet). We are conducting a 3-arm, non-inferiority cluster randomized controlled trial in 60 schools (20 schools per arm, 100 students per school) across 8 districts to assess the relative performance of the two models to each other and versus comparison schools. Youth aged 12-19 will be followed for 2 years. The primary outcomes are HIV testing in the past year, uptake of a modern contraceptive method, and age of initiation of childbearing, measured at 24 months.

Lessons learned: We enrolled 6,082 students (51% female) with a response rate of 82%. After 8 months of follow up, we have successfully retained 94% of students. Baseline data indicate 38% of students had ever tested for HIV, and 20% had tested within the past year. Preliminary evaluation of process data indicate that distance to partnering pharmacies, cost of products, and stigma may pose significant barriers to contraceptive access. To disentangle these issues, free non-SRH related "mystery gifts" and limited-time product discounts have been added to pharmacies, and additional partnerships have been initiated with health posts in some districts.

Conclusions/Next steps: As one of the few rigorously evaluated HCD-derived interventions being delivered at large scale, the results of this 3-arm cluster RCT will reveal the effectiveness of the CyberRwanda intervention on SRH outcomes among youth. It will also shed light on the optimal implementation model, which will be enhanced by a complementary cost-effectiveness study.

EPE371

Private drug shops as providers of girl-friendly HIV prevention and sexual and reproductive healthcare: scaling and evaluating the *Malkia Klabu* intervention in Tanzania

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Background: From 2018-2019, we used human-centered design (HCD) to co-develop a theoretically-driven HIV and pregnancy prevention intervention for AGYW ("*Malkia Klabu*"/"Queen Club") at private drug shops called Accredited Drug Dispensing Outlets (ADDOs) in Tanzania. The result, *Malkia Klabu*, was a loyalty program designed to enhance drug shops' role as HIV prevention and sexual and reproductive health (SRH) providers. AGYW earned punches for shop purchases, including free HIV self-tests, redeemable for small prizes of increasing value; free SRH products could be requested discreetly by pointing to punch-card symbols. Our four-month pilot among 40 shops (1:1 intervention/control) showed that intervention ADDOs had higher AGYW patronage, distributed more HIVST contraception to AGYW, and made more referrals compared to business-as-usual ADDOs. The potential impact of the *Malkia Klabu* program in large-scale implementation has yet to be determined.

Description: To rigorously evaluate the effectiveness of *Malkia Klabu* and optimize the implementation model for scale we are now conducting a cluster randomized controlled trial (c-RCT) among 120 ADDOs in forty wards in Shinyanga and Mwanza regions of Tanzania over two years commencing March 2022. Our rigorous design evaluating the HCD-derived intervention will assess the population impact of the intervention on the primary outcomes HIV diagnoses and antenatal care registrations using routine health facility data.

We will also assess implementation outcomes, evaluating program exposure through quantitative interviews with AGYW and assessing shop-level delivery strategies that bolster success.

Lessons learned: Using ubiquitous private drug shops as providers of basic health services/commodities leverages existing resources and provides a unique opportunity to increase access to priority health initiatives for underserved groups such as AGYW.

Informed by our pilot study, we anticipate that the *Malkia Klabu* intervention will result in increased uptake of HIV self-testing, contraception, and antenatal care visits among adolescent girls and young women in intervention wards compared to control wards.

Conclusions/Next steps: Our HCD-grounded program will be one of the first rigorously evaluated through a c-RCT, and will be well-positioned for scale-up should *Malkia Klabu* be effective.

The study will provide timely evidence on closing the gap between evidence and practice for HIV self-testing and contraceptive uptake among Tanzanian AGYW.

Effective approaches to linking population and programme data to inform HIV programming

EPE372

GIPA engagement audit: Assessing the National Association of People Living with HIV Australia's (NAPWHA) engagement of people living with HIV

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Background: The National Association of People Living with HIV Australia (NAPWHA) relies upon its membership and people living with HIV (PLHIV) from across Australia to understand the priorities for PLHIV. As the peak organisation in Australia representing PLHIV, NAPWHA invited Qthink to conduct an independent assessment of their capacity to engage with PLHIV.

Description: Over nine months, NAPWHA engaged Qthink, an external consultant, to ensure the voices of people living with HIV were heard. The consultants selected 'engagement' as a broader theoretical lens than 'involvement' to capture consultation and interaction with PLHIV and positive communities. A bespoke survey was completed by the leadership of NAPWHA's membership group (n=34). Its design was informed by Greater Involvement and more Meaningful Engagement of PLHIV (GIPA/MIPA) principles, and best practice guidelines sourced from a variety of international NGOs, peak bodies and advocacy organisations. In depth interviews were held with six nominated representatives exploring five themes that emerged from the survey results: accountability, autonomy, resources, representation and transparency.

Lessons learned: The final report provides critical insights and observations which will improve NAPWHA's engagement and consultation mechanisms with their members and the diverse communities of people living with HIV. The following five recommendations were put forward:

1. Create an organisation-wide consultation and engagement strategy.
2. Support emerging priority populations.
3. Enhance the capacity, operations and transparency of existing networking bodies.
4. Conduct a review of how improve geographical and representational diversity.
5. Conduct a governance review with a focus upon practices which would enhance accountability, transparency, and responsibility.
6. Improve transparency by publishing half yearly updates on major activities, campaigns and projects.

Conclusions/Next steps: GIPA/MIPA principles provide a sound basis for a PLHIV organisation's engagement review. NAPWHA has already commenced its governance review and will be commissioning an engagement strategy in 2022. By scrutinising internal policies, procedures and priorities through this lens, NAPWHA aims to strengthen its appreciation of and responsiveness to the diverse needs, identities and experiences that are represented among people living with HIV in Australia.

EPE373

Leveraging routinely collected programmatic data to inform extrapolated size estimates for key populations in Namibia

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Background: Estimating the size of key populations (KP) including female sex workers (FSW) and gay men who have sex with men (MSM) can inform both the scale and content of specific HIV prevention and treatment programs at local and national levels. In places where direct population size estimates for KP are unavailable, including those extracted from Integrated Bio-Behavioral Surveys (IBBS) sampling frames (which are often limited in scope), small area estimation (SAE) can help fill in gaps using auxiliary data sources. However, routinely collected programmatic data have not historically been used in SAE approaches.

Methods: We used programmatic data to update national and subnational FSW and MSM size estimates in Namibia. Extrapolated estimates were obtained iteratively using simple imputation, stratified imputation, and multivariable regression of IBBS-collected direct estimates. KP program data, including PEPFAR Monitoring, Evaluation, and Reporting indicators and KP-STAR quarterly data, were used as priors to inform triangulation of multiple direct estimates using a Bayesian consensus-building approach.

		Simple Imputation PSE %		Stratified Imputation PSE %		Multivariable Regression PSE** %
	Region	IBBS	IBBS + Program Data	IBBS	IBBS + Program Data	IBBS
FSW	Zambezi	1.90	2.80	2.60	4.00	3.30
	Ohangwena	1.90	2.80	2.60	4.00	1.01
	Erongo	1.90	2.80	1.40	1.20	2.53
	Khomas	1.90	2.80	1.40	1.20	0.94
	Hardap	1.90	2.80	1.40	1.20	4.18
	Karas	1.90	2.80	1.40	1.20	3.21
	Kavango	1.90	2.80	1.40	1.20	1.22
	Kunene	1.90	2.80	1.40	1.20	4.68
	Omaheke	1.90	2.80	1.40	1.20	3.41
	Omusati	1.90	2.80	2.60	4.00	0.95
	Oshana	1.90	2.80	1.40	1.20	1.28
	Oshikoto	1.90	2.80	2.60	4.00	1.70
	Otjozondjupa	1.90	2.80	1.40	1.20	1.59
MSM	Zambezi	1.50	0.75	2.10	0.80	2.95
	Ohangwena	1.50	0.75	2.10	0.80	2.04
	Erongo	1.50	0.75	1.30	0.70	0.56
	Khomas	1.50	0.75	1.30	0.70	0.80
	Hardap	1.50	0.75	1.30	0.70	0.90
	Karas	1.50	0.75	2.10	0.80	1.43
	Kavango	1.50	0.75	2.10	0.80	1.46
	Kunene	1.50	0.75	1.30	0.70	0.63
	Omaheke	1.50	0.75	1.30	0.70	0.82
	Omusati	1.50	0.75	2.10	0.80	1.57
	Oshana	1.50	0.75	2.10	0.80	2.34
	Oshikoto	1.50	0.75	2.10	0.80	2.76
	Otjozondjupa	1.50	0.75	1.30	0.70	0.80

*Percentage of women and men aged 15-49 estimated to be female sex workers (FSW) and men who have sex with men (MS

**For multivariable regression, program data were not assessed as priors given the limited data points

Figure. Extrapolated regional FSW and MSM population size estimates (PSE) in Namibia, by data source and method.*

Results: Extrapolated national estimates for FSW ranged from 4777.5-11613.7, comprising 1.5%-3.6% of women ages 15-49. For MSM, estimates ranged from 2235.7-4611.2, comprising 0.7%-1.5% of men ages 15-49. The incorporation of program data resulted in a -221%-68% change in regional population proportions (*Figure*), with the largest number of KP predicted in Khomas, Namibia's most populous region.

Conclusions: Using SAE approaches, we combined epidemiologic and programmatic data to predict subnational size estimates for KP in Namibia. While imperfect, programmatic data represent a supplemental source of KP data that can be used to align size estimates with real-world HIV programs, particularly in regions where no other data are available, and necessitate an iterative approach to refine estimates.

Future work is needed to determine how best to include programmatic data in size estimation, ultimately bridging research with practice to support a more comprehensive HIV response.

Data and accountability and transparency

EPE374

Where to care: a new South Africa-based mobile mapping platform delivering accurate information on safe sexual and reproductive health services directly to you - wherever you are

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Background: South Africa has an established network of sexual and reproductive health (SRH) providers and high smartphone penetration. However, outdated information, unfriendly services, and costly mobile data limit beneficiaries' ability to navigate the health system.

In 2018, TRIAD Trust and amfAR created Where to Care (WtC), a no-cost mobile platform to map and disseminate information on safe, legitimate, public, private, and NGO SRH, Comprehensive Family Planning (CFP) and Gender-Based Violence (GBV) service providers directly to beneficiaries.

Description: The digital WtC map documents SRH providers, including those who offer HIV, safe abortion, and 40 other services. It helps beneficiaries find nearby health services based on their location and provides verified information about quality and friendliness, especially for youth, LGBTQ+ people, and other marginalized populations. A trained team of in-country data collectors populates the map. They conduct three verifying calls to each facility: a survey records available services, a "secret patient" call assesses patient friendliness, and a reconciliation call harmonizes discrepant responses. Update calls are conducted every 3-6 months. The map can be accessed online or sent directly to beneficiaries' phones using the WtC app, which sends a geolocating data-free link to the map through an SMS.

Lessons learned: As of January 2022, WtC covered 60 million individuals across South Africa. More than 35 international, national, and community-based user organizations actively disseminate links to beneficiaries with the WtC app. Most users send >100 messages per month. The average link is opened 2.7 times. This demonstrates high acceptability to providers and beneficiaries.

Conclusions/Next steps: Where to Care benefits providers and beneficiaries. Providers easily share information about local HIV support services, SRH, CFP, and GBV care options with beneficiaries. Beneficiaries access a private, affordable, trusted resource, enabling them to choose the onward care provider that offers the care they want. WtC's novel combination of scalable data collection and dissemination methodology actively provides beneficiaries with accurate information on HIV and SRH service availability and friendliness.

This tool has the potential for broad health benefits and may be especially important for youth and other marginalized populations. It should be standard practice for health and social service providers across the Global South.

EPE375

A data quality assessment of SALVAR (2006-2020), the main public health information system of people living with HIV in Mexico

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Background: The Antiretroviral Administration, Logistics and Surveillance System (SALVAR) captures clinical information of patients living with HIV/AIDS without social security in Mexico. As the HIV/AIDS indicators derived from SALVAR are the basis for decision-making in Mexico, assessing the quality of SALVAR is essential.

Methods: We conducted quality assessments of SALVAR (2006-2020), containing 4,814,282 records of 245,602 patients in six modules:

1. general patient information,
2. treatment regimens,
3. CD4 count,
4. viral load,
5. GESTAR (maternal health data), and;
6. tuberculosis (TB) related data.

We assessed the data for key dimensions from several data quality frameworks. We assessed the entire system for interpretability, uniqueness, and completeness.

We also selected vital variables to assess timeliness, consistency, internal and external validity, and accuracy, defined as the percentage of values within two standard deviations.

Results: SALVAR has limited interpretability due to the lack of support documents like codebooks, metadata, and training materials. Regarding uniqueness, less than 1% of the patient observations were duplicated. For completeness, we found that over 80% of the potentially captured data was present in most modules, except for the GESTAR and TB modules (≈45% was missing).

Regarding timeliness, a delay in data acquisition occurs in 15% of the variables. In terms of consistency, the range of acceptable values for critical variables per module was between 72% and 96%; we found most implausible values in the viral load and CD4 modules. Concerning internal validity, we found illogical relationships in 6% to 28% of dates.

We found the poorest results in the external validity dimension: three modules included at least 52% of variables difficult to interpret. This result was mainly driven by poor coding of critical variables such as patient, facilities, and location identifiers. Finally, the accuracy results were optimal (>90%).

Conclusions: SALVAR is a valuable platform to monitor HIV/AIDS services in Mexico. Improving the timeliness of data collection could improve its usefulness for real-time monitoring. In addition, crucial data related to TB and maternal health is often missing. Supporting documents, locks or filters at the time of capturing, and periodic reviews could strengthen the system.

EPE376

Fit for purpose? Analysis of the quality and implications of PEPFAR's performance targets

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Background: PEPFAR is the largest global funder of HIV programming. PEPFAR is intensely data driven, utilizing epidemiological and performance data to set district-level targets to achieve the UNAIDS 95-95-95 targets. Targets are used to assess district and implementing partner performance, and to inform resource allocation decisions. However, comparing results to targets is only useful if targets reflect reasonable expectations of performance.

Methods: We analyzed PEPFAR's district-level targets and results for HIV testing, HIV diagnoses, and treatment initiations from 2017-2021 evaluating the relationship between targets and results, stability of targets, and usability of targets as a metric of performance.

We calculated proportional annual changes and grouped districts by +/-10% proportional changes. Districts with complete annual targets with an annual target >=200 for an indicator were included. We additionally identify districts where targets/results fluctuate by 20% or more in opposite directions in consecutive three-year periods.

Results: 771 districts were included for HIV testing, 767 for HIV diagnoses, and 750 for treatment initiations. For HIV diagnoses, median district level targets increased 150% in 2018, decreased 36% in 2019, increased 20% in 2020, and decreased 35% in 2021, showing significant fluctuation.

Comparatively, median district results increased 5% in 2018 and decreased in each of the following years (12%/16%/8%).

Over the period, 318 districts (41%) experienced target fluctuations of more than 20% in opposite directions in three consecutive years compared to only 52 districts (7%) in results. Findings were similar for HIV testing and treatment initiations.

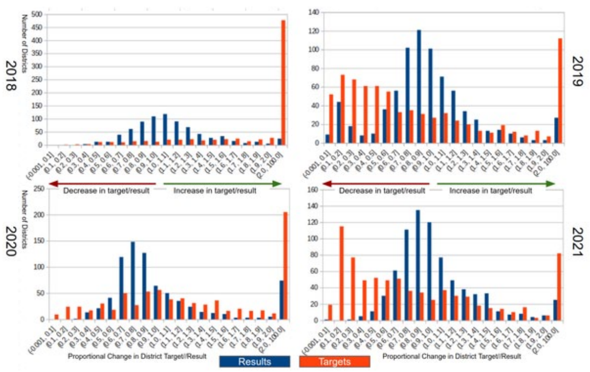

Figure. District level annual proportional change in targets and results for new HIV diagnoses.

Conclusions: Targets are critical for evaluating performance and progress in health programs. However, the quality of the target setting process is critical in whether the targets function as indicators of performance. PEPFAR's targets often fluctuate dramatically year-to-year, while changes in results are more modest.

Performance monitoring should reflect this, and target-setting limited to more gradual changes unless programming changes notably.

EPE377

Data Quality Audit: prioritizing the assessment of data management systems and accurate HIV data reporting of health facilities and civil society organisations in the Eastern Region of Ghana

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Background: Accurate HIV Data reporting is crucial to HIV programming and policy development. It is the bedrock of Ghana's agenda to End AIDS by 2030. Prioritizing Data Quality Audit is imperative to understanding the link between health data management systems and the accuracy of HIV Data reported for strategic information.

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Description: Data Quality Audit involves a trace and verification exercise carried out at randomly selected health facilities. The process cross-checks the accuracy of data reported along the reporting lines by re-counting all reported figures from their source documents. In 2021, the Technical Support Unit of the Ghana AIDS Commission undertook a Data Quality Audit exercise to assess data management systems and the accuracy of HIV reported data from January-September, 2021. The exercise covered 14 health facilities, and two Civil Society Organisations implementing Key Population interventions. A Verification Factor (VF) was used to determine if the data was under/overreported or accurate. A VF over 100% indicates an underreporting as more information was found at the site than was reported. A VF below 100% indicated an overreporting as fewer data was found at the time of the audit than was reported. A VF of 100% represents accurate reporting.

Lessons learned:
- 3 health facilities and 2 CSOs with functioning data management systems (100%) reported accurate data in all four health indicators and two KP indicators.
- 4 health facilities with partly functioning data management systems (50%) reported accurate data in only two indicators.
- 4 health facilities with poorly functioning data management systems (less than 50%) reported accurate data in only one indicator.
- 3 health facilities with no functioning data management system reported inaccurate data on all four indicators.
- It's a cost-effective way of providing training on data reporting since on-site training is provided for key staff.
- It provides leverage to address weaknesses in decentralized and national HIV reporting channels.
- It ensures effective programming of the HIV response.

Conclusions/Next steps:
- Advocate for routine data quality audits throughout the year.
- Train all key staff at health facilities in up-to-date HIV reporting systems and data management.

EPE378
Measuring local organization capacity building for USAID/PEPFAR compliance

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Background: In April 2018, PEPFAR announced a goal to direct 70% of USAID/PEPFAR funds to local partners through direct prime awards to achieve country ownership of the HIV response. In April 2019, the USAID-funded Accelerating Support to Advanced Local Partners (ASAP) Project, through IntraHealth International, began rapidly developing local organizations to have essential capabilities to serve as prime funding recipients for USAID and PEPFAR, furthering USAID's efforts to support countries' journey to self-reliance.

Description: The USAID Non-US Pre-Award Survey (NUPAS) is used to determine whether an indigenous organization has sufficient financial and managerial capacity to manage USAID funds following US Government and USAID requirements. ASAP expanded NUPAS to develop the NUPAS+ to identify significant weaknesses in organizational functions and procedures to managing US Government funds. NUPAS+ is conducted by external assessors with verifiable data. In Ethiopia, ASAP has conducted 16 NUPAS+ assessments to implement capacity development plans (CDPs). Reassessments were conducted after 12 months.

Lessons learned:
1. Using a metric of 1 to 4, with 4 showing the most compliance with least fiduciary risk, the reassessments showed the following changes:

Score	% at Baseline	% at Reassessment	Comment
1.0 to 1.5	5.71%	0	Risk reduced
1.51 to 2.5	19.5%	4.14%	Risk reduced
2.51 to 3.5	57.41%	65.43%	Improved compliance
3.51 to 4	17.38%	30.43%	Improved compliance

2. The lowest baseline scores were in fraud mitigation with an average of 1.39 and a reassessment score of 2.12, indicating more work is needed to create a culture of fraud risk mitigation and prevention.
3. Areas needing further capacity development include financial reporting, budget variance analysis, performance management, cost allocation, and compliance with legal provisions.
4. When there is a means to measure gender equity it can become an organization priority.
5. Data visualization through NUPAS+ dashboards maintains awareness of compliance standards and organizational procedures among leadership and technical teams.
6. Local primes have limited capacity to support local sub-partners with capacity building.

Conclusions/Next steps: NUPAS+ uses verifiable data to assess an organization's capacity and serves to monitor progress, post-baseline. CDPs are custom-made and implemented by expert advisors co-located for up to 12 months. These approaches and ASAP's metrics are contributing to USAID/PEPFAR's investment in localization.

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EPE379

Building a supportive digital ecosystem for achieving and maintaining HIV epidemic control

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Background: Data are critical to providing healthcare workers and health systems decision-makers with information needed to achieve the 95-95-95 goals. Health information systems investment and implementation have been fragmented and ad-hoc, making it challenging to understand best practices throughout healthcare systems to meet data needs, reduce system costs, and decrease documentation burden.

Towards that end, the Data Use Community (DUC) in collaboration with other data-focused groups has brought together key stakeholders to collaborate across facilities, countries, care levels, and organizations to share iterate upon best practices to support a better quality of care through data use and more information savvy healthcare systems.

Description: In a multi-prong approach that stresses local buy-in, accountability, and data transparency, we seek to: better understand effective data practices at facility and county levels; move towards collaborative and cost-effective information systems investments; and promote data sharing practices that reinforce good health data governance principles. The DUC convenes meetings where data users and system implementers share best practices. The meetings provide an opportunity for knowledge sharing in and between countries. Information presented is documented and synthesized for knowledge discovery and dissemination.

Lessons learned: From DUC learnings and building on the WHO Digital Health Atlas, the Digital Health Inventory was developed to routinely inventory digital health investments supported by PEPFAR to provide a better understanding of digital health ecosystems to maximize data use while reducing parallel or inefficient data flows and funding approaches. Similarly, the PEPFAR/MOH Data Alignment Activity (DAA) is a complementary initiative to help understand the full HIV landscape and better define targeted interventions. Facility level HIV results from the Ministries of Health of 23 countries and from PEPFAR are aligned to provide a comprehensive and unambiguous view of national programs. Combined, these activities receive input and support from a PEPFAR inter-agency committee to ensure coordination, and transparency across efforts.

Conclusions/Next steps: It is critical to defragment and de-silo data and systems so that information is accurate and usable for informed decision-making and care provision.

Through coordinated and collaborative efforts, we will expand regional and country support for these activities to increase effective data use towards achieving and maintaining HIV epidemic control.

Monitoring and reporting in the SDG era

EPE380

Monitoring tools for rapid assessment of pregnant women with detectable HIV viral load: using on-line data for the HIV vertical transmission elimination in Brazil

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Background: Scientific evidence has shown that in pregnant women living with HIV (PW-HIV) with undetectable HIV viral load and great adherence to antiretroviral therapy (ART) the rate of mother-to-child transmission of HIV (MTCT-HIV) is less than 1%.

Description: Brazil has an online virtual national system(SIMC) to monitor public laboratory HIV-VL and CD4+ account data, integrated with the national ART dispensation system. Since 2019, this system has a specific monitoring function for PW-HIV with detectable viral load(≥50copies/mL). As soon as there is an updated information and the PW-HIV achieve undetection, she is automatically excluded.

Managers and health professionals can access daily updated information in a single report. There are different levels of access to information and there are specific protocols to preserve the confidentiality.

This tool supports the organization of health services to prioritize and active search for PW-HIV with detectable viral load in a timely manner so they can re-engage in care and achieve undetection. It also generates updated indicators to support public policies.

Lessons learned: From December 2019 to December 2021,managers and health professionals had access daily updated information of 6,673 PW-HIV identified (mean 1,098 PW-HIV/month) in the SIMC. Mean age was 27 yo, 50.6% were black, 59% had <12 years education, 69% had high viral load (>1,000copies/mL) and no ART use (29%) (Table1). This conditions related to increased risk of MTCT-HIV.

	2019	2020	2021	Total
Viral load(copies/mL)	n=1.182	n=3.078	n=2.413	n=6.673
>1000	65%	70%	69%	69%
50-1000	35%	30%	31%	31%
Antirretroviral Terapy				
No	30%	28%	29%	29%
Yes	70%	72%	71%	71%

Table 1: Pregnant women living with HIV with undetectable HIV viral load, initial profile in SIMC-pregnant. Brazil, 2019-2021.

Conclusions/Next steps: Despite public policies, wide availability of HIV diagnostics, treatment, prophylaxis and efforts to eliminate MTCT-HIV, Brazil still has PW-HIV at high risk for MTCT-HIV. This powerful monitoring tool encourages the integration of care and surveillance in the active and immediate search for these most vulnerable women.

Next SIMC update will expand the inclusion criteria and link PW-HIV with delayed in ART delivery, regardless viral load, and detect PW-HIV with adherence issues and increased risk of detecting the viral load in pregnancy.

EPE381

Automated reporting from a health facility-based Electronic Medical Record System (Uganda EMR) increases accuracy and decreases delays in reporting to a national aggregate DHIS2: Uganda's Military HIV program experience

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Background: Uganda's Ministry of Health is strengthening the National HMIS for evidence-based decision-making. However, the inability to report data elements automatically from EMRS hinders this process. At military health sites, data was often manually summarized from registers and later manually entered into the aggregate DHIS2. This manual process affected data completeness, accuracy, reporting timeliness, and increased workload for health workers who support reporting.

It is against this background that the military HIV program piloted Uganda EMR at six of its health sites in May 2020. This abstract reveals the comparison results between the Uganda EMR sites and the non-EMR sites.

Description: A feasibility assessment was conducted at 6 high-volume health sites at which the EMR was rolled out over 12 weeks. Efficiency of the sites was monitored quarterly and compared with the efficiency at 21 non-EMR sites. IT equipment was installed and at sites where power outages occurred, solar backup systems were installed. Focal staff in the ART clinic were oriented on data capture and reporting from the system.

At the end of the first quarter, a quarterly report was run from the system and used to complete the periodic Ministry of Health HMIS quarterly reports then entered into DHIS2.

Lessons learned: Data elements generated automatically from Uganda EMR were 100% complete and accurate, while at the other 21 sites, the manual generation process resulted in a 65% to 100% completeness with accuracy ranging from 45% to 95% through June 2021. The Uganda EMR report required only one staff member to have it complete whereas the manual generation required 4 to 6 staff to do the aggregation. The time factor observation revealed that on average it takes close to seven hours to manually aggregate a quarterly report depending on the site volume, while it is just a few mouse clicks in Uganda EMR to have the same report.

Conclusions/Next steps: Data elements generated from Uganda EMR to DHIS2 have eliminated transcription errors, improved report completeness, and reduced delays in reporting to the district. Currently, the Uganda EMR has been rolled out at 27 military ART sites with 21 sites running the point of care mode.

Using big data in the HIV response

EPE382

Use of machine learning in predicting and improving retention in care

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Background: Poor retention in care of patients on ART remains a major challenge to achieving epidemic control in Nigeria. Data-driven predictive models using machine learning have been suggested for identifying patients at risk of experiencing Interruption in Treatment (IIT). These techniques can capture complex non-linear interactions between variables, supporting the complex factors that may result in an IIT.

Machine learning (ML) techniques can identify and rank key predictors of IIT, allowing programs to implement proactive and targeted interventions to improve retention in care.

Methods: We applied supervised ML algorithms to de-identified individual patient level electronic medical records data of a cohort of persons living with HIV from

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90 facilities across four Nigerian states at USAID-funded RISE-supported sites. Only patients who had at least two pharmacy refill visits between 1st January 2017 and 31st December 2020 were included in the analysis.
We defined our outcome measure retention in care as clients who have not had a missed clinic drug refill appointment more than 28 days consecutively per PEPFAR guidelines. Merged demographic, clinic, pharmacy and laboratory data were investigated in multiple models as potential predictor variables.
Results: A total of 266,702 records for 41,392 clients were included in the final model. Our best model was an Adaboost Classifier, when fitted resulted in a ROC Area Under Curve (ROC-AUC) of 0.76, had a positive predictive value of 60%, a sensitivity of 61% and a negative predictive value of 73% and specificity of 80%. Length of time in treatment and number of recorded sequential visits were found to be of high predictive importance.
Prescription duration; number of days late to collect the medication; months since last visit; year and day of visit; day of month that the prescribed medication is to be fully consumed; number of visits on a particular regimen; and more than 3 days late to collect medication count were also found to be significant factors.
Conclusions: ML is one tool that can be used to support clinicians in identification of HIV clients at risk of treatment interruption or VL un-suppression. Predictive modelling can help improve patient monitoring, improve retention and patient outcomes.

Impact of COVID-19 on HIV prevention services

EPE383
Sexual behaviour and STI prevention during the COVID-19 pandemic

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Background: Almost all sexual health services report lower numbers of sexual transmitted infections (STI) testing and counselling during the COVID-19 pandemic. Data on sexual behavior and incidental STI is controversial.
Given the structure of its attendees, WIR – Walk In Ruhr, Center for Sexual Health and Medicine, is able to obtain data from diverse living environments.
Methods: Based on the online HIV/STI risk test (ORT), questionnaires and data from ongoing studies and attendee data of the WIR, changes in sexual behavior and STI incidence before 2020 and during the COVID-19 pandemic were analyzed.
Results: The use of the anonymous ORT rose by 40.4% from 367 (before 5/2020) to 507 users per month (after 5/2020). While young heterosexuals (18-24 years) used ORT less, heterosexuals between 25 -29 years and men having sex with men used it more frequently, bisexual sex was reported by more than 30% of the participants. More ORT users reported a positive prior STI test or acute symptoms after 5/2020.13% more attendees were observed in 2020 at the WIR center compared to 2019.
The rate of positive STI tests for chlamydia (CT), gonorrhea (NG) and mycoplasma (MG) rose significantly (0.001) from 21.5% in 2019 to 28,8% in 2020. The most common infections among 18-29 years old in 2020 were CT (17.9%), NG (11.4%) and MG (7.6%).
While infections with Treponema pallidum (TP) rose significantly in women (0.01), significantly less HIV infections were detected. Although all participants in our ongoing studies (eg. PrEP study) reported a reduction in the number of sex partners, STI incidence rates increased.
Either the reduction in sexual partners was insufficient or STI protection among those with trusted partners were reduced and STI clusters were leading to higher incidences.
Conclusions: Our data show that in times of the COVID-19 pandemic, prevention messages have to be adapted to ongoing sexual activity. Continuous sexual health services are needed for counselling, diagnosis and treatment of STI during times of pandemic. A population switch of STI risk from MSM and FSF to heterosexual contacts should be taken into account.

EPE384
Changes in sexual behaviors and testing for HIV and sexually transmitted infections among transgender women at Tangerine Clinic during COVID-19 lockdown

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Background: In mid-2021, Thailand faced the most severe wave of COVID-19, peaking at around 20,000 new cases daily. The Thai Government imposed a two-month lockdown (July-August 2021), which included nighttime curfew and closure of non-essential businesses. We investigated the impact of COVID-19 lockdown on sexual behaviors, pre-exposure prophylaxis (PrEP) use, and access to HIV and sexually transmitted infection (STI) services among

transgender clients at the Tangerine Clinic, which provides integrated gender-affirming and sexual health services in Bangkok.

Methods: Demographic characteristics and sexual risk behaviors, routinely collected through self-administered questionnaires, were retrieved for transgender clients who received services in two periods: May-June 2021 (pre-lockdown) and July-August 2021 (lockdown). STI self-sampling and telehealth were made available during both periods. Data on HIV/STI testing uptake, test results, and PrEP service use were retrieved from clinic and laboratory databases.

Results: The number of transgender clients visiting Tangerine Clinic during the lockdown (n=207) was 35.1% lower than pre-lockdown (n=319). Of 61 (29.5%) during the lockdown and 109 (34.2%) pre-lockdown who reported engaging in sexual activity in the past 3 months, 70.4% and 59.5% reported condom use, respectively (p=0.05). Among 130 who used PrEP pre-lockdown, 127 (97.7%) received PrEP refills (96.8% via in-person and 3.2% via home delivery services) while three clients (1.5%) stopped PrEP during the lockdown.

HIV/STI testing (n=118) decreased 59.6% from the pre-lockdown period (n=292). Of those who did not receive HIV testing, 20% reported not engaging in sexual activity in the past 3 months. However, no change occurred in HIV-positive yield during lockdown and pre-lockdown (0.9% and 1.4%, p=0.96) or the rate for chlamydia/gonorrhea infections (20% and 22%, p=0.51).

No difference was seen between the two periods in terms of demographic characteristics and HIV risk perceptions.

Conclusions: HIV/STI testing rate dropped during the lockdown restrictions in Bangkok although transgender clients continued to engage in sexual activity and remained at risk of acquiring HIV/STIs. These findings indicate the need for sexual health service continuation and emphasis on regular HIV testing during the pandemic. Telehealth and self-sampling have high potential to help minimize service interruptions during future waves of COVID-19 and other pandemics.

EPE385

Has the COVID-19 Pandemic changed the quality of patient-provider communication regarding PrEP care?

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Background: During the two-year-long siege from the COVID-19 pandemic, many activities related to HIV care have been faltered and disrupted, including reduced HIV testing and screening services, fallen prescriptions of the pre-exposure prophylaxis (PrEP), and delayed antiretroviral treatments. On the other hand, a significant proportion of doctor visits transit from in-person to virtually, either voluntarily or involuntarily. However, a scarce of evidence is available to assess the quality of patient-provider communication, especially for PrEP care-related communication.

Methods: In the current study, we employed a semi-structured in-depth interview to collect qualitative data to assess the quality of provider-patient communication regarding PrEP care among 18 PCPs and 25 PrEP-eligible patients. Following the five-step framework analysis, our approach includes familiarization (describing potential themes), thematic framework (generating a nascent code/subcode list), indexing (producing a final consensus code list), charting (critical thematic constructs will organize hierarchical themes), and mapping and interpretation (summarizing and interpreting).

Results: Most patients and providers have had virtual doctor visits during the pandemic. Patients and providers reported pros and cons regarding their virtual experience. Most of them considered that virtual visits were more convenient, efficient, and comfortable than in-person visits. Patients said that sensitive topics (e.g., sex behaviors) were easier to be initiated during virtual visits than in-person visits. However, without face-to-face interactions, some patients felt less empathy, caring, and connected during virtual visits compared to being in-person. On the other hand, health providers expressed concerns about patients' privacy, lack of intimacy, and delayed lab work during the virtual visits.

Conclusions: With COVID cases surging, virtual doctor visits may remain mainstream for seeking healthcare nationwide. Our data indicated that the overall quality of communication remained stable during the in-person to virtual transition, although participants have revealed some concerns. Virtual visits might even facilitate PrEP related communication between patients and providers. With technological advancement, home-testing kits or modern telecommunication tools could mitigate worries regarding delayed lab work.

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EPE386

The International Sexual Health And Reproductive Health Survey (I-SHARE-1): a multi-country analysis of sexual behaviors and HIV/STI prevention access prior to and during the initial COVID-19 wave in 30 countries

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Background: The COVID-19 pandemic has profoundly disrupted social relationships and health services that are fundamental to sexual and reproductive health (SRH). However, there is limited data on SRH during the initial wave of policy measures to mitigate COVID-19 ('COVID-19 measures').

To address this gap, our team organized a multi-country, cross-sectional online survey on sexual behaviors, intimate partner violence, and essential HIV/STI services.

Methods: Consortium research teams conducted online surveys in 30 countries from July 2020 to February 2021. Sampling methods included convenience, online panels, and population-representative. Primary outcomes included sexual behaviors, partner violence, and HIV/STI service utilization, which we compared three months prior to, and during COVID-19 measures.

For inclusion in analysis, each country was required to have obtained Institutional Review Board approval from a local ethics authority, locally translated and field-tested the instrument, and obtained responses from at least 200 participants. We conducted meta-analyses for primary outcomes and graded the certainty of the evidence using the GRADE approach.

Results: A total of 22724 respondents participated across 25 countries (3 lower- to middle-, 8 upper middle-, and 14 high-income countries) that met the inclusion criteria. Among 4546 respondents with casual partners, condom use with these partners stayed the same for 3374 (74.4%) and 640 (14.1%) people reported a decline. Fewer respondents reported physical or sexual partner violence during COVID-19 measures (1063/15144, 7.0%) compared to the period before COVID-19 measures (1469/15887, 9.3%).

Respondents indicated COVID-19 measures impeded access to condoms (933/10790, 8.7%), contraceptives (610/8175, 7.5%), and testing for HIV/STI (750/1965, 30.7%). Pooled estimates from meta-analysis indicate during COVID-19 measures, 32.3% (95% CI 23.9-42.1) of people needing HIV/STI testing had hindered access, 4.4% (95% CI 3.4-5.4) experienced partner violence, and 5.8% (95% CI 5.4-8.2) decreased condom use with casual partners (moderate certainty of evidence for each outcome).

Meta-analysis findings were robust in sensitivity analyses that examined country income level, sample size, and sampling strategy.

Conclusions: Difficulty accessing conventional HIV/STI testing services suggests the need for HIV/STI self-testing or sampling, and other decentralized approaches. Further research on the impact of the COVID-19 measures on sexual behavior, sexual violence, and SRH service access is warranted.

EPE387

Reception strategies as a tool for timely approach to new cases of HIV infection

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Background: The discovery of HIV infection is a critical moment in people's lives. The approach during the diagnostic revelation with humanized and empathic assistance can facilitate the acceptance of the new health condition and favor adherence to treatment in the long term. The Brazilian Ministry of Health (MH) recommends the initiation of antiretroviral therapy (ART) until the 14th day after diagnosis.
However, barriers within the health services represent challenges to meeting this goal.In view of this, a project was implemented to link and retain people living with HIV (PLHIV) in public health services in the city of São Paulo. Among the objectives of this project, is the effort to attend new cases according to the deadlines set by the Ministry of Health.
The aim of this study was to evaluate ART initiation rates among new cases of HIV infection enrolled in the health services of the project.
Methods: Descriptive analysis of data after implementation of strategies for welcoming new cases (multiprofessional care, exam collection and medical consultation with a date less than the 14th day of diagnosis). The sample consisted of 1455 new cases. Data were collected between 01/2020 and 12/2020, and are part of the project Linking and Retention of PLHIV in public health services: a demonstration project in the city of São Paulo, Brazil. CEP 2.241.860 - SMS/SP.
Results: Of the 1455 new registrations, 1034 (71.56%) started ART with time less than 14 days. Of the 411 (28.44%) that exceeded 14 days, the main obstacle in 61% of the cases was due to barriers in the health service (unavailability of medical agenda; difficulties in collecting exams; delay in diagnostic confirmation; others). 39% reported personal issues as the main reason.
Conclusions: The implementation of welcoming strategies allowed reaching the goal recommended by the MH in more than 70% of new cases assisted by the project.
The improvement of these strategies and the increase in the number of qualified professionals in the health services can enhance this result, allowing the offering of timely care.

EPE388

"Falling through the cracks": provider perspectives on HIV pre-exposure prophylaxis (PrEP) service disruptions and adaptations during the COVID-19 pandemic in Baltimore, Maryland

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Background: The COVID-19 pandemic continues driving unprecedented disruptions to healthcare provision, including HIV prevention and treatment services. We explored service provider experiences promoting and prescribing PrEP to marginalized populations during the COVID-19 pandemic in Baltimore, Maryland.
Methods: In February–April 2021, we facilitated four virtual focus group discussions with 20 PrEP service providers, representing various professional cadres (physicians, nurses, case managers, outreach workers) and practice settings (hospital outpatient facilities, health department clinics, federally qualified health centers, community-based organizations). Focus groups examined PrEP implementation strategies for marginalized populations, including disruptions and modifications to PrEP implementation precipitated by COVID-19.
Employing an iterative, team-based thematic analysis, we identified salient enablers and constraints to PrEP promotion, initiation, and persistence in the COVID-19 era, as well as innovative adaptations to PrEP service-delivery.
Results: Discussants—most of whom were cisgender women (70%), Non-Hispanic White (60%), and practiced in hospital settings (35%) or health department clinics (35%)—described attenuated demands for PrEP early in the COVID-19 pandemic, exemplified by high PrEP discontinuation rates. Providers attributed this to changes in clients' sexual behaviors and shifting priorities during the pandemic, including heightened caregiving responsibilities. Discussants reported substantial systems-level disruptions impacting PrEP provision, including: suspension of outreach services, personnel shortages due to COVID-19 infections/exposures, and facility restrictions on face-to-face visits. Providers emphasized that these disruptions, though occurring early in the pandemic, had protracted impacts on PrEP accessibility; specifically, workforce/resource reconfigurations (laboratory outsourcing, furloughing of on-site phlebotomists) limited opportunities for providers to make PrEP referrals and for clients to engage with PrEP services.
The transition to telemedicine rendered healthcare services, including PrEP, more accessible/convenient to some clients and expedient to providers. However, structural

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barriers to telehealth engagement (telephone/internet access), coupled with limitations of the virtual care environment (difficulty establishing provider-client rapport), impeded efforts to equitably promote and prescribe PrEP.

Conclusions: Temporary service closures, shifting client priorities, and health system adaptations have complicated PrEP provision during the COVID-19 pandemic.

Expanding the PrEP outreach workforce and availing alternatives to telemedicine (specimen self-collection, street-based mobile care) could minimize PrEP service disruptions and facilitate PrEP care continuity, especially as COVID-19 transitions from an acute to a protracted health emergency.

EPE389

Feasibility and acceptability of remote PrEP provision among adolescent girls and young women in South Africa

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Background: COVID-19 prompted adaptations to current PrEP delivery to facilitate PrEP persistence. This study aimed to assess the feasibility and acceptability of remote PrEP delivery for adolescent girls and young women (AGYW).

Methods: PrEP SMART is an adaptive sequential trial of scalable PrEP adherence support interventions for AGYW aged 18-25 in Johannesburg. The study team made PrEP delivery adaptations to allow for remote PrEP refills and reduce the number of participants and staff at the clinic.

Between March-September 2021, we conducted interviews with AGYW, who accepted or declined remote PrEP delivery (n=13); PrEP SMART staff (n=12), and key informants (KIs) involved in PrEP programmes (n=10).

We conducted a rapid analysis of interview transcripts to explore the experiences of remote PrEP delivery, including facilitators, barriers, and practicalities of implementing remote PrEP delivery, and considerations for scale-up.

Results: Remote PrEP delivery was acceptable to AGYW, who reported that it made PrEP care convenient, quick, easy, and empowering. However, they also reported anxiety about doing the procedures incorrectly. Half of the interview participants still preferred in-person PrEP due to barriers to remote PrEP delivery including a lack of privacy, fear of blood self-sampling, and getting invalid test results (Table 1).

Staff and KIs suggested that remote PrEP delivery could benefit AGYW but had concerns that preparations could be burdensome for healthcare providers, costly and therefore not sustainable. They suggested that integrating contraception into the package of services and partnering with community-based organizations to deliver PrEP could improve efficiency.

Standard of Care PrEP procedures	COVID-19 Adaptation of PrEP procedures	Benefits/ facilitators of adapted procedures	Barriers of adapted remote procedures
HIV and pregnancy testing by a clinician	Self-testing	• Quick and easy procedures • Convenient • Empowering • Confidential • Video- how to do self-testing • No judgement from clinic staff • First to see own result	• Lack of privacy • Fear of self-prick and blood self-sampling • Concern about invalid test results • AGYW may not do the tests on themselves but test others. • Not having clinician in-person to make AGYW feel at ease about testing
PrEP refills at clinic pharmacy	PrEP home delivery	• Convenient • Reduce cost associated with in-person clinic visits	• Home PrEP Delivery may be costly and unsustainable • AGYW may not be available to receive PrEP their PrEP package. • Accidental PrEP disclosure when someone receives the PrEP delivery • Remote visits contradict efforts to encourage AGYW to access health care services frequently clinic visits.
In-person counselling. In-person health assessments	Telephone-based counselling; telephone health assessments	• Quick, convenient • Reduce judgement and stigma from clinic staff.	• Unable to talk openly – lack of privacy • May still need to visit clinic for contraceptives if it requires provider administration

Table 1: Facilitators and barriers of adapted PrEP delivery procedures

Conclusions: Remote PrEP delivery is feasible and acceptable for AGYW, especially for those with limited time or access to facilities. However, they may not appeal to all AGYW, particularly those who live in confined spaces and had not disclosed PrEP use. These findings support demedicalising PrEP services through remote delivery and increasing access to PrEP for AGYW, irrespective of pandemic status. Programmes will need to focus on overcoming barriers to remote delivery, particularly around self-testing in this age group.

EPE390

Impact of the COVID-19 pandemic on PrEP appointments and adherence: a systematic review and meta-analysis

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Background: Engagement in risky behaviors has been reported during the pandemic, highlighting the higher needs of HIV prevention strategies among key population groups during this crisis period. However, disruption to HIV prevention services due to the pandemic has been seen in many parts of the world.
We conducted a systematic review and meta-analysis to estimate how much the COVID-19 pandemic has disrupted PrEP appointments and adherence, and factors that may influence the disruption.
Methods: A comprehensive search was conducted in Embase, Scopus, PubMed, Cinahl, and Medline for studies published until 29 Sept 2021. Articles were selected if they discussed the impact of the COVID-19 pandemic on1 PrEP appointments, and/or 2) PrEP intake adherence. Metaprop in STATA was used to perform meta-analyses of proportions. Subgroup and pooled estimates with inverse-variance weights were obtained using a random-effect model.
Results: COVID-19 has had various impacts on PrEP programs, including the number of PrEP visits to the clinic, and disruption in obtaining prescriptions or refills. Studies reported higher rates of PrEP discontinuation and difficulties in PrEP adherence.
Our meta-analysis showed that the pooled prevalence of PrEP users experiencing disruption to PrEP appointment or prescription/refill was 15% (95%CI 9% - 23% ; I^2 88%). The pooled prevalence of PrEP users experiencing PrEP adherence difficulties ranged from 9% to 42%, with a pooled prevalence of 26% (95%CI 20%-33%; I^2 91.7%).
Studies from the US reported lower proportions of disruptions to both access to PrEP services and PrEP adherence compared with studies from other countries. MSM and LGBTs experienced less disruption to PrEP services than IDUs but higher difficulties in PrEP adherence rates.
Conclusions: There has been a significant level of disruption to PrEP appointments and PrEP intake adherence. Greater support is needed to ensure the maintenance of PrEP delivery during the COVID-19 pandemic.

EPE391

Oral pre-exposure prophylaxis adaptations during COVID-19 in USAID-supported PrEP programs

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Background: By the end of 2020, fewer than one million people had started oral pre-exposure prophylaxis (PrEP) for HIV prevention, falling short of the UNAIDS goal of three million people. The COVID-19 pandemic disrupted services worldwide and programs had to quickly adapt.
We conducted a survey of country-level USAID-supported PrEP programs to describe how these programs adapted in order to maintain services.
Methods: We developed a self-administered 38-question survey using Google Forms to identify and elicit descriptions of PrEP programming adaptations in the context of COVID-19. We used an implementation-focused theory of change guiding PrEP scale-up as a framework for survey design. Questions were organized under six domains: Policy and Enabling Environment; Service Delivery; Demand Creation; Provider Training; Laboratory and Supply Chain; and Monitoring, Evaluation and Learning (MEL). The survey was circulated in August 2021 across USAID Missions implementing PrEP. Two authors extracted and organized data using the framework to describe PrEP program adaptations and innovations to share lessons learned and best practices.
Results: There were 22 responses, covering 21 of the 32 USAID countries implementing PrEP [n=16 (76%) Africa; n=4 (19%) Asia; n=1 (4.8%) Western Hemisphere]. Respondents from 13 countries described guidelines or policy changes due to COVID-19, including multi-month dispensing of PrEP drugs and the use of telehealth for clients. Respondents from 15 countries reported adaptations to service delivery, including expanding community-based service delivery and extending working hours. Respondents from 18 countries described adaptations to demand creation activities, including the use of social media and shifting from group to individual PrEP support. Respondents from 16 countries reported adaptations to PrEP provider training, including shifting to virtual or smaller group formats. Respondents from five countries reported introducing HIV self-testing for PrEP continuation. Respondents from 12 countries described adaptations to MEL, including shifting to virtual MEL visits and changing the frequency of data reporting.
Conclusions: Many USAID-funded programs were able to quickly adapt PrEP services to mitigate the effects of the COVID-19 pandemic and advance innovations in delivery.
The adaptations identified here can equip PrEP policymakers, providers, and stakeholders with specific strategies to mitigate the impact of COVID-19 on PrEP programs.

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EPE392
Leveraging HIV intervention program to promote awareness on COVID-19 among key populations

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Background: With the increasing number of COVID-19 cases, the country went into a lockdown which disproportionately affected the healthcare access services especially among marginalized communities including MSM, TG/Hijras and Female Sex Workers. Due to the travel restrictions and many of the hospitals being converted into quarantine centres, the community members avoided visiting health care facilities due to fear of contracting COVID. Due to the lockdown, the community members were not able to access condoms or other prevention tools.
Description: The Humsafar Trust implements Targeted HIV intervention programs in Mumbai. During the COVID pandemic most of the community members were unaware of the precautions and treatment to be taken, especially if they were HIV positive.
We trained our outreach team on the various aspects of COVID including the importance of COVID appropriate behavior for management of COVID. The outreach team further undertook sessions with their registered community members to provide information and clarify the myths and misconceptions surrounding COVID-19.
Community members who were positive were provided with additional information on adhering to their treatment and help was provided to them in case they were not able to access medicines from their respective centers. The community members were also provided with referrals for mental health counseling, as most of them expressed mental health issues related to lockdown.
Lessons learned: It was crucial to utilize existing resources to address emergency and immediate needs of the community who are marginalized. Since the outreach team already had a rapport with the community, the messages of COVID and HIV management could be easily passed on to the community members. Apart from virtual interaction, the team also shared innovative communication messages through social media with the community members.
Conclusions/Next steps: The outreach team were able to successfully pass on the messages on COVID and reinforce the HIV prevention and treatment communication through virtual medium with the key populations whose unique needs are often ignored by the mainstream communication materials.
Personal communication and follow-up helped the community members to clarify their doubts related to COVID and also seek appropriate help when they tested positive for COVID.

EPE393
Voluntary Medical Male Circumcision (VMMC) service model rebranding amidst novel corona virus-19 (COVID-19) pandemic in meeting set targets in Zambia

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Background: Zambia's Voluntary Medical Male Circumcision (VMMC) program had significant scale-up success in recent years. The national operational plan of 2016-2020 had a target to circumcise 2 million males in five years. Operational plan focused two service delivery models; conducting national wide campaigns accounted 75% of annual performance and routine model accounted for 30%. During campaigns, massive demand generation activities were done such as road shows, public announcements and community mobilizers were recruited to conduct interpersonal communication in the communities.
The program met its annual targets from 2017 to 2019. In March 2020, Zambia recorded its first COVID-19 case, guidelines were given to all programs to remodel service delivery, and that focused on prevention of COVID-19 pandemic. VMMC technical working group changed the service delivery models to get numbers
Methods: In 2020, the program opened up more static sites from 1,715 to 2,200 across the country. Outreach sites were upgraded to offer minimum routine services, more health workers were trained in VMMC skills through conventional training method and blended learning.
Measures employed helped cushion workload in the static sites. Coordinated supply management system with implementing partners was established to ensure adequate supplies reached the sites on time. sites with adequate staffing adopted moonlighting and weekend schedules.
Scheduling of clients helped to avoid crowding at the sites. Demand generation was done through posters, social media platforms and community radio stations. Seats were provided in the sites to enable social distance to clients as they waited for the services. Coordination meetings with provinces and districts were conducted vir-

tually on a weekly basis. Rebranded the program from "a man who cares is circumcised to *"a man who cares; mask up. get circumcised".*
Results: The strategies employed helped the program achieve 125% performance against the target for 2020 and is already at 51% by end of 1st quarter 2021.
Conclusions: Despite the effects of COVID-19 pandemic on HIV prevention programs. Program successfully increased the uptake of VMMC among boys and men. The COVID-19 has helped to remodel our service delivery into sustainable models. The program continued with strategies that worked in meeting the set targets for the country.

EPE394
Tele-PrEP during the Delta COVID-19 outbreak in Vietnam: Use of remote client engagement and home-delivery of pre-exposure prophylaxis and HIV self-test kits to maintain client access during lockdown

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Background: The COVID-19 Delta variant surged in Vietnam from July through October 2021 overwhelming healthcare services leading to rapid closure of in-person healthcare and restricted ability to travel, directly impeding PrEP access among 12,300 individuals on pre-exposure prophylaxis (PrEP) in Hanoi, Ho Chi Minh City and Dong Nai province.
Description: In response, the USAID/PATH Healthy Markets project worked closely with the Ministry of Health (MOH) to define emergency guidance for remote PrEP counseling and home-delivery of three-month PrEP prescriptions and HIV self-test kits (INSTI) for client-led HIV monitoring.
Providers from 31 clinics (12 key population(KP)-led, 1 private and 18 public) were rapidly supported to put in place systems for remote PrEP and were equipped with adequate HIVST kits to enable sustained remote PrEP services. Remote PrEP was available to those continuing on PrEP from end of July to end of October, 2021 when lockdowns were lifted.
Lessons learned: Through this rapid, pragmatic adaptation of PrEP service delivery, we found that during the worst part of the lockdown (August-September), that 84% (n=3086), 49% (n=795) and 28% (n=388) of clients in Ho Chi Minh City (HCMC), Dong Nai and Hanoi respectively switched to remote PrEP, and that the degree of switching aligned with the relative severity of lockdown in these localities (with HCMC being the worst and Hanoi the least). PrEP prescriptions and HIVST kits were primarily delivered by KP peers or clinic staff (84% in HCMC, 93% in Dong Nai and 100% in Hanoi) but delivery via post, family/friends and Grab were also used in HCMC and Dong Nai.
Overall, clients and clinicians reported ease in applying the tele-PrEP model – a rapid quality assurance survey (n=68) found that 96% were willing to use tele-medicine because it felt more convenient (65.1%) and safer (46.5%) than face-to-face care.
Conclusions/Next steps: Tele-PrEP including HIVST enabled PrEP services to continue during a severe COVID-19 lockdown. Both clients and clinicians reported acceptability of the model.
Offering tele-PrEP and HIVST for remote client-led HIV status monitoring as a part of routine service delivery may make PrEP accessible to a greater number of potential PrEP users in Vietnam, further increasing uptake and use.

Impact of COVID-19 on HIV testing services

EPE395
Impact of COVID-19 pandemic in HIV testing in Buenos Aires, Argentina

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Background: COVID-19 lockdowns disrupted HIV services leading to drops in HIV testing and diagnoses, referrals to care services and HAART initiations. Argentina, heavily affected by SARS-CoV 2 spreading, implemented nationwide strict lockdown measures in 2020 during the first wave of the pandemic, followed by a social distancing/"new normality" period during the last months of 2020 and 2021. Our institution is the main ambulatory HIV care center for health-insured patients in Argentina, and offers universal free of charge rapid test (DETERMINE HIV 1/2 Abbott), being the principal HIV testing service provider in the private system within the country.
Our objective is to describe trends in HIV testing in our institution during the first two years of COVID-19 pandemic.
Methods: Retrospective analysis of aggregated data regarding HIV testing (number of tests and positivity rate) considering pre-pandemic period (2018-2019) and pandemic years (2020-2021) in an HIV care center in Buenos Aires, Argentina.
Results: During pre-pandemic period (2018-2019) 22895 and 23056 total tests were done, respectively. Average number of tests per month were 1908 for 2018 and 1921 for 2019. During pandemic years annual number of HIV tests were 10470 for 2020 and 11276 for 2021. Average number of tests per month were, 872 for 2020 and 939 for 2021 (graphic). For pre-pandemic period positivity rate was 4.1% and 3.7% for 2018 and 2019 respectively. For pandemic years, positivity rate were 4.2% and 5% for 2020 and 2021, respectively.

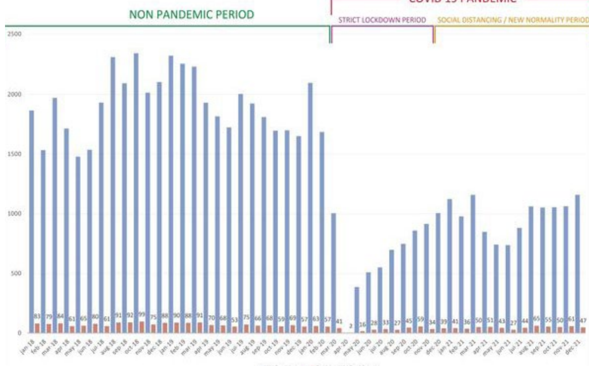

Figure.

Conclusions: COVID-19 pandemic significantly reduced HIV testing in Buenos Aires city (without changes in positivity rate), contributing to a delay in the achievement of UNAIDS targets. The absence of strict local confinement measures during 2021 didn't translate in increasing HIV testing demand to pre-pandemic numbers.

Our center continues to address and promote HIV testing in order to provide timely diagnosis to achieve UNAIDS diagnostic goals.

EPE396

Impact of the COVID-19 pandemic on access to and delivery of HIV testing and other sexually transmitted and blood-borne infections (STBBI) services, among priority populations in Canada

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Background: COVID-19 has created unprecedented challenges in delivery of and access to HIV/STBBI services, disproportionately affecting priority populations and impacting the first "90" in the 90-90-90 HIV targets. Canada's rate of new HIV diagnoses in 2020 (4.3/100,000) decreased compared to 2019 (5.5/100,000); possibly partially attributable to decreased HIV testing.

National surveys were conducted to better understand the impact of the pandemic on service providers' (SP) ability to deliver STBBI services, and access to these services by African, Caribbean, and Black (ACB) communities and people who use drugs (PWUD).

Methods: Three self-administered, online, and anonymous surveys were developed in collaboration with community partners, expert working groups, and/or those with lived experiences: SP (November-December, 2020); ACB (May-July, 2021); and PWUD (January-February, 2021). Eligible SP were those providing HIV/STBBI services in Canada. Information collected included types of services provided, associated challenges, and disruptions. Among priority populations, aged 18+ in Canada, self-identifying as ACB, or PWUD including alcohol or cannabis 6 months from survey-start, were eligible. Information regarding use and access to HIV/STBBI services and associated changes was collected.

Results: Participants included 416 SP, 1556 ACB community members (mean age 40.2, range 18-86 years, 66.2% cisgender female, 30.9% cisgender male), and 1034 PWUD (mean age 40.5, range 18-84 years, 61.2% cisgender female, 32.6% cisgender male). SP reported a 66.3% decrease in demand for services while 44.0% reported a "strong decrease" in ability to provide them.

Since the beginning of the pandemic, SP reported that HIV testing either decreased (43.9%) or stopped (30.8%) at some point. Nearly half of ACB (40.5%) and PWUD (49.5%) participants wanting HIV testing services were not always able to access.

Similar barriers were reported among these populations: reduced clinic hours; public health measures; getting referrals, appointments, or contacting health care professionals. In response to barriers, SP either created new, or increased their ability to provide, remote services.

Conclusions: Survey results highlight the COVID-19 impact on access to and delivery of HIV/STBBI testing in Canada and introduction of innovative remote practices. Unintended consequences for healthcare delivery, and access by priority populations, may have decreased HIV diagnosis rates, potentially affecting future HIV trends.

EPE397

Virtual HIV counseling: How to access MSM and transgender people in rural areas in Paraguay in the context of the COVID-19 pandemic

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Background: In Paraguay, between 2019 and 2020, due to the impact of the COVID-19 pandemic, access to HIV testing decreased by 28.8% and new diagnoses by 28.4%. These gaps have impacted into the MSM and Trans population to a greater extent. To reduce these gaps, a virtual consulting program was implemented through cellular operators by operational advisers. A project was designed to reduce the gaps in the HIV/AIDS care continuum in 4 rural areas of Paraguay in the context of the COVID-19 pandemic aimed at MSM and transgender people.

Description: 50 virtual counselors from the MSM population have been trained. Home testing services have been offered, promoting self-testing and home delivery of condoms in order not to suspend services during confinement during the COVID-19 pandemic. More than 800 MSM and Transgender people have been reached for 8 months in 2021. The selected areas were rural, since in these areas there were the greatest barriers to accessing the health service.

Lessons learned: The fundamental role of civil society is demonstrated to access key populations with health services and how it contributes to reducing the impact of

COVID in maintaining testing services in key populations. On the other hand, it includes the use of technology to access counseling and receive the testing service in homes or other community spaces.
This experience was effective in rural areas, since, added to COVID, there are other barriers to accessing the health service, such as distances and stigma and discrimination. Adding virtual counseling by peer counselors has facilitated access to the 800 MSM and transgender people.
Conclusions/Next steps: The HIV services offered by civil society organizations cover the gaps that the health service cannot reach, especially in access to key populations. This experience shows that public health services must consider the contribution of civil society and integrate the innovative strategies developed by NGOs as part of the health system in order to achieve a truly comprehensive and universal health system.

EPE398

The impact of COVID-19 restrictions on online sales of HIV self-test kits and implications for HIV prevention: analysis of transaction data from a leading e-commerce platform in China

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Background: The effect of the COVID-19 restrictions on HIV self-testing (HIVST) remains unclear. COVID-restrictions may have prevented consumers from obtaining HIVST kits or, alternatively, accelerated a shift away from facility-based to online HIVST.
Our study aimed to quantify the impact of COVID-restrictions on HIVST kit purchasing behaviors in mainland China.
Methods: De-identified transaction data were retrieved from a leading online shopping platform in China. An interrupted time series model was constructed to examine the impact of COVID-restrictions on the weekly number of anonyms purchasing HIVST kits, online orders, and purchased kits, as well as post-restrictions trends.
Results: A total of 2.32 million anonyms submitted 4.46 million orders for 4.84 million HIVST kits between 7 January 2016 and 22 April 2020. In the ITS model, the number of anonyms purchasing HIVST kits, orders, and kits decreased by an estimated 10,545, 17,973, and 18,471 in the first week (23 January 2020 to 29 January 2020) after COVID-restrictions were implemented compared to expected levels, respectively. This represented declines of 51.7% (incidence rate ratio [IRR] 0.483, 95% confidence interval [CI] 0.380-0.615), 55.3% (0.447, 0.361-0.553), and 54.9% (0.451, 0.363-0.562), respectively.
As restrictions eased, the number of anonyms purchasing HIVST kits, orders, and kits gradually increased by an average of 7.4%, 4.8%, and 4.9% per week, respectively. In the first week after COVID-restrictions were lifted in Wuhan city (9 April 2020 to 15 April 2020), the number of anonyms purchasing HIVST kits returned to pre-restriction levels (IRR 0.982, 95% CI 0.821-1.175) in mainland China, whereas the number of orders (0.707, 0.588-0.850) and kits (0.725, 0.606-0.869) were still lower than pre-COVID levels.
The impact of COVID-restrictions on outcomes at the beginning of COVID-restrictions and the increasing trends of outcomes were larger among those living in regions with higher COVID-19 incidence (e.g., Wuhan city and Hubei province).
Conclusions: Online sales of HIVST kits were significantly impacted by COVID-restrictions, and HIVST kit purchasing patterns returned to pre-restriction levels after restrictions were lifted.
Access to HIVST kits should be maintained and strategies to increase testing should be implemented during future public health emergency responses.

EPE399

Factors associated with HIV testing among people who inject drugs: findings from a multistate study in the United States at the start of the COVID-19 pandemic

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Background: The COVID-19 pandemic disrupted every aspect of public health, including HIV testing services for people who inject drugs (PWID). Routine HIV testing is vital to public health given that many new HIV infections are transmitted by persons unaware of their status. Existing research that examines HIV testing is informative, but primarily reflects data collected before the COVID-19 pandemic.
This study examines factors associated with having been tested for HIV in the past six months among a geographically diverse sample of PWID in the United States from late 2020 to early 2021.
Methods: People who use drugs were recruited between August 2020 and January 2021 from 21 drug treatment and harm reduction programs in 9 states and the District of Columbia. Program staff distributed recruitment cards to clients and interested persons called the study phone number to be screened for eligibility.
We restricted the sample to PWID who were HIV negative and reported having injected drugs in the past 6 months (n=289). We used logistic regression to identify correlates of PWID having been tested for HIV in the past 6 months.
Results: On average, participants were 39.9 years old and approximately half identified as male. Most (61.8%) identified as White. Less than half reported having completed high school (46.7%) and residing in a large metropolitan area (40.4%). Approximately one in three (32.9%) reported weekly hunger.

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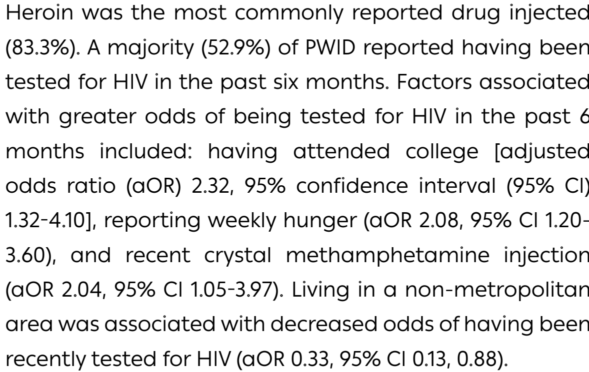

Heroin was the most commonly reported drug injected (83.3%). A majority (52.9%) of PWID reported having been tested for HIV in the past six months. Factors associated with greater odds of being tested for HIV in the past 6 months included: having attended college [adjusted odds ratio (aOR) 2.32, 95% confidence interval (95% CI) 1.32-4.10], reporting weekly hunger (aOR 2.08, 95% CI 1.20-3.60), and recent crystal methamphetamine injection (aOR 2.04, 95% CI 1.05-3.97). Living in a non-metropolitan area was associated with decreased odds of having been recently tested for HIV (aOR 0.33, 95% CI 0.13, 0.88).

Conclusions: Our results underscore the importance of ensuring HIV prevention services are maintained during crises. Eliminating injection drug use-associated HIV transmission will require renewed efforts to expand access to HIV testing services.

EPE400

DIY: because anybody can. Lessons from Triggerise's promotion of HIV self-testing kits in Kenya during the COVID-19 pandemic

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Background: COVID-19 has been enormously disruptive to HIV testing services across sub-Saharan Africa (Ponticiello et al., 2020) (Lagat et al., 2020.). National lockdowns, and other social distancing measures have made facility-based testing difficult for patients and reduced access to routine HIV testing, particularly in low income settings (Ziang et al., 2020). This is cause for concern as testing is a critical step in the HIV care cascade. With limited indication of life returning to normal, it is increasingly clear that innovative approaches are needed to counter the decline in testing.

Description: This paper analyses the impact that switching to self-testing kits had within Triggerise's Tiko ecosystem in Kenya. Tiko is a motivational technology platform targeted at adolescent girls and young women that is designed to promote positive sexual and reproductive health (SRH) choices. It uses mobile technology to connect young women to service providers and a system of behavioural nudges to reward users when they take up an SRH service. In Kenya, Tiko has 593,504 unique users (aged 15-19) who have taken up services since 2018. HIV testing is a key service that the platform promotes given that young women are at particularly high risk of HIV infection. On average, 2100 HIV tests are conducted per month for users on the platform.

Lessons learned: As a result of COVID-19, Triggerise shifted to promoting HIV self-testing kits as an alternative to facility-based testing. In contrast to other studies of the impact of COVID-19 on HIV testing (such a Dorward et al., 2021), we find no statistically significant difference in the number of HIV testing services accessed by users on the platform before and after the change to self-testing kits when conducting a Welch two sample t-test.

Additionally, user data from the platform shows a high degree of understanding of how the self-testing kit is used, and high user satisfaction with the service.

Conclusions/Next steps: From this, we draw a clear policy recommendation: HIV self-testing kits are an effective way to continue to provide HIV testing during COVID-19. More kits need to be provided to low and middle income countries and widespread use should be encouraged.

EPE401

Service uptake, client profile, and acceptability of a self-directed HIV and STI screening clinic in Quebec during the COVID-19 pandemic

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Background: Screening for sexually transmitted infections (STI) remains an important public health recommendation amid increasing STI trends in Canada. Prélib, a new clinic in Quebec, Canada, aims to provide accessible STI screening (Chlamydia, Gonorrhea, Syphilis, Hepatitis, Hepatitis C, and HIV) by combining Internet-based risk assessment with a self-collection of samples to address the systematic barriers and stigma associated with STI testing and reach a wide range of populations including high-risk groups.

The objective of this study is to demonstrate the service uptake, client profiles and acceptability of the STI self-testing service before, and during the COVID-19 pandemic.

Methods: The data was collected from December 2018 to December 2021. Participants completed anonymous surveys on the demographics and sexual risk and attended the STI self-screening appointment at the clinic during the period. Service uptake, client profile, and acceptability were assessed based on data from surveys and Net Promoter Scores (NPS) indicated by participants.

Results: Since December 2018, the number of new participants accessing the self-testing service per month increased from 139 to 1922 by December 2021. Of the total of 14,396 participants, 51% were female, aged 28 (sd=10) on average.

Among them were individuals who had condomless sex within the last two months (63%), sex under the influence of drugs (2.4%), individuals who identify themselves as sex workers (1.6%) and as men who have sex with other men (MSM) (12%). Among participants were also first-time testers (24%), those with regular STI screening habits (21%), and 36% used the service recurrently.

Among participants with valid medical results, the positivity rate to any STI was 6.5%, driven by Chlamydia and Gonorrhea. The average NPS score was 94.60 out of 100, indicating a high satisfaction of service users.

Conclusions: Results demonstrated a growing accessibility and uptake of the STI self-testing service even during the COVID-19 pandemic. The self-screening service was benefited by individuals in need of stigma-free and ac-

cessible service, high-risk groups including MSM, as well as individuals who have never tested for STI before, highlighting the importance of STI self-testing clinics for sexual health.

EPE402

MSM / TG communities impacted by covid 19 lockdown resulting in increased hiv prevalence and low testing- anexploratory study from india

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Background: AIDS HEALTHCARE FOUNDATION - India implements the HIV rapid community based testing across ten states.The objective of the program is early detection and linkage to treatment in order to compliment the efforts of the National Program in reaching 95- 95 -95. A high proportion of people living with HIV remains undiagnosed especially among MSM and trans population despite long years of HIV program.

The COVID 19 pandemic posed great challenges to the MSM/TG communities in accessing HIV services like testing, counselling, condom access and ART initiation and replenishment.

Methods: AHF India implements Rapid HIV testing program keeping high risk population at the centre. To understand the impact of Covid 19 related restrictions affecting the uptake of HIV testing services by MSM and Trans population. The data from 2019 to 2021 was analysed to see the number of testing and the HIVsero-positivity among the MSM and Trans population. The focus was to observe the HIV testing number and map prevalence among the MSM/trans population.

Results: The results show that in late 2020 when the testing services resumed, the HIV testing numbers extremely low, owing to lockdowns but the sero-positivity among men and Trans was as high as 18.5%. Clients who tested positive were interviewed to understand the reasons for the surge in the sero positivity. Of those who tested positive, 79% (23) revealed that due to loss of employment and wages they did sex work for a living, 7% (2) had casual sex and 14% (4) were already engaged in multi partner sex before Covid 19 itself. The National HIV prevalence among Men having sex with Men (2.69%) and Trans is (3.14%) yet in 2019 and 2021 the HIV sero-positivity is 5.4% and 4.6% respectively which is twice higher than the National prevalence.

Year	Tested	Positive Identified	Sero-positivity
2019	1269	69	5.4%
2020	151	28	18.5%
2021	911	42	4.6%

Table. MSM & TG

Conclusions: Robust and innovative approaches towards providing HIV services for MTH community is the need of the hour. Impact of the COVID pandemic lockdowns need to be considered while adopting and redesigning newer strategies especially for MTH community.

Impact of COVID-19 on HIV treatment services

EPE403

Assessing COVID-related concerns and their impact on antenatal and delivery care among pregnant women living with HIV in Kenya

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Background: Some studies indicate that pregnant Kenyan women were concerned about COVID-19 exposure during maternity care. We assessed concern regarding COVID-19 exposure and any impact on antenatal care (ANC) enrollment and/or hospital delivery among pregnant women living with HIV in Kenya.

Methods: Data were collected from pregnant women living with HIV enrolled in a cluster randomized trial to evaluate the impact of the HITSystem 2.1 at 12 government hospitals in Kenya (MHR01121245). Participants were interviewed at study enrollment (n=1199) and delivery (n=771). A 5-point Likert scale (strongly disagree to strongly agree) assessed COVID-19 concerns and travel challenges. Gestational age at ANC enrollment and delivery location were compared among women who expressed concerns and those who did not.

Results: Of 1199 women interviewed at baseline, 61 (5.1%) reported delayed ANC because of COVID-19 concerns. More (96 [8.0%]) worried about exposure to COVID-19 during delivery and indicated COVID-19 related travel challenges (321, 26.8%).

Gestational age at enrollment was similar among women who reported COVID-19 concerns or indicated COVID-related travel challenges compared to those who did not (17.7 weeks vs 18.1 weeks and 18.5 weeks vs 17.9 weeks, respectively). Among 767 with delivery location documented; 726 delivered in a health facility, 34 at home, 2 with

the assistance of a traditional birth attendant, and 5 on-route to the facility. Rates of home-based delivery were lower among women who expressed concerns about delivering in a health facility (2/73, 2.7%) compared to those who did not (29/678, 4.6%), but there was too much uncertainty in these estimates to rule out an effect in either direction (Fisher exact test p=0.759).

Similarly, there was little evidence of a difference between rates of home delivery among women who indicated travel challenges (10/221, 4.5%) and those who did not (20/529, 3.9%; Fisher exact test p=0.683).

Conclusions: Few pregnant women living with HIV expressed concerns about COVID-19 exposure in the context of routine ANC or delivery care. Women with and without concerns had similar care seeking behaviors.

The recognized importance of routine ANC care and facility-based deliveries may have contributed to these positive pregnancy indicators.

EPE404

COVID-19 affects Ryan White facility utilization in South United States: a place visitation analysis

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Background: Few studies on HIV services utilization interruption in Deep South, US which endures double epidemic of HIV and COVID. Using real-time place visitation data of Ryan White (RW) facilities in 8 South states (3/13/2019-6/30/2021) we aim to explore spatiotemporal pattern of the HIV-related health utilization since the pandemic.

Methods: The address of all RW facilities in the 8 states (i.e., Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Texas) were retrieved from the HRSA dataset. The place visitation data of all RW facilities (i.e., how many people visit a certain clinic [given a location address] in a particular timepoint) were obtained from cellphones via SafeGraph, a commercial data company.

We calculated the daily (and 7-day smoothed) visitation change rate (VCR) using the same day of the week for year 2020 to 2019 and 2021 to 2019. Temporal pattern of RW facility visitation change was presented by VCR trajectories (Fig 1.a) of states and geospatial pattern was showed by map (Fig 1.b).

Results: The VCR trajectories kept declining since WHO declared COVID-19 a pandemic to April for most of states and then stably increased till June 2020. However, the recovery of visitation volume was significantly interrupted in 2020-2021 winter. The visitation volume in most states (except SC) remained low and did not achieve the level prior to the pandemic with the state VCR ranging -28.3% to -48.3% in 2020 and -21.2% to -48.8% in 2021. Facilities with high VCR were concentrated in FL, GA, and TX.

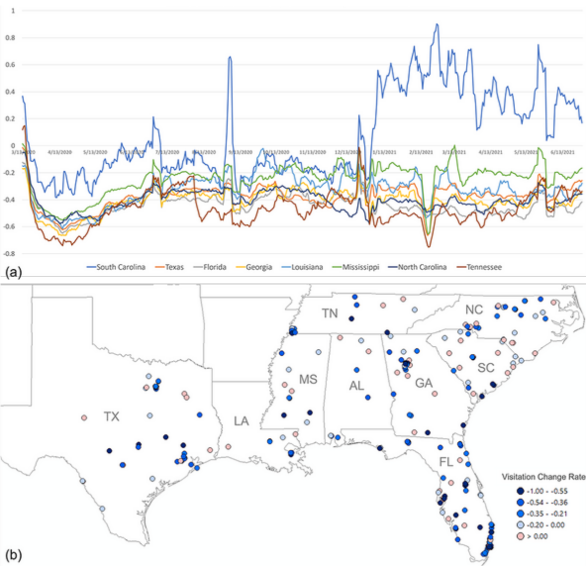

Figure. Ryan White HIV facilities daily visitation change rate since the pandemic.

Conclusions: Based on real-time place visitation data, our study suggests that RW facility utilization in Deep South has been severely affected by COVID-19 and not yet recovered for most of states. Policy makers and health organizations need to pay attention to the profound and long-term impact of the pandemic on HIV service utilization in Deep South.

EPE405

Assessing loss to follow-up in HIV treatment in Tien Giang province during the COVID-19 pandemic

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Background: Local transmission of COVID-19 may threaten continuity of care for people living with HIV (PLHIV) in Tien Giang province, Vietnam. The Meeting Targets and Maintaining Epidemic Control (EpiC) project conducted an analysis of Tien Giang's HIV treatment program focusing on clients no longer in treatment and without a known transfer or death—those considered lost to follow-up (LTFU)—in 2020 and 2021 to evaluate the situation and identify factors associated with LTFU in treatment in the province.

Methods: Case management records for all patients on antiretroviral therapy (ART) in Tien Giang's provincial HIV treatment database from January 1, 2020 to September 30, 2021 were reviewed, validated, and analyzed. Appropriate statistical analysis, including univariate and mul-

tivariate logistic regression, were used to calculate odds ratios reflecting associations between patient characteristics recorded in patient records and designation as LTFU.

Results: Among 2,762 ART clients in the observed period (76.2% male, 23.8% female), the mean age was 34.7 (±9.9). Of the 75.6% who had had a viral load (VL) test, 95.1% were virally suppressed (VL <200 copies/mL). Key and priority population status at enrollment included people who inject drugs (PWID) (5.2%), female sex workers (0.4%), men who have sex with men (32.2%), partners of PLHIV (15.0%), and other (47.2%). By the end of September 2021,178 patients (6.4%) were transferred to facilities in other provinces, 37 (1.3%) died, and 130 (4.7%) were LTFU. In univariate analysis, we found no statistically significant effect of age, gender, or duration on treatment on LTFU status (p-value>0.05).

However, unsuppressed viral load is associated with increased likelihood of LTFU (odds ratio [OR]= 5.02, 95% CI: 2.70 to 9.32). PWID at the time of enrollment were also significantly more likely to be LTFU (OR= 3.26, 95% CI: 1.90 to 5.58).

Conclusions: LTFU remained under the program's target threshold of five percent per annum in the observed period. However, efforts should be made to improve treatment adherence, including through employment of adherence planning and motivational counseling, to address barriers to continuity in care among PWID and virally unsuppressed patients for the long-term success of HIV treatment in Tien Giang.

EPE406

Decentralized drug distribution during the COVID-19 surge in Ho Chi Minh City: lessons learned from antiretroviral drug home delivery via postal services

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Background: COVID-19 challenged Vietnam's centralized drug distribution management system, in place since antiretroviral (ARV) introduction in 2004. Stay-at-home orders and interprovincial travel restrictions required a pivot towards emergency drug dispensing via post. This process was first used in Ho Chi Minh City (HCMC) because of its COVID-19 burden, including a high number and proportion of patients from other provinces, and restrictions on interprovincial travel.

Description: Ten HIV treatment faciities (HTFs) in HCMC initiated postal ARV distribution in late May 2021. Facility staff developed lists of clients that relocated to other provinces. Patients were then contacted to obtain consent for mail delivery and confirm addresses and agreement to pay for postage upon delivery. HTFs contracted with the two most popular postal service companies. Patients in quarantine for or infected with COVID-19 were also eligible for postal ARV delivery.

Lessons learned: From May to September 2021 (peaking in July and August), 6,825 30-count ARV bottles were mailed to 4,188 patients, representing 22.7% of the patients served by the 10 HTFs. A total of 4,138 of these patients resided outside HCMC.

Given interprovincial travel restrictions, postal service was optimal for delivering drugs to these clients. Postage did not exceed US$2 per parcel, and patients were generally willing and able to pay these delivery costs.

This approach made ARVs accessible to clients and promoted continuity of treatment who lived outside of HCMC or had temporarily relocated during a COVID-19 surge in the city. Home delivery also reduced COVID-19 transmission risks and removed barriers to treatment continuation.

Nevertheless, postal distribution slowed or was temporarily disrupted when the COVID-19 outbreak peaked. Two hundred ARV bottles were stuck in distribution centers because of post office closures due to infected staff or lockdowns at recipient locations. Six bottles were returned to senders and 13 were lost in transit. These service delays and disruptions posed challenges for patient adherence and HTF drug management.

Conclusions/Next steps: Postal delivery was effective for ARV distribution, removing a barrier to treatment continuation. As current national guidelines do not allow for this approach, advocacy efforts are needed for adoption of decentralized drug distribution beyond the COVID-19 context.

EPE407

Home delivery of antiretroviral drugs in Indonesia, Laos, Nepal and Nigeria: implications of COVID-19 experiences for post-pandemic decentralized ARV delivery

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Background: Confronted with COVID-19-imposed health facility closures and travel restrictions, HIV services in Indonesia, Laos, Nepal, and Nigeria introduced home delivery (HD) of antiretrovirals (ARVs) to ensure HIV treatment continuity.

A 2020 program review revealed HD to be feasible and acceptable across the four countries, with 19%-51% of eligible clients receiving ARVs through HD. We report on

continued HD during in 2021, the pandemic's second year, and present implications for decentralized drug delivery (DDD) beyond emergency circumstances.

Description: Throughout 2021, all four countries continued the ARV home delivery mechanisms initiated in 2020. In Indonesia, the Jakarta Provincial Health Office continued to support *Jak-Anter,* a home-based ARV delivery system which utilizes ride-based apps and transport courier services. In Laos and Nepal, the HD conducted by community health workers continued, with the numbers of clients using the service varying with pandemic intensity. In 2021, in Indonesia, Laos, and Nepal, 29.8%, 47.0%, and 28.4% of individuals on ARVs in project-supported areas were on HD. In Akwa Ibom State, Nigeria, clients were progressively transferred to alternative DDD models, with HD limited to 12% of clients on ARVs in Mbo Local Government Area who could not go to the facility.

Lessons learned: Understaffing in health facilities, exacerbated by COVID-19 infection among health care providers, made ARV HD a valuable service alternative. Six-month dispensing allows HD to be practical and affordable but depends on consistent ARV stocks. In addition, the countries continuing ARV HD rely on donor funding and external technical assistance, and mechanisms for sustaining and scaling the approach without external support are not yet in place.

Conclusions/Next steps: Policymakersand service delivery partners in the four countries support innovative community-based service delivery models to ensure service continuity in the COVID-19 era. While service delivery guidelines have been adjusted to support HD, national policy change is still needed to sustain the approach. New mechanisms for financing, supply chain management, staff training and supervision, and client sensitization are needed to implement HD at scale.

Options for decentralized service delivery will be especially important for future service disruptions caused by other pandemics, natural disasters, or civil unrest.

EPE408

The impact of COVID-19 on HIV care and treatment at sites across the global IeDEA consortium

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Background: While interruptions in treatment pose risks for people living with HIV (PLWH), effects of the COVID-19 pandemic on HIV services are not broadly documented, particularly in countries with a high HIV burden.

Methods: In late 2020, the International epidemiology Databases to Evaluate AIDS (IeDEA) research consortium surveyed 238 HIV care sites across seven world regions to document service disruptions during the first year of the pandemic and strategies for ensuring continuity of care for PLWH. Descriptive statistics were stratified by national HIV prevalence: <1%, 1-<5%, ≥5%.

Results: Questions about COVID-19's impact on care were completed by 225 (95%) sites in 42 countries with low (n=82), medium (n=86) and high (n=57) HIV prevalence.

Most sites (75%) reported their location had been subject to pandemic-related restrictions on travel, service provision or other operations, with restrictions more common in high-prevalence (91%) than low- (78%) and medium-prevalence (61%) settings.

While 42% of sites reported ever suspending non-urgent appointments, fewer reported suspending HIV testing (26%) or new patient enrollments (10%). Negative impacts on clinic operations (e.g., decreased hours/days, reduced provider availability, clinic reconfiguration for COVID-19 services, record-keeping interruptions, and suspension of NGO support) were reported by 76%.

Increased use of telemedicine was reported by 85% of clinics in low-prevalence settings, compared with medium- (38%) and high- (40%) prevalence settings. In high-prevalence settings, few sites (2%) reported suspending antiretroviral therapy (ART) clinics, and many reported mitigation strategies to support adherence, including multi-month dispensation of antiretrovirals (95%) and designating community ART pick-up points (44%).

Few sites reported stockouts of first- (5%), second- (10%), or third-line (10%) ART regimens. However, stockouts of second- and third-line regimens were more common in high-prevalence settings (25% and 17%, respectively).

Interruptions in HIV viral load (VL) testing were reported, including suspension of testing (22%), longer turnaround times (41%), and supply stockouts (22%); disruptions did not differ across HIV prevalence levels.

Conclusions: Whilepandemic-relateddisruptions in VL testing and drug supply chains negatively impacted HIV care, many IeDEA sites introduced measures aimed at ensuring the continuity of treatment. Impacts of these interventions on HIV care outcomes are yet to be understood.

EPE409

"Culture Shock under the New Normal" Integrating COVID-19 into HIV rogramming for PLHIV in Zimbabwe

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Background: Zimbabwe has an estimated 1.2 million People living with HIV (PLHIV) with an estimated prevalence of 11.9% in 2020 as well as 94% of adults and 70% of children being on Anti-retroviral Treatment respectively. (Ministry of Health and Child Care, 2021, Global AIIDS Response Progress Response). Before COVID, National AIDS Council had managed to establish MIPA Forums where PLHIV would have physical meetings at district, provincial and national levels would have a team of PLHIV visiting selected health facilities to assess availability of medicines. In March 2020 the country had its first lockdown which ran up to July 2020. This disrupted the interactions and psychosocial support that PLHIV provided to each other.

Description: To circumvent the restrictions brought about the COVID-19 restrictions, National AIDS Council established regional MIPA Forums and where by the country's 10 provinces were broken down into two regions of 5 provinces each and establishing regional WhatsApp platforms where PLHIV would share information about COVID-19, medication and providing each other with psycho-social support. The national network of PLHIV also established a call centre whereby PLHIV could make distress calls where-ever they are as they report stock outs and other problems affecting them.

Lessons learned:

- Regional MIPA Forums' WhatsApp groups and Regional meetings have reduced the cost of conducting meeting as well as facilitating closer interactions between PLHIV as they tackle regional access problems that are closer to them.
- The establishment of a call centre has replaced physical community monitoring by PLHIV and has made it easier to report stock outs and allow corrective action to be taken at national level at then shortest possible time.
- The HIV structures have made it easy to integrate COVID-19 into HIV programming using already established structures.
- Fight against Stigma and discrimination under HIV has made it easier to fight against COVID-19 stigma.

Conclusions/Next steps: COVID-19 has presented new challenges but use of HIV experiences has made it easier for PLHIV to deal with COVID-19.

EPE410

Sustaining clinic engagement and viral suppression through modifications to HIV care models during the COVID-19 pandemic: experiences in Uganda military health facilities

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Background: The COVID-19 pandemic presented challenges of disrupting continuity of care, potentially worsening HIV outcomes among highly mobile populations. These disruptions called for modifications to HIV care delivery models to ensure continued engagement for people living with HIV (PLHIV) on treatment.

We describe the interventions, outcomes and lessons learned in implementing HIV care delivery modifications from March 2020 in Uganda military health facilities supported by the URC-Uganda Department of Defense HIV/AIDS Prevention Program (DHAPP).

Description: Changes to HIV care strategies involved pre-appointment profiling, line-listing all clients who were due for appointments, and tracking daily attendances.

The DHAPP team used this information to design a community drug delivery program that allowed drop-in refills with no appointment, scaled up multi-month dispensing, and included the use of stickers and alerts in the electronic medical record (EMR) system as reminders for health workers to take viral load (VL) tests of clients before they were reviewed. DHAPP also implemented changes to client flow to strengthen triage and set-up a COVID-19 screening points. Clinic engagement was tracked in Excel-based documents and VL suppression rate was tracked using the national VL dashboards one quarter before and 2 years after the onset of the pandemic.

Lessons learned: Overall 21,500 PLHIV were enrolled on treatment in 31 military facilities,of these 55% were male. The proportion of missed scheduled visits pre-Covid-19 was 15% which initially increased immediately to 35% after lock-downs were introduced. Thereafter, a steady improvement was noted through September 2021, while viral suppression rates slightly improved during the COVID-19 pandemic as shown below.

	Jan - Mar'20	Apr - Jun'20	Jul - Sep'20	Oct - Dec'20	Jan - Mar'21	Apr - Jun'21	Jul - Sep'21
% of scheduled appointments missed	15%	35%	23%	18%	14%	12%	14%
VL Suppression (%)	87%	89%	89%	92%	91%	96%	94%

Table.

Conclusions/Next steps: Efforts to limit the impact of the COVID-19 pandemic on continued engagement and sustaining viral suppression among PLHIV on treatment were effective. There is need to continuously improve HIV care models to address any unanticipated structural disruptions, such as those associated with the COVID-19 pandemic. Further studies on cost implications of these modifications are recommended.

EPE411

Impact of crisis-driven interventions on averting Lost to follow-up among people living with HIV on antiretroviral therapy in Mumbai, India

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Background: India had national and provincial lock-downs that prompted outmigration before they took effect during two COVID-19 waves. The pandemic posed challenges to treatment continuity and reengagement among people living with HIV (PLHIV).

Multiple interventions were adapted to prevent lost to follow-up (LTFU: no pill pick-up for >28 days since last expected pick-up) in Mumbai metro-city, which caters to 38,000 PLHIV, many of whom are migrants.

Description: We proactively generated a list of PLHIV due for their pill pick-up and called them. An automated interactive voice response system (ART-MITRA) prompted callers to respond on their availability, and a convenient location to reach a nearby ART center. To enable treatment continuity in the setting of out-migration, we instituted an E-transfer-out system. Decentralized drug distribution (DDD) was set up. To avert calling delays, we enhanced data to use to reach PLHIV prior to and on the day of missing pill pick-up. During April- July 2021, we rapidly re-activated and adapted the entire response package of tracking and tracing, and added teleconsultations for the severely ill, along with courier services and community refills.

Lessons learned: In March 2020, of the 7,480 PLHIV due for refill 47% PLHIV were reachable. Through ART-MITRA 1300 PLHIV collected their pills. An additional 1660 PLHIV collected pills from 13 DDD sites. With enhanced case-based tracking, and calling of 27,980, 18,002 (64%) were reached, and 4,866 LTFU PLHIV were re-engaged from October – to March of 2021. During the second wave, teleconsultations for severely ill PLHIV and ART delivery through community volunteers and couriers resulted in the prevention of 1,559 LTFU. A significant (P<0.001) 50% decline in LTFU was observed between the two COVID-19 peaks.

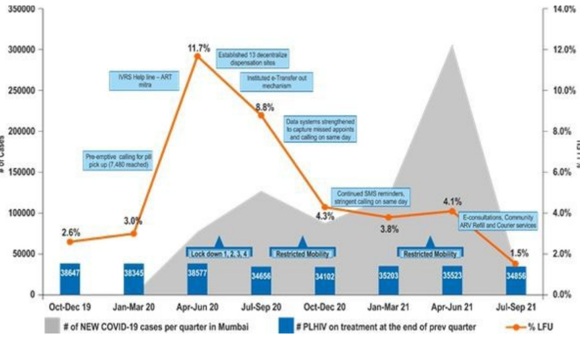

Figure.

Conclusions/Next steps: Interventions tailored to the situation on the ground, and rapid reactivation in subsequent surges led to a decline in LTFU rate and allowed for maintenance of treatment gains.

EPE412

Technology-enabled expert clinical decision making to fast-track HIV-1 viral load result uptake among the network of providers at antiretroviral treatment centers, Maharashtra, India

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Background: In Maharashtra state, antiretroviral therapy (ART) services are delivered through a tiered pyramidal network of an Adult and Paediatric Centre of Excellence (CoE) at the Apex, 14 ART plus centres, and 91 ART centres catering to 383,790 people living with HIV (PLHIV). The CoEs and ART plus centres have the additional role of mentoring the clinical network of providers and supporting clinical decision-making regarding ART switching through designated State AIDS Clinical Expert Panels (SACEP). Previously, PLHIV would need to be physically present at the SACEP, which led to a cascade of challenges, including decreased access to SACEP due to expenses, delays, and the rescheduling of appointments.

Furthermore, the COVID-19 pandemic aggravated challenges for in-person consultations and delayed critical expert input.

Description: SinceApril 2020, the Tele-SACEP intervention was initiated to provide timely e-consultations for utilization of viral load results and other clinical decisions. We reviewed data to estimate PLHIV with pending SACEP consults and developed a Standard Operative Procedure per national guidelines, incorporating patient confidentiality and a meeting calendar for patient appointments.

We used the Zoom® platform to facilitate case discussions between the ART center staff and SACEP Panels with patients who could attend their closest ART center, preserving patient confidentiality. The SACEP decision was shared with referring ART center providers on the same day for appropriate action for patient care.

Lessons learned: In the 390 Tele-SACEP meetings held, 6,641 cases were reviewed from April 2020 to December 2021. Of these, 4,678 (70%) were recommended for ART switch or substitution with a short turnaround time (TAT). When comparing the median and mean TAT between January 2016 and March 2020 (31 and 44 days) to the median and mean TAT between April 2020 to December 2021 (07 and 17 days), there was a significant difference from referral to the actual SACEP meeting.

Conclusions/Next steps: Technology-enabled SACEPs resulted in the provision of timely clinical decisions and increased the number of referrals for required expert consultation. In addition to providing critical connections during the COVID-19 pandemic, the process intuitively strengthened the clinical acumen of the in-network clinicians through case discussions and aided in easy access to the SACEP.

EPE413

MMD facilitates continuity of treatment and viral suppression for PLHIV during COVID-19 – experience from military facilities in Uganda

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Background: Coronavirus disease 2019 (COVID-19) and its associated lockdowns globally created challenges of continuity of treatment for PLHIV in care. To overcome this disruption, Uganda introduced multi-month dispensing of drugs (MMD) as one of the interventions to adapt to the COVID-19 lockdowns.

We describe the process, outcomes and lessons learned in scaling up MMD in Uganda military health facilities supported by the PEPFAR funded US Department of Defense URC-Uganda project.

Methods: MMD included providing clients with 3-6 months of drug refills (anti-retrovirals (ARVs), Cotrimoxazole, TB drugs) instead of the usual 2-month cycles, training staff on MMD protocols, providing job aides, supply chain strengthening, increasing community-based drug deliveries, mentoring health workers, tracking appointments and increasing appointment reminders. The MMD data from 28 ART clinics were tracked weekly, monthly and quarterly through an Excel-based dashboard; 12-month retention and viral suppression were tracked from national reporting databases. 25 health workers from 10 health facilities were interviewed for their experience with MMD. Descriptive statistics were applied to determine the extent of MMD implementation and outcomes.

Results: Results showed progressive uptake of MMD at all health facilities, improvements in viral suppression and sustained 12-month retention on treatment as shown below.

Variable	March '20	Sep'20	March'21	Sept'21
% of clients on MMD	33%	51%	77%	87%
% of clients with suppressed VL	89%	90%	93%	94%
12-month retention	78%	75%	81%	86%

Table.

Interview findings revealed five success factors for MMD:

1. Increased availability of 3-month packs of fixed dose drugs and other supply chain improvements in quantification and forecasting;
2. Provision of job aids;
3. Training HWs on MMD;
4. Delinking viral load bleeding from refill dates and;
5. Clients' desire to reduce frequency of clinic visits.

Conclusions: MMD is a feasible and acceptable approach to be scaled up and is associated with improved HIV treatment outcomes, treatment continuity and improved viral load suppression.

This success shows that broader MMD access can serve as a new standard of care for HIV and other chronic diseases both during service delivery disruptions and routine care.

EPE414

COVID-19 and HIV: How COVID-19 changed HIV service delivery in Zambian correctional facilities

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Background: The Zambia Correctional Service (ZCS), working with the Ministry of Health (MOH) and other implementing partners, has made great strides to reduce HIV prevalence rates among the inmates, from 27.4% (Simooya et.al., 2011) to 14.3% in 2019 (Kagujje et.al. 2021). However, the advent of COVID-19 in 2019 threatened to reverse the gains due to the shift of attention from HIV to COVID-*19*and the subsequent control of entry to correctional centres and partial lockdown affected HIV service delivery. The inmates who suffered severe COVID-19 illnesses and those who died from COVID-19 are mostly those who had either HIV or were co-infected with HIV and TB.

The ZCS, MoH and other implementing partners, implemented an innovative differentiated service delivery (DSD) model of HIV services.

Description: To ensure uninterrupted HIV service delivery, as well as, protect inmates, staff and service providers from COVID-19 infection, ZCS implemented current and novel DSD practices that involved:

- Reducing the frequency of ART clients' visits to clinics by giving them up to 6 months of antiretroviral drugs monitored by trained inmate peer educator;
- Intensifying HIV/AIDS coordinators' and peer educators' adherence support to client on ART;
- Integrating *HIV/AIDS*prevention, treatment, care and support for inmates with COVID-19 prevention services such as sensitization, testing and vaccination;
- Encouraging inmates with*HIV*to get vaccinated against COVID-19 to protect their health, and;
- Pooling together of COVID-19 and HIV resources.

This DSD model enabled 3591 inmates living with HIV between 2019 and 2021 to continue receiving HIV services amidst the COVID-19 pandemic.

Lessons learned: The ZCS approach to DSD of HIV services ensured that all HIV clients among inmates received uninterrupted HIV services, and at the same time, reduced COVID-19 infections in correctional facilities. It also helped to leverage resources and to create effectiveness and efficiency in addressing the two infectious diseases.

Conclusions/Next steps: A holistic approach for combating COVID-19 and HIV in correctional facilities protects the health of inmates living with HIV who are at a higher risk of becoming seriously ill and dying from*COVID-19*

EPE415

Acceleration ofthe implementation of differentiated ART delivery services in the advent of COVID-19 in Zambia

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Background: USAID-funded Right to Care Zambia to support the Ministry of Health in Zambia to implement the UNAIDS 95-95-95. Retention of HIV-positive recipients of care is critical to the attainment of the 95-95-95. However, with the emergence of the COVID-19 pandemic in early 2020, there was concern about disruptions in HIV service delivery. To protect the gains made, the Ministry of Health issued operational guidance to adapt HIV services in March 2020 that included the provision of three or six months of ARV medications as part of differentiated service delivery. RTCZ shares its experience with the provision of differentiated service delivery during the COVID-19 pandemic.

Description: USAID Action HIV accelerated the implementation of differentiated ART delivery at 270 supported health facilities in Northern, Muchinga, and Luapula provinces by offering multiple-month dispenses through fast-tracked drug pick-ups in the health facilities and establishment of community-based medication collection points.

This involved identifying patients with future pharmacy appointments from March 2020 to December 2021.

Lessons learned: The 6MMD uptake stood at 78148 out of the Tx_Curr of 126,881 an achievement of 62%. 10,096 clients were provided services through ccommunity pick-up points and home deliveries 7,797 were dispensed medicines and 1,327 had VL Samples collected in the period under review.

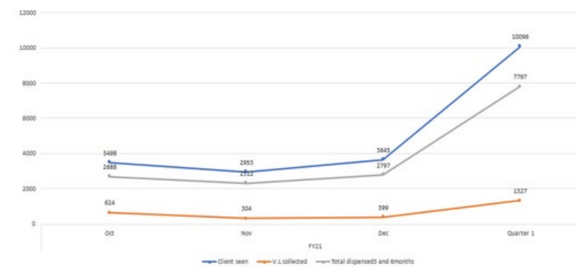

Figure. Clients seen in the community vs. proportion of VL collected and dispensation.

Conclusions/Next steps: Despite all these challenges and limitations, there are opportunities for improvement, which include the need to ensure patient information completeness, the institutionalization of informal pickup locations as key features of the health system, additional resources to support logistics and processes at pickup locations, automation of pickup processes, and demand creation.

Proactive systems for triaging eligible clients can help in rapidly scaling up differentiated service delivery for PLHIV, lessening the burden on the already stretched health system in the era of the COVID-19 pandemic.

Impact of COVID-19 on financing for the HIV response

EPE416
Revisiting sustainable financing for the HIV/AIDS response in the COVID-19 era

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Background: The SDGs aim to end the AIDS epidemic by 2030. Achieving the Fast Track 95-95-95 targets is essential and requires substantial additional financing for recurrent cost increases over the near and medium term [1].

The share of domestic government spending on HIV/AIDS remains relatively limited among lower-middle-income countries (31.6%) and low-income countries (11%) [2].

Mobilizing, aligning, and optimizing donor, public, and private resources to adequately fund a sustainable HIV/AIDS response is more important than ever.

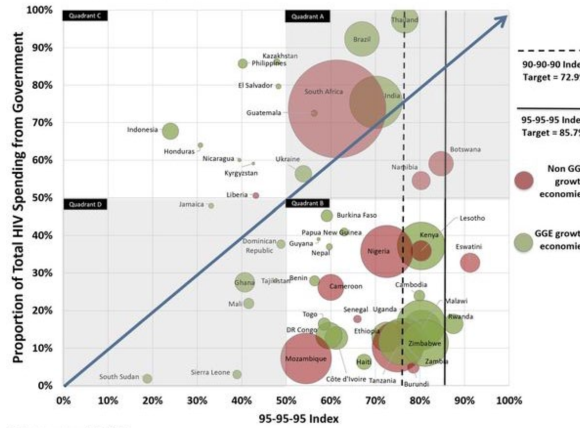
Description: Annual funding for PEFPAR and HIV development assistance peaked in 2011–12, reaching US$17.5 billion, falling to US$14.5 billion in 2020. As donors seek to increase domestic co-financing, COVID-19 places enormous pressures on public budgets [3].

Many countries expect reduced near-term general government expenditures (GGE) due to COVID-19 related economic shocks [4]. Some developing countries are already adjusting monetary policy and are preparing to scale back fiscal support [5].

Lessons learned: Country-specific context is critical to identify the most important HIV/AIDS priorities and strategic opportunities to support both performance improvement and ownership through financial self-reliance.

The negative correlation (-0.29, $p<0.05$, weighted to number of PLHIV) between the achievement of the 95-95-95 targets and domestic financing suggests that context and tradeoffs are not fully balanced.

Figure 1 presents the relative position of USAID/PEPFAR-supported countries vis-a-vis 2030 Fast Track performance and government HIV expenditure.



Data sources: [4, 6, 7]
Note: Five countries not shown due to incomplete data.

Figure 1. 2030 fast track performance and proportion of government HIV expenditure in PEPFAR-supported countries weighted by the number of PLHIV

Conclusions/Next steps: The focus on increased domestic resource mobilization to achieve self-sufficiency should not come at the cost of progress made towards achieving targets. Donors and countries must collaborate to balance replacing external funding while meeting targets. With restricted fiscal space and new competing health needs, the strategic use of data and analytics is essential to increase domestic resources for HIV, optimize resource allocation for scarce available resources, and improve efficiency of HIV service delivery.

EPE417
A pandemic triad: HIV, COVID-19 and debt in developing countries

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Background: This paper assesses the impact of the HIV, COVID-19 and debt pandemics dynamics on health, HIV and pandemic preparedness and response-related financing in developing countries.

Methods: Using a novel dataset, we did a cross-national systematic analysis of all data sources available for government expenditures on health, HIV, COVID-19 and debt servicing in selected developing countries. Using panel-regression methods, we estimated the association between government domestic spending on health, HIV, COVID-19 and debt servicing. Finally, we tested the robustness of our conclusions using various models and subsets of countries.

Results: We find an inadequate multilateral response with the ensuing gaps allowing both pandemics to thrive. The G20 Debt Service Suspension Initiative (DSSI) and the Common Framework only covered countries with a third of the global population of people living with HIV (PLHIV). Rising and unsustainable debt levels are limiting the capacity of governments to protect the health of their pop-

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ulations. Government spending is already falling in response to high debt payments. Specifically, debt servicing is crowding-out lifesaving investments. In 2020, for every US$ 5 available, US$ 4 was spent on debt servicing. Only US$ 1 was invested in health. This is a binding constraint on countries' efforts to control COVID-19.

Even with a gargantuan effort to increase health expenditure, the outlook for health financing remains negative. Fiscal consolidation, with a heavy emphasis on expenditure cuts, is expected to take place across 139 countries in the coming years.

Conclusions: These findings suggest that fiscal policymakers should be concerned about the crowding-out and constraining effects of public debt.

To this end, pragmatic recommendations are made to treat and cancel debt as a critical policy lever to accelerate the end of HIV and COVID-19 pandemics in developing countries as a key condition to address the growing inequalities and ensure debt can be a benefit, not a burden.

EPE418

Effects of COVID-19 on HIV Financing Prospects in 15 Asian Countries

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Background:

Many countries across the Asia region have made strong efforts to prioritize their HIV responses over recent years, yet the fiscal space to finance the interventions remains limited. HIV funding gaps have grown substantially due to the economic contractions and shifts in budgetary priorities that many countries have experienced throughout the COVID-19 pandemic. This paper uses updated macroeconomic inputs (as of April 2021) to better understand the impact that COVID-19 has had on countries' abilities to increase domestic funding for their HIV response.

Methods: To understand country capacity to increase domestic government spending on health and HIV, HP+ created a model to project future funding levels based on two scenarios (optimistic and pessimistic). Themodel[RR1] assessed GDP, government spending, health spending, and HIV spending[RR2]across 15 countries across the Asia region from 2020 to 2023, accounting for the potential effects of COVID-19 on economic growth projections and prioritization of specific health areas. Inputs were gathered from the October 2019 and October 2021 IMF World Economic Outlook, the World Health Organization (WHO) Global Health Expenditure Database, UNAIDS, and country-specific sources, including budget documents and funding requests.

Results: Across the 15 countries included in this analysis, of the total HIV resource needs required, domestic governments in 2020 could provide a little less than half (46%), assuming optimistic conditions. By 2022, estimates suggest domestic governments could increase financing to 66% of the total resources needed. Under a more pessimistic scenario, this number drops to 41% in 2020 and 36% by 2022. Pakistan and Lao PDR face the largest resource gaps in terms of the percentage of needs that will likely go unmet (greater than 90%).

Conclusions: Decreased spending would jeopardize hard-fought progress toward epidemic control and could result in increased HIV incidence and mortality. To avoid this situation, it is important that governments and implementing partners look for efficiency gains and innovative solutions to improve value for money in the short term and give larger budgetary priority to HIV in the medium and long term.

Optimizing HIV services (prevention, testing and/or treatment) in the COVID-19 era

EPE419

A qualitative study of patient and provider experiences with telemedicine for HIV care

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Background: There is limited information on impressions and experiences with using telemedicine for routine HIV care, particularly from U.S. federally qualified health centers (FQHCs). We sought to understand telemedicine experiences of people living with HIV (PLHIV) and their providers.

Methods: We conducted interviews with 31 PLHIV taking antiretroviral therapy and 20 HIV care providers and key informants (KIs) from two FQHCs in Los Angeles between March-July 2021. Questions for PLHIV focused on use and perceptions of telemedicine; questions for providers and KIs focused on implementation of telemedicine and perceptions of patient experience. We used the Modified Framework of Access for coding and analysis of PLHIV interviews, and the Consolidated Framework for Implementation Research Guide for provider/KI interviews. All interviews were double coded with Dedoose software.

Results: The median age of PLHIV was 50 years old (range 23-65). 77% spoke English and the remainder Spanish. 21 identified as cisgender men, 7 as cisgender women, and 3 as transgender women. Almost all had used telemedicine by telephone without video. PLHIV largely viewed telemedicine as a convenient way of accessing HIV care, with savings of time and transportation costs. Most PLHIV felt

capable of engaging in telephone visits, but some shared concerns around technological literacy needed for video visits. Nearly all wanted to continue telemedicine as part of their HIV care. Providers and KIs generally agreed that their patients benefit from telemedicine. Both agreed that initial visits should be in-person. Some providers expressed a perception that patients strongly prefer in-person visits or have significant barriers to telemedicine, including limited technology resources.

Benefit / Challenge	People living with HIV	Providers and Key Informants *(7 physicians, 4 case managers, 2 nurses, 7 clinic managers)*
Preference	All but one interested in continuing to use telemedicine in their HIV care	Perception that patients prefer only in-person visits
Travel to clinic and opportunity costs	Less travel time, saves time and costs of transportation Reduced number of visits gives more time for work and personal matters	Perception of less travel time, saves time and costs of transportation, for patients Fewer missed/late appointments Reduced number of visits, especially for stable and suppressed PLHIV
Technology literacy	Some prefer phone, some prefer video Most report feeling tech literate for phone telemedicine or are interested in learning more about how to use video	Perception that most patients prefer phone because it is simpler to use
Technology resources	Most reported access to smartphone, computer/tablet and WiFi/mobile data	Perception that WiFi/mobile data not dependable for many patients Perception that patients with housing instability/homelessness may not have consistent access to phone or computer/tablet
New diagnosis	Better for initial visits to be in person	Better for initial visits to be in person
Privacy	Most reported access to privacy for telemedicine visits and are comfortable with being on video	Concerns around patients' privacy at home/in surrounding environment during visit
Spanish interpretation	Use of interpreters over telemedicine is acceptable	Use of interpreters over telemedicine more difficult

Table. Comparison of telemedicine benefits and challenges as reported by PLHIV and providers

Conclusions: PLHIV found telemedicine highly acceptable, feasible, and convenient, while some providers raised concerns about their patients' access to telemedicine.
Addressing disparate patient-provider views will be important for the successful implementation of telemedicine as part of routine HIV care.

EPE420
COVID-19, telehealth and HIV care

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Background: COVID-19 has threatened health care for many individuals. HIV clinics, including ours, often share staff, facilities, and logistics with Infectious Diseases departments on the frontlines of the pandemic. Restrictions of resources, redeployment of staff, and patient reluctance to make clinic appointments disrupt continuity of care of existing patients and limit access to care of new ones. To overcome this, we expanded our capabilities by promoting a telehealth, MyChart (MC), application.
In this report, we describe outcomes as measured by HIV viral load and retention in care in a group of patients enrolled in this program.
Methods: We enrolled Ryan White (RW) people living with HIV (PLWH) at Henry Ford Hospital to MC (electronic medical record software) and initiated a program to educate PLWH on how to use this tool. We supplied pre-loaded phones, as needed, to make virtual visits accessible to all patients. As part of this initiative, a tele-health navigator helped patients download the application and provided education on how to use it.
We collected demographic information and clinical outcomes. Goals were to have 85% of patients virally suppressed (HIV RNA <200 copies/mm3) and have 40% of PLWH have at least one MC visit
Results: From 10/2020 - 01/2022, 264 PLWH were enrolled into our pilot program and given telehealth education. Of these successfully enrolled in MC: 83.7% were black, 73% male, 57% were older than 45 years, 88% lived in Wayne County, and 27 needed and received pre-loaded smart phones. Of those PLWH in this pilot program, 88.32% maintained viral suppression, yet only 43% downloaded MC and only 4.7% had at least one MC visit.
Conclusions: Telehealth programs can help overcome barriers to HIV care and maintain patient engagement when crises interrupt traditional care models. Enrollees maintained parity with our overall RW population and had a similar frequency of viral suppression. Although, telehealth visits were under-utilized, the intervention, itself, may have promoted engagement in care.
Other features of the program such as bidirectional provider-patient messaging and prescription updates await further evaluation.

EPE421
Responding to the COVID-19 pandemic: HIV continuing professional development virtual seminars for healthcare workers in Ukraine

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Background: The International Training and Education Centre for Health (I-TECH) has been supporting HIV service delivery in Ukraine since 2013, including extensive in-service training and mentorship. With the onset of the COVID-19 pandemic, I-TECH has shifted technical support and education for healthcare workers (HCWs) to an online model to continue supporting quality service delivery while respecting efforts to mitigate the pandemic.
Description: In August 2020, I-TECH conducted an initial survey among 184 HCWs to inform the delivery of online training for infectious disease specialists working at 107 I-TECH-supported antiretroviral therapy (ART) sites.
Based on survey results, I-TECH implemented monthly virtual continuing professional development (CPD) series via Zoom with participant surveys after each session.
Email invitations were circulated to potential participants, who registered for each session to gain nationally recognized CPD credits.
One year later, another user survey was conducted among 343 HCWs to guide ongoing CPD delivery. Between September 2020 and December 2021, 15 virtual CPD seminars were conducted with a mean of 111 participants per session.

Lessons learned: The virtual CPD series was well received with a median uptake of 76% among those invited and overall user satisfaction of 96.9%, indicating high or very high level of satisfaction with each session.

Scheduling refinements were made based on participant feedback, including preferences for Thursdays, 3 pm start time, and duration of one hour plus 30 minutes for questions. Participants prioritized monthly sessions. Interactivity was increased based on preferences for incorporating case discussions. CPD credits were a motivator for attendance.

Despite high uptake and user satisfaction, some barriers to participation included unstable Internet access; insufficient Wi-Fi capacity for video streaming; limited computer literacy for navigating Zoom; and translation quality when international experts presented. Participants desired offline access to seminar materials in the Ukrainian language and supplemental in-person training.

Conclusions/Next steps: The virtual CPD series allowed I-TECH to continue providing in-service training despite the COVID-19 pandemic and had high uptake and user satisfaction. Participant surveys were valuable for adapting the program to meet user needs and continue informing ongoing series. A similar approach will be explored for other cadres of service providers.

EPE422

Training adaptations to address quality improvement in PEPFAR-supported Latin America programs in the era of COVID-19

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Background: QI approaches implemented at health facility level have been shown to be effective in improving HIV programs globally. The COVID-19 pandemic context necessitated innovative modalities of QI training conducive to social distancing and travel restrictions. CDC-supported countries in Latin America convened a virtual QI training for leadership stakeholders as a means of improving service delivery at the site level. Here we describe the implementation of this remote QI training.

Description: The training was conducted over a nine-week period in Spring 2021 in seven Latin American countries. Training was delivered in English via Zoom platform with simultaneous translations in Spanish and Portuguese. Participants included HIV service providers, CDC country staff, implementing partners, and their counterparts from the Ministry of Health in each country.

The course, usually conducted in person over a two-week period, was adapted to virtual format. Sessions were conducted weekly over an eight-week period and consisted of one-hour didactic lectures covering QI methods and tools facilitated by ICAP and CDC QI experts followed by one hour of peer-to-peer group exercise activities facilitated by in country facilitators.

During these group exercises, facility teams completed QI tools examining common quality challenges related to their own context for peer-to-peer sharing at the beginning of each subsequent session. Final deliverables were a compendium of all QI tools covered throughout the course which were used to address identified challenges. A four-question survey was administered at the conclusion of the QI training to elicit feedback on course content and delivery.

Lessons learned: Participant teams from six countries joined in the QI training. Survey results showed that most participants found the training program improved their knowledge in QI methods, was relevant to current job responsibilities, and met all or most of their expectations. Lack of evaluation of participant knowledge and skill acquisition in robust QI implementation is a limitation of this training and one that can be addressed in future iterations.

Conclusions/Next steps: The PEPFAR remote QI course is a viable alternative to in person trainings in the era of COVID-19. Further evaluation of course content and participant skill acquisition in QI would be useful to inform future trainings.

EPE423

Brazilian Ministry of Health strategies to address disruptions to HIV testing during COVID-19 pandemic

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Background: The rapid spread of SARS-CoV-2 during 2020, led to additional challenges in accessing HIV diagnosis, performed in Brazil mainly with HIV rapid tests (RT) in almost all primary care public health units. The need for social distancing and redirecting the services to fight the pandemic, reflected in a reduction of 27% in the number of RT distributed by the Brazilian Ministry of Health (MoH), between 2019 (16 million) and 2020 (11.6 million), leading to a slight drop in the proportion of people living with HIV (PLHIV) diagnosed, from 89% to 88%.

Description: Considering the disruptions in HIV testing services, from May 2020 the MoH published technical guidelines and provided webinars for all 27 states, recommending the following strategies: scheduling for HIV testing; oral fluid self-collection with social distancing; outdoor testing and extraordinary HIV self-testing (HIVST) offer to key and priority populations in health services

to avoid crowds; targeting HIV testing through focused testing strategy aiming to lead to greater PLHIV identification, even with the reduction in the number of tests performed.

Lessons learned: HIVST distribution for key and priority populations increased 82% in 2020 second semester (108,391), the period following the recommendations, in comparison to the first semester (59,442). After the adoption of other recommended strategies, the number of RT (blood and oral fluid samples) distributed increased by almost 44% in 2021 (16.7 million) in comparison to 2020 (11.6 million) and the use of oral fluid RT increased 121% in 2021 (498,010) in comparison to 2020 (225,200).

The transmission of SARS-CoV-2 could discourage health professionals from using the oral fluid test acquired by the MoH and the strategies implemented (self-collection) allowed the use within the validity period avoiding tests loss.

Conclusions/Next steps: The rapid adoption of strategies was crucial in the reestablishment of HIV testing services, showing the importance of close monitoring of testing strategies in health services, allowing strategic decision-making in a fast and well-communicated way.

These findings also suggest that until rapid HIV testing is fully re-established, and services are no longer impacted by the COVID-19 pandemic, it is important to maintain or even expand the implemented strategies.

EPE424

Circumventing the impact of COVID-19 pandemic on access to HIV-1 RNA assay in Nigeria

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Background: The first confirmed case of Coronavirus disease 2019 (COVID-19) in Nigeria on 27th February 2020, preceded the COVID-19 lockdown directive issued on 30th March 2020. The lockdown disrupted the Laboratory Network for viral load (VL) testing and interrupted access to VL services.

To mitigate the interruption in VL testing, RISE Nigeria, with funding from USAID, pivoted innovative strategies to facilitate seamless provision of VL services to clients in Adamawa, Akwa Ibom, Cross River and Niger States in Nigeria.

Description: Stakeholder engagements were conducted to secure COVID-19 passes and remote access to the National Laboratory Information Management System (RA_LIMS). Staff and clients were educated on COVID-19 safety practices using virtual platforms, provided guidelines and commodities for safe practices, implemented an integrated case management model to collect VL samples at home, community-based private health facilities (HF) and in 90 public HF. Samples collected were transported by the National Integrated Specimen Referral Network, electronic results were retrieved via RA_LIMS and disseminated via WhatsApp and email to HF. An excel tool was used for data collection, and weekly virtual meetings were convened to review performance.

Samples collected and results reported between October 2019 and September 2020 were compared using the two-sample independent *t* test pre-COVID (October 2019-March 2020) and during-COVID (April 2020 –September 2020) lockdown at 95 confidence interval and <0.05 level of significance.

Lessons learned: VL samples collected increased from 31,848 (88% of 36191 eligible clients [EC]) pre-COVID to 42,955 (90% of 47945 EC) during COVID lockdown (p<0.001). The number of VL results returned increased from 77% (24,550/31,848) collected pre-COVID to 96% (41,081/42,955) during COVID-19 lockdown (p<0.001). VL coverage (VLC) increased from 87% to 95% (p<0.001); 57% to 77% for children 0-9 years, 71% to 91% for adolescents and young people, 19% to 91% for pregnant and breastfeeding women, 70% to 87% for males >24 years, and 76% to 90% for non-pregnant females >24 years (p<0.001).

Conclusions/Next steps: Our interventions resulted in reduced impact of the COVID-19 lockdown on VL services in RISE supported HF with an increase in VL coverage and results returned.

EPE425

Improving viral load coverage and suppression in four Central American countries during the COVID-19 pandemic

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Background: The USAID-funded HIV Care and Treatment project, led by IntraHealth International, provides direct service delivery in 36 facilities across Guatemala, El Salvador, Honduras, and Panama. It seeks to reach 95% viral load suppression (VLS) using strategies aligned with UNAIDS 95-95-95 goals and WHO recommendations. Lockdowns and closure of outpatient laboratory services due to the COVID-19 pandemic exacerbated VL coverage challenges, with coverage decreasing to 19% and suppression to 69% (Q2 FY20) from pre-pandemic levels (37% and 80%, Q1 FY20).

Description: The project implemented a quality improvement bundle, with an action plan to address VL coverage, including granular site management for low performing sites based on root cause analysis. We identified reasons for declining coverage via site monitoring, responding to these challenges through (re)training, VL reagent purchasing, hiring laboratory technicians, increasing

access to VL sample collection testing through peripheral labs, community blood draws, and extended work hours in laboratory and pharmacy. To address declining VLS we optimized patients by switching to Dolutegravir-based regimens, used SMS reminders for appointments, and provided enhanced adherence counseling using Undetectable=Untransmissible (U=U) messaging.

Lessons learned: Granular site management with root cause analysis informed differentiating care to meet clients' needs during COVID-19, resulting in better VL coverage and suppression rates. Implementing the comprehensive action plan led to an increase to 64% VL coverage and 85% VLS (Q1 FY21), and to 86% VL coverage & 90% VLS (Q4 FY21) with more granular site management (Figure 1).

Figure 1. VL coverage and suppression, HIV Care and Treatment Project during FY2020 & FY2021

Conclusions/Next steps: Given the importance of improving VL coverage and suppression to end HIV transmission, an action plan based on root causes analysis, granular site management, and differentiating care can contribute to improved outcomes during times of health systems stress.

EPE426

Introduction of multi-month dispensing and community distribution of antiretrovirals during the COVID-19 pandemic in the Dominican Republic

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Background: As in other countries, the Dominican Republic (DR) imposed restrictions on population mobilization and the provision of some health services due to the COVID-19 pandemic. Close to 40,000 persons on antiretroviral (ARV) therapy was, therefore, at risk of interrupting their treatment. Therefore, in March 2020 the DR introduced multi-month dispensing (MDD) to ease the demand in overcrowded facilities. MDD dispending was possible due to the changes in the procurement of Fixed-dose combinations formulation in large packing (90 tablets per bottle). This sole intervention, however, could not assure a continuous supply of ARVs during the pandemic.

Description: The Dominican Republic MoH, with the support of GIS Grupo Consultor support, developed standardized guidelines for the community distribution of ARVs. In order to qualify, patients on ARV therapy must be in a stable clinical situation, be adherent to treatment, and explicitly agree to receive ARVs at home. The prescription must be authorized by the clinician and validated by the pharmacist. A community health worker delivered the ARVs at home, or at an agreed meeting site. The guidelines included procedures to assure confidential dispensing, clinical, epidemiological, and logistic record keeping. By the end of 2021, 4,800 persons were receiving ARVs in the community.

Lessons learned: The combination of MDD and community distribution of ARVs were useful strategies to prevent treatment breakdowns during the COVID-19 pandemic. Five hundred and thirty-four thousand (534,000) ARV units were distributed under this initiative.

Conclusions/Next steps: The cost of the community delivery of ARVs, although significant for the public health system, has to be measured against an increased adherence to treatment and the reduction in transportation costs for the users. Follow-up economic studies are needed to extend this intervention to more persons on ARV therapy and, eventually, to other chronic conditions such as diabetes and hypertension.

EPE427

Delivering COVID19 vaccine to people living with HIV through an AIDS service organization partnership

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Background: The intersection of the COVID19 and HIV pandemics has presented new but familiar challenges. Vaccination of all populations including PLWH has been recommended, although data on efficacy in PLWH is lacking. Historical distrust and fear of exploitation in racialized people limited their vaccine uptake despite the higher COVID19 burden experienced by them. The AIDS Committee of Ottawa (ACO) aimed to improve uptake of COVID19 vaccine among PLWH in Ottawa through an innovate community collaboration.

Description: ACO, as the primary AIDS Service Organization in the nation's capital, partnered with Ottawa Public Health and a community health clinic (Bruyere Family Health Team) to provide a low-barrier COVID19 vaccination clinic for PLWH/people affected by HIV. Information sessions on COVID19 vaccine safety and COVID19 burden

were held by ACO in partnership with the Canadian AIDS Treatment Information Exchange (CATIE) to answer questions and build confidence among members. A first-dose clinic was held on 22-23 May 2021, with >400 people vaccinated; a follow-up (second-dose) clinic was held on 10-11 July 2021, with 238 people vaccinated. Government-issued identification was not required to attend the clinic. A survey of clients attending the second clinic was conducted, with 236 responses.

Lessons learned: 71% of respondents identified as racialized individuals, with the largest group identifying as Black (49%). Most clients were <40 years old (28% 30-39; 29% 18-29; 9% 12-17). Gender breakdown included 51% male, 43% female, and 5% transgender/non-binary/gender non-conforming/two-spirited. Most were Canadian citizens (78%), with 14% permanent residents, 3% temporary residents, 3% refugees. Half had received both vaccine doses at the ACO clinic, while 11% had their first dose there, and 39% had their second dose. Respondents noted convenient location (97%), ease of booking appointment (96%), and culturally-safe care (99%) as ways in which the clinic had reduced barriers for them.

Conclusions/Next steps: This low-barrier, culturally-safe approach to providing COVID19 vaccine to PLWH in Ottawa is an excellent example of how to reach racialized and marginalized populations to help address the pandemic.

Community-based organizations like ACO represent trusted allies that can address vaccine hesitancy and lack of trust in partnership with local public health services to deliver necessary care to these populations.

EPE428

An innovative HIV self-testing system during COVID-19 pandemic to reach unscreened MSM: results from an online community program

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Background: The Covid-19 crisis has had a large impact on HIV testing in France, evidenced by declines of 14% in HIV blood testing and of 22% in HIV self-tests sales by pharmacies from 2019 to 2020, according to Santé Publique France.

At the same time, self-tests distribution by AIDES association increased by 71%, with a high mail distribution demand. As a result, we launched an online self-test send platform "*Jefaisletest.fr*" involving AIDES, Santé Publique France and Blue Savanah.

As an HIV key population, this analysis aims to identify the factors associated with a first HIV test among men who have sex with men (MSM).

Methods: *Jefaisletest* is a web page, launched in April 2021, where users can order an HIV self-test and provide anonymous sociodemographic (age, gender and sexual orientation) and HIV testing history information. A remote interview is also offered.A multivariate logistic regression was used to identify factors associated with a first HIV test among MSM.

Results: Between April and November 2021, 5657 self-tests were sent all around France through *Jefaisletest* applications. Most users were men (n=4453; 79%) of whom 85% were MSM (n=3772). Of these MSM, 14% (n=543) had never been tested for HIV.

The age distribution of these never-tested MSM was homogeneous: 17% aged 18-24 age group, 23% aged 25-54 and 14% aged 55+. A quarter of the latter lived in Paris region. Remote interview request was made by 9% (n=46). F irst HIV test made through *Jefaisletest* was independently associated with living outside Paris region (aOR 1.5; 95%-CI 1.1-1.9), being between 18-24 years old (aOR 9.1; 95%-CI 6.7-12.6) or between 25-34 years old (aOR 2.3; 95%-CI 1.6-3.1) compared of being between 45-54 years old, and requesting an interview (aOR 2.1; 95%-CI 1.4-3.0).

Conclusions: The innovative Jefaisletest.fr platform was created to mitigate the decline of HIV testing during the Covid-19 epidemic. It offers an HIV testing alternative throughout France, mostly accessed by MSM. First-time testing among MSM was associated with younger age and living outside the Paris Region.

This type of program should be made permanent and more widely available. It could be extended to other STIs and other vulnerable populations.

EPE429

Six-month Antiretroviral dispensing and other comprehensive, person-centered HIV care to increase service efficiency, client convenience and risk of COVID-19 infection in three provinces in Zambia

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Background: The USAID SAFE program (SAFE) supports the Ministry of Health (MOH) in Zambia with an integrated approach to HIV prevention and treatment. A five-year (2017–2022) project, SAFE operates in three provinces and has supported 302 health facilities through the COVID-19 pandemic with an increasing volume of people living with HIV (PLHIV) receiving treatment.

Description: SAFE collaborated with the MOH to decrease clinic congestions, increase service efficiency and client convenience, while reducing clients' clinic visit burden and risk of COVID-19 transmission.

SAFE implemented the following strategies:

1. Transition of stable clients to 6 multi-months dispensation (MMD) supply of ART drugs when eligible;

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2. Community integrated delivery of services such as ART deliveries/dispensation, TPT initiation/refill, cervical cancer screening, viral load (VL) sample collection and monitoring, and family planning;
3. Regular review of ART stock status to ensure adequate availability;
4. After-hours and weekend clinics for those unable to access ART during normal working hours; and,
5. Clinical camps and intensive calling of clients for drug pick-up and/or top-up prior to predicted COVID-19 waves by Zambia National Public Health Institute.

Lessons learned: In March 2020, out of 307,778 clients on ART, 66% (203,134) physically attended clinics, with 29% (83,706) of all clients on 6MMD, 47% (136,211) on 3-5 MMD, and 24% (68,198) on less than three months. By December 2021, the overall population of clients on ART increased by 2% (315,245), but the number physically attending clinics in the month decreased by 30% (143,218), with 68% (215,293) of all clients on 6MMD, 24% (75,912) on 3-5 MMD, and the remaining 8% (24,094) on less than three months.

Conclusions/Next steps: The 6MMD and other decongestion measures greatly reduced the volume of health facility visits by PLHIV, while serving larger numbers overall. The reduction in the number of PLHIV attending the facility on each clinic day enabled adherence to COVID prevention measures as there was adequate space for social distancing that enabled sufficient time for health practitioners to attend each client. SAFE will continue to support the MOH to maintain person-centered approaches like 6MMD and community services.

EPE430

Resilience of an HIV program during COVID-19 facilitates the continuum of care and increases the patient cohort in four provinces in Mozambique

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Background: Mozambique has one of the world's largest populations living with HIV, and an HIV prevalence of 13.2% (IMASIDA, 2015). The first COVID-19 case in Mozambique was reported on March 22, 2020. By December 16, 2021, 156,729 cases and 1,948 deaths were reported (MISAU, 2021). In March 2020, the Mozambican Ministry of Health (MISAU) released a circular to reorganize patient flow and antiretroviral therapy dispensing to reduce congestion in health facilities.

We analyzed the resilience and capacity of the Mozambican health system to ensure provision of care and treatment during the COVID-19 pandemic.

Description: In accordance with MISAU's circular, USAID's Efficiencies for Clinical HIV Outcomes project (ECHO) began implementing new COVID-adapted service delivery models, including expanded 3 months ART delivery criteria, community drugs delivery (CDD), one stop model, more frequent preventive phone call reminders for adherence, and extended working hours. ECHO supported MISAU to develop standard operating procedures to implement these models in 148 health facilities in Tete, Manica, Niassa, and Sofala Provinces. We analyzed 24 months of site-level program data from electronic patient records.

Lessons learned: Identification through index case testing combined with strong referral systems facilitated the steady enrollment of new HIV patients on ART. A median of 13.001 new patients were enrolled per quarter from March 2020. The ART cohort increased regularly during the pandemic and increased by 45% from March 2020 (220.904 active patients) to December 2021 (321.439 active patients). The combination of preventive phone call reminders and CDD improved early retention for newly enrolled patients. The retention rates for 90 days increased from 71% in March 2020 to 91% in December 2020 and 96% in December 2021.Viral suppression increased from 78% in March 2020 to 91% in December 2021.

Conclusions/Next steps: The COVID-19 pandemic necessitated new strategies to maintain or increase access to HIV care and treatment and mitigate attrition. Coordination between MISAU and ECHO and efficient implementation of COVID-adapted service delivery models permitted to strength the resilience of the HIV program during the pandemic.

The implementation contributed substantially to these results. Continued analysis of program outcomes will help inform service delivery approaches in a post pandemic era.

EPE431

Telemedicine and E-commerce platforms supporting medical care continuity during the COVID-19 pandemic in Uganda

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Background: Government efforts to curb the spread of COVID-19 in Uganda included total or partial mobility lockdowns between 2020 and December 2021. As a result, access to health facilities for both healthcare workers and patients became almost impossible. As a result, telemedicine and e-commerce delivery models gained more prominence, and their utility compounded.

We share the experience of a 24/7 telehealth center serving public health projects and private health insurance members in Uganda.

Description: The Medical Concierge Group (TMCG), a Ugandan digital and telemedicine company, provides telehealth and information communication support to donor-funded public health projects and private health insurers. From March 2020 to Dec 2021, its telehealth centre was used for remote teleconsultations, supporting HIV

care continuity through appointment reminders, and disseminating countrywide COVID-19 prevention and vaccination information through a toll-free hotline, two-way WhatsApp and SMS chat platforms, and an online e-commerce site.

Lessons learned: A total of 34,215 voice teleconsultations were conducted, with the top inquiries being for HIV (22%), COVID-19 (17%), Family planning (12%), Tuberculosis (9%), and Voluntary Medical Male Circumcision-VMMC (8%). In addition, 184,334 people were engaged via SMS or WhatsApp for sensitization and awareness information predominantly on COVID-19 vaccination (63%), general COVID-19 information (12%), and VMMC (6%).

In addition, 18,079 patients received HIV appointment reminders and 31,374 viral load test reminders, with the average appointment keeping for the supported sites being 85% and 92%, respectively. The e-commerce site; Rockethealth.shop had 5741 orders, with the majority being COVID-19 prevention supplies like facemasks, sanitizer, and vitamin supplements. The median age of users was 26 years (18-40), with a 50% share among male and female users.

Conclusions/Next steps: Telehealth and e-commerce platforms turned out to be the primary or complementary access points for healthcare services for the majority of people during the COVID-19 lockdown periods. The adoption is expected to persist and grow further even though it might be slower during periods of unrestricted mobility.

There is a huge opportunity to ride this wave of uptake and grow digital health and technology-supported healthcare models for HIV and the private sector.

EPE432

Programmatic measures leading to viral load coverage improvement after declining due to the COVID-19 pandemic

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Background: In March 2020 the Ministry of Health and Wellness introduced several measures aimed at reducing the risk of COVID-19 infections in the health facilities and among health care workers. The measures included a moratorium on viral load (VL) testing for clients with suppressed VL, with the exception of children and pregnant women. Movement restriction also temporarily stopped community interventions for patients follow up. As a result, VL coverage declined from 95% (Jan-March 2020) to 84.7% (July-September 2020).

We describe programmatic measures that contributed to a recovery in VL coverage at PEPFAR supported sites after this decline.

Description: *Botswana*-University of Maryland School of Medicine Health Initiative (*Bummhi*) implemented a series of interventions to support the recovery of VL coverage among patients living with HIV at 52 PEPFAR-supported sites. These measures included the lifting the moratorium on VL testing for previously virally-suppressed clients; line listing of clients with invalid VL; phone recall of clients with invalid VL; reinitiating community visits for clients with invalid VL; engaging 14 temporary phlebotomists to support VL bleeding; extending bleeding hours and provision of transport for VL specimens to testing labs in Gaborone, Moshupa, Kanye, Tutume, and Francistown.

Lessons learned: The interventions contributed to a 71% increase in the number of VL tests performed (22,075 in July-September 2020 to 37,783 in July-September 2021. In contrast, the number of clients with invalid VL decreased from 33,410 in July-September 2020 to 12,775 in July-September 2021VL coverage increased from 84.7% to 95.9% during the same time period.

Conclusions/Next steps: Despite the setback in VL coverage experienced at the start of the COVID-19 pandemic, targeted programmeasures implemented to support VL coverage recovery proved effective in re-establishing the viral load coverage for PLHIV with invalid viral loads to the level recorded before the pandemic.

EPE433

Maintaining ART client retention during the COVID-19 pandemic, St. Carolus Hospital, Jakarta, Indonesia

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Background: Ruang Carlo Clinic has supported 5,735 people living with HIV (PLWH) on ART since 2009. Most (65%) are MSM and the majority (59%) <30 years old. Pandemic lock-downs, travel restrictions, and reduced operational hours impacted client access to the clinic.

The clinic introduced several innovations to address these challenges that we describe here and compare retention before and during COVID pandemic.

Description: Medical & non-medical care providers together with clients took part in creating a service that meets client needs. From the front desk to meeting the doctor or counsellor, clients are treated with care and respect. Counselling services can extend beyond HIV and can include facilitating reconciliation between parent and child, husband and wife, partners or other struggles faced by PLWH.

Besides its empathic care and detailed record keeping to monitor performance, the clinic has introduced courier ARV delivery and multi-month ARV dispensing (MMD). Clients receive automated phone message reminders for their scheduled appointments. A baseline retention average pre-pandemic was established for 2019 and

compared with the period 1 January 2020 through 31 December 2021. ART retention in 2019 was 3,432 of 3,742 (92%). That number increased to 95% of 3,712 clients in 2020-2021 despite the pandemic.

Lessons learned: Maintaining services that value person-focused care and engagement supported by innovations such as home ARV delivery, MMD, close follow-up and appointment reminders can ensure and even improve retention in the face of adversities like those faced by clients during the pandemic.

Conclusions/Next steps: Facing any clinic access restriction like those faced during the Covid19 pandemic, ART staff and clients should work together to develop new strategies to ensure retention of ART clients and meet any psychosocial needs that arise during lockdowns and pandemic restrictions. During pandemics or similar emergencies we must continue serving clients with care and help clients to build or restore relations with their families and partners.

Clinics must work together with clients in achieving treatment goals; maintain detailed data collection and documentation; find new ways for ARV delivery; lengthen MMD; maintain close communication; and. develop other strategies that support client retention.

EPE434

Supporting Prevention of Mother-to-Child Transmission of HIV (PMTCT) during the COVID-19 pandemic: lessons from the Kyrgyz Republic

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Background: Elimination of mother-to-child transmission of HIV is a national priority in Kyrgyzstan. For more than 15 years, the country has been integrating PMTCT services within the perinatal health care system. In 2020, the COVID-19 pandemic threatened to disrupt delivery of PMTCT services and discourage patients from seeking care. Temporary lockdowns, strained resources, and the unexpected large-scale return of labor migrants including pregnant returnees posed formidable challenges.

In response, the country adopted an initiative to minimize service disruptions and encourage uptake of services among vulnerable pregnant women while reducing in-person contact and the risk of COVID transmission.

Description: The initiative targeted pregnant returnees in three districts and was jointly developed by the Ministry of the Health of Kyrgyzstan, the Republican and Osh AIDS Centers, the Kyrgyz State Medical Academy, and UNICEF.

Core components included: an algorithm for case finding and referral of pregnant returnees; introduction of HIV rapid self-testing for pregnant women; development of an electronic educational leaflet; use of a popular messaging platform (WhatsApp) to contact returnees, disseminate information and conduct pre/post-test video counseling for rapid HIV self-tests; virtual training on PMTCT.

From July – November 2020, 806 medical professionals completed a virtual training on PMTCT. A total of 221 pregnant returnees were identified and screened for PMTCT services. Of these, 55% required HIV testing and were offered the option of clinic-based or rapid self-tests. Almost 60% of eligible pregnant returnees opted for rapid self-testing supported by WhatsApp video counseling.

Lessons learned: The introduction of rapid self-testing helped ensure timely HIV screening for this mobile population. Offering a choice of HIV testing (home or clinic-based) helped alleviate patient concerns related to stigma and privacy. The popularity of WhatsApp made it a useful tool for outreach. Patients preferred video calls for pre/post-test counseling. Video calls pose some risks to patient confidentiality and safety which must be addressed.

Conclusions/Next steps: The COVID-19 pandemic accelerated the adoption of new technologies for training, conducting outreach and HIV testing for pregnant women. While these technologies were intended to minimize in-person contact and the risk of COVID transmission, they could prove useful in reaching highly mobile and remote populations in the future.

EPE435

Use of telehealth in the delivery of HIV services in rural America during COVID-19 Pandemic

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Background: COVID-19 pandemic has challenged continuity of HIV services because of the restrictions following the pandemic. Telehealth provides alternative to care access for People Living with HIV(PLHIV) but with challenges such as social distancing, access to reliable broadband connection, adapted HIV services to minorities and vulnerable groups.

This commentary examines the operationality of telehealth for PLHIV in rural areas and recommends strategies to manage HIV services during the COVID-19 pandemic.

Description: PLHIV reported more difficulties accessing HIV services at healthcare facilities during COVID-19 pandemic. Pandemic restrictions, intersectional stigma, medical mistrust, and COVID testing requirements have combined to lower the use of healthcare facilities by PLHIV in favor of telehealth.

However, close to one-third of Americans living in rural areas do not have high-speed broadband service. Furthermore, HIV services through telehealth are limited among vulnerable populations such as elderly, the homeless,

sexual minorities, females, African Americans, and non-English speakers. The utilization of telehealth and virtual platforms come at a high cost for vulnerable populations affected by HIV/AIDS and COVID-19. It also interferes with the in-person communication and human touch traditionally used to help build trust and rapport between patients and providers.

Lessons learned: The COVID-19 pandemic has stalled the progress toward HIV epidemic control and ensuring the treatment continuity. Access to telehealth in addition to ART multi-months dispensing (MMD), HIV mobile health truck units, computer tutorials and access to internet especially in rural areas are recommended.

Moreover, patient-provider relationships should be kept as a priority and in-person visits encouraged as needed to ensure a positive outcomes of telehealth use by PLHIV.

Conclusions/Next steps: The use of telehealth to deliver HIV services in rural areas has increased because of the COVID-19 restrictions. Telehealth is one of the few alternatives to in-clinic care management for PLHIV.

However, it presents a lot of difficulties for adoption and the implementation both from the beneficiaries and their providers and ensuring people have the knowledge and the technology to use telehealth and can support care and services continuity during lockdowns due to pandemics.

EPE436

Acceptability of televisits implemented during COVID-19 among adults living with HIV in Chicago

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Background: There is limited research on the effects of telehealth implementation since COVID-19 on provision of quality outpatient care and acceptability among PLH. Using the *RE-AIM* implementation research framework, we measured patient-reported acceptability of a telemedicine program that was introduced in March 2020, among PLH receiving HIV care at an academic (Northwestern University [NU]) and community health center (Howard Brown Health Center [HBHC]) in Chicago, US.

Methods: Surveys at two time-points during the COVID-19 pandemic 12/2020 (S1) and 11/2021 (S2) were administered to adult PLH active in care (defined as having $\geq$2 office visits between 9/2018-3/2020). Surveys included questions on reach, implementation, and maintenance of televisits.

Responses regarding implementation and maintenance outcomes were assessed on a Likert scale (agree/neutral/disagree) and compared between each time-point using the Chi-squared test.

Results: 546/6219 (8.7%) and 377/2400 (16%) responded to S1 and S2, respectively. 834/923 (90%) respondents were male; median age 52 (IQR 21); 60% white. Demographics among respondents did not differ significantly between the two surveys. Among those who completed at least one televisit [784/923 (85%)], most agreed they were satisfied with televisits (S1 71% vs. S2 70%; p=0.98), felt comfortable with the level of communication (85% vs 81%; p=0.26) and agreed that their privacy was well protected (78% vs 76%; p=0.64). Televisits by video were more common in S2 (64% vs. 68%; p=0.01) and the proportion experiencing technical difficulties remained low (16% vs 16%; p=1.0).

Despite favorable ratings of televisit experience, fewer than a third agreed that televisits were the same quality as in-person (29% vs. 28%; p=0.96). Most (81% vs 77%; p=0.32) agreed they would attend televisits again, although the majority preferred half or fewer visits as televisits in the future (69% vs 70%; p=0.8).

Conclusions: Across two large sites of HIV care, PLH found televisits to be an acceptable, feasible and appropriate mode of care delivery during the COVID-19 era. Respondents continued to express an interest in maintaining televisits as an option in the future.

Further study is needed to identify strategies to improve the perceived quality of televisits among patients, to match that of visits in-person.

EPE437

Reducing interruption in treatment during COVID-19 emergency in Guatemala using differentiated service delivery models

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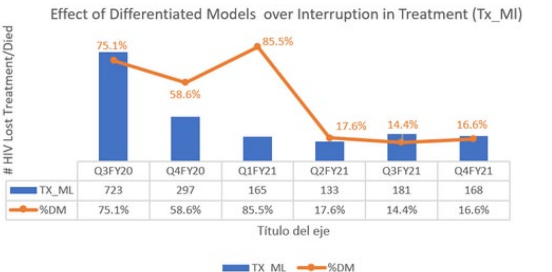
Background: The USAID-funded HIV Care and Treatment program, led by IntraHealth International, provides direct service delivery in facilities across four Central American countries. Lockdowns and closure of outpatient services due to the COVID-19 pandemic had potential to lead to interruption in treatment (IIT); in response, the program increased access to differentiated service delivery (DSD) models.

Description: In Guatemala, DSD models for ART were implemented in 5 of 8 clinics supported by the project, which reach 65% of PLHIV on ART. Four clinics are in rural or underserved areas. DSD included multi-month dispensing (≥3 months), less frequent clinical consultations, community-based drug delivery, and other decentralized drug distribution models such as shipping through private courier and motorcycle messengers. In Q1 FY2021, following DSD implementation, the proportion of people currently on ART increased to 85.5% and IIT was reduced (Figure 1). During Q2 FY2021, DSD implementation decreased as patients returned to their regular clinic visits and DSD was only prioritized for patients who fulfilled criteria such as poor adherence and difficult access to clinics due to distance.



	Q3FY20	Q4FY20	Q1FY21	Q2FY21	Q3FY21	Q4FY21
TX_ML	723	297	165	133	181	168
%DM	75.1%	58.6%	85.5%	17.6%	14.4%	16.6%

Figure 1. DSD effect on interruption in treatment in Guatemala clinics supported by the HIV Care and Treatment Project during FY2020 & FY2021.

Lessons learned: With the increase in implementation of DSD models forced by the COVID-19 emergency, it became evident that their full implementation has a significant impact on reaching new PLHIV and achieving continuity of treatment. Implementing a full set of DSD models reduced IIT during the COVID-19 emergency period in comparison to the post-emergency period, showing that DSD models must be well-prioritized according to patients' needs.

Conclusions/Next steps: The DSD model led to the reduction in IIT during COVID-19 at Guatemalan HIV clinics supported by the project. DSD represents an important, person-centered response to service access barriers posed by the COVID-19 pandemic.

EPE438

Using the mobile clinic strategy to provide HIV prevention, testing and treatment services in the community during the COVID-19 lock down in Uganda

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Background: In Uganda, Covid 19 led to the reduction of 30% in the provision of HIV testing services both in the communities and facilities (MOH). ART initiations decreased by 31% between April and June 2020 while viral load coverage decreased from 96% to 85% and CD4 access decreased to 22% between December 2019 to June 2020 due to Covid 19 lock down and its related restrictions.

Description: AIC worked together with community peer mobilizers and Kampala Capital City Authourity (KCCA) through the mobile clinic strategy and provided integrated HIV prevention, treatment and care services during the Covid 19 Lock down in Kampala District.

Peers mobilized communities for the uptake of integrated HIV prevention services, controlled the influx of clients and emphasized Covid 19 prevention Standard Operating Procedures.

Service providers intergrated service delivery to the beneficiaries where they offered services ranging from Behavioral Change Communication (BCC) messages, prevention counseling, HIV testing, ART initiations, ART Refills, Sexual reproductive Health (SRH), GBV prevention, management and condom distribution.

Lessons learned: The flexibility and adaptability of the Mobile clinic strategy in Kampala District made it ideal for the improved service uptake such as ART refills increased by 27% while, PrEP service uptake increased by 30%, HIV testing by 39% and ART initiations by 17%. This was due to the fact that Mobile clinic strategy addressed barriers which had hindered demand and a smooth uptake of integrated services in the vulnerable communities of Kampala District.

Conclusions/Next steps: The mobile clinic model proved to be effective in the provision of Integrated HIV prevention, testing, treatment and care services and Sexual and reproductive Health (SRH) services in the communities of Kampala District since it addressed and unlocked barriers which had hindered service uptake during the Covid 19 Lock down.

EPE439

Impact of COVID-19 on HIV research: challenges and opportunities in a clinical trial setting

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Background: The repeated waves of COVID-19 and corresponding mitigation measures have impacted health systems globally with exceptional challenges for the HIV research community.

Description: In response to the pandemic, researchers, regulators, and funders abruptly halted or modified ongoing non-COVID research activities.

For studies that were carried through, new difficulties arose in protecting research staff and patients from contracting the SARS-CoV-2 virus while continuing with clinical research activities.

COVID-19 has put enormous additional strain on HIV researchers tasked with leading the COVID-19 research response and losing progress in solutions for the longstanding dual epidemics of HIV and tuberculosis.

Lessons learned: Notwithstanding these difficulties, the acceleration of scientific knowledge generation has never been greater. In parallel, there has been substantial innovation in research collaboration and real-time implementation of COVID-19 research findings. More than a year after the first reported case of COVID-19 in China, the research world is responding to the pandemic at breathtaking speed.

Regulatory approvals have been expedited and research findings published in record time. With the re-introduction of research activities, several strategies imposed to minimize infection risk, such as telemedicine, have become common practice cutting costs and building inefficiencies to clinical trial management beyond the pandemic.

Conclusions/Next steps: This major global health threat has highlighted the need for a more robust global clinical research infrastructure, agile enough to withstand unexpected emergencies.

EPE440

The effects of COVID-19 on HIV and TB services in China, Guatemala, India, Nepal and Sierra Leone: A Rapid Community-Led Monitoring Study

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Background: COVID-19 brought HIV and TB responses to a standstill. Some estimate that it cut ART initiations in half. Global TB case detection fell by nearly 25% in 2020. Amid this crisis, there is a paucity of data on COVID-19's effects on communities of people living with HIV and TB.

This project rapidly mobilized communities for data-driven change.

Description: From September 2020 to March 2021, communities monitored HIV and TB services during COVID-19 at 17 health facilities in China, Guatemala, India, Nepal and Sierra Leone. The monitored sites were predominantly high-volume urban hospitals, together serving more than 20,000 people on ART.

Facility data was collected by communities for 31 quantitative indicators, complemented by 325 qualitative interviews, and used to inform advocacy for improved responses to HIV and TB in the context of COVID-19.

Lessons learned: Across all facilities, 42% of ART initiations were same-day diagnoses. The rate was highest in China (82%) and lowest in Nepal (17%). On average, people who received multi-month dispensing of ART increased from 57% to 72%. COVID-19 catalyzed home ART delivery mechanisms, particularly in China, Guatemala and Nepal. Young people on ART were disproportionately likely to be lost to follow-up in the context of COVID-19. Job loss, food insecurity, restricted movement, stock-outs, and fear of COVID-19 were reported to negatively affect retention in care. A decline in GeneXpert was observed. Just 21% accessed rapid molecular TB tests, delayed by requirements for a COVID-19 test. Stigma and concerns about confidentiality flourished. Communities in Sierra Leone used this data to secure a commitment for a new indicator to track ART treatment failure. After learning of movement restrictions, ART was distributed to 40 refugees from Myanmar who were stranded in China. Communities in India advocated for government to pay for TB patient support.

Conclusions/Next steps: COVID-19 devastated some HIV and TB services while galvanizing others. Community ART delivery, multi-month dispensing, using digital tools, and other differentiated approaches improved. However, rapid molecular TB testing decreased, and stigma and discrimination rose. The urgent need for psychosocial support remains a key advocacy priority.

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Track F - Political science, laws, ethics, policies and human rights

Laws and policies on reproduction (including coerced sterilization and abortion)

EPF001

The Global Gag Rule and access to abortion: impact on law reform in Zimbabwe, Zambia, Mozambique, Eswatini and Malawi

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Background: The Global Gag rule is a US government policy that imposes a condition on foreign NGO recipients of US global health funding not to promote abortion as a method of family planning including providing counselling, advice, lobbying and advocacy for the legalisation of abortion. The Maputo Protocol obligates its member states from the African Union to facilitate access to safe abortion through the repeal of restrictive laws and policies to accessing safe abortion, including criminalisation.

This has been hampered by restrictions on funding and activities through the Global Gag Rule.

Description: The study examined the state of the laws and policies on abortion in Zimbabwe, Zambia, Mozambique, Malawi, and Eswatini, a region that has high incidence of mortality due to complications arising from unsafe abortions, in the context of their obligations in terms of the Maputo Protocol and other international rights standards.

The study looked at the impact of the implementation of the Global Gag Rule in the individual countries and its effects on the ability of civic society to assist the state to implement its international and national obligations for access to reproductive healthcare.

Lessons learned: The study found that the laws on abortion in the 5 countries were highly restrictive and/or unclear, leading to an increase in unsafe abortion, and that there was need for law reform. However, the Global Gag Rule effectively acted as a barrier to effective mobilisation by civic society to advocate for law reform. It also led to fragmentation of civic society, with the real risk of affecting general health outcomes, including the HIV response.

Conclusions/Next steps: States should enact legislative and policy measures to provide access to safe abortion in order to ensure the highest attainable standard of health for women. Policies like the Global Gag Rule impose onerous and unfair barriers to achieving these obligations, which has not only negatively affected regional health outcomes but also threatens state sovereignty when states are hindered from fulfilling their national and international obligations. Although the Global Gag Rule is no longer in force, it is likely to return with a change in government in the US, with dire consequences.

Laws and policies on HIV transmission, exposure, and non-disclosure

EPF002

"I had a one-night stand and followed the law; it ruined my life." Requirements to take reasonable precautions not an improvement on laws criminalising HIV non-disclosure: a case study

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Background: In October 2018, New South Wales (NSW) became the last State in Australia to remove requirements for people living with HIV (PLHIV) to disclose their status prior to engaging in sexual intercourse. While other Australian jurisdictions replaced these requirements with statements of principles regarding mutual obligations, NSW instead legislated section 79 of the *Public Health Act 2010 (NSW)* (s79) which requires a person with HIV to take reasonable precautions to prevent transmission to another with a maximum penalty of 6 months imprisonment and/or up to an $11,000 fine for contravention.

In practicality, prosecutions under s79 have implications far beyond criminal penalties.

Description: The HIV/AIDS Legal Centre NSW (HALC) is aware of just one prosecution under since s79 to date however the consequences for the defendant in that case, despite them being found not guilty, were rife.

First, the defendant was held in custody on remand for weeks as the Magistrate considered them a risk to public safety.

Second, while the Magistrate cleared the Court (proceedings under s79 must be conducted in closed courts), they omitted to order reporters to remove television cameras from the Court resulting in the mainstream media reporting on the case, including publishing the defendant's name and HIV status. Following the publication, the defendant faced ostracisation and discrimination from their local community.

Lessons learned: Even though the Magistrate in this case found that the prosecution had not satisfied their burden of proof and that the defendant was not guilty, by that stage, it was too late to mitigate the impact on the defendant from the public disclosure of his HIV status.

Lawyers, the judiciary and prosecutors must be trained not only on the current science on HIV treatment and prevention but also to ensure that non-publication orders are sought early in proceedings to prevent any non-consensual disclosure.

Conclusions/Next steps: HALC continually advocates for s79 to be repealed due to its detrimental impact on HIV testing, treatment and prevention and provides ongoing representation for PLHIV facing criminal charges to counter the negative impacts of criminlisation and to ensure that the privacy of PLHIV can be protected at all stages of the process.

EPF003

Combatting HIV criminalization: Francophone activists within the HIV JUSTICE WORLDWIDE Coalition

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Background: HIV criminalization is a global phenomenon and Francophone countries are not spared. 19 countries in Francophone Africa have HIV-specific lawS. 16 of these laws that are meant to protect the rights of people living with HIV also criminalize exposure or transmission of the virus. Canada is known for being a world leader in prosecuting people living with HIV and prosecutions have taken place in France, Switzerland, and Belgium.
However, and as widely recognized by HIV and human rights experts, HIV criminalization is bad for public health and harmful for human rights.
Description: HIV JUSTICE WORLDWIDE (HJWW) was created in 2016 to abolish criminal and similar laws, policies and practices that regulate, control, and punish people living with HIV based on their HIV-positive status. Specific space was created within the coalition for Francophone activists working against HIV criminalization. Having a dedicated space provides Francophone activists with a forum to discuss and exchange common issues and experience in their own language.
The Francophone space is also used to connect Francophone activists with other activists worldwide through information sharing on advocacy internationally.
Lessons learned: More than 14 countries are represented on the Francophone space. Support provided includes : learning and resources exchange through list-serv and conference calls; availability of French resources; and technical and financial support to local advocacy. In Niger, a civil society coalition was put in place to combat HIV criminalization. Law reforms efforts are ongoing in Burkina Faso and in Canada. In DRC, capacity building activities have been conducted with people living with HIV, sex workers and the LGBTI community.
In Benin, people living with HIV and key populations mobilized around the reform of their national HIV specific law.
In Belgium, advocates launched a campaign using some progresses made in Canada to support their advocacy.
Conclusions/Next steps: HJWW has focused on creating networks, exchanging information, developing resources in multiple languages, providing technical support, and strengthening local capacities.
With its network and experience, the coalition plays a key role to ensure the significant involvement of people living with and affected by HIV against punitive laws, including in Francophone countries.

EPF004

Reducing the harm: reforming Canadian criminal law to limit HIV criminalization

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Background: In Canada, HIV criminalization has occurred under various offences of general application Most prosecutions are for *aggravated sexual assault*, following Supreme Court of Canada decisions that non-disclosure of HIV+ status before sex posing a "significant risk of serious bodily harm" (*R v Cuerrier*, 1998) – which means a "realistic possibility of HIV transmission" (*R v Mabior*, 2012) – can amount to "fraud" invalidating consent to sex, making it a sexual assault in law.
Prosecutors' and courts' interpretation of this legal test has led to wide application of the law and unjust prosecutions.
Description: In 2017, the Canadian Coalition to Reform HIV Criminalization (CCRHC, www.hivcriminalization.ca) called on Parliament to legislate an end to sexual assault charges and to limit any criminalization to cases of intentional transmission of HIV. This call is endorsed by 174 organizations/networks. In 2019, a Parliamentary committee recommended legislative reform.
From 2019-2022, the CCRHC explored different options for reform, including adding interpretive provisions to the *Criminal Code*to limit the scope of existing general offences versus amendments that would preclude entirely the use of those existing offences and replace them with a new, narrowly-drafted offence specific to HIV transmission.
Lessons learned: As there is no existing HIV-specific law in Canada to repeal or modernize, any legislative amendments need to address multiple aspects (both material and mental components) of the multiple offences that are in play. There are advantages and disadvantages to different approaches.
Considerations include: the degree to which a given approach could limit the scope and severity of the laws (including sexual assault) that have been, or could be, used

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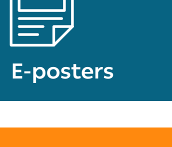

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to prosecute; whether a narrow HIV-specific law would be preferable to current very broad application of existing general offences (which *de facto* already single out PLHIV), a trade-off between certainty in law and further stigmatization; the anticipated feasibility of Parliament adopting particular reforms; the risk of limiting criminalization of HIV but expanding criminalization to other transmissible infections.

Conclusions/Next steps: Advocates, including CCRHC, continue to press for Criminal Code amendments to limit HIV criminalization, guided by international recommendations and national community consensus to limit prosecutions to cases of intentional transmission.

EPF005

No justice, no peace for people living with HIV: a global analysis of HIV-related criminal cases, 2019-21

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Background: At least 149 countries have laws that can be used to prosecute people living with HIV for HIV non-disclosure, exposure or transmission, including 75 countries with HIV-specific criminal laws, despite UN and others recommending against such laws, global guidance to limit the overly broad use of other laws, and no evidence of such laws or prosecutions benefiting public health.

Methods: The HIV Justice Network's Global HIV Criminalisation Database contains case reports of HIV-related criminal cases and criminal laws that target people living with HIV. We undertook a global audit of HIV-related arrests and prosecutions reported between January 2019 and December 2021 to establish whether they adhered to global recommendations and guidance and up-to-date knowledge of HIV-related science.

Results: We identified 250 HIV-related arrests and prosecutions with an additional 65 cases where HIV status was treated as an aggravating factor for sentencing or other offences. The majority of cases concerned non-disclosure of HIV status prior to consensual sexual activity with fewer than 30% of cases alleging HIV transmission. A minority of cases concerned spitting, biting, breastfeeding, blood donation, or medical negligence.

Arrests and prosecutions of HIV-related offences often proceed on inaccurate assumptions regarding HIV. In alleged transmission cases, these shortfalls are compounded by the failure of prosecutors and the courts to ensure correct interpretation of scientific evidence and its forensic limitations when seeking to prove actual transmission of HIV. Sentencing is disproportionate, particularly in cases where there is little to no risk of HIV transmission, with non-custodial sentencing options rarely considered.

Courts are timidly acknowledging some scientific advances but remain largely hesitant to depart from previous judicial decisions that do not recognise these advances. In a few isolated cases, prosecutors are concluding that the requisite evidentiary standard for the relevant offence is not met where the accused has an undetectable viral load or has used a condom during sexual intercourse.

Conclusions: Prosecutors and courts continue to ignore scientific developments on HIV-related risk, harms, and proof of transmission. Legislative reform efforts must be complemented by sustained judicial and prosecutorial training and effective implementation of the 2021 UNDP Guidance for prosecutors on HIV-related criminal cases.

EPF006

Transforming HIV policy in the UK Armed Forces – a collaborative approach

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Background: HIV charities and medical organisations worked in partnership with a member of the UK Armed Forces living with HIV to challenge policies and practices regarding people living with HIV (PLWH) and people using PrEP. These included:

1. A ban on PLWH entering the military in any capacity.
2. Variation in policies around employment and management of personnel across the three military services.
3. An inconsistent approach to PrEP for recruitment and serving personnel across the British Army, Royal Navy and Royal Air Force.

Description: Policies were challenged with scientific and evidence-based arguments, communicated to key stakeholders within the Armed Services and parliamentarians. Included were the effectiveness of HIV treatment, PrEP safety data and research on blood borne viral transmission in ballistic and trauma incidents. Crucially, a member of the Armed Forces living with HIV made the case internally on the need for review, and the desire for change within all three services. HIV organisations lobbied across government departments to gain ministerial and cross-party parliamentary support. The team then directly engaged parliamentarians in a briefing sharing the professional and psychological impact existing military policy had on PLWH and the advantages of a policy that promotes equality.

Lessons learned: The swift progress in policy change was a direct result of a member of the Armed Forces living with HIV being willing and able to champion change, working synergistically with HIV charities and clinicians. This co-production approach is recommended in future HIV discrimination policy projects in the UK.

Conclusions/Next steps: On World AIDS Day 2021 the UK Armed Forces announced it would end its ban on people living with HIV from entering the military from spring 2022. With immediate effect, serving personnel living with HIV will no longer be automatically medically downgraded, so are now able to deploy to front line roles, and PrEP use is no longer a barrier to service or recruitment. The UK is the only member of NATO and the second country (the first being South Africa) to adopt this policy. Ongoing work will ensure better access to HIV and sexual health prevention services for serving personnel.

EPF007

HIV criminalization laws and intimate partner violence: a qualitative study of Russian women living with HIV

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Background: Despite growing evidence linking HIV criminalization with women's vulnerability to violence, little is known about real-life experiences of victimized women. This study filled this gap by examining cases of Russian women with HIV who experienced intimate partner violence in a legislative environment that penalizes both HIV transmission and its threat.

Methods: We analyzed cases of eight women, participants of HIV service organizations in 3 Russian cities, who sought protection from intimate partners' violence and threats of criminal prosecution under Article 122 of Russia's Criminal Code (liability for HIV transmission or its threat). The cases, documented between August - September 2021, involved semi-structed interviews with women, their case-managers and peer counselors. The study employed thematic analysis to identify patterns of women's victimization.

Results: The study demonstrated that woman's decision to end a relationship commonly triggered conflict and abuse. In all cases, male partners refused break-up and threatened to initiate criminal proceedings under Article 122. That tactic often worked and women remained in the partnership. Building on that fear, male partners further escalated abuse by threatening to disclose women's HIV-positive status and instilling fear for their safety. In all eight cases, psychological violence was followed by physical assault, commonly involving hitting, slapping, and chocking. Thanks to women's prior links with HIV service organizations, though, they eventually sought assistance from peer counselors or case managers. Women received crisis counseling, social support, consultation on rights protection, and in some cases, services to mediate a family conflict. As a result, all women were able to end their abusive relationship and no criminal case has been opened.

Conclusions: Laws criminalizing HIV transmission increase women's victimization and gender inequality. Organizations working with people living with HIV need to develop services for victims of domestic violence, including crisis intervention, emotional support, as well as housing and legal advocacy.

Laws, policies and practices impacting access to HIV testing, prevention, treatment, care and support

EPF008

The priority population left behind - people who use drugs in New South Wales (NSW), Australia

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Background: Despite *people who use drugs* being identified as a priority population in National HIV strategies and the United Nations noting that criminalisation of key at-risk populations can have a significant impact on treatment intake and adherence for people living with HIV (PLHIV), possession of small amounts of prohibited drugs continues to be a criminal offence in NSW.

The government uses sniffer dogs and invasive strip searches to target young people and marginalised communities and continually drags them through the Court system.

Description: The Special Commission of Inquiry (the Inquiry) into crystal methamphetamine and other amphetamine-type stimulants (ATS) was established by the NSW Government in November 2018 and noted that:

"*Contact with the criminal justice system, including having a criminal conviction for simple possession, is directly associated with adverse impacts on employment, earning prospects, access to housing, access to treatment, relationships and wellbeing. The criminalisation of simple possession is a powerful source of stigma, which has a serious impact on the physical and mental health of people who use drugs, as well as their willingness to seek help. 38.*"

Despite the Inquiry's recommendations that possession of drugs for personal use be decriminalised and that drug use be treated as a public health issue rather than a criminal law one, the NSW government has not accepted any of the Inquiry's recommendations to date.

Lessons learned: To minimize the harm which drug criminalisation causes, the HIV/AIDS Legal Centre NSW (HALC) frequently represents PLHIV where HALC makes submissions to the Courts in an attempt to mitigate the sentence that the Court might otherwise impose. Despite the offence having been proven, HALC has had significant success in having no convictions recorded for these matters where the Court either dismisses them entirely or imposes a conditional release order where the accused is required to have a period of good behavior.

Conclusions/Next steps: Until such time as significant reforms are made to the State's drug laws and policy, HALC will continue to represent clients in drug possession mat-

ters to mitigate the harms associated with drug criminalisation and continue to advocate for drug decriminalisation.

EPF009

Reducing harm and preventing transmission by assessing complex HIV situations through a multidisciplinary lens: INSPQ's expert support to regional public health departments

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Background: Complex HIV situations arise when individuals living with HIV, for multiple reasons, do not or cannot take precautions to prevent HIV transmission. These individuals often face conditions that raise ethical and legal issues that can complicate interventions, including the risk of facing threats, violence, criminal charges and/or deportation.
In 2017, Quebec's Ministry of Health and Social Services mandated the Institut national de santé publique du Québec (INSPQ) to provide expert support to regional public health departments (RPHD) faced with complex HIV situations.
Description: An expert support committee (ESC) was set up by the INSPQ to assess complex HIV situations through a multidisciplinary lens. Members of the ESC include physicians, a community representative, a lawyer, an ethicist, and*ad hoc*experts if needed.
The ESC focuses primarily on the person living with HIV, preventing transmission and assessing risk. When a healthcare professional is faced with a complex HIV situation, they reach out to their RPHD to weigh possible interventions. If needed, the RPHD reaches out to the ESC for support, that includes exchanges, risk and emergency assessments, avenues of intervention and referrals.
The approach is not prescriptive: the ESC provides recommendations to the RPHD so that they can in return assist healthcare professionals in their interventions.
Lessons learned: Public health professionals are responsible for preventing HIV transmission and protecting individuals when there is perceived risk of HIV transmission. In practice, most RPHD, especially outside urban centers, are not often involved in complex HIV situations and do not have, in their region, access to the expertise that is provided by the ESC.
Conclusions/Next steps: The ESC is both a prevention tool and a harm reduction support. The service ensures that adequate measures are taken to support the person living with HIV and prevent transmission, while also limiting the use of coercive methods and involvement of law enforcement to deal with complex HIV situations, thus reducing the risk of overcriminalization.
As many RPHD and healthcare professionals do not know about the services provided by the ESC and because the COVID-19 pandemic shut down the promotional efforts that were underway, a new communication plan needs to be devised.

EPF010

A world leading model of best-practice or a reactionary nation? Implementation of mandatory disease testing highlights laws at odds with Australia's reputation as a pillar of human rights

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Background: Australia prides itself on having "a world leading model of best-practice" (8th National HIV Strategy), yet in recent years domestic laws have been amended and enacted which penalise, criminalise and stigmatise PLHIV and key populations (KP).
Specifically, this abstract examines the mandatory disease testing laws enacted in six Australian jurisdictions, their detrimental impact on PLHIV and KP and how they undermine Australia's world-leading response to HIV.
Description: As recently as 2021, the Australian state of New South Wales (NSW) passed the *Mandatory Disease Testing Bill*. This allows police to enforce testing for blood-borne viruses (BBV), including HIV, on people who have intentionally exposed emergency services workers to bodily fluids.
This will make it the sixth of eight Australian states/territories to pass such laws. UNAIDS and WHO have long been of the view that mandatory testing should only apply to the screening of blood products for donation, and it is widely recognised that mandatory testing of HIV is detrimental to testing, treatment and prevention efforts.
In partnership with the HIV/AIDS Legal Centre (HALC), the National Association of People with HIV Australia (NAPWHA) undertook a concerted programme of advocacy seeking to head off these changes.
Lessons learned: Misplaced fear of BBV transmission among law enforcement and emergency services workers drives the implementation of such laws. In HALC's criminal law practice it observes police officers reporting such fears as a significant impact of 'spitting' offences. These laws respond to the fear rather than the negligible risk of transmission.
Failing to engage with the scientific reality of BBV transmission results in laws which are not evidence-based, do not prevent BBV transmission, and dramatically undermine the human rights of PLHIV, KP and defendants in criminal proceedings.
Conclusions/Next steps: Mandatory testing laws need to be challenged and repealed. Together, NAPWHA and HALC aim to combat these laws with a tri-level approach. First, at the grassroots HALC provides direct legal representation to individuals impacted by these laws. Second, NAPWHA engages state and territory governments

to advocate the repeal of these laws. Finally, both organisations work together to educate law enforcement and emergency services on the risks of occupational BBV transmission.

EPF011

Antiretroviral therapy supply for foreigners during COVID-19 pandemic in Brazil

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Background: Considering the restrictions on international travel caused by the COVID-19 pandemics, Brazilian ministry of Health (MoH) assures the foreigners access to the health services including supply of antiretrovirals (ARV) for all people living with HIV (PLHIV). This abstract aims to compare ARV refill for foreigners before and during COVID-19 pandemic.
Methods: Data were obtained from the Drug Logistic Control System (SICLOM) database, which compiled data from HIV-infected adults. The Prais-Winsten generalized linear regression procedure was used to calculate trimestral increase rates in ARV refill for foreigners during 2019 to 2021.
Results: Throughout the period studied, pre-pandemic data showed the highest rate for ARV refill (5.62; 95% CI 4.29% – 6.93%) during the first trimester of 2020, then it shows a downward trend, likely related to COVID-19 movement restrictions. Shortly thereafter there was an upward trend in the ARV refill, with a mean increase of 2.63% quarterly (95% CI 1.92% – 3.36%).

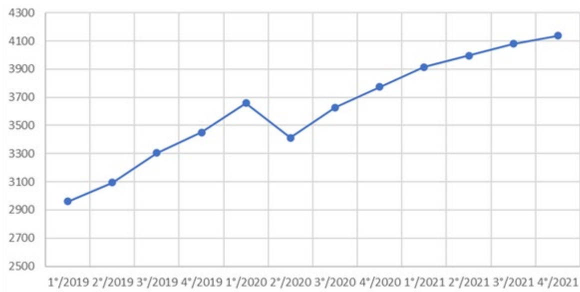

Figure. Time series ARV refill for foreigners, 2019 to 2021

Conclusions: The restriction caused by COVID-19 pandemic impacted the quality of care for PLHIV, mainly those who were outside their home country. During this period Brazilian MoH stretched strategies to assure HIV treatment for foreigners, providing ARV and clinical care. In addition to caring for foreign, the MoH had the means to donate ARV to countries of South America, Central America and Africa.

EPF013

Influence of the voice of the community of women using drugs in Ukraine on decision-making related to policies and programs for HIV and TB prevention and treatment

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Background: According to the results of a bio-behavioural survey among key population groups on HIV infection in 2020, Ukraine still has a high prevalence of HIV among IDUs (20.3%), the same study indicates that the prevalence of HIV is higher among women IDU (29.6%) than among men who inject drugs (18.1%). The target group of the project is women using drugs (WUD): mainly WUD, who are on the OST program or are in active use, and members of their families. According to the latest bio-behavioural study among IDU in Ukraine, there are about 60,000 women.
Description: Since 2021, the community of women using drugs in Ukraine has been identified as a separate key community in the Global Fund's country project, allowing the community to thrive and represent the interests of WUDs at all levels of decision-making.
The activities aim to raise the visibility of the community of women using drugs, to involve them in decision-making regarding access to HIV prevention and treatment. As of 2022, the WUD community activism centres operate in 13 regions of Ukraine (there are 24 regions in Ukraine).
Lessons learned: Strong stigma against WUD by health professionals, law enforcement, the general population and within the PUD community makes women using drugs an "invisible" community in Ukraine, their problems and needs are not considered important, there is no focus on the community in programs of HIV prevention and treatment, protection of rights, formation of national drug policy. As a result, the coverage of HIV prevention and treatment services is lower (compared to men). Improving the visibility of the community, giving the community a voice in decision-making has a positive effect on reducing barriers to access to HIV prevention and treatment services, reducing stigma and discrimination.
Conclusions/Next steps: The allocation of a key group of WUD at the level of planning prevention and treatment programs will allow for the inclusion of gender-sensitive services in such programs, which will take into account the problems and needs of women.

EPF014

Impact of United States pharmacy utilization management techniques on oral antiretrovirals

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Background: Prior Authorizations (PAs) for medications have been noted by the American Medical Association (AMA) to cause care delays and serious adverse events as well as potential abandonment of treatment.

The specific impact of these processes on antiretroviral (ARV) management has not been previously described.

Methods: Using a questionnaire adapted from a previously validated survey, the American Academy of HIV Medicine (AAHIVM) distributed a cross-sectional survey to its members and credentialed providers (n=4510) between August 3 and September 9, 2021. Participants included physicians, pharmacists, and advanced practitioners who were asked 28 multiple choice or open-ended questions to describe utilization management techniques (UMT) and the impact that they may have on their practice. Descriptive statistics were used to summarize multiple choice questions.

Results: There were 173 questionnaires completed (66% prescribers and 33% pharmacy professionals) with varied HIV experiences (39% >20 years). 43% of respondents described required PAs 1-25% of the time for treatment naïve patients. 51% of respondents described PAs for medication switches 26-50% of the time. Per month, 56% of respondents described PAs affecting up to 10 patients.

Over the last 5 years, 64% of respondents noted an increase in PAs. Due to UMTs, 48% of clinicians responded that their patients/clients resorted to taking a partial antiretroviral regimen and 71% of respondents described UMTs as causing a negative impact on patients' emotional or mental health. Roughly 67% of participants needed dedicated staff for PAs and among those who did not, preferred to have such a person (45%).

Overall, 72% of participants reported UMTs hindering their ability to prescribe optimal ART therapy. Over 50% of respondents described UMTs causing altered prescribing habits (55%), prescribing a less desirable ARV regimen (50%), and opting for generic alternatives of ARV (56%).

Conclusions: One of the key strategies in ending the HIV epidemic is rapid treatment of people with HIV to reach sustained viral suppression. This approach mandates minimizing barriers to ARV access as well as any disruption to therapy. PAs are a barrier to achieving this goal. ARV UMTs require further study to ensure optimal patient care and to reduce interruptions in therapy and likelihood for adverse events.

EPF015

Community voices shaping policy implementation & reform: how PLHIV advocacy is addressing the test and treat policy gaps in Uganda!

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Background: Uganda adopted the Test & Treat policy in 2016, following WHO recommendation to immediately enroll PLHIV on ART, irrespective of their CD4 level or HIV clinical stage to meet the 95-95-95 targets. Amidst implementation, recipients of care had eminent challenges including; inadequate preparation of clients pre and post initiation to treatment which greatly affected adherence & viral load suppression due to limited counselling and treatment literacy.

Description: With support from AVAC, Community dialogues were organized, PLHIV experiences were documented through a special report & policy brief for advocacy. Three National policy makers' dialogues targeting 60 PLHIV networks, Ministry of Health, UNAIDs, PEPFAR were organized to share policy recommendations. Community launched a *"Beyond My Pill"* campaign officiated by UNAIDs Country Director to demand for the Intensive Adherence counselling sessions protocol (IAS); funded treatment literacy programs & recruitment of trained counsellors in health facilities.

https://www.youtube.com/watch?v=h1uJygzPoiw

https://www.newvision.co.ug/articledetails/121709

Social media campaigns were undertaken through; photo voices, E-posters & video clips to rally a better policy environment. A media café was organized with health journalists, newspaper articles written to highlight PLHIV voices calling for policy reform. Resultant, PEPFAR through COP 21 is funding the network to roll out a comprehensive treatment literacy program, there will be standard remuneration of the CHWs. MOH is undertaking quality assurance, supervision to ensure effective policy implementation at the health centers.

Lessons learned: Initiating PLHIV on treatment alone is not enough, ensuring effective adherence is of equal importance to prevent future transmission.

"*The beyond my pill* campaign accelerated community driven advocacy efforts, as a result, PEPFAR is funding the National PLHIV forum to roll out treatment literacy in the country.

Conclusions/Next steps: NAFOPHANU will continue to advance the Test, Treat and Retain campaign to address issues of poor adherence and retention. At Country level, the campaign re-awakened community policy implementation monitoring and improved service provision.

EPF016

Impact of the "Chase the virus, not people" EECA joint community campaign

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Background: In 2018, the first time all regional networks of key populations communities had joined forces in one campaign, united by the goals, unified slogan and ready to stand and speak out loud together, defending the rights of each community, of all and everyone, attracting the attention of governments, international organizations to stigma, discrimination, and criminalization.

The campaign addressed advocacy asks of such communities as PLHIV, MSM, TG, PWUD, SW, women affected by HIV, Teenagers, and youth.

Description: The campaign started during the AIDS2018 by 9 regional community networks. Joint effort was well coordinated and supported by more than 100 organizations from the region. Over 500 activists took part in campaign's activities with 12000 participants. Regional and global speakers at the AIDS2018 voiced the campaign's aim and called the AIDS2018 audience to join its appeal. During the following 2019-2021 the campaign was presented and promoted at all big international and regional events, was implemented by community leaders on a national level.

Lessons learned: During 2018-2021, it accumulated efforts of more than a thousand CSO and community activists, delivered its messages to over two million direct recipients and recruited a variety of partners to support campaign. https://chasevirus.org/wp-content/uploads/2021/11/chase-the-virus-campaign-final-overview-eng-1.pdf

Keys for success of the campaign are:

- Joint coordinated effort of all key community networks;
- Clear targets and realistic planning;
- Community ownership.

Conclusions/Next steps: Impact of the loud and efficient campaign and following global advocacy lead to prioritizing the removing of human rights barriers and decriminalization of key populations now is prioritized in global and regional AIDS strategies.

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Laws and policies regulating access to drugs and medical devices (including intellectual property and trade regimes, competition law and price regulation)

EPF017

Legal opportunities for scaling up HIV treatment access using government use and compulsory licensing: recommendations based on legal framework analysis in the countries of the Eurasian Economic Union

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Background: TRIPS flexibilities, including compulsory and government use licenses, have proven to be effective to improve treatment access. The antiretroviral therapy coverage in the Eurasian Economic Union (EEU) is below 90% of those knowing their status, partly because of high prices for key medicines, (e.g. dolutergavir), due to patent monopolies. The COVID-19 pandemic reiterated the need to assess legal provisions related to compulsory licenses and government use of inventions for medicines. We analyzed national and regional regulatory framework in the EEU to demonstrate opportunities for govenment use or compulsory licensing to impove access to antiretroviral medicines and beyond.

Methods: For analysis, we used international regulatory framework (TRIPS Agreement, Paris Convention, and Doha Declaration); official national and regional legal databases:
https://www.garant.ru/;
https://regulation.gov.ru/;
https://adilet.zan.kz/kaz/ and,
https://online.zakon.kz/;
http://cbd.minjust.gov.kg/;
https://pravo.by/;
https://www.aipa.am/hy/;
https://eec.eaeunion.org/.

The Russian versions of the following key words and combinations were used: compulsory license/licensing, government use of inventions, use without the consent of the patent holder, anti-competitive practices, limitation of intellectual proprty rights, actions not considered as patent infringement.

Results: Our analysis identified three categories of legal provisions related to use of patents for medicines without the consent of the owner: government use of inventions, compulsory licenses, and use of patents not considered as patent infringement. We focused on language that can be related to access to medicines, such as "healthcare/health", "epidemics", "national security", "medicines", "insufficient use", "non-use" and "anti-competitive practices".

Country	Government use	Court	Use of patent not considered as patent infringement
Armenia	-	+ national security; health (including lack of access to medical products); unfair use of patent rights by restricting competition; non-use or insufficient use;	+ national security (issuing authority n/a)
Belarus	-	+ non-use or insufficient use	+ epidemics (issuing authority n/a)
Kazakhstan	-	+ national security; health protection; abuse of patent rights; non-use	-
Kyrgyzstan	+ national security; epidemics	+ non-use or insufficient use	+ epidemics (issuing authority n/a)
Russia	+ national security; protection of life and health of citizens	+ non-use or insufficient use	-

Conclusions: The key finding is that Armenia, Belarus and Kazakhstan lack provisions related to government use of inventions without patent holder consent, which limits opportunities for rapid actions to close treatment access gaps. In Belarus and Kazakhstan, this could have had a negative impact on increasing access to patented dolutegravir. The media reported that the Kazakh government intended to seek compulsory license for dolutegravir through court.

Countries are recommended to revise their regulatory framework to include provisions enabling government use of inventions for medicines in a variety of situations to improve access to essential medicines.

EPF018

Involving HIV community-based organizations into intellectual property and treatment access work: lessons learnt and opportunities ahead in the Eurasian Economic Union

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Background: HIV community-based organizations (CBOs) have tackled intellectual property (IP) barriers to increase treatment access since the early days of the HIV epidemic. The IP work of ITPCru has 4 objectives:

1. Analysing regulatory framework, focusing on TRIPS flexibilities (e.g. compulsory/government use licenses, Bolar exemption, parallel importation, patent oppositions) or TRIPS+ provisions (e.g. patent linkage, data exclusivity);
2. Proposing ways to integrate flexibilities and mitigate/remove TRIPS+ to ensure a better framework for increasing access;
3. Compulsory/government license campaigns and opposing patents for key medicines; and
4. Awareness raising.

Description: ITPCru launched its first IP projects in 2014-2015 and expanded them to the Eurasian Economic Union. Activities included analysing patent status for

drugs, opposing patents, compulsory license campaigns, legal framework analysis with recommendations, publicising news about IP and treatment access. We motivated CBOs to support IP and access work by visualizing the link between treatment shortages, high prices and, subsequently, IP barriers causing high prices. Region-specific access issues, e.g. varying prices for original and generic key HIV drugs, PreP options and HCV direct-acting antivirals have been among illustrative examples.

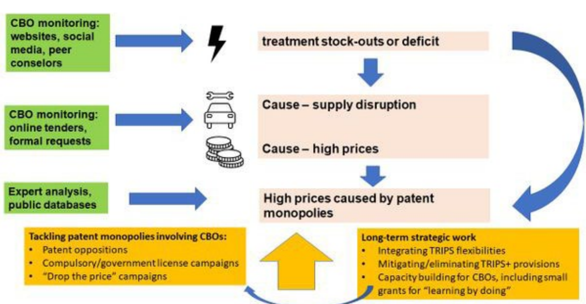

Figure. Involving CBOs into IP and access work: flowchart

Lessons learned: For some sign-on campaigns, we brought together over 30 CBOs. Gaining CBOs' support has contributed to success of several initiatives, including optimization of compulsory license framework in Russia and more than two-fold price reduction for several key patented drugs (including dolutegravir and sofosbuvir). Difficulties with CBO involvement included: negative attitude to generics due to poor information; the topic's complexity; general low awareness about IP and access issues.

Conclusions/Next steps: Involving CBOs into IP-related activities is crucial for revitalising treatment access work, which is important given novel treatment options and current access gaps. More efforts need to be invested into capacity building of communities as to IP and access, including development of community-friendly materials, grant programmes for IP and access, integrating IP into HIV meetings and conferences.

EPF019

Research on evergreening patents in Ukraine

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Background: There is an active discussion in Ukraine and worldwide on the impact of patent protection on the affordability of medicines and in particular ARV drugs. Big multinational pharmaceutical companies claim that patent protection should be as broad as possible as it allows to swiftly bring innovative products to the market, while their opponents from the civil society organizations refute that argument by stating that excessive patent protection restricts access to affordable treatment.

In order to test this hypothesis, 100% Life, the biggest community-led organization in Ukraine launched an evergreening study, with support from Aidsfonds and ITPC Global.

Methods: The researchers selected 132 patents. Selection of patents was based on:

1. Medicines that are procured from a single source in Ukraine and which are expensive due to the patent protection and
2. Prospective medicines for which competition is blocked because of patents.

The next step of the research was to determine the percentage of the patents that could be defined as evergreening, i.e. patents that are granted to prevent generic competition rather than to protect genuine inventions (UNDP, 2016). The researchers used criteria set in guidelines developed by the UNDP, WHO, UNCTAD and ICTSD in order to determine whether a certain patent could be considered as evergreening.

Results: The analysis was published in 2020 and demonstrated that 60 of 132 (45,45%) patents could be considered as evergreening. The most common type of evergreening patents was a composition/dosage from the known active substance (13), isomers and salts (11), polymorphic forms (11) and the combination of the known substances (9). Of the evergreening patents the majority were related to HIV treatment (15), followed by oncology (10), rheumatoid arthritis (6) and viral hepatitis (6).

Conclusions: The study demonstrates that almost half of the patents for essential medicines in Ukraine could be classified as evergreening. The research was an important argument that persuaded stakeholders in Ukraine to adopt legislation aimed at the reduction of unmerited patents in the summer of 2020. The methodology of the research could be used in other countries to measure percentage of evergreening patents.

EPF020

Advocacy of patent law reform in Ukraine

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Background: In 2015 around 60.000 people were receiving ARV therapy in Ukraine, while the estimated number of people in need of ARV treatment was 4 times higher. The overall prices for the HIV medicines at that time were high as most of them were patented and could have been procured from a limited number of manufacturers. Therefore, to improve access to medicines, 100% Life, the biggest community-led organization in Ukraine started advocacy of patent law reform with a support from Aidsfonds and ITPC Global.

Description: The goal of reforming the patent law is to enable prompt generic substitution of medicines, leading to sufficient price reductions for essential drugs, in particular ARVs. The draft law advocated by 100% Life had 3 key elements:

1. Enabling patent office to reject patent applications for new modifications of known medicines if they do not contribute to enhancing its efficacy;

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2. Simplification of the process of challenging patents and obtaining compulsory licenses;
3. Limitation of the grounds for patents extension beyond 20-year term. The advocacy of amendments took 5 years (2015-2020) and involved engagement of the key stakeholders. After several unsuccessful attempts to pass the law, e.g., the draft law not getting enough votes of MPs in September 2018, the law was successfully adopted on July 21, 2020.

Lessons learned: Based on 100% Life's experience of advocacy two important conclusions can be drawn:
1. It is important to establish strong partnerships with key stakeholders in order to overcome opposition from the opponents of the patent law reform, such as big multinational pharmaceutical companies;
2. Data-driven research to support the proposed amendments is essential to persuade stakeholders to support patent law reform. In 2015-2020, 100% Life published and disseminated 5 evidence-based studies on the urgency and benefits of the reform.

Conclusions/Next steps: Based on the patent law reform, the prices of essential medicines are expected to reduce 10%-25% in the next 6-8 years. ARV medicines are the most endangered by unmerited patent monopolies, therefore it is expected that ARV prices will decrease with 20%-30%. In practice this means that an additional of thousands of PLHIV can receive ARV treatment.

EPF021

Solving the PrEP failure in the U.S.: a national PrEP financing and delivery program

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Background: In the U.S., less than 25% of individuals with PrEP indications are actually using it and substantial disparities in PrEP access and use based on race, ethnicity, gender, gender identity, and geographic location persist. Without major improvements in PrEP access, the U.S. will almost certainly fail to meet the federal Ending the HIV Epidemic initiative goal of reducing new HIV infections by 90% by 2030.

We developed a policy proposal for a national U.S. program – the "Federal PrEP Program" – for the financing and delivery of PrEP for those who do not have insurance and those on Medicaid.

Description: The Federal PrEP Program replaces the fragmented procurement and delivery system for PrEP in the U.S. with a centralized federal purchasing mechanism for PrEP medications and labs and broad distribution channels through both clinical and non-clinical community providers.

The program supports expanded provider networks by funding novel telehealth partnerships between clinical and non-clinical providers. By design, the program will be able to reach individuals least likely to access care through traditional health care sites by expanding the availability of PrEP in community-based settings via these telehealth arrangements. To develop the Federal PrEP Program, we consulted with individuals using PrEP, clinicians, pharmacies, governmental public health leaders, and federal partners.

Lessons learned: Two core challenges for low-income individuals accessing PrEP in the U.S. include the fragmented and complex system of services and the paucity of PrEP providers who can serve patients in community sites. Also relevant are the interests of manufacturers and the perverse incentives toward prescribing higher cost PrEP medications experienced by a subset of clinicians.

Conclusions/Next steps: Following positive feedback from HIV providers, patients, and federal partners, the team is providing technical assistance to policymakers. Implementing an ambitious new plan will take political commitment and buy-in from HIV providers and people who would benefit from PrEP. The recent approval of a new long-acting but expensive formulation of PrEP has created an opening for reform.

EPF022

Translating international commitments in national lawmaking: lessons from the French advocacy for transparent public subsidies in the research and development of new medicines

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Background: In 2019 at World Health Assembly, facing strong mobilization from civil society, France voted in favor of the transparency resolution of markets for medicines, vaccines, and other health products. Between 2019 and 2021, French health and patient organizations worked together towards the national declension of this commitment. By ensuring the transparency of the amount of public subsidies received for the research and development (R&D) of new medicines, the aim was to secure access to treatments through fair negotiations between the State and the pharmaceutical industry.

Description: Our organizations' goal was first to ensure the adoption of transparency measures in the parliament. During the discussion of the 2020 Social Security Financing Bill in 2019, we led targeted advocacy towards the Ministry of Health and parliamentarians. Our work particularly focused on exchanging with Olivier Véran, then rapporteur of the text. An amendment he introduced was adopted, ensuring the transparency of R&D public subsidies during price negotiations, but was censored by the constitutional council for procedural reasons.

In 2020, we took the opportunity of Olivier Véran's nomination as Minister of Health to demand he fulfills his previous commitments. We reiterated our institutional advocacy strategies during the 2021 Social Security Financing Bill, tied with communication campaigns on social media. An amendment supported by a large majority of both chambers was adopted, yet only ensuring the transparency of aggregated data.

We finally focused on ensuring the enactment of the measure, with the aim of securing exhaustive, readable and diachronic information on public R&D subsidies. Although most our demands remained unanswered, our regular exchanges with the Ministry led to the publication of an implementing decree in October 2021.

Lessons learned: Holding public deciders accountable for their previous commitments by articulating international mobilization and national advocacy strategies compelled France to be the first European country to effectively implement legally-binding transparency measures of public R&D subsidies.

Conclusions/Next steps: Evidence of important public subsidies for the R&D of new treatments could be crucial in contesting excessive prices, thus ensuring access. Next step will be to monitor the implementation of the measure and advocate for a wider scope of transparent information.

EPF023

Medical cannabis in Canada - the hazy road to cannabis legalization

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Background: In October 2018, Canada legalized recreational cannabis. The new regulations superseded previous medical cannabis regulations, leaving medical cannabis patients fighting for access rights that were won in 2001. At AIDS2004 in Thailand, we described the long road to the *Marihuana Medical Access Regulations* (2001). Access to medical cannabis was achieved on the basis that laws were unconstitutional, by violating the life, liberty, and security interests of persons under the Canadian Charter for Rights and Freedoms.

The long-fought battles for access to medical cannabis also helped pave the road to the *Cannabis Act,* a legal and regulatory framework for recreational cannabis, and the introduction of government excise tax.

Description: (Table A) Cannabis in Canada Timeline outlines numerous times that medical cannabis patients and advocates intervened, challenged, and succeeded in maintaining a medical cannabis access program in Canada. With the new cannabis regulatory framework and the commercialization of recreational cannabis, clinical research on the risks and benefits of cannabis is critical in informing evidence-based cannabis health policy and ensuring the continuation of a medical cannabis access program.

Year	Event
2000	R. v. Parker (Ontario Court of Appeal) Landmark ruling that cannabis prohibition was unconstitutional because there was no exemption for medical use – a violation of the right to life, liberty, and security of a person.
2001	Canada introduced the **Marihuana Medical Access Regulations (MMAR) -** Access to cannabis for medical purposes including people living with HIV/AIDS - Patients could grow their own or obtain from a government source. This made Canada the first country to legalize cannabis for medical use.
2004	Medical Marijuana - What a Trip! The Canadian Experience - Abstract at AIDS2004, Bangkok, Thailand
2003 - 2011	2003 - R. v. J.P. (Ontario Court of Appeal) MMAR did not create a constitutionally medical exemption that was acceptable. 2008 - Sfetkopoulos v. Canada (Federal Court of Appeal) Licenced producers allowed to grow for more than one person. 2011 - R. v. Mernagh (Ontario Superior Court) Sections 4 & 7 of the Controlled Substances Act were found constitutionally invalid and of no force and effect
2014	The **Marihuana for Medical Purposes Regulations (MMPR)** replaced the MMAR. Medical cannabis could be prescribed by a physician and a government license was no longer required.
2015 - 2016	2015 - R. v. Smith (Supreme Court of Canada) ruled restrictions of dried cannabis under the MMAR and MMPR was unconstitutional and expanded the definition to include any form of the drug. 2016 - R. v. Allard et al - Court injunction for those licensed under the MMAR. BC Superior Court ruled the MMPR was unconstitutional and gave the government 6 months to create a new framework.
2016	The **Access to Cannabis for Medical Purposes Regulations (ACMPR)** replaced the MMPR.
2017 - 2018	2017 - The Canadian Parliament introduced Bill C-45, the ***Cannabis Act***, to legalize recreational cannabis by July 1, 2018. 2018 - The Senate passed the bill in June 2018 and the ***Cannabis Act and Regulations*** came into force on October 17, 2018.
2019 - 2022	**Canadian AIDS Society (CAS) Cannabis Task Force**, formed in 2019 • 2020 BMJ Open, Protocol - *Canadian clinical practice guidelines for the use of plant-based cannabis and cannabinoid-based products in the management of chronic non-cancer pain and co-occurring conditions: protocol for a systematic literature review* • 2022 Canadian AIDS Society and the Task Force publishes the Canadian Clinical Practice Guidelines on the Use of Cannabis in the Management of Chronic Pain and Associated Symptoms **CIHR CTN Cannabis Research Working Group**, formed in 2020 • CTN PT028: A pilot clinical trial to assess safety, tolerability and effect on inflammation in people living with HIV on antiretroviral therapy • CTN PT037: Disentangling medicinal and non-medicinal cannabis use among people living with HIV: Feasibility of a smartphone-based assessment • CTN PT043: Interplay between the expanded endocannabinoid (eCB) system and inflamm-aging: Implication between accelerated atherosclerosis in people living with HIV under ART • Cannabis and mental health in racialized populations • CAMH/CAS Cannabis and HIV Study • Cannabis use and impacts among Ontarians living with HIV in the era of recreational legalization

Table A. Cannabis in Canada Timeline.

Lessons learned: The Canadian AIDS Society Cannabis Taskforce (2019) and the CIHR CTN Cannabis Working Group (2020) were formed to conduct cannabis research and develop evidence-based clinical practice guidelines, to inform cannabis health policy that will enable patients to continue to access to medical cannabis, with a special focus on affordability including private and public insurance coverage.

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Conclusions/Next steps: The last 20+ years of medical cannabis in Canada have led towards the hazy road of legalization. Medical cannabis patients and advocates have temporarily succeeded in preserving a medical cannabis program in Canada alongside the legalization.

Cannabis researchers and patient advocates now have five (5) years to provide clinical evidence on the risks and benefits of cannabis to inform health policies that will preserve a medical cannabis access program in Canada.

EPF024

Process of the reform of the law on flight against the trafficking and illicit use of narcotic drugs, psychotropic substances in Ivory Coast

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Background: In 2016, Ivory Coast undertook a reform of its drug policy in order to move towards less repressive legislation than the law of July 22, 1988.

Thus, with the technical and financial support of its partners, including Médecins du Monde (MdM), it has drawn up, through the Interministerial Committee for the Fight against Drugs (CILAD), a bill containing major innovations, making Ivory Coast one of the most advanced West African countries on the issue.

Description:

The main innovations contained in the law are:

- A new vision of the drug user (DU), no longer as an offender but as a sick person in need of treatment.
- The integration of harm reduction activities in the health pyramid.
- The drastic reduction of the quantum of criminal penalties for drug use.

In doing so, they will reduce HIV prevalence among this key population by reducing transmission and improving treatment adherence.

The draft law was adopted by the Council of Ministers on July 7, 2021, then by the National Assembly in committee on October 12, 2021, and in plenary session on December 16, 2021.

Lessons learned: The process of drafting and adopting the law was done in an inclusive and collaborative manner with the participation of state structures, namely CILAD and the National Program for the Fight against Smoking, Alcoholism and other Addictions (PNLTA); civil society gathered within the Council of Organizations for the Fight against Drug Abuse in Côte d'Ivoire (CONAD-CI), of which Médecins du Monde is a member; and UNODC.

Following the principle of "do nothing for DU without DU", the Phoenix Group, an advocacy group composed of peer educators and DU, played an important role throughout this process: they were present at all the meetings organized and carried the voice of DU by bringing the most distant actors closer to reality.

Conclusions/Next steps: One of the successes of this reform is the inclusiveness of the process in which all stakeholders participated. The next steps are the adoption of the law by the Senate, then the publication and effective implementation of the implementing decrees.

EPF025

Will voluntary licenses save the world? Impact of voluntary mechanisms on the economy, the policies and the politics of access to medicines

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Background: Voluntary licensing is a common practice in industry sectors where patents are numerous, including the pharmaceutical field. The objective of this research was to review different features and impacts that voluntary licenses (VLs) can have on access to medicines for patients, on the economic dynamics of the pharmaceutical market, and on the access to medicines movement and debates.

Description: The research drew from bibliographic resources, licence agreements, and communications with legal experts and other stakeholders involved in implementing or advocating for access to HIV treatment and other medicines policies. Two analysis were conducted: an assessment of the provisions in licence agreements, and a description of the different effects and impacts that they could have on policies and stakeholders.

Lessons learned: The study found a range of potential effects from voluntary licenses. It looks into the positive impacts on access for certain populations in certain countries and the negative features of some agreements, in terms of countries and population targeted, transparency, transfer of know-how, use of active ingredient, prices, grant-back of rights, etc. The study considered the effects of licence deals on the behavior and business practices of pharmaceutical companies (partnerships between companies previously in competition, assessment of the risk to engage in compulsory licensing, weakening of small generic manufacturers, etc.), their impact on the access to medicines movement and the use of TRIPS flexibilities, as well as their impact on access politics, and on debates of access policies.

The study also proposes a range of recommendations to improve licence agreements and their monitoring and regulation, and to limit the indirect creation of new barriers to access to medicines.

Conclusions/Next steps: These results allow a broader understanding of the industrial dynamics and relationships between companies (originators, generic manufacturers from India, generic manufacturers from other middle income countries, etc.) on the markets of different countries.

They underline the indirect role voluntary licensing plays on policies and on the access to medicines environment and are important for informing better policies with the aim of improving access to HIV medicines, and to help stakeholders negotiate according to this objective.

EPF026
The end of patent term extensions in Brazil: positive impacts for the procurement of ARVs

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Background: On May 12, 2021, the Brazilian Supreme Court (STF) issued a landmark decision for access to medicines, ending or shortening the term of 3435 pharmaceutical and healthcare patents. The STF declared the unconstitutionality of Art. 40, sole paragraph, of the Brazilian Industrial Property Law, which established an automatic, indeterminate and unjustifiable extension of patent terms, leading to harmful pressure over the budget of the public health system.
The Working Group on Intellectual Property (GTPI), a civil society coalition formed by 17 organizations, coordinated by the Brazilian Interdisciplinary AIDS Association (ABIA) was the first party to become *amicus curiae*, within the framework of the Direct Action of Unconstitutionality (ADI) No 5529, initiated by the Brazilian Public Prosecutor's Office (PGR) in 2016. ABIA/GTPI contributed with arguments and data through technical debates, petitions and oral statements that were observed in the final ruling.
Thanks to this decision, the Brazilian Ministry of Health has the opportunity to explore generic supply for several essential medicines, including for important ARVs.
Methods: This research is based on a holistic, descriptive, single case-study of the Direct Action of Unconstitutionality No. 5529 and its positive impacts on public procurement strategies for essential ARVs.
Results: In the STF's decision, health-related patents were subject to retroactive effects (*ex tunc*). Therefore, approximately 3,435 patents were immediately extinguished or had their term reduced. We evaluated the outcomes of the decision for four ARVs. The results are described in Table 1.

Drug	Monopoly term before STF's decision	Monopoly term after STF's decision	Monopoly term reduction in months	Included in national guidelines?
Etravirine	11/2023	09/2019	50	Yes
Rilpivirine	04/2029	08/2022	98	No
FTC/ Rilpivirine/ TDF	04/2029	08/2022	98	No
Raltegravir	06/2027	10/2022	56	Yes

Table 1.

Conclusions: Generic competition will become possible immediately, in the case of Etravirine, and by the second semester of 2022 for Rilpivirine, FTC/Rilpivirine/TDF and Raltegravir. For the Brazilian HIV/Aids treatment program, this decision represents an opportunity both for budget savings and for the incorporation of new drugs at affordable prices.

Challenging criminalization/penal provisions relating to gender and sexual diversity as an impediment to the global HIV response

EPF027
Is the integration of LGBT people into public HIV care health facilities possible in a country where there is a criminalization of homosexuality? The case of Burundi

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Background: Homosexuality is a reality in Burundi. After the City of Bujumbura (2011-2014) in collaboration with King Baudouin Foundation, the CPAMP CHU kamenge project to integrate sexual minorities into public HIV care health facilities, in collaboration with the France Foundation (2015-2017), has been extended to all provinces of Burundi. Despite the criminalization of homosexuality, activities in their favor are steadily increasing.
Description: At the beginning, we sensitized health officials and LGBT focal points in Burundi's health provinces during the development workshops.
Afterwards, training and awareness sessions for LGBT people and health providers were organized in all provinces. Afterwards, we organized discussion groups, bringing together LGBT people and sensitized health providers. To reach out to LGBT people, we have identified, with the help of LGBT activist associations, peer educators in each province. These in turn identified LGBT people to participate in awareness and training sessions.
For health officials and providers sensitized, we have involved provincial physicians and district chief physicians during development workshops.
Lessons learned: Jobs done:
- 42 health officials (Ministry of Public Health) and 10 LGBT focal points sensitized.
- 368 health care providers from public health facilities sensitized
- 225 LGBT sensitized on HIV / AIDS prevention and care
- 687 LGBT people tested for HIV
- 30 tested positive for HIV (4.36%)

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- 20 discussion group sessions with the joint participation of LGBT people and health providers: 417 LGBT people and 50 health providers from health public facilities.
Integration of HIV into public health care facilities of LGBT has been effective in 10 of the 15 already sensitized provinces. Seven district hospitals, three regional hospitals, a national referral university hospital and a health center have integrated LGBT people into their HIV health care facilities.
Conclusions/Next steps: Although the situation of prevention and effective treatment of LGBT HIV is constantly increasing in Burundi, we are witnessing a surge in anti-gay speeches and actions by government authorities.
This slows down some initiatives by health providers, activist associations, and beneficiaries, thus preventing the effective integration of LGBT people into both public and private health facilities.

EPF028
Laws and Policies in Eastern Europe and Central Asia as an obstacle to providing HIV-services for MSM and trans people

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Background: ECOM - Eurasian Coalition on Health, Rights, Gender and Sexual Diversity (ECOM) conducted qualitative research on legal environments for HIV services among MSM and trans people in 11 countries of Eastern Europe and Central Asia, where most of the countries are still considered to be predominantly homo/bi/transphobic.
Methods: A literature review of existing studies has been conducted. The research protocol was elaborated. Assessment was based on data collection via a pre-defined questionnaire on laws protecting or on opposite discriminating MSM and trans people. It was filled out by two legal experts from each country in EECA. Collected data were analyzed and compared with international standards on SOGI and HIV.
Results: State authorities are adopting national legislation to international standards in terms of human rights of MSM and trans people. Nevertheless, there are crucial unresolved questions related to well-being and safety of the latter.
Among them right of freedom of peaceful assembly and freedom of speech for LGBT. Governments not only fail to protect peaceful assemblies organized by LGBT-activists, but it also impedes the restoration of their violated rights, failing to ensure effective investigation and punish the offenders.
Lack of anti-discrimination legislation results in the absence of protection from discrimination based on SOGI.
High level of stigma in "conservative" EECA governments prevents MSM and trans people to use HIV-services and discourages them to disclose any personal information to state authorities, including medical records. It also causes high level of mistrust in the state institutions that protect human rights. Therefore, it influenced people's perception about the efficiency of the state efforts related to combat discrimination and prevent further spread of HIV.
Conclusions: Existing discriminatory laws reinforce the predisposed homo/bi/transphobic notions entrenched in society, create environment of impunity, and exclude MSM and trans people from fulfillment of their right to health.
Only three EECA countries adopted anti-discrimination regulations. Homophobia institutionalized in law enforcement bodies in most of EECA countries deepens the oppression of LGBT.
Law enforcement violence in all of Central Asia states towards these groups weakens the trust of LGBT in state institutions, thus, creating an obstacle to providing efficient HIV-services for them.

EPF029
Legal clinic an effective tool for maximizing HIV services among key population in Cross River State Nigeria

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Background: One of the greatest needs of members of the key population (MSM, FSW,PWID,TRANS and, PRISONS) is legal protection. This however is shrouded by the existence of bias and, stigmatizing lawyers who see these groups as nothing but, irresponsible.
There was also to be considered the cost effect of consulting a lawyer, which further shrinks access to justice. In the same vein, the continuous demands of incentives by KP's on treatment was becoming tiresome to funders and draining for the program hence, the Legal Clinic bridge point was built to not only create a means for these groups to be heard without prejudice but also, a reason for which their interest and adherence to the program, is sustained.
Description: Legal clinic was a physical avenue that afforded members of the KP community access to free legal counselling, from which actions were taken in form of representation where needed. The legal clinic was carried out by seasoned lawyers employed on the USAID funded Key Populations Community HIV Services Action and Response 1 Project implemented by Heartland Alliance LTD/GTE in collaboration with key population community-based organization from October 2020 to September 2021.
Lessons learned:
- There was an optimal increase in Uptake of HIV services with the introduction of Legal Clinic with a record of 215 persons who came in for legal clinic and, 70% of that number received HIV services.

- A decline in the cry for incentives was recorded as the Legal Clinic intervention had met a much greater need. Of the 215 persons who came in for legal clinic, 85% of them no longer requested incentives after passing through the clinic.
- KP's in coverage area were more aware and, bolder due to an easy access to legal consultation and justice.

Conclusions/Next steps: The legal clinic intervention not only brought about a legally woke and secure KP community but also, increased the voluntary moral of program participants to uptake HIV services optimally.

EPF030

Women´s r4ealities: addressing safety issues that women activists face in EECA

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Background: In recent years, attacks, both physical and cyber, against women activists working in the HIV field and in particular women living with HIV and from key populations (KPs) have escalated dramatically in Eastern Europe and Central Asia (EECA). Women activists' insecurity is exacerbated by increasingly punitive legislation targeting KPs and, in general, limiting space for NGOs. The situation of women activists is worsened by the traditionally patriarchal society in EECA and inadequate access to digital literacy, technology and legal aid.

Description: In 2021, women-led networks in Ukraine, Kyrgyzstan, and Belarus, with support from Deutsche Aidshilfe and UNAIDS Technical Support Mechanism, implemented a project that aimed to improve their understanding of physical and digital safety and develop strategies to strengthen their networks in the context of shrinking space for civil society in EECA. With the help of a lawyer, women activists analyzed national legislation and how it affected their freedom of expression and freedom of assembly and how it may impact their advocacy work, organizing training and counseling, conducting interviews, and keeping their workplace safe. This was followed by 2-day country training sessions on digital security where individual and networks' digital risks were analyzed, data security skills trained, and organizational and personal data security plans developed.

Lessons learned: The project led to a significant increase in digital literacy and access to data security tools, as well to closer cooperation between women from different key populations and civil society groups on the country level. Women activists were given necessary tools to encrypt their devices in order to protect their data, and in addition they analyzed risks and developed response protocols.

Conclusions/Next steps: Women-led networks face risks of persecution and violence due to their advocacy aimed at gender equality, HIV-related decriminalization, and human rights defense. Technical support that is focused on activists' safety, with practice oriented outcomes, can improve access to technology among women LHIV and from KPs and strengthen their advocacy capacity.

EPF031

One step forward: challenging anti-LGBT laws in Jamaica

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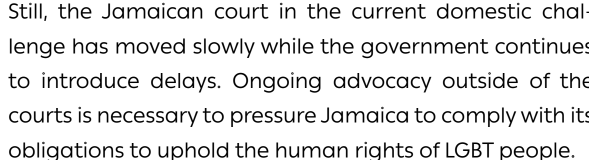
Background: In Jamaica, the *Offences Against the Persons Act* (OAPA) which criminalizes consensual sexual activity between men, is a relic of British colonialism. This law legitimizes discrimination and hostility towards LGBT people and drive men who have sex with men (MSM) away from effective HIV prevention, treatment, care and support interventions. Jamaica's punitive and stigmatizing environment has contributed to HIV prevalence of almost 30% among MSM, the highest in the Caribbean region.

Description: In December 2011, two Jamaican petitioners challenged provisions of the OAPA which prohibit consensual sexual activity between men, in the Inter-American Commission on Human Rights (IACHR). The petitioners described how the OAPA fuels violence, discrimination, and other abuse against LGBT people in Jamaica and sought a declaration from the IACHR that this law violates Jamaica's legal obligations under the *American Convention on Human Rights* Convention).

Lessons learned: In 2020, the IACHR published a long-awaited, landmark report concluding that the OAPA provisions violate individual rights protected by the Convention*.* The report issued a number of recommendations, including for Jamaica to repeal those provisions, adopt a legal framework to prohibit discrimination on the basis of sexual orientation, gender identity or gender expression, and "adopt the necessary measures to ensure the effective access to health services to LGBTI persons without discrimination."

Conclusions/Next steps: To date, Jamaica has failed to demonstrate any effort to comply with the IACHR's recommendations, and LGBT people in Jamaica continue to face the threat of criminalization. A claimant has filed a domestic challenge to the OAPA provisions on the basis that they violate his rights as a gay man under Jamaica's Constitution. The IACHR decision will be instructive as Jamaican courts have found that Jamaica's international human rights obligations are relevant to the determination of domestic cases, and a positive domestic decision would compel the government to change those laws.

Still, the Jamaican court in the current domestic challenge has moved slowly while the government continues to introduce delays. Ongoing advocacy outside of the courts is necessary to pressure Jamaica to comply with its obligations to uphold the human rights of LGBT people.



Conceptualizing political drivers and their impacts

EPF032
The political economy drivers of HIV in marginalized suburban communities in Suriname

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Background: The political economy of Suriname has to be studied to comprehensively establish its impact on HIV incidence in marginalized communities. These communities are more likely plagued by HIV not because residents are promiscuous, rather because of the unfavorably political, economic, and social barriers that drive the epidemic within their societies. The major cities receive more attention politically and economically, while others (suburban) are left to scramble.

This study explored and established the significance of these two factors as the main drivers of the HIV epidemic in Suriname.

Methods: The study utilized mixed qualitative methodologies (Participant observation, interviews, focus group discussion, and desk review) based on the grounded theory approach. A total number of 101 persons who were recruited through local networks in Abra Broki, Texas, and Latour communities of Suriname participated. There were 51 males (including 20 MSM) and 50 females, all between the ages of 16-52years. About 45% of the total participants identified as PLWHA. Structured open-ended questionnaires were used for interviews (86) and 2 focus group sessions (15 attendees in each) were conducted.

Results:

- 83% of participants blamed the government's lack of development plan and activities for the economic downturn in the communities; hence, residents are pressured to engage in risky sexual behaviors as means of survival;
- 100% of participants reported having engaged in risky sexual behaviors such as unprotected transactional sex at one point as a desperate means of survival in response to adverse economic conditions;
- 63% of participants identified a lack of adequate and effective political support for prevention efforts and provision of quality health facilities in the areas as main drivers; and
- 100% of PLWHA interviewed linked their infections to economic pressure at the time.

Conclusions: Although these communities are part of Paramaribo, the capital city of Suriname, poverty, unemployment, illiteracy, poor standard of living, stigma, and discrimination are evident and high. These are all drivers of HIV.

HIV prevention efforts in such communities should be intensified and holistic. The government should consider favorable political, economic, and social policies that would reduce poverty, increase economic opportunities, and foster better collaborations between all stakeholders serving the communities.

EPF033
The life of a foreign agent: Risks and perspectives on operating in Russia as an NGO designated as a foreign agent

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Background: During 2012-2021 Russia enacted more than twenty laws nicknamed altogether as Laws on 'Foreign Agents'. Along with laws on drug and gay propaganda they create significant obstacles for HIV service nongovernmental organizations (NGOs) receiving international funding. By November 2021, fifteen HIV-servicing organizations were included on the list of foreign agents. Six of them have ceased their activities.

This study aims to define the main risks and to propose the risk mitigation recommendations for NGOs to work in the environment of foreign agent laws and policies.

Methods: The study comprises law and policy desk research followed by in-depth interviews with 14 leaders of HIV service NGOs in six provinces in Russia who have been declared as foreign agents. The coding and categorization method was used to carry out a thematic analysis of the transcripts.

Results: Due to the foreign agent laws, HIV service NGOs report a significant increase in administrative burden, strong barriers to receive government funding, and the unwillingness of government officials to engage into meaningful dialogue with NGOs who have been declared foreign agents. These laws also have a chilling effect on the willingness of international donors to fund civil society in Russia, especially such politically sensitive activities as harm reduction and the promotion of human rights of key populations. All respondents reported increased administrative, financial, and psychological burdens associated with periodic inspections of NGO's activities by various government services. Foreign agent laws significantly hamper the activities of the most engaging and professional HIV service NGOs, thus depriving the key and vulnerable group of essential services. The study proposes the risk mitigation recommendations for NGOs, donors, and activists.

Conclusions: After inclusion on the 'foreign agent' list, operations of HIV service organizations have become associated with additional financial and administrative dif-

ficulties. With the implementation of the 'foreign agent' law, there is a gradual narrowing of the space for the activities of HIV-servicing NGOs. There is no reason not to expect further expansion of the laws restricting the activities of NGOs in Russia.

Antiretroviral procurement and supply chain management

EPF034

Strengthening the Government of Vietnam's ARV supply chain management as they transition to sustainable HIV financing: lessons for HIV integration

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Background: As donor funding for ARVs decreases in middle-income countries like Vietnam, many turn to their national health insurance schemes to integrate and finance HIV programs. Technical assistance from partners to strengthen country ownership of the national HIV response is critical for addressing health systems issues, including financing and supply chain, in support of domestically funded HIV programs. USAID's Local Health System Sustainability (LHSS) project is supporting HIV program integration by the Government of Vietnam's (GVN) ARV supply chain management system and the Social Health Insurance (SHI) fund, the country's primary public financing mechanism for health.

Description: In 2021, Vietnam faced an imminent shortage of the main ARV covered by the SHI fund, TLE600, due to global supply chain challenges and unsuccessful procurement from the drug's sole government-approved supplier. LHSS supported GVN processes to add two WHO-preferred ARVs (TLD and TLE400) to the SHI drug list, paving the way for SHI-funded procurement. This was the first time TLE400 and TLD were procured via price negotiation; publishing the results was delayed by three months due to administrative errors in technical bidding documents. Subsequently, LHSS supported GVN to expedite procurement to ensure uninterrupted supply of high-quality, cost-effective treatment.

Lessons learned: GVN procured and distributed TLD and TLE in July 2021, six months before originally planned. By December 2021, approximately 48,000 and 54,000 HIV patients received SHI-covered TLD and TLE, respectively. The Vietnam experience illustrates how strengthening HIV program leadership skills for collaboration, planning, and coordination across multiple government-led agencies is critical to successful program integration.

Commodity procurement must strictly follow bidding regulations; well-prepared technical documents are critical to ensure accuracy and avoid delays in announcing procurement results. Changing ARV procurement policies is political; evidence and engagement to support consensus-building is required to change and operationalize new supply chain policies.

Conclusions/Next steps: The updated SHI drug list with TLD and TLE, the possibility of other advanced ARV drugs in the future, and favorable policies and actions have expanded opportunities for HIV patients to access cost-effective, high-quality ARVs. Vietnam's experience and process has lessons for countries with similar HIV program integration and domestic financing strategies.

Humanitarian crises

EPF035

Poverty, cumulative violence, and contexts of HIV vulnerability among refugee youth in a humanitarian setting in Uganda

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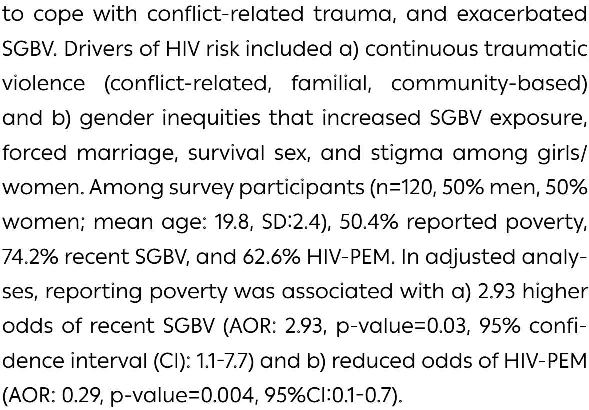
Background: Poverty and violence are structural drivers of HIV in humanitarian contexts. Scant research has examined HIV prevention cascade needs with refugee youth in humanitarian settings such as Bidi Bidi, Uganda—the world's second largest refugee settlement. We explored social-ecological factors linked with HIV vulnerabilities among refugee youth in Bidi Bidi.

Methods: This multi-methods study in Bidi Bidi involved 6 focus groups and 12 in-depth individual interviews (IDI) with refugee youth aged 16-24, and IDI with refugee elders (aged≥55) (n=8) and healthcare providers (HCP) (n=8). We applied thematic analysis to understand HIV vulnerabilities. We then conducted tablet-based surveys with refugee youth (16-24 years) that assessed: poverty (no income in past 12-months), recent (past 12-months) sexual and gender-based violence (SGBV) (sexual/physical violence), and HIV prevention engagement motivation (HIV-PEM) (wanting to learn more about HIV prevention). Multivariable logistic regression adjusting for age and gender was used to estimate adjusted odds ratios (AORs) for associations between poverty and SGBV with HIV-PEM.

Results: Qualitative participants included youth (n=60; 50% men, 50% women; mean age: 20.7, standard deviation [SD]:2.16), elders (n=8; 50% men, 50% women), and HCP (n=8; 62% women, 38% men). Narratives revealed chronic poverty resulting in stress, 'idleness', and frustration that elevated substance use. Substance use was also used



to cope with conflict-related trauma, and exacerbated SGBV. Drivers of HIV risk included a) continuous traumatic violence (conflict-related, familial, community-based) and b) gender inequities that increased SGBV exposure, forced marriage, survival sex, and stigma among girls/ women. Among survey participants (n=120, 50% men, 50% women; mean age: 19.8, SD:2.4), 50.4% reported poverty, 74.2% recent SGBV, and 62.6% HIV-PEM. In adjusted analyses, reporting poverty was associated with a) 2.93 higher odds of recent SGBV (AOR: 2.93, p-value=0.03, 95% confidence interval (CI): 1.1-7.7) and b) reduced odds of HIV-PEM (AOR: 0.29, p-value=0.004, 95%CI:0.1-0.7).

Conclusions: Findings signal the confluence of poverty, cumulative violence, and substance use elevate youth HIV vulnerabilities in humanitarian contexts. Poverty drives SGBV and undermines HIV prevention engagement. Structural and gender-transformative interventions addressing unemployment, continuous violence, and trauma-informed substance use services, can reduce HIV vulnerability and enhance HIV prevention cascade engagement among youth in humanitarian crises.

Sexual- and/or gender-based inequalities, inequities and violence

EPF036

Contribution of platforms fighting against Sexual and Gender-Based Violence (SGBV) in the prevention of HIV / AIDS and STI transmission among LGBT people in Benin

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Background: In Benin, an average of twenty (20) cases of violence of LGBT people are recorded per quarter, in the sole territory of the Beninese crossing of the Abidjan-Lagos Corridor.

To improve responses to SGBV, Benin Synergies Plus Network (BESYP), with the technical support of the Abidjan-Lagos Corridor Organization, set up in 2019 the first platforms (PF) to fight against Sexual and Gender-Based Violence (SGBV) for LGBT people, which became the pillar of the national strategy against SGBV. The platform is a collaborative framework for exchanges, referrals and counter-referrals for actors involved in the response to SGBV. It is made up of members of the Republican police, health professionals, journalists and faith-based or community-based civil society organizations. Today, there are 3 SGBV platforms for LGBT people along the Beninese crossing of the Abidjan-Lagos Corridor.

Description: The SGBV platforms are an innovative response, aiming to strengthen the coordination of interventions, the framework of prevention and care for survivors of SGBV. They integrate:

• A mechanism for collecting data on SGBV,
• Psycho-social care, support and legal guidance for victims,
• Coordination and capitalization of actions.

Lessons learned: From 2019 to 2021,the three SGBV platforms have enabled 153 victims of SGBV to benefit from comprehensive medical (screening, EPT), psycho-social (listening, counseling) and legal care.

The main advances made possible by the implementation of these platforms are the followings:

• Systematization of referral and support for victims of SGBV by the SGBV focal point;
• Commitment of doctors to provide medical care for victims of SGBV within the required timeframe and, for victims of physical violence, to issue free medical certificates necessary for legal procedures.
• Decrease in time to linkage to care through ongoing education of communities about HIV risks due to violence.

But difficulties remain: insufficient resources to expand activities in other departments; socio-cultural constraints; lack of emergency accommodation facilities.

Conclusions/Next steps: • Extend the activities of SGBV Platforms in other departments of Benin;
• Develop and distribute awareness-raising materials on the importance of medical treatment within 72 hours of an event of physical violence.

EPF037

Gender based violence against female sex workers and transgender during COVID-19 pandemic in Dhaka and in selected brothels (Case study of Bangladesh)

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Background: Female sex workers (FSWs) in Bangladesh face daily threats to their personal and collective safety. FSWs are legally marginalized and socially stigmatized and suffer precarious social protection, economic insecurity, and are targeted with physical, sexual, and emotional violence by the police, managers, clients, and intimate partners.

The transgender in Bangladesh are also subject to a high level of Gender Based Violence (GBV). A study conducted in 2015 among the gender diverse population (GDP) revealed that 42.2% of them GDPs were the victims of rape, 26.1% gang-rape, 55.3% physical torture and another 63.3% faced police arrest due to their gender identity.

The study is conducted to understand the nature and consequences of GBV experienced by the FSW and transgender during the pandemic, to inform HIV policies and programming and to help protect KPs' human rights.

Methods: The study was conducted among the Street Based Female Sex Workers (SBFSW), Transgender and Brothel Based Female Sex Workers (BBFSW).
It adopted a mixed-method approach, both qualitative and quantitative. Semi-structured interviews and in-depth case studies were conducted.
The estimated sample size at 95% level of confidence with precision of 5% and non-response rate of 5%, the total sample size was 951.

Results: Three-quarter of the SBFSW (75.3%) reported to face any form of physical violence in the last 12 months. The rate was relatively lower among BBFSW (60.2%). Among the transgender interviewed, 71.3% mentioned that they faced physical violence in the last 12 months. In addition, more than eighty percent of the female sex workers and 76% of Hijras reported to ever experience physical violence.

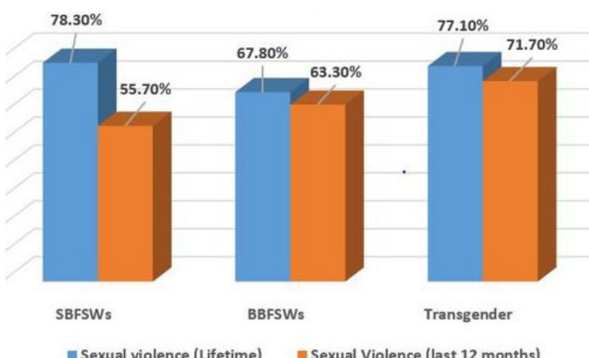

Figure. Lifetime and 12-month prevalence of sexual violence among FSW and Transgender

Conclusions: The study findings provide evidences on violence faced by selected KPs which requires political commitment and supports programmers working with violence, community-based organizations and advocates to highlight and address human rights violations faced by KPs in Bangladesh.

EPF038

The Gender Equality Forum and the 40 billion dollar question: where is HIV?

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Background: *The Global AIDS Strategy (2021-2026*) and the 2021 *Political Declaration on HIV and AIDS* commit to urgent and transformative action to end gender inequalities. Yet it remains unclear how financial pledges made at the *Generation Equality Forum* (GEF) to advance gender equality can complement these commitments to improve the lives of those most impacted by HIV.

Description: In 2021 world leaders, philanthropic foundations, civil society, feminist leaders and the private sector convened for the GEF – a once in a decade meeting to revitalise action on gender equality. The *Global Acceleration Plan*, launched at the forum, sets the global agenda for the next five years, supported by USD $40 billion in commitments. Yet, for many – including HIV activists – the road ahead is still unclear.

Lessons learned:

- The GEF Acceleration Plan is inconsistent in terms of how inclusive it is of women, girls and gender-diverse people most impacted by HIV. Action Coalition 3 on Bodily Autonomy and SRHR makes no reference to HIV. Those on GBV and feminist movements and leadership recognise HIV status, gender identity and sexuality – but is this enough?
- HIV was rarely mentioned in the Forum and in funding commitments, and there was a worrying silence – even absence – of key allies of the HIV movement. This despite the AIDS epidemic being *one of the most devastating gendered crises facing the African continent in the late 20th century*.
- The Forum did nothing to explicitly engage with women living with HIV or sex workers. Concerns were also raised about the tokenistic involvement of young women and other marginalised groups. However, some sessions had strong transgender speakers, and presence of LGBT+ organisations and activists.

Conclusions/Next steps: How much of the $40 billion will be used to address HIV and support feminist action by HIV activists? We need meaningful community engagement with the Acceleration Plan to deliver and track these commitments. This means fully resourcing organisations led by women, girls and gender diverse people including those living with HIV. Afterall, grassroots mobilisation and collective care by women and girls living with HIV provides *vital lessons for feminist activism and movement building* and the HIV response.

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EPF039

Intersecting inequities in access to justice for trans and non-binary sex workers in Canada

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Background: Canada's "end demand" sex work laws purport to enhance sex workers' safety and access to justice. As these claims are contested, the experiences of transgender and non-binary sex workers are often obscured. We sought to characterize access to justice among trans and non-binary people in Canada with and without sex work histories, across intersecting social identities and positions.

Methods: Trans PULSE Canada collected multimode survey data in fall 2019 using a community-based research approach. We estimated age-adjusted predicted probabilities from logistic regression models to compare participants by sex work history, and cross-stratified by sex assigned at birth, ethnoracial group, and household income.

Results: Of 2012 trans and non-binary participants (median age = 28), 280 (16.1%) had ever done sex work. Most (66.5%) were assigned female at birth and 48.9% identified as non-binary. Sex workers were more likely to anticipate (predicted probability = 72.2% vs. 50.5%) and experience (43.1% vs. 15.6%) police mistreatment and to report any physical or sexual violence (61.5% vs. 27.3%) or violence due to being trans or non-binary (41.4% vs. 14.0%) in the previous five years (all p<.0001). Sex workers were more likely to both have needed police services in the previous five years, and to have avoided calling 911 for police (51.4% vs. 18.1%, p<.0001).

Few sex workers trusted that they would be treated fairly by the police or courts if they experienced physical (10.8%) or sexual (4.7%) violence. Intersectional inequalities included that sex workers assigned male at birth and street-based sex workers were most likely to have experienced violence due to being trans or non-binary in the previous five years (58.0% and 53.9% respectively), and that Indigenous and racialized sex workers reported higher levels of police mistreatment and 911 avoidance.

Conclusions: We found very limited access to justice for trans and non-binary sex workers, which was exacerbated for transfeminine, Indigenous, racialized, and street-based workers, in the context of Canadian laws that purport to protect the rights of sex workers and trans people. These inequities, which may exacerbate HIV risks, must be addressed in sex work legal reform efforts.

EPF040

GBV incidence reduction among adolescent girls and young women's (AGYW) and the Violence Against Person's Prohibition Act in South-South, Nigeria: thoughts for the HIV gender, human rights response

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Background: From 2011 to date, the South-South HIV gender and human rights response has, in alignment with national guidelines, pioneered an effective multisectoral programming using gender mainstreaming – a strategy for promoting gender equality in all populations including AGYW. However, challenges with reducing GBV incidence remain, while reviews on the VAPP reveal how AGYW stand to benefit from its domestication and the need for zonal coverage and enforcement towards more effective designs of gender and human rights programmes.

Description: We examined the gender mainstreaming approaches currently used and their impact on GBV incidence reduction. We also reviewed the enabling conditions for gender and human rights programming in the zone, as well as opportunities and threats to enforcing the VAPP law for better outcomes of the HIV gender and human rights activities.

Lessons learned: These 11 years, successes have been recorded with respect to GBV incidence reduction using gender mainstreaming. Currently gender has been mainstreamed into many private and public policy/programming processes, direction provided through guidelines and the gender and human rights emergency response team (GHRRT) constituted in one SS state. Reports of researches have been disseminated and capacity built on the use of standardized data collection tools. Still, GBV incidence reduction is being threatened as very little data on context-specific issues and their effects on AGYW exists. To address this threat, the NACA South-South zonal office (SSZO), in 2021 conducted a rapid appraisal of the VAPP law domestication to inform the redress of programme implementation approaches targeted at AGYW in the zone. More exploration of the VAPP law is ongoing to determine the most efficient way of reducing GBV incidence, intensified advocacy for adoption of the law in the three remaining SS states and innovative GBV mitigation models that, if adapted and implemented will help the SS GHR response.

Conclusions/Next steps: The SS GHR programme for AGYW has demonstrated the need to intensify advocacy for the approval and enforcement of laws for effective

addressing of GBV incidence reduction and related issues. With more gender mainstreaming, local systems can be enhanced to increase access to structured and effective GBV response services backed and empowered by law.

EPF041

Rethinking the development agenda: Advocating for the full inclusion and participation of men who have sex with men and transgender people in the South African health care system

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Background: In support of South Africa's National Strategic Plan and the National LGBTI HIV Plan, 2017-2022, HIV, TB and STI intervention programme was implemented from April 2019 to reduce the incidence of HIV amongst Men having Sex with Men (MSM) and Transgender (TG) people in 10 selected districts of South Africa.
This abstract highlights areas that have significant implications for the developmental agenda of SA regarding the plight of MSM & TG people as well as the healthcare service delivery.
Description: A mid-term evaluation of the intervention programme was conducted during February and March 2021. Qualitative data collection methods including in-depth interviews and Focus Group Discussions in line with the evaluation objectives, explored various categories of the intervention programme stakeholders including programme beneficiaries, peer educators/ navigators and programme managers as well as other key informants involved in policy formulation including LGBTI, AIDS Council and Civil Society.
Purposive sampling was conducted for these interviews with a total of 21 interviews conducted across the various categories.
Lessons learned: Inequalities in society and in the SA health system was raised as the primary challenge. Programme coverage was described as inadequate. More focus and resources dedicated to a model which would cater for the critical needs of this population such as the provision of hormone therapy for transgender was recommended. Rethink of binary and heteronormative state of patient ablution facilities in health facilities that exclude the minority groups. The need for the proclamation of the third gender in SA was made. Transgender people reported concern with regards to their IDs that are not aligned to their sex change.
At present, the issue of transgender people is not policy hence the challenge MSM and TG people are facing at health facilities.
Conclusions/Next steps: South African health service delivery lacks integration that is inclusive of the diversified populations such as the LGBTI community.
This evaluation highlighted areas that need fast-tracking in the provision of health care service delivery for an inclusive health care system. Inclusion of members of LGBTI in health policy decision making spaces such as clinic committees, school governing bodies is vital towards the achievement of health for all.

EPF042

Routine domestic abuse (DA) enquiring in people living with HIV (PLWH)

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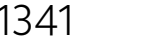
Background: The estimated lifetime prevalence of women subjected to DA globally ranges from 8.1-64.6%, with scant data for men. During the COVID19 pandemic, DA organisations saw an increase in calls. There is increasing evidence of DA in PLWH, correlated to poor health outcomes including death. We aimed to improve routine DA routine enquiry of PLWH at our HIV outpatient service using quality improvement methodology.
Methods: All clinical staff were asked to routinely ask PLWH about DA. All were trained on how to screen and manage disclosures via health advisors to specialist services/organisations. Weekly reminders with DA screening rates were circulated, with support and encouragement. Feedback was undertaken to understand barriers and acceptability to screening: patients were randomly asked by a clinician to partake in informal in-depth interviews, and staff completed an online survey. Characteristics and outcomes for identified cases were also reviewed.
Results: Routine DA screening improved from an 8% average (range 0-19%) pre-lockdown (848 asked), to 33% (range 0-56%) post-lockdown (3508 asked) by clinicians only, with a slight decline to 24% (range 6-45%) when nurses/healthcare assistants were included (2638 asked). Pre-lockdown 8% (3/38) disclosed DA, rising to 92% (35/38) post-lockdown, with a further 6 disclosures. 89% were asked twice before disclosure. The majority of survivors were homosexual non-British white males. Overall, 73% (n=44) accepted referral to DA services, regardless of current or past DA. 14 patients completed interviews. 92% responded positively about screening, all feeling comfortable being asked. 59% felt DA should be screened every time. 26 staff completed the survey. 81% had positive patient encounters when screening. 73% agreed screening should be asked at every opportunity by every staff member.
Conclusions: Routine DA screening for PLWH improved with simple interventions. Increase screening resulted in ten-fold disclosure, the majority not disclosing on first enquiry. Most (past and current) accepted onward referrals. Staff and patients found it acceptable. Screening advocates for management pathways, but ultimately impacts prevention of DA and consequences. The WHO does not recommend routine DA screening due to lack of resources but we believe, and call for this to be an essential part of care with funding re-directed to enable this.



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Access to education

EPF043

Our health, our future: mobilising action to advance national commitments on adolescent sexual health and rights in East & Southern Africa

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Background: In December 2021, Ministers of education, health, gender and youth in Eastern and Southern Africa reaffirmed the Ministerial Commitment on comprehensive sexuality education (CSE) and adolescent sexual and reproductive health and rights (SRHR). Expanding on the agreement made in 2013, Governments agreed to a bold new set of targets.

In the run-up to this re-endorsement Frontline AIDS, LVCT Health Kenya and SAfAIDS - with support from UNESCO - implemented a small programme designed to mobilise political support for the new Commitment within the region and counter growing opposition.

Description: Over 6 months we conducted a series of activities, including:

- Hosting a virtual consultation with over 100 civil society organisations to document the success and failures of the previous ESA Commitment.
- Developing a civil society Call to Action (C2A) with recommendations
- Raising awareness of the new Commitment among civil society and hosting meetings with government departments to build support for our reccomendations.
- Developing a network of youth and community organisations keen to advocate on CSE and creating social media toolkits, press releases and policy briefs to support their work in countering opposition.

Lessons learned: As a result of this work:

- Over 270 organisations from across the ESA region endorsed our C2A.
- Recommendations from the C2A were included in the final Commitment.
- More than 15 countries in the ESA region have now publicly endorsed the new Commitment

Conclusions/Next steps: Frontline AIDS and our partners played a crucial role in mobilising civil society around the new ESA commitment. Although the new Commitment is now in place, significant challenges remain. Knowledge of HIV prevention in the region remains stubbornly low. Less than 50% of adolescents have access to youth-friendly SRHR services. Civil society organisations must continue to play a critical role in tracking domestication and implementation of the new targets, this includes their involvement in accountability mechanisms and periodic review forums to track progress.

At the conference we want to hear how countries plan to make this new Commitment a reality. What priority actions will they take? How can governments and civil society work together to deliver on this agenda?

Criminalization, incarceration and living in closed settings

EPF044

Drug decriminalization done right: a civil society platform

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Background: Punitive drug laws and policies purported to deter drug use have failed. Worse, they have fueled deadly stigma; epidemics of HIV, HCV, and overdose death; poverty; homelessness; and egregious violations of human rights — particularly against poor and racialized drug users. In May 2020, 180+ civil society organizations (CSOs) in Canada launched a call to decriminalize simple possession. Subsequently, Canada's police chiefs endorsed decriminalization, Canada's prosecution service recommended non-prosecution for simple possession except in the "most serious cases," and numerous bills to reduce criminalization were introduced.

To advance a vision of decriminalization that centres human rights and drug user liberation, a Strategy Group formalized the call by developing a CSO platform for drug decriminalization.

Description: The CSO platform involved multiple rounds of drafting and discussion by a Strategy Group, and consultation with a broader range of CSOs, including Black and Indigenous community organizations and advocates.

The racialized impacts of drug prohibition, especially for Black and Indigenous peoples in Canada, were part of the group's deliberations and the racial justice dimensions of decriminalization are reflected in the platform.

Lessons learned: The CSO platform for decriminalization includes:

- Full removal of criminal sanctions, penalties, and coercive interventions for simple drug possession, as well as for necessity trafficking, defined as the sharing or selling of drugs for subsistence, to support personal drug use costs, or to provide a safe supply.
- Automatic expungement of previous convictions for these activities.
- Removal of police and other law enforcement as "gatekeepers" or "liaisons" between people who use drugs and health and social services, to be replaced by organizations led by people who use(d) drugs or skilled and trained frontline workers.
- Redistribution of resources from law enforcement to programs and services that protect and promote health and human rights, including housing and social services.

Conclusions/Next steps: Non-prosecution policies or diversion programs are inadequate, as are proposals that maintain any punitive sanctions (criminal, administrative, or otherwise) for simple possession and necessity trafficking. Short of the elements proposed in the CSO platform, people who use drugs will continue to face violations of their human rights, including their right to health and HIV prevention services.

Availability and access to harm reduction (including OST and NSP)

EPF045
Analysing the role of stigma and racism in harm reduction policy: a tri-country analysis

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Background: The systematization of stigma with regards to prevention, treatment, and recovery for PWUD varies across the globe, producing a variation in policy response. This project includes a tri-country analysis of federal health policies in the United States, Brazil, and Portugal, thereby exploring the following question: *How do harm reduction policies and public health response measures reflect sociopolitical beliefs, particularly notions of responsibility?*

Description: In the United States, the racial criminalization of Black and Latinx people as a result of the "War on Drugs" reflects political and social beliefs; in Brazil, PWUD have been increasingly prosecuted as traffickers, even though the nation's public health system has expanded sterile needle access; in Portugal, one can approach a supervised injection facility and use with impunity, while also being referred to social support services.

This abstract presents an analysis of such policies from the past decade, with a focus on comparative, federal response to harm reduction.

Lessons learned: The variations within and across countries as to whether harm reduction and opioid response is the responsibility of the state reveal the extent to which stigma—across race and related to PWUD—is embedded in national policy. In the United States, an analysis of policy language around responsibility depicts dissonance between political parties and, subsequently, between state and federal leadership. With regards to Brazil and Portugal, both countries take a seemingly human rights approach to healthcare through top-down constitutional commitments and universal healthcare systems. However, their respective responses to harm reduction, treatment, and prevention vastly differ, with Brazil taking an increasingly racial/carceral approach to drug use and related crime, compared to the Portuguese system of de-escalation and dissuasion, where social support was accepted and implemented as a nonpartisan responsibility of the state.

Conclusions/Next steps: The juxtaposition of these three countries depict the necessity of both top-down systems response and political participation, as well as a continued vigilance and review of implementation. Even a universal healthcare system such as Brazil's remains inequitable so long as racial bias and stigma against PWUD exists in people and policy. It is crucial that human rights not be dependent on the precariousness of political power.

EPF046
The need for overdose education and naloxone distribution among people who inject drugs in Kazakhstan

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Background: Overdose is a leading cause of morbidity and mortality among people who inject drugs (PWID) in Kazakhstan; regional data suggests risk of overdose is twice as high among PWID living with HIV (PWID-PLWH). While naloxone is approved for emergency overdose response in the country, there is still no centralized procurement of this life-saving medication, and distribution programs are limited to pilot projects of international organizations. Increasing overdose prevention services for PWID-PLWH may help to engage PWID-PLWH, and link them to a continuum of HIV and other services.

More information is needed to understand the extent of overdose awareness and risk in Kazakhstan's PWID-PLWH population, including their experience and attitudes towards naloxone.

Methods: This study used baseline data collected between 2017 and 2019 from a longitudinal study of 616 PWID-PLWH. Participants were recruited through needle and syringe programs (NSP), HIV care centers, and field-based recruitment in four Kazakhstani cities. Participants completed a computerized self-assessment, including questions on lifetime and recent overdose experience and injectable naloxone use, as well as awareness and willingness to use nasal naloxone.

Results: Nearly three-quarters of participants (72.2%) experienced an overdose in their lifetime, and over one-fifth (22.0%) in the past 6 months.The majority of participants (76.9%) reported overdose from heroin, though overdose from synthetic stimulants was also high (17.3%).

Additionally, 88.9% of PWID-PLWH had witnessed someone's overdose. Only 26.6% had heard of naloxone, yet among those aware, 40.9% reported having used it to reverse an overdose for them or a friend. Only 4.7% of participants had heard about nasalnaloxone, yet one-fourth (24.7%) of all participants were willing to use nasal naloxone if available.

Conclusions: The study results show a high need for overdose awareness and prevention programs and wide spread distribution of take-home naloxone as an effective and inexpensive life-saving medication for PWID-PLHIV. More information about overdose prevention should be distributed among PWID-PLWH communities.

Overdose prevention and naloxone distribution should be widely integrated into HIV care, drug treatment, harm reduction, and other programs available in Kazakhstan.

Financial incentives, micro-finance and other economic approaches

EPF047

Effects of financial incentives for clinic attendance on economic well-being among adults initiating antiretroviral therapy in Tanzania: a three-arm randomized controlled trial

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Background: Financial incentives for clinic attendance are shown to promote retention in HIV care and antiretroviral therapy (ART) adherence. However, few randomized studies have assessed potential secondary impacts of these incentives on economic well-being. We examined the effects of different incentive sizes on employment, food insecurity, and wealth among adults (≥18 years) starting ART (≤30 days) in Tanzania.

Methods: We conducted a three-arm parallel-group randomized controlled trial at four clinics in Shinyanga region. Participants were individually allocated (1:1:1) to usual care (control group) or to additionally receive a monthly cash incentive for up to 6 months, conditional on clinic attendance, in one of two amounts: 10000 TZS (US $4.50) or 22500 TZS (US $10). Economic outcomes, collected via a questionnaire at baseline and 6 months, included: currently working, functional limitation (missed work due to illness), food insecurity (Household Hunger Scale), and relative wealth (score from principal components analysis). We compared changes in economic outcomes over 6 months using longitudinal regression models with a group-by-time interaction term, including multiple imputation for missing 6-month surveys (10.6%).

Results: From April 24 to December 14, 2018, we randomized 530 participants (184 control, 172 smaller incentive, 174 larger incentive). From baseline to 6 months, overall improvements were observed in the proportions working (from 60% to 72%) and experiencing household hunger (from 27% to 21%), with little difference between study groups. Compared to the control group, functional limitation declined more in the larger incentive group [-10.9 percentage points, 95% CI: -24.4, 2.6; interaction p=0.11] and wealth percentile improved (3.8, 95% CI: -1.0, 8.6; interaction p=0.12).

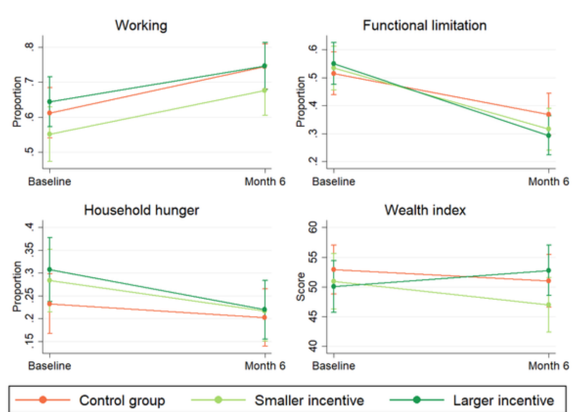

Figure.

Conclusions: Financial incentives to improve retention and ART adherence may have additional benefits for individual and household economic well-being, given a sufficiently large incentive size. These findings contribute further evidence for implementing incentives within HIV care and should be factored into cost-benefit considerations.

Safe housing, social protection and other care and support for people affected by HIV

EPF048

Healthcare and social assistance for the social protection of people with HIV/AIDS in situations of vulnerability: the Brazilian case

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Background: Considering the Political Declaration on Ending AIDS by UN General Assembly High-Level Meeting in 2016 and the publication on social protection (UNAIDS, 2018), the Department of Diseases of Chronic Condition and Sexually Transmitted Infections of the Brazilian Min-

istry of Health, worked in partnership with the Ministry of Citizenship for the development of actions on health and social assistance, protecting people with HIV/AIDS in situations of vulnerability.

Description: In 2021, a Technical Cooperation Agreement (TCA) was signed aiming at: establishing joint guidelines for the health and social assistance networks in the fight against HIV/AIDS, among other diseases; sensitizing health professionals in the identification and referral of people in situations of social vulnerability to social assistance; equipping social assistance professionals to promote health and fight stigma and discrimination; strengthen advocacy actions for the improvement of public policies related to the subject. The first product of the TCA was launching an online course on social protection for people in socially vulnerable situations with syphilis, HIV/AIDS, viral hepatitis, tuberculosis or leprosy. Developed by the Pan American Health Organization and the Federal University of Rio Grande do Norte in partnership with Ministry of Health and Citizenship, the 60-hour online course has versions in Portuguese, English and Spanish (https://avasus.ufrn.br/local/avasplugin/cursos/opas.php) It has sought to train health and social assistance to improve access for people with social vulnerability to both services. In four months, 2496 students enrolled and 998 people finished the course.

Lessons learned: Strengthen the performance of health and social assistance networks in the territory in order to facilitate the access of people with HIV/AIDS to social protection programs, as well as improve social assistance services in the identification of people at risk in order to offer early and better diagnosis adherence to treatment.

Conclusions/Next steps: To this end, in the second year of the TCA, a pilot project will be developed, covering the five geographic regions of Brazil to enhance the intervention methodology considering the technical collaboration among the Brazilian health and social assistance networks.

Access to appropriate healthcare services (including for co-infections and co-morbidities)

EPF049

Disparities in the geographic accessibility of Ryan White HIV/AIDS program clinics in the United States

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Background: The United States' (US) *Ending the HIV Epidemic*(EHE) initiative allocated funding to high burden jurisdictions to expand access to the Ryan White HIV/AIDS programs' (RWHAP) comprehensive care for low income people with HIV (PWH). US standards suggest one should travel <60 minutes to a specialist. We assessed geographic accessibility using drivetime to RWHAP clinics for PWH by subpopulations and policy context.

Methods: Data were collected from publicly available sources (Centers for Disease Control and Prevention's AtlasPlus, US Census Bureau, Health Resources & Services Administration). Counties of the 48 contiguous US with a total population ≥ 100 and HIV prevalence ≥ 5 were included. We imputed data for counties with suppressed data. Drivetimes were calculated from each county's population-weighted center to the nearest RWHAP clinic and were weighted by PWH population size per county. Stratified by urban/rural, median drivetimes with 95% confidence intervals were calculated by bootstrap for subgroups (age, sex, race/ethnicity, HIV prevalence, EHE status).

Results: Drivetimes and frequencies were calculated for 981,663 PWH within 2,499 US counties (Figure 1). Urban PWH (n=923,730) had a shorter drivetime (9.8 minutes; 95% CI: 6.9–12.9) compared to rural PWH (n=57,933; 75.8, 72.1–79.7). Within urban/rural, there was no drivetime difference by age or sex. Urban Native Hawaiian & Other Pacific Islander (NPHI) PWH (41.8, 38.4-45.3) had longer drivetimes than other racial groups. Rural Black PWH had shorter drivetimes, but all rural racial groups had drivetimes >60 minutes. Within urban counties, drivetime increases with decreasing HIV prevalence. Urban EHE counties had shorter drivetimes (6.7, 6.0-9.8) compared to their non-EHE counterparts (18.1, 14.1-23.2).

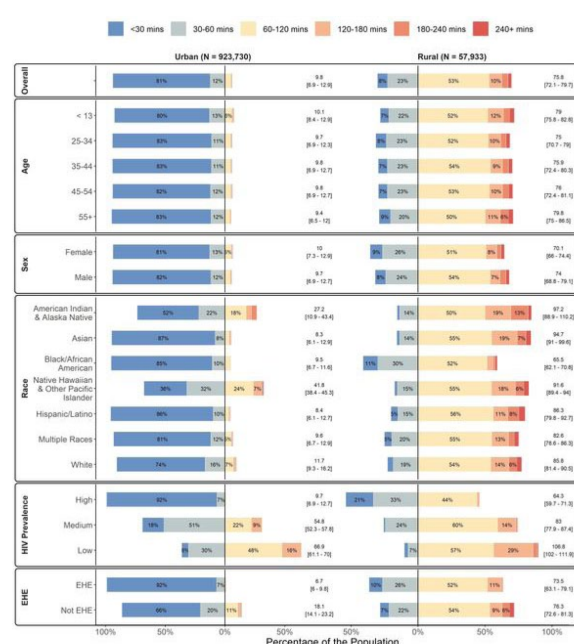

Figure 1. One-way drivetime to closest Ryan White HIV/AIDS program clinic by subgroup.

Conclusions: Poor geographic access (>60 minutes) to RWHAP clinics for urban subgroups of PWH and rural PWH is concerning. Spatial optimization studies are warranted to identify locations for RWHAP clinics/telemedicine-sites to improve access for PWH with long drivetimes.

EPF050

Integration status of HIV/TB services in 12 countries in the Centre and East of the WHO European Region

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Background: People with HIV-associated tuberculosis (TB) are often treated separately in vertical and fragmented programs at national levels, offering care for each disease with limited coordination. This "siloed" approach generates diagnosis and treatment delays. In 2020, in the WHO European Region, there were 68% of people living with HIV (PLHIV) who started TB preventive treatment (TPT) along with their antiretroviral therapy (ART) and 55% of HIV+ TB patients had successful TB treatment outcome, which is lower than 77% global rate according to WHO Global TB report. To improve HIV and TB services at national level, interventions for better integration of TB and HIV services are recommended and monitored in countries.

Methods: Integration of core HIV and TB services into the national policies of 12 selected countries of the WHO European Region (Albania, Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Republic of Moldova, Montenegro, Tajikistan, Ukraine, Uzbekistan) reporting to WHO and UNAIDS through policies monitoring tools in 2020-2021 was analyzed.

Results: 41.7% (5/12) countries use the WHO-recommended TB rapid molecular diagnostics and provide ART at the same place as TB treatment countrywide (>95% of health facilities providing HIV testing and care). ART is initiated by same healthcare workers providing TB treatment and both ART and TB treatment are monitored by one healthcare worker countrywide in 58.3% (7/12) of countries. TB screening and TB preventive treatment are recommended in national policies and guidelines for PLHIV in 91.2% (7/12) countries; 50% (6/12) of countries use LF-LAM for diagnosis and screening of active TB in PLHIV as national policies.

Integration of HIV/TB services:	WHO-recommended TB rapid molecular diagnostics	PLHIV with TB receive ART at the same place as TB treatment	ART initiated by same healthcare workers providing TB treatment	ART and TB treatment monitored by one healthcare worker
Countrywide (>95% of health facilities providing HIV testing and care)	41.7% (5/12)	41.7% (5/12)	58.3% (7/12)	58.3% (7/12)
In many (50-95%) health facilities providing HIV testing and care	25% (3/12)	33.4% (4/12)	25% (3/12)	16.7% (2/12)
In few (<50%) health facilities providing HIV testing and care	16.7% (2/12)	8.3% (1/12)	8.3% (1/12)	8.3 % (1/12)
Not integrated in practice	16.7% (2/12)	16.7% (2/12)	8.3% (1/12)	16.7% (2/12)

Table.

Conclusions: Despite progress in integration of HIV and TB services, an accelerated effort is needed to adjust national policies in priority countries lagging behind and to fully implement recommendations and policies aligning with WHO guidelines.

Effective models of NGO structure, funding, partnership, strategy and community participation

EPF051

A promising practice: enhancing access to and uptake of HIV services among grassroots LGBTQI+ youth in Malawi through systems strengthening of their organizations

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Background: Community-based LGBTQI+ youth-led organizations are more effective in reaching out to grassroots level LGBTQI+ youth especially those living with HIV through rights protection in public health, community outreach, mass mobilization to push for policy change and popular education with and for LGBTQI+ young people living with HIV. Despite these game-changing approaches, most community-based LGBTQI+ youth-led organizations experience a plethora of challenges that often make their programming less impactful.

Therefore, the purpose of this paper is to examine how organizational systems strengthening projects in LGBTQI+ youth-led community-based organizations like Ivy Foundation lead to outcomes that enhance HIV programming targeting LGBTQI+ youth living with HIV.

Description: The systems strengthening project was a one-year project running from June 2020 to December 2021 focusing on strengthening organizational systems within IVY foundation an LGBTQI+ youth-led community-based CSO in Malawi. The project focused on technical assistance and capacity development through systems strengthening, setting up governance structures, producing policies and procedures as well as guidelines and strategies for advocacy to better reach and link LGBTQI+ youth aged 18 to 30 living with HIV services and legal literacy.

The project was packaged into several layers which included initial needs assessment which involved the definition of needs and resources for Ivy Foundation, review of Ivy Foundation's capacity gap, analysis of existing systems and infrastructure of Ivy Foundation, leading to the development of a systems strengthening plan.

Lessons learned: As a result, improved systems have led to the effective serving of LGBTQI+ young people living with HIV by Ivy Foundation. Through training, mentorship, and coaching, IVY Foundation has improved in project design, implementation, and advocacy and they

have succession plans in place, better administrative and financial systems that are attracting more funding and partnerships.

Conclusions/Next steps: Documented steps in the approach can be packaged as a promising practice and replicated in Malawi with other CSOs of the same size as the IVY Foundation. The findings underscore the need to invest in strengthening internal systems and processes of community-based organizations so that efficiency in HIV programmes is enhanced at the grassroots level.

Established organizations can support start-up organizations through mentorship and coaching for systems strengthening.

EPF052

Increasing TB diagnoses and proper treatment by identifying and addressing service barriers through community led monitoring and advocacy in Mozambique

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Background: Mozambique's tuberculosis (TB) prevalence is 368 per 100,000 population (WHO, 2020), and 45% of TB cases are missed annually, resulting in unnecessary morbidity and mortality, particularly among people living with HIV. Supported by the Stop TB Partnership Challenge Facility for Civil Society from 2020-21, ADPP implemented a community-led monitoring (CLM) project to identify, understand and overcome barriers to TB identification and treatment.

Description: Using the *OneImpact* digital platform, CLM was integrated into the USAID-funded "Local TB Response" project in two districts of Zambezia Province. ADPP collaborated with 28 health facilities and 80 community leaders to train and empower 569 community members (78% TB patients) to use a mobile App to collect information about service barriers and other concerns from TB-affected community members, and use this data to advocate for improved services.

Project staff convened monthly sessions with *OneImpact* users, community members, and district leaders to discuss the findings and co-create solutions.

Lessons learned: Over the course of the project, 215 barriers were reported, including: Lack of information about support service e.g. nutrition and mental health (33%); Stigma and self-shame (30%); Human rights violations, including job loss due to TB status and breaches of confidentiality (23%); Lack of availability and access to TB services (14%).

Generating high levels of awareness, ownership and empowerment among TB-affected communities and health workers, the people-centered CLM process resulted in 98% of the reported barriers resolved at health facility and community levels. CLM can be a powerful tool for improving availability, access and quality of TB services, as an integral component of HIV programs.

Conclusions/Next steps: CLM is a simple, low-cost tool to gather key data from people affected by TB, supporting improvements in health services at community, facility and policy levels. CLM is aligned with the National Tuberculosis Program's community engagement approach, and endorsed by the Global Fund to Fight AIDS, TB and Malaria as a rights-based, gender-sensitive tool for strengthening community health systems.

ADPP encourages Mozambique's government and other countries to adopt CLM as a standard activity in all TB and HIV programs as it promotes local ownership and sustainability of efforts in the journey to self-reliance.

EPF053

Improving program acceleration and capacity for CSOs towards more access to HIV testing and treatment (impact+)

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Background: The Impact+ is a project to strengthen the institutional capacity of civil society organizations (CSOs) implementing partners for the HIV program in 26 priority districts/cities in Indonesia.

This program is intended for CSOs to have a better capacity to access, implement and manage grants from national and international development partners towards expanding access to HIV testing and treatment. The impact+ program was facilitated by the Penabulu Foundation with support from UNAIDS Indonesia.

Description: The impact+ program consists of several stages:

1. Initial assessment of organizational capacity,
2. Development of session plans,
3. Implementation of serial webinars and virtual training activities,
4. Face-to-face technical assistance to 10 selected CSOs,
5. Final assessment.

Activities have been carried out from December 2020 to December 2021.

Lessons learned: There are 30 CSOs who have participated in the activities until the end of the program. Each CSO attends a session based on the results of the initial assessment. The tool used for assessment is PERANTI, which has 4 domains as categories for identifying capacity conditions and needs, namely organizational mandates; organizational governance; organizational operational; and organizational sustainability.

Each domain has an interval scale from 1 to 50. The results of the impact+ are seen by comparing the average (median) of each domain at the beginning (pre) and at the end of the program (post).

Conclusions/Next steps: The most significant improvements occurred in organizational governance, organizational operational, and organizational sustainability. Ca-

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pacity building and technical assistance in these domains have earned a large portion. For the next impact+ program in 2022, the weight of the material for each domain must be more proportional and the number of CSOs who will receive technical assistance must be increased in order to get a more optimal program impact towards expanding access to HIV testing and treatment.

Figure. Median scores across 4 domains (pre & post).

EPF054
OST services have a great impact of PWID's life and livelihood

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Background: The GF has been supporting HR program scaled-up intervention aiming to greater coverage in Bangladesh through northern part. A social behavioral longitudinal cross sectional study conducted by a national NGO called APOSH reported that OST had greatly benefited PWID including reinstating their lives through generating income in socially acceptable ways and continuing their livelihood through integration.
OST had helped PWID restore trust in their families and become less of a burden to them through economical sustainability.
Description: Now 218 PWIDs are receiving OST in Rajshahi city.During the starting time(January'20) OST there were 160 PWID married and 45(28%) were separated from their spouse due to the drug addiction. After six months of OST, 22 (49%) PWID were living with their spouse and family members, as they were more stable and socially accepted by the family members.After twelve months, 40 PWID(89%) were fully living with their spouse and family members. Most of the family members, other neighbors accept them as normal human being.
Before starting the OST, 55%, PWID were out regular and decent works, within six months of OST 25% PWID involved different full time and decent works in the city and after 12 months of OST 49% out of 55% were fully involved with full time and decent works with active work force.
OST recipients PWID behavior changes a lot after taking the OST through livelihood and family life. One OST Client mentioned that their close relative accept them as their brother and taken them in every social programs without any hesitation, it was impossible when he was injected drugs regularly.
Lessons learned: OST recipients PWID behavior changes a lot after taking the OST through livelihood and family life. One OST Client mentioned that their close relative accept them as their brother and taken them in every social programs without any hesitation, it was impossible when he was injected drugs regularly.
Conclusions/Next steps: OST services have significant impact of PWID's life and livelihood through changing behavior, income and involved different social and cultural program in Bangladesh. The impact of OST is proven and great intervention through proper communication, outreach and routine monitoring. Government and other stakeholders have a significant amount of involvement for successful implementation of the services.

EPF055
Platform "Faith for Life": uniting people of faith to improve access to diagnostics, treatment and care

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Background: At present finding new cases of HIV within key affected communities reached its limit. In countries of the former Soviet Union the HIV epidemic moved to general population. Since religion plays an important role in lives of people of post-Soviet countries, ow is the time when faith-based organizations and churches can make an input into both finding new cases of HIV infection and ensure timely treatment for PLHIV while also fighting HIV related stigma and discrimination.
Description: In August 2021, Ukrainian FBO "ELEOS-UKRAINE" initiated establishment of the regional interfaith platform "Fight for Health" with involvement of churches and other religious organizations from Ukraine, Moldova, Lithuania, Kazakhstan, Estonia, Latvia, Georgia, Armenia, Bulgaria, Belarus and Russian Federation.
The creation of an international platform with a focal point in Ukraine increased the visibility of people living with HIV, religious organizations that help people living with HIV at the international level.
This provides additional resources to combat the epidemics and stigma and discrimination of PLHIV. Platform participants which have more experience shared their best practices with the newly involved partners.
Lessons learned: The initiative united representatives of FBOs and churches from different countries in counteracting the epidemic, stigma and discrimination. Cooperation with religious communities provides new opportunities in finding new HIV cases in populations previously not covered by prevention programs and refer them to treatment. Platform members from countries where governments are less proactive in fight with HIV infection learned ways to become more involved and influence the policies

and programs, provide care and support interventions to representatives of KPs and PLHIV. Platform representative was delegated to represent the EECA region in "Faith2EndAIDS" platform, it's members participated in events organized by the WCC and UNAIDS.

Conclusions/Next steps: Consolidated interfaith cooperation shows the readiness religious communities to help people with various diseases, including HIV/AIDS. The international experience of religious and public organizations will be useful for Ukraine and partners from Eastern Europe and Central Asia and vice versa.

Platform will continue activities to ensure joining and participation by it's members the Global Partnership for Action to Eliminate All Forms of HIV-Related Stigma and Discrimination following the example of Ukraine.

EPF056

Programs influencing policies: How strategic partnerships and program data were used to foster an enabling environment for key populations HIV prevention and treatment Programing in Nigeria

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Background: From 2010 till 2019, the USAID/PEPFER funded Integrated MARPs HIV Intervention Prevention Program (IMHIPP) implemented by Heartland Alliance enhanced access to comprehensive HIV prevention and treatment services to key populations (KPs) and their sexual partners in Nigeria.

Throughout the project, Heartland Alliance consistently forge meaningful partnerships and used program data to advocate for necessary policy changes that increased access to comprehensive HIV prevention and treatment services in a nondiscriminatory manner among the Key Populations community in Nigeria.

Description: The Integrated MARPs HIV Intervention Prevention Program (IMHIPP) was characterized by meaningful strategic partnerships with key state and local governments bodies, a primary focus on the KP community-led services, and maximum use of data to comprehend and advance program performance.

This approach created meaningful opportunities for the KP community to have their voices heard, and for project staff and local partners to advocate with government stakeholders and country representatives from USAID and PEPFAR for supportive policies to provide KP with services across the projects thematic areas.

Lessons learned: The IMHIPP contributed to creating a sustainable enabling environment for program implementation across the 6 states in Nigeria. Heartland Alliance One Stop Shops supported updates to national HIV policies and guidelines to better address the needs of, and incorporate evidence-based recommendations for, Key Populations, their sexual partners, and their children. In all 6 states where the IMHIPP was implemented, Heartland Alliance championed the removal of barriers to KP service uptake.

Heartland Alliance also influenced policy-level processes by supporting the formation of a national Key Populations secretariat in Nigeria, strengthening national data systems to include Key Populations specific data and mobilizing domestic resources for KP services.

Conclusions/Next steps: By leveraging the project's routine data, working closely with local decision-makers, and amplifying the voices of the key population's community, Heartland Alliance in Nigeria contributed to advocating for environments that enable effective HIV programming.

These policy changes not only redounded in immediate advancements in service uptake but are also likely to have a sustained impact on epidemic control sweats and quality of life of the Key populations community in Nigeria and globally.

EPF057

CSS walked so CLM could run: examining the community led monitoring structure for improved HIV service delivery

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Background: Over the past decade, the expansion of HIV prevention, testing, and treatment has halved new infections. Progress has been uneven, however. For instance, incidence is rising among men and men who have sex with men. The failure to disaggregate data has masked the service delivery challenges that gave rise to health disparities like this. Community-based organizations (CBOs) have been instrumental in highlighting these challenges.

Community Systems Strengthening (CSS), and Community Led Monitoring (CLM) are two CBO driven approaches to bridge the data gap and identify service delivery solutions. *The CSS Framework*was developed by the Global Fund in 2010. The first CLM project was established and in 2020, PEPFAR mandated that all its programs implement a CLM project.

Given the lack of literature comparing these frameworks, we sought to identify key differences between the two and describe the added value of CLM.

Methods: We performed a literature review and informational interviews to delineate activities of CSS projects conducted under the Global Fund Health Systems Strengthening (HSS) grant.

We then composed case-studies of three CLM Projects in Uganda, South Africa, and Haiti to examine operational country-specific CLM projects. Using these materials, we qualitatively analyzed CSS and CLM programs, paying attention to structure and activities.

Results: In the context of HSS, a framework for clarifying essential functions within a formal health system, the major contribution of CSS was to highlight the role of CBOs in improving services. Efforts under CSS were uncoordinated and sporadic with an emphasis of capacity building– yet, lacked dedicated funding. By contrast, CLM is a routinized, structured approach to the monitoring and improvement of services.

In all three case-study countries, affected communities led the coordination and implementation of CLM. While it is too early to assess sustainability, multiple donors have committed to continued support of CLM projects.

Conclusions: CSS was essential to building community networks and enhancing their involvement in health care delivery. CLM emerged from CSS but has a strong focus on data-informed advocacy to improve donor and government accountability through a community-owned mechanism. CLM is an important tool to end inequalities around access and treatment.

Human rights of people living with HIV and key populations

EPF058
HIV and rights in Spain

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Background: In 2018, the Social Pact for Non-Discrimination and Equal Treatment associated with HIV was approved to strengthen the response to HIV based on human rights in Spain. Among its objectives were:

1. To identify the legal norms that were discriminatory, and;
2. To identify the different barriers that people with HIV face.

What is the reality of HIV in Spain from a human rights point of view?

Methods: Using the Critical Theory of Law, the Spanish legal system has been analyzed, on the one hand, in order to identify legal norms that discriminate (directly, indirectly or by association) against people with HIV, those who are in risk of becoming infected or those persons related to them, and, on the other, the 1,111 consultations received at the CESIDA/UAH Legal Clinic, specialized in the legal literacy of people with HIV, during the period 2019-2021, in order to identify attitudinal barriers and situations of self-stigma.

Results: In the period 2019-2021 specific anti-discrimination regulations have been approved for people with HIV (eg access to public function), but the Spanish legal system still maintains legal regulations that discriminate directly, indirectly or by association against people with HIV, those who are at risk to become infected or those that are related to them.

In addition, some of the legal reforms have not been effective (eg contracting insurance). In Spain a person with HIV cannot be a security guard; the requirement to take out health insurance prevents non-EU students from obtaining a study visa; and people who regularly live with a person with HIV cannot be blood donors.

On the other hand, in 2 out of 3 consultations received at the Legal Clinic there is an attitudinal barrier towards people with HIV (eg denial of health services) or a situation of self-stigma (eg person with HIV excludes himself/herself from the exercise of his rights).

Conclusions: The achievement of the goal set by UNAIDS for 2030 to reduce discrimination associated with HIV is still a long way off. In Spain, legal regulations must be repealed, legal mechanism must be improved, and legal literacy programs for people with HIV must be implemented.

EPF059
Impact of community-led monitoring (CLM) of HIV care services in the context of the humanitarian crisis and the COVID pandemic in Venezuela

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Background: Venezuela has been experiencing a humanitarian crisis for over a decade, with a collapsed health system compounded by the continued violation of fundamental human rights. Dismantled and deteriorated infrastructure and services are commonplace, including partial closures of public health centers , outpatient clinics, and hospitals without qualified personnel and lack of the most basic equipment and supplies.

With the government's AIDS response severely weakened, and their inability and uninterest to guarantee the life and health of people living with HIV, Venezuelan and international civil society organizations have stepped in to fill the void.

Description: Civil society organizations (CSO) led by Acción Ciudadana Contra el Sida (ACCSI) and the Red Venezolana de Gente Positiva (RVG+) have played a unique

and vital role in keeping HIV and health-related services active during the humanitarian crisis and COVID pandemic, thus saving the lives of more than sixty thousand people. They have advocated for evidence-based strategies to ensure people living with HIV (PLHIV) receive the care they need.

A team coordinates the work of fifty-five community monitors that collect data based on health indicators through onsite interviews and direct observation on issues of drug procurement, storage and distribution, access to health services and violations of fundamental rights.

The team records the information in a secure database and analyzes and systematizes the findings utilizing new information technologies. The analysis is then used to influence critical decisions regarding prioritizing and allocating resources.

Lessons learned: Direct investment on CLM, stakeholder engagement, partnership and advocacy is key to ensure accountability and ultimately a comprehensive and effective AIDS response.

This project has enhanced the resilience and capacity of PLHIV and civil society to document and analyze evidence and advocate for responding to the health crisis and the complex humanitarian emergency in order to protect the life and health of people living with HIV.

Conclusions/Next steps: CLM has strengthened how PLHIV exercise their rights to participate on decisions regarding their own health and life. Community-led monitoring is an integral part of a comprehensive and effective AIDS response.

Ultimately, our results demonstrate that direct investments in civil society organizations produce impactful actions that save lives.

EPF060

How people with power constrain living and working environments of female sexworkers in Bangladesh: a qualitative study

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Background: There are limited peer-reviewed studies of powerful actors' (politicians, gatemen, local men) role in exploiting and constraining female sex workers' (FSWs) living and working environments in Bangladesh and worldwide.

This study examines how people in power produce and perpetuate exploitative sociocultural contexts that constrain FSWs' living and working environments and increase FSWs' vulnerability to poverty and insecurity while maximising their own financial and political benefits.

Methods: Semi-structured in-depth interviews with 10 FSWs and 11 other stakeholders were conducted in a Bangladeshi brothel context. This study also used field notes to document the sociocultural contextual issues influencing FSWs' living and working environment. The interview transcripts and field notes were coded and analysed thematically.

Results: Participants' accounts reveal several themes about exploitative practices reproduced and sustained by politicians, gatemen and local men. By controlling and owning brothel areas, conducting unfair arbitration, and running illegal drug trade, individuals with power increased their financial and political gains, thus deteriorating FSWs' living and working environment.

Conclusions: Findings suggest that FSWs have limited agency to improve their brothel environment in Bangladesh. Therefore, policymakers need to decriminalise sex work in order to enhance FSWs' agency and promote a healthy living and working brothel environment.

EPF061

Impact of human rights violations on access to and utilization of HIV prevention, care and treatment services towards the LGBTIQ community

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Background: This study was premised on Levesque's conceptual framework to explore impact of the human rights violations on the access and utilization of HIV prevention, treatment and care services among LGBTIQ victims of human rights violations in greater Kampala metropolitan area (GKMA), Uganda.

The study used the COSF Uganda's raid of 29th March 2020 which victimized 20 young gay and transgender persons under the pretense of newly presidential provisions to respond to COVID-19.

Methods: This study was conducted in the Uganda. A cross-sectional study design utilizing participatory qualitative approaches was used to obtain data from LGBTIQ victims of human rights violations that happened in 2020 and above using focus group discussions (FGDs), in-depth interviews (IDIs) and key informant interviews (KIIs) were used to obtain data from the purposively selected respondents and we used respective guides after obtaining informed consent to discuss. 10 IDIs, 3 FGDs and 5 KIIs were conducted.

Discussions were digitally recorded, transcribed verbatim, codes developed, Nvivo was used for coding transcripts and analysis was done based on the study objectives.

Results: 20 LGBTIQ victims participated in the study. 11 were gay men and 9 were transgender persons aged between 18-24 years. Results showed that human rights violations have a great impact on access to and utilization of HIV prevention, care and treatment services among the LGBTIQ.

Respondents reported having limited chances of having their HIV/AIDS health care need to be met due to these particular human rights violations.

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Social disconnection from family and friends, depression, post-traumatic disorder, hopelessness,and unacceptability of health workers resulted in delayed health seeking, shunning way from the facilities without accessing services, limited their ability to decide to seek HIV services, poor adherence to ART and inability to express their SRH issues that would require thorough examination to receive meaningful medication. Survivors miss ART refills.
These experiences breed fear, stigma among LGBTIQ persons, mistrust in the health care system and inability to engage health care providers.
Conclusions: Without addressing these violations experienced by LGBTIQ persons an effective response to HIV will remain out of reach.
Human rights policies on LGBTIQ violations are needed to improve HIV outcome.

EPF062

Lessons from the Archive: Queer Indonesia Archive and collecting, preserving and exhibiting queer HIV histories within Indonesia

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Background: In Indonesia the lived experiences and narratives of queer people are being challenged, erased, and delegitimized in the national collective memory. For the last two years the Queer Indonesia Archive (QIA) - a volunteer run, Indonesia based digital archiving project - has been building a digital collection reflecting the histories of queer communities. QIA utilises a process of community consultation, material collection and exhibition as it's community archive process.
Through this method the archive has built an accessible collection of digital objects to promote cross generational engagement, build community capacity and ensure a community collective memory of the HIV response.

Figure. Queer Indonesia Archive Collection Process.

Description: In 2020, QIA began to build a repository of community materials reflecting the response to HIV within Indonesia. 2,087 unique materials have now been digitised and are accessible digital collection through the QIA website. Materials were then curated into a digital exhibition - 'AIDS & Queers in Indonesia'. The online exhibition has seen over 4000 viewers and generated significant media interest. Several events were also held inviting HIV workers from multiple generations to respond to archival materials.
Lessons learned: With over 40 years of history of community responses to the HIV epidemic, it is now more important than ever to preserve community histories. Digital technologies now allow for low cost preservation of historical materials whilst also enabling greater accessibility and engagement with the histories that these materials speak to. Through community led curatorship, archival collections are able to promote cross generational HIV knowledge and build community capacity.
Conclusions/Next steps: Community archives, especially in the Asian region are few and the material history of the response to HIV in the region is at risk at being lost if steps are not taken to ensure it's preservation. This project highlights the accessibility and benefits to building community archival collections.

EPF063

The quality of HIV services in Bhutan: findings from the first key population led community-based monitoring

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Background: Community-based monitoring (CBM) is increasingly used by key populations to assess the quality of HIV and related services. Such information needed to inform service providers to improve service delivery is limited in Bhutan.
The findings from the first CBM conducted by Pride Bhutan, an organization working for the LGBT+ community, with the support of the Sustainability of Key Population Services in Asia (SKPA) Program are presented.
Description: The CBM conducted in June 2020 used a community scorecard that was administered to key population members and service providers. Trained community members collected data on services provided in seven Health Information Service Centres (HISCs) established by the Ministry of Health. Data on HIV services and stigma and discrimination were collected using a structured questionnaire.
Given the COVID-19 restrictions, the data was collected through telephonic interviews and social media platforms followed by face-to-face interviews. Participants identified through a community mapping exercise were selected using convenience sampling.
Lessons learned: Of 121 persons who availed HISC services, most were gay and bisexual men, had secondary level of education, and resided in Thimphu. A majority (70.3%)

were satisfied with the services provided, and 83.5% expressed recommending other members to visit a HISC. About 36% of the respondents were not satisfied with the HISC's operation time, and more than half were disinclined to visit HISCs if located in a hospital.
Almost 60% accessed condoms while 64% did not access lubricants. Most (77%) were satisfied with the current method of communicating test results. Only six respondents reported feeling stigmatized.
Of 50 who did not avail HISC service, 48% were not aware of HISCs and the services provided, and six of the 10 service providers expressed inadequate HISC infrastructure and space. All who tested for HIV got tested at a hospital.
Conclusions/Next steps: The findings show that members were generally satisfied with services currently provided. The results also suggest the need to explore alternative operation timing for HISCs and to strengthen the capacity of HISCs in providing key population-friendly comprehensive services.
Interventions designed to address these findings can help enhance service access and utilization that may contribute towards realizing national goals.

EPF064
The violation of the Human Rights of men who sleep with men (MSM) in Ghana and its effect on their daily lives

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Background: Due to proposed legislation to criminalize homosexuality in Ghana, there has been an increased attacks which most often lead to bodily harm and in extreme cases death of MSM individuals in Ghana; thus, violating their fundamental human rights.
Description: Using testimonials from both MSM and activists working in various parts of Ghana, the information collected was analyzed; thus, describing a pattern where MSM and the general LQBTQI community face the threat of criminal charges for their sexual orientation, discrimination, stigma, threat, harm and the inability to benefit from HIV prevention efforts. These testimonials, information as well as interviews from both MSM and activists were gathered between the period of January to December 2021.
Lessons learned: The situation has become so volatile that individuals suspected to be gays often faced discrimination, stigmatization, and sometimes bodily harm in their communities, from their friends and even family. This is affecting this at-risk population to seek for medical help or access HIV/AIDS interventions or treatments thus affecting their general wellbeing and violating their human rights.
Conclusions/Next steps: The international community must join hands with other local organizations to put pressure on the government to help address such issues or else the gains that have been made over the years in the fight against HIV/AIDS will be totally eroded. Again, its important that governments are held accountable for the protection of the fundamental human rights of these people.

EPF065
How to respond to human rights violations effectively through the broadening of coverage with legal aid among the key groups and people living with HIV

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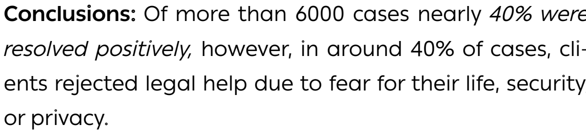
Background: Eastern Europe and Central Asia (EECA) is the *only region in the world* where new HIV infections among all ages have continued to rise. Behaviors related to KP are *heavily criminalized* and pose *significant barriers to access services*. Significant countries' domestic resources are directed towards *repressive systems for punishing key populations* instead of providing them with health services and social support.
The *awareness of human rights remains very low among KPs*, which results in unpunished and ubiquitous police violence, arbitrary detentions, and insupportable prosecution. Lack of data impedes evidence-based advocacy for change.
Description: *REAct* - is an online tool to monitor human rights violations, stigma, and discrimination against PLHIV and groups at risk, when accessing HIV prevention and treatment services. REAct helps to:
- record human rights violations
- track legal and medical support, provided to victims
- analyze collected data and plan advocacy actions
Since January 2020, REAct is implemented by *APH* in *7 countries of the EECA region*. *Over 6000 cases* were registered by more than *150 NGOs*.
Lessons learned: 1. *Community-based paralegals* are essential for reaching vulnerable populations with legal aid.
2. *Distance legal consulting* showed effectiveness during lockdowns.
3. *Hotlines for victims* are effective during arbitrary detentions.
4. *Crisis funds* are needed for the victims` rescuing.
5. Secure and easy-to-use *tools for recording* data about HR violations are needed to gather a body of evidence for advocacy.
6. Besides support to victims, there have to be taken *actions to re-educate or punish the perpetrator*:
- *enlightening talks* and brochures about HIV for relatives, who practice stigma against the victim.
- *representing patient`s interests* in medical facilities in case of denial of health services or degrading treatment.
- support in the preparation of *statements, claims, complaints*, and other documents to *punish the perpetrator.*
- *negotiations with state entities* to eradicate stigma and discrimination.



Conclusions: Of more than 6000 cases nearly *40% were resolved positively,* however, in around 40% of cases, clients rejected legal help due to fear for their life, security, or privacy.

Next steps: Broaden paralegals' system, deepen human rights awareness, continue evidence-based advocacy efforts. *Success stories here*.

EPF066

Improving adherence to ARVs by improving ARV distribution

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Background: In Ukraine, HIV-positive people could receive ART only in public clinics, which in turn brought a number of inconveniences to the patients.

1. Usually such clinics are located on the outskirts of the city with inconvenient transport logistics.
2. The staff is not patient-oriented and not tolerant of key groups.
3. The schedule for ART is often not convenient for patients. Clinics work from 8:00 to 16:00, Saturday and Sunday are weekends, one working week per month ART is not issued to patients.

This situation negatively affected adherence to treatment, with patients refusing and often disrupting treatment due to inability to conveniently receive medications. There were special inconveniences for working patients, because they regularly had to take hours off work to receive drugs.

Description: The first step to solve this problem was the opening of a private clinic "Medical Center 100% Life", which began to provide free treatment services for PLHIV, signing a contract with the National Health Service of Ukraine and ensuring the issuance of ART at this clinic. PLHIV could sign contracts with family physicians tolerant of PLHIV and key communities, which gave them better access to the entire healthcare system. The main principles of work are:

1. Patient orientation
2. Tolerance towards PLHIV and key groups
3. Convenient location of the institution
4. Possibility to receive ART from 8:00 to 20:00 seven days a week.

Lessons learned: The possibility of issuing ART in private clinic emerged through advocacy at both the local and national levels - legislation was amended and permits were obtained at the local level. The main opponents of the changes were the existing state institutions, which were monopolists in providing services to PLHIV.

Conclusions/Next steps: At the "Medical Center 100% Life", PLHIV and key groups can receive free services from other specialists and a wide range of medical examinations through the center's social program, under which 10% of profits go to free services.

It is planned to start provision of anti-tuberculosis drugs and of hepatitis C treatment in this Center.

Advocacy for changes in legislation making possible prescription and issue of ART to patients by family doctors continues.

EPF067

From coercion to help: lessons learned from the community awareness and sensitization of harm reduction approaches in Kachin State, Myanmar

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Background: There were an estimated 93,000 people who inject drugs (PWID) in 2017 in Myanmar. Across all states and regions, HIV prevalence in PWID was the highest in certain townships of Kachin State, standing up to 61%. Harm Reduction interventions faced adversities to fully implement in contexts where the local communities shared a strong negative opinion about drug use.

Description: Though recent changes are made to the country's prohibitionist drug policy, the perceived lack of effective measures to contain booming drug use situations alerted the locals to counter with *'people's war on drugs'*. That had led to the creation of the Drug Vigilante Group, namely *Pat Jasan*, which was founded in 2014 to tackle drug-related problems in Kachin ethnic concentrated areas.

Médecins du Monde (MdM) has been providing harm reduction services to PWIDs in Kachin since 2006. Emerged as a largescale popular anti-drug movement, *Pat Jasan*'s initiatives presented conflicting viewpoints that required harm reduction programs to redesign and adapt to the different environs. Under those circumstances, MdM engaged the local community as well as *Pat Jasan* members in dialogues highlighting the importance of sustainable harm reduction interventions among drug users.

Lessons learned: The focus of awareness and sensitization efforts that have been made and sustained through various ways, such as community consultations, open door days, social media campaigns, etc., did work to diminish misbeliefs and discriminatory attitudes towards the drug users. As a result, harm reduction services have been resumed for more than 1,000 PWIDs in *Moegaung* township where there had been major community resistance to such services.

Key messages that entail the concepts of harm reduction principles and promote the enabling environment for the key-affected populations have been crucial to increase the understanding and acceptance of harm reduction approaches among the community.

Conclusions/Next steps: Due to the changing of situations and contexts, knowledge and perception of the community about harm reduction should be assessed throughout and effective sensitization measures and advocacy strategies should be carried out at different

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levels of stakeholders. To conclude, in view of the lessons learned, the role of the community became highly efficient in transforming coercion into help.

EPF068

HIV and LGBTQ rights in Botswana: progress and remaining challenges

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Background: Despite decades of internationally recognized successes in Botswana's national HIV response, some human rights challenges remain.Among them is building on the judicial decisions in 2019 and 2021 to strike down Penal Code provisions that criminalized consensual same-sex intimacy.

This presentation highlights the actions and strategies being undertaken to translate these judicial milestones into a new reality for the protection, promotion and respect of the rights of LGBTQ persons in Botswana.

Description: Botswana is part of the Global Fund supported Breaking Down Barriers (BDB) initiative that provides financial and technical support to 20 countries to eliminate human rights-related barriers to health services, including stigma, discrimination and unjust criminalization.

Activities, including improving the legislative environment, are central priorities of the national HIV strategic framework, which is complemented by a national plan for removing human rights barriers to HIV and TB services in 2019-2024.

Lessons learned: Judicial decisions alone are insufficient to address the exclusion, discrimination and bullying that MSM and LGBTQ persons continue to face. BDB activities, including rights literacy, access to legal services, engaging with police and health workers and reducing stigma and discrimination in community settings will contribute to reducing abuses and increasing access to justice. Lesbians, Gays and Bisexuals of Botswana (LEGABIBO), Botswana's leading LGBTQI rights NGO, is working with other partners to seek legislation that explicitly protects gay rights and allows transgender persons to reflect their gender identity in official documents, among other rights.

A landmark January 2022 meeting between LEGABIBO leaders and the President of Botswana enabled the public airing of a full agenda of community awareness-raising and policy advocacy actions to be undertaken. Community-led monitoring developed under BDB will continue to be important in tracking continuing instances of rights violations.

Conclusions/Next steps: All programs that are part of the national HIV human rights plan can make an important contribution towards ensuring that the spirit of the judicial decisions on LGBTQ rights is reflected in a transformed legislative and policy framework and enhanced social inclusion and participation for LGBTQ persons in Botswana.

EPF069

Reducing MSM rights violations through peer education in Benin

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Background: In Benin, HIV prevalence rates are particularly high among key populations, particularly men who have sex with men (MSM) (7.0% among MSM versus 1.2% in the general population). The stigmatization and discrimination of MSM leads to their marginalization, which confines them to silence and secrecy, and prevents them from accessing quality preventive information and promotes violations of their rights.

To overcome the barriers encountered by MSM in accessing healthcare and basic human rights, the Benin Synergies Plus Network has developed a strategy that aims at strengthening the knowledge of MSM on their legal environment and at deploying human rights focal points at screening sites.

Description: As a first step, MSM peer educators were trained on peer education and on their rights. Three training and information workshops for peer educators were organized for further education and to identify those who can raise awareness among their peers and serve as community relays.

In a second step, the community workers intervened in educational discussions, interpersonal communications, and support groups by raising awareness among their peers within identity organizations. As results, we have:

- 60 MSM peer educators were trained on information, education and communication;
- 10 focal points were trained to serve as community intermediates between peers and health centers located on the Beninese portion of the Abidjan-Lagos Corridor;
- 800 MSM peers were informed and awareness was raised on their rights and self-esteem by peer educators.

Lessons learned: a significant reduction in violence and discrimination and several MSM have been tested since the implementation of these activities on the Sèmè Kraké - Hillacondji portion

Conclusions/Next steps: This strategy has proven its effectiveness in improving the quality of life of MSM. For the sustainability of these actions and their development throughout the national territory, BESYP is currently working to strengthen partnerships and collaborations with

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Beninese institutions such as the Health Program for the Fight against AIDS (PSLS-Benin) and the Benin Association for the Development of Law (ABDD).

EPF070

Violence against key populations and people living with HIV in Benin: improved reporting and case-management

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Background: Plan International Benin is implementing a national program funded by The Global Fund for the period 2021-2023 with the primary objective of scaling up access to HIV prevention and treatment for key populations (Homosexual men MSM, Transgender people TG and People who inject drugs PWIDs) and people living with HIV (PLHIV) in Benin.
The current monitoring data of the program's component on addressing Violence against these populations show some important findings.
Description: The program addresses the reporting and management of gender-based violence (GBV) and human rights violations (HRV) experienced by these key and vulnerable populations.
In terms of reporting GBV and HRV, thanks to the training of 317 social workers from all over the country, hundreds of PLHIV, MSM, TG and PWIDs have been informed about their rights, what constitutes violence and what recourse is available.
In the area of victim care, the training of 100 doctors and 202 police officers throughout the country has made it possible to provide more respectful and empathetic support. In addition, psychologists and lawyers dedicated to these population groups have set up consultations in the country's main cities to ensure better access to psychological and legal support following the violence.
Lessons learned: The program routine data show a significant number of cases of GBV/HRV reported by key populations and PLHIV.
PLHIV women report five times more cases of GBV or HRV than PLHIV men. In 9-month time (April to December 2021), 206 and 538 cases of GBV occurred respectively for Transgender women and MSM (including psychological/verbal or physical or sexual forms of violence). Among male PWID, 107 cases of physical violence were reported.
As a result of the program's interventions, 101 survivors received legal support and 35 received psychological support.
Conclusions/Next steps: The program monitoring results show that GBV and HRV against these populations are highly prevalent in Benin and can go unnoticed without adequate measures. Given the link documented in the literature between the presence of such violence and the prevalence of HIV among key populations, this program hopes to observe a positive effect in the use of prevention services to reduce HIV prevalence by 2023.

EPF071

Are people with HIV an insurance liability? Combating discrimination of PLHIV seeking insurance through litigation and advocacy

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Background: Australia's discrimination legislation provides a mechanism whereby insurers can lawfully discriminate against PLHIV and others with disabilities where actuarial statistical data supports the denial of provision of insurance. The HIV/AIDS Legal Centre (HALC) endeavors to redress this outdated discriminatory provision through; direct legal representation to PLHIV who have been denied insurance and advocacy.
Description: PLHIV frequently contact HALC upon being denied insurance cover to seek redress. HALC engages in litigation to assist PLHIV by commencing proceedings in either the state or federal jurisdiction, depending upon the particulars of the case and the litigant. P
roceedings are commenced based on the assertion that insurers are relying upon outdated or inappropriate actuarial statistical data and that the data no longer supports refusing cover or higher premiums; in short that due to advances in medicine and treatments PLHIV are unlikely to need to call upon the provision of insurance as a result of their HIV condition. HALC represents clients in applications for compensation for the act of discrimination, and/or to obtain the insurance applied for.
Lessons learned: Systemic change has been difficult to achieve due to insurers often making the decision to resolve individual complaints through a conciliation process; the result of this is that no court or tribunal has had the opportunity to examine and determine whether the insurers are relying upon outdated data.
Therefore, although individual litigants often achieve redress, overall systemic change has not yet been achieved. At time of writing HALC has four active cases of this nature at various stages of proceedings.
Conclusions/Next steps: HALC needs to continue to actively assist PLHIV through litigation to combat this issue for the individuals and force change. Steps also need to be taken in partnership with researchers to compile and consolidate the relevant data to ensure that PLHIV are not denied insurance or offered insurance with higher premiums.
More broadly HALC will mobilize with other HIV community organizations to report breaches of discrimination legislation to regulatory authorities and seek investigation through ongoing parliamentary inquires into the financial services sector.

EPF072

Drug enforcement remains a top barrier for people who inject drugs to access HIV and TB prevention, care, and treatment in Georgia, Kyrgyzstan, Moldova, Russia, Tajikistan, Ukraine, and Uzbekistan

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Background: From January 2020, civil society organizations implemented an online tool, REAct, to document and respond to human rights violations against key affected populations in Georgia, Kyrgyzstan, Moldova, Russia, Tajikistan, Ukraine, and Uzbekistan — countries with high prevalence of injection drug use and serious epidemics of HIV and HCV affecting people who inject drugs (PWID). By November 2021, REAct had documented more than 7,000 cases of human rights violations.

Description: PWID make up a significant portion of REAct clients, from 13% in Tajikistan to 66% in Russia. The most frequent violators of PWIDs' rights are the police (from 18% in Moldova to 68% in Kyrgyzstan) and the healthcare system (from 14% in Kyrgyzstan to 61% in Russia). Discrimination in health care is often linked to punitive drug control measures, such as a mandatory drug registry, the lack of accessible evidence-based drug dependence treatment, and the disenfranchisement of PWID based on criminal record and/or health status. Police violations range from minor verbal assaults and arbitrary street arrests, to the egregious cases of torture and ill treatment (93 cases). Often police stations do not provide any access to drug dependence treatment, which makes people with drug dependence vulnerable to the misuse of withdrawal syndrome by police to obtain confessions to such serious crimes as drug trafficking.

All police violations can be traced back to outdated drug laws, policies, and practices that make PWID vulnerable to human rights violations and undermine public health response to HIV/TB.

Lessons learned: REAct confirmed that despite minor reforms in lifting drug policy barriers to harm reduction services, punitive drug enforcement itself is an obstacle for PWID to make health-centered choices to mitigate the HIV and TB epidemics among PWID.

Conclusions/Next steps: To improve HIV and TB response among PWID, drug policies should de-prioritize drug use–related behavior for law enforcement and replace punitive sanctions with viable public health and social tools. Gradual de jure or de facto decriminalization of drug use, drug possession, and peer-to-peer distribution will lift major barriers to science-based HIV and TB prevention among PWID.

EPF073

PLHIV transgender communities legal and social security

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Background: Indian citizenship safeguards the rights of the Transgender Community including the right to vote. However most transgender communities are yet to receive a voter ID card. The Indian government recognised the Transgender community with equal rights in 2014, but the position of profit is still not there. According to the 2011 census, the number of transgenders in the country was 487203, although there was no record of transgender voters till 2014. Transgender votes were documented for the first time in 2014. In the last election, 28527 transgender voters were registered, although out of this, 1968.

The transgender community is already neglected by mainstream society, if a transgender person is found HIV positive, then is subjected to stigma and discrimination and are also deprived of government services as well.

Description: The Humsafar Trust, an India based Community based organisation has made efforts to advocate for the voting cards by working with the State of Punjab for providing Election Commission. We had a series of meetings with the Election officials on understanding the requirements for obtaining the voter cards for both PLHIV and Non-PLHIV communities so that they can also obtain other social entitlements based on the voter card.

After multiple meetings with Chief Election Commissioner, Punjab, it was decided all those transgender persons living in Punjab for 6 months or more can apply for a voter ID card by self-expression without any proof. We provided a 207-member list from the local CBO from the Ludhiana district.

Lessons learned: Out of 207 Transgender voter ID applications, now we received 193 Voter ID Cards of the Transgender Community in Ludhiana District of Punjab. In continuation, we plan to apply the same strategy in other districts of Punjab.

Conclusions/Next steps: It is important that the HIV intervention programs also need to incorporate providing access to other welfare and social entitlement schemes for the community members so that they are able to other access HIV and other related schemes based on the state level documentation they have, especially for the trangender community as they don't have any documentation to access welfare schemes.

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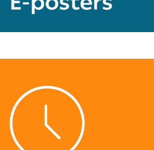

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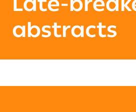

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EPF074

Intensification of religious communities in the fight against HIV in military divisions

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Background: In Ukraine, the church influences over 67,5% of the population. That's why we chose a chaplain to give answers to his military congregation to the most difficult questions. Due to many cases of stigma against PLHIV, the level of testing decreases while discrimination and mortality increases. The aim of the meetings of chaplain and military is to prove that the church is ready to work to overcome HIV and stigma.

The military, limited in information and having their subjective views on socially dangerous diseases, jointly address the problem of stigmatization and reduction of HIV, hepatitis, tuberculosis.

Description: The project was implemented in July-November 2021. The military chaplain of the UOC and coordinator of the project visited the units of the air command "East". Informational and educational meetings were held with participation of 50 to 200 people.

The participants included conscripts and commanders, officers of the department of psychological support. Using the manual "HIV: faith, tolerance, hope" the priest found the optimal formula for communication with the military about HIV. It was based on his experience of work with PLHIV in his congregation.

Lessons learned: HIV testing and distribution of condoms started. Medical chaplains organize information meetings aimed at overcoming stigma and discrimination of people living with HIV in their communities. The social video was made to support people with HIV.

We presented a manual "HIV: faith, hope, tolerance" together with doctors of hospitals, military, representatives of religious organizations and HIV-service organization "Synergy of souls". Military priests began to test for HIV and publicly talked about it.

Conclusions/Next steps: Talking about the military, paying attention to the information, education and social activity of the soldiers is necessary. This is the opportunity to move forward in addressing HIV related stigma, and discrimination. The Church is gradually beginning to socialize. The priests have an understanding of being on the front line in this fight.

We plan to intensify local religious organizations, governments and the public through information and educational activities and build a constructive dialog, providing relevant, reliable information on socially dangerous diseases, advancing reduction of stigma and discrimination against people with HIV, risks of HIV transmission.

EPF075

Involvement of law enforcement in the fight against HIV and discrimination among LGBT people in Benin

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Background: The socio-cultural environment is often unfavorable to sexual relations between people of the same sex in Benin. This social evidence is enforced by law enforcement. During 2018, 10 cases of LGBT arrests were reported. This discriminatory atmosphere leads LGBT people to hide and stay away from health services.

Description: Since 2018, BESYP has developed an approach to raise awareness among law enforcement on discrimination against the LGBT community. Awareness-raising workshops on legal education and the protection of the rights of populations most at risk of HIV were organized. These workshops aimed to promote a favorable environment for the implementation of interventions with LGBT people. 03 advocacy workshops were organized at the national level between 2018 and 2019 and 40 law enforcement officers took part. Identified police personnel were approached and involved in community actions targeting LGBT people.

1 Risk Management Committee has been set up; it is composed of 2 members of the ABDD (Beninese Association for Law and Development), 3 members of BESYP, 8 representatives of the police (representatives of the police stations of the Beninese portion of the Abidjan-Lagos Corridor).

Lessons learned: A significant reduction in the number of arrests. During the first half of 2019, we noted only 02 cases of arrest which turned out to be unrelated to the sexual orientation of the person concerned, compared to 10 in 2018.

It has been observed that the security forces have taken ownership of the testimonies of health personnel presenting the positive effects of the offer of HIV prevention and care services for LGBT people. They were more inclined to focus on repression education in dealing with LGBT issues after these workshops.

Conclusions/Next steps: Some law enforcement agencies are still not in favor of better treatment of subjects relating to sexual orientation, hence the need to develop a strategy targeting them specifically and more broadly. The establishment of a Risk Management Committee at the level of each region, bringing together different actors and stakeholders, to renew the response to violence based on sexual orientation and gender identity is an absolute necessity and it is essential that the forces of order participate in it.

EPF076

Importance of technical support for and by communities of people living with HIV and key populations to strengthen community-led responses

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Background: The current Global AIDS Strategy and the 2021 Political Declaration on AIDS include ambitious targets for community-led responses (including services and advocacy) and full implementation of the GIPA principle by 2025. This workstream prioritizes community-led research and monitoring of stigma, discrimination, HIV service access, and results-based advocacy.

Technical support for community-led data generation and advocacy is paramount in UNAIDS' efforts to fight inequalities and reach these targets.

Description: In 2020, UNAIDS launched its Last Miles First (LMF) Initiative which includes a workstream of technical support to and by communities of PLHIV and key populations. In 2021/2022 LMF provided technical assistance in 35 low- and middle-income countries through eleven implementing partners, six of which are PLHIV and key populations (KP)-led organizations.

LMF covered technical support to the PLHIV Stigma Index 2.0 country implementations, women LHIV engagement in the validation of elimination of the prevention of vertical transmission, community-led monitoring of HIV prevention for KPs and antiretroviral treatment, youth-led monitoring of governments commitments on HIV, and support to the advocacy for decriminalization and sustainable harm reduction programmes.

Lessons learned: Communities of PLHIV and KPs have the willingness, experience and capacities to implement projects and provide peer-to-peer technical support. However, they face an array of challenges rooted in criminalization, stigma and discrimination, a lack of resources, and as a result, exclusion from decision-making.

Technical support provision should be targeted at overcoming these barriers, engaging affected communities as both TS providers and recipients, helping develop partnerships with governmental and academic stakeholders, and documenting communities' input in national and global HIV response.

Conclusions/Next steps: Supporting communities, in their diversity, to lead and meaningfully participate in the process of research design and data generation, provides an accurate picture of the gaps, and needs for PLHIV and KPs. This then gives way to effective and tailored policy interventions, which are only possible when listening directly to the people most affected.

Investing in the provision of quality and tailored technical support while upholding and sustaining the leadership of communities is a game-changer in community-led responses.

EPF077

Community interventions as an effective strategy to reduce barriers to access to health and rights of Venezuelan refugees and migrants in Peru

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Background: The proposal seeks to reduce the gaps in access to health services and protection of rights that Venezuelan refugee and migrant populations living with HIV, sex workers and the LTGBIQ population have in the Lima and Tumbes regions of Peru. Prosa, with the support of UNHCR, implement actions and services to reduce these barriers to access to health and rights COVID-19.

Description: The Program implements a series of actions and services using a community intervention strategy in alliance with different sectors of the state, developing actions or facilitating access to:

a. Linking people living with HIV to hospitals and health centers so that they can access antiretroviral treatment;

b. Regularize the migratory status of Venezuelan people living with HIV due to vulnerability for their access to Comprehensive Health Insurance;

c. Sensitization of law enforcement officials such as the National Police and citizen security for better treatment.

d. Provision of emotional support services, peer counseling, group therapies and legal advice

e. Provision of biosafety supplies to Venezuelan sex workers for survival to prevent STIs, HIV and COVID 19 in sex work areas;

f. Community integration actions that contribute to the national response in the fight against AIDS.

Lessons learned: • Alliances between sectors of the Peruvian State and community organizations are key and contribute to reducing the gaps in access to health and protection of rights.

• Community integration is key to generating public policies to protect rights.

Conclusions/Next steps: • Establishing strategic alliances between the state, international cooperation and community organizations have been key to prevention, access to treatment, care and support for refugees and migrants with HIV in Peru.

• Timely access to treatment and rapid care has contributed to saving the lives of Venezuelan refugees and migrants in Peru.

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EPF078

Regional consultations with Muslim and Christian religious on stigmatization and discrimination of key populations

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Background: Senegal is affected by a concentrated epidemic with high prevalence among key populations (HSH27. 6%; PS 6.6%; CDI 5.2%) and low in the general population (0.3%). However, public and social health interventions are made difficult by the stigmatization based on religious ideologies of these key populations.

Regional consultations with religious leaders were strategically organized with the objective of providing a space for constructive dialogue with religious leaders on the AIDS Plan, a process of reducing stigma and discrimination.

Methods: The participatory approach used to engage in a constructive debate with Christian and Muslim religious leaders on the issue of stigma and its effects on the deconstruction of achievements in the fight against HIV. Brainstorming workshops including the sacred union around the national strategic plan to fight AIDS.

A total of 500 religious leaders were consulted between 2020 and 2021.

Results: The interventions made it possible to make the concentrated character of the epidemic which requires a multisectoral and multi-stakeholder response with a dynamic of holistic management. An ongoing dialogue between religious leaders and actors in the fight against AIDS is established. An action plan to reduce stigma and discrimination against PHA to contribute to the achievement of Goal 3 X 95 calls for an approach targeting marginalized groups with religious prominence raising awareness and combating stigma.

Also, work on a draft plan of regional activities to fight against stigma and also commitments of leaders to get involved in going through prayers and homilies. In addition to targeted communication, a communication system is set up around community radio stations and local correspondents.

Conclusions: Stigma is a major barrier to interventions for key populations. The goal of zero discrimination is a major guarantee of the success of interventions with key populations. The identification of the religious basis of stigmatization makes it possible to fight by involving religious leaders.

Gender equity and diversity

EPF079

Invisible woman: not so fantastic. Recognising the harmful exclusion, marginalisation and invisibilisation of lesbian, bisexual and other queer women in HIV-programming

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[1]*Positive Vibes Trust, Cape Town, South Africa*

Background: Since 2017, Positive Vibes has supported key populations in East/Southern Africa to document their healthcare experience; monitor service delivery; analyse programming; dialogue with healthcare workers, programmers and policy makers. One common theme recurs: lesbian, bisexual and queer women, and female-bodied trans persons, go unnoticed and underserved.

In Key Populations programming, HIV-related services and commodities, sexual and reproductive health, they are -- like the Fantastic Four's *"Invisible Woman"* --unseen in a penis-centric landscape.

Description: Multiple sources inform findings. Reviews of HIV NSPs (2018;2020) and PEPFAR COP-20, 21, 22 guidance were conducted. In 2017 - 2021, standardised focus group discussions with LGBTIQ people reflected on service delivery in 40 facilities in 11 towns across 5 countries, producing the *"Perceptions/Perspectives"* series. In 2020/21, LGBTIQ and sex worker groups in 5 countries assessed national PEPFAR-supported KP-programming, producing the *"Talking Points"*series. In 2021, KP-led organisations in 6 countries deployed the *ma'Box* virtual suggestion box to monitor user-experience at selected facilities, generating 1500 unique reviews in Implementation Quarter 1.

Lessons learned: Disproportionate exclusion and marginalisation of queer women are clear. In Botswana (2021), LBQ women accounted for 11% of *ma'Box* facility monitoring data, but carried 60% of low satisfaction reviews.

LBQ women are vulnerable to HIV from, amongst other factors, the pressures and expectations of life in heteronormative social contexts: they are not men or a function of sex with men. They face stigma, discrimination and exposure to physical and sexual violence. Many live with HIV, but are unreached with SRH services, or resist presenting for them (eg. cervical cancer screening).

They are unrecognised in facility intake or reporting forms, unlisted as a priority population, even in the drop-down list of an International AIDS Conference. Backbone and vanguard of community programmes aimed at populations other than themselves they have little access to information suited to their identities and relationships.

Research on LBQ identities, behaviours and vulnerabilities is scarce; where it exists -- eg. BTRI Study, Zimbabwe (2013) -- it is suppressed or unpublished.

Conclusions/Next steps: LBQ health suffers silently; risk and vulnerability increase in a population left behind. Contrary to the comics, invisibility is not so fantastic after all.

EPF080

Engaging peer networks in opioid overdose response in the State of Manipur, India

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Background: Anecdotal evidence suggests that Opioid overdose is a major cause of premature death among people who inject drugs (PWID) such as heroin in the State of Manipur, India. Reducing the time between the onset of ODIO symptoms, appropriate assistance, including administration of the antidote naloxone, which is easily available in a public health setting, can quickly and effectively reverse the ODIO and prevent mortality.

Description: To address ODIO, an overdose intervention project was initiated in the Imphal-West and Churachandpur districts of Manipur. As peers of PWID are often the first to witness any ODIO incident, an Overdose Response Unit (ORU) was formed.

We trained 268 peer educators and leaders of PWID on ODIO management, including the safe administration of naloxone at the hotspots. Each ORU has up to 6 members, including a coordinator, an outreach worker, and peer educators.

They were all encouraged to use "Helpline Numbers", which is active round the clock. Information on the ORU and helpline was shared through vouchers, interpersonal communication, and social networking sites. An electronic database is maintained for ODIO cases by the project.

Lessons learned: A total of 1,190 ODIO cases have been reported from April 2019 through Sept 2021 in which ORU was able to avert many deaths. Out of 1,190 cases, 1,166 (93%) were referred for help from the PWID peer network.

All death cases were mostly from other districts where ORU does not exist, and reports were mostly from the public. 96% of management was done by administering Naloxone & rest by appropriate non-medical assistance.

Conclusions/Next steps: ODIO has a significant risk of death among PWID. Proper engagement of peer networks within the system of overdose management system can bring a significant change in terms of preventing ODIO incidents and likely saving lives.

EPF081

Influence of the proposed anti-LGBTQ+ bill on HIV&AIDS programs for men who have sex with men (MSM) in Ghana

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Background: Key populations such as MSM are vulnerable and disproportionately affected by HIV due to factors such as stigma, discrimination and abuse. Anti-LGBTQ+ laws further threaten human rights and response to HIV&AIDS making it difficult to reach an already hard-to-reach populations such as MSM with HIV&AIDS services. In March 2021, "The Promotion of Proper Human Sexual Rights and Ghanaian Family Values Bill" was presented to the Parliament of Ghana for reading.

The proposed bill criminalizes LGBTQ+ people by a maximum five-year imprisonment and a ten-year prison sentence for organizations rendering services to LGBTQ+ people. We sought to assess the influence of the proposed anti-LGBTQ+ bill on HIV&AIDS programs for MSM in Ghana.

Methods: A qualitative cross-sectional survey was conducted to explore the impact of the proposed anti-LGBTQ+ bill on HIV programming for MSM in Ghana. Directors of 3 organizations working with MSM in Ghana, and 30 MSM individuals were purposively sampled and interviewed for this study. In-depth individual and focused group interviews were conducted for the directors and MSM respectively between March and April 2021 using a semi-structured interview guide. Interviews were transcribed verbatim and analyzed using inductive thematic analysis.

Results: Findings from the study confirmed a considerable reduction in HIV&AIDS services for MSM in Ghana. MSM participants reported concerns to accessing HIV services at health-facilities for fear of being discriminated. Results confirmed that MSM have further driven underground and would rather avoid places or services where they could be easily identified as LGBTQ+. Reports from the organizations indicate low turn-out of MSM to community programs that promote HIV prevention, testing and treatment. Again, organizations have stopped having large-group meetings with MSM but instead engaged in interpersonal one-on-one meetings for fear being harassed by the public. Findings revealed increase in attacks on organizations leading to some offices halting activities to ensure safety of staff and MSM.

Conclusions: The influence of the proposed anti LGBTQ+ bill on HIV&AIDS programming is enormous affecting MSM and the organizations offering services to them.

Oral abstracts

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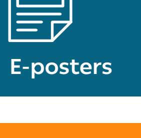
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Hence, there is the need for a high-level stakeholder advocacy on the effect of the proposed bill against sexual minorities in the fight against HIV&AIDS.

EPF082
Understanding the urgent need for inclusion of comprehensive sexuality education for Persons with Disabilities (PWDs) in addressing the HIV pandemic in Nigeria

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Background: The World Disability Report shows that up to 25 million people in Nigeria have at least one type of disability with 1/3 of these figures being young people. Young PWDs living across Nigeria like their peers require information, education and communication on sexuality, body changes, gender and psychosocial development.
This study assesses the sexual and reproductive health knowledge attitude and practice of PWDs educating them on CSE to prevent HIV and STIs
Description: 120 PWDs; male and female,15 – 24 years with at least one form of disability were reached within a twelve weeks' period.
Questionnaires were in braille for the visually impaired and sign language interpreters for the deaf and hard of hearing participants.
Focus Group Discussion, one on one structured discussion and interviews were conducted at the agreed location; in some cases the home of eligible subjects to collect data on their knowledge of SRHR including attitudes and perception, HIV/AIDS, sexually transmitted infection testing and treatment services.
Lessons learned: With a baseline response rate of 89.9%, 69% of the respondents were females whilst 30% were male; 49% of all respondents admitted they were sexually active and 91% of all sexually active females had unprotected sex. 25% of males and 18% of females had knowledge of modern contraceptive methods.
85% reported poor access to contraceptives which usually required aid in getting services they would rather be discreet. PWDs experience physical, emotional barriers to information and services.
The ignorance and attitudes of society and individuals, including healthcare providers, raise most of these barriers – not disabilities. 49% of all respondents between the ages of 15-24 have had unintended pregnancies in the past.
This leaves women facing multiple, intersecting discrimination as getting unintended pregnancies often halts their education, other times their skill acquisition program gets disturbed. 87.9% of all respondents have misconceptions about contraceptives and their safety, believing they contain harmful chemicals that can damage their reproductive system.
Conclusions/Next steps: There is an urgent need to promote the participation of PWD when designing programs that address SRH needs and support them in the implementation and programming process to address the gap in their SRH needs and HIV prevention.

Sexual and reproductive health and rights

EPF083
Assessing global progress towards quality school-based comprehensive sexuality education: Urgent investment in scale-up and quality central to reaching global AIDS objectives

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Background: Comprehensive sexuality education (CSE), or whatever it may be called as part of national education programmes, is a critical intervention in ongoing efforts to end AIDS as a public health threat, to enable young people to reduce their risk of HIV infection and eliminate HIV-related stigma and discrimination. It also promotes SRH, gender equality and healthy relationships.
This global study aimed to build a composite picture of the global status of school-based CSE to assess progress and identify areas needing further investment.
Methods: The study drew on a range of data sources including global data sets (NCPI, UBRAF) through secondary data analysis, data collected in an extensive desk review, a national-level survey in 59 countries and key informant interviews. The study included quantitative data from 155 countries.
Results: Results indicate that despite favourable policies in many countries (85% of 155 countries say they have policies mandating some form of sexuality education at primary and secondary level), there remains a gap between policy rhetoric and implementation. Closer analysis highlights that the breadth of topics covered in curricula in most countries is limited or taught too late with gender and sexual health often insufficiently addressed. Young people report low satisfaction with the quality of sexuality education received.
Moreover, research including the perspectives of teachers and learners indicate that there remains much to be done in ensuring sexuality education covers a diverse range of topics and building teachers confidence and skills to ensure quality of delivery.
Conclusions: Despite compelling evidence for its benefits, many learners are not realising access to quality CSE. Results highlight that policies favourable to CSE need to be backed up by dedicated budgets, alongside continued efforts to expand coverage and ultimately realise the full potential of CSE in preventing new HIV infections and promoting the health and well-being of learners. This will

only be a worthwhile investment when attention is paid to the quality of delivery, which will be achieved through continued curriculum reform and significant investments in teacher training and support. Without stepping-up such efforts, the goals outlined in the new Global AIDS Strategy will not be achieved.

EPF084

Engaging communities on social cultural barriers promotes acceptability to HIV andSexual Reproductive Health Rights(SRHR) services among Adolescent Girls and Young Women (AGYW) living with HIV in Central and Northern Uganda

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Background: The Partnership to Inspire Transform &Connect the HIV response (PITCH) Project was a five year project running from 2016-2020 in the districts of Mubende, Gomba and Mityana in central Uganda and Lira & Gulu, in northern Uganda. The project focuses on increasing equal access to HIV and SRHR services among AGYW living with HIV.

Description: PITCH project aims at ensuring equal access to HIV and SRHR services by removing barriers that obstruct AGYW to access services. AGYW face many health challenges particularly reproductive health which include early/unwanted pregnancies, unsafe abortions, STIs/HIV and AIDS, FGM, psychosocial problems such as substance abuse, sexual abuse. This coupled with poor parent adolescent communication and lack of knowledge about sexual matters. Thus, the PITCH project in the five districts employed a number of interventions to mitigate the effect of these barriers. They range from fact finding missions to generate evidence for advocacy, community dialogues involving duty bearers, religious, cultural and religious leaders, capacity building for AGYW to be advocacy champions, participation of young people living with HIV in SRHR and policy design to raising voices during district and national advocacy days.

Lessons learned:

- Engagement of communities has increased ownership of the challenges and enabled joint action planning to address the barriers that bar AGYW from accessing the much needed HIV and SRHR services.
- Working with AGYW to generate evidence on HIV and SRHR services delivery was very effective at getting duty bearers act.
- Increased number of AGYWLHIV overcoming stigma, disclosing their status and accessing SRH and HIV services due to empowerment. Over 56 are providing adherence counselling to fellow youth in health centres.
- Participation of empowered AGYWLHIV in trainings of caregivers and health workers significantly contributes to provision of an enabling environment and uptake of HIV services.

Conclusions/Next steps: Engaging communities has enabled 9047 AGYW living with HIV access HIV and SRHR services. This needs to be replicated in other districts to address the social cultural barriers that have fueled new HIV infections especially among young people.

EPF085

Sexual reproductive health and right freedom is our demand ashawo screened": advancing sexual reproductive health for female sex workers in Vandeikya LGA of Benue State Nigeria

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Background: In Nigeria's despite highly restrictive abortion law, induced abortions occur daily and more frequent with key population such as female sex workers. It is estimated that 1.25 million induced abortions occurred in 2018 (Ipas Report 2019), alongside female sex workers between the age of 18-25 seeking postabortion care services.

It is against this backdrop that Concerned Women Int Dev't Initiative with support from Youth Fund aimed to improved access to relevant SRH information, HIV and SRH services of Female sex workers.

Description: Through safe space club CWIDI engaged 52 brothel female sex workers in rural and semi urban of the project site and provided SRHR information such as contraceptive information and services alongside referee for COVID 19 testing. The safe space club was established across 6 brothels, where young FSW between the age of 18-25yrs gather, socialize and also have access to relevant SRH services. The program also adopted the use of WhatsApp as an educational platform for the FSW for quick dissemination of SRHR information.

Lessons learned: Young sex workers are actively aborting using harmful practices thereby putting their life at risk. Also, there are many undocumented abortion deaths that have occurred as a result of the illegal nature of abortion. Below are the most popular abortion methods used by sex workers between the aged of 18-25yrs. Ricinus Communis (Castor Oil Plant) The leaf of the plant is boiled to produce a concoction that is consumed by the patient. Some of the leaves are directly inserted into the vagina until bleeding occurs. Boiling of Coca-Cola Soft Drink and Bicarbonate, boiling of uda seed, scent leave, Uzzia leaves, pepper, ginger, pounded serve drinking till bleeding occurs.

Conclusions/Next steps: Establishment of a multi-stake holder coalition and enhance their advocacy skills build a collective voice to advocate for policy change in Nigeria abortion law will go a long way to reduce deaths associated with abortion.

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EPF086

Mobilizing feminist groups, WLHIV networks, and diverse civil society to influence 2021 HLM on AIDS and Post HLM to safeguard the gains for advancing a gender-transformative HIV response

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Background: The 2021 HLM was an opportunity to mobilize communities, women and girls, to engage decision-makers to ensure commitments and safeguard the gains secured in the 2016 Political Declaration. In 2016, through the #WhatWomenWant campaign, ATHENA collaborated with civil society, women, and feminist movements to build a campaign that amplified the priorities, demands, and lived realities of women and girls globally.

Description: The HLM 2021 coincided with the Beijing+25/26 anniversary, embodied by Generation Equality's concrete and transformative actions to achieve gender equality. Women's civil society and feminist movements worked with UNAIDS to develop an agenda safeguarding the 2016 gains and advocate for a 2021 Political Declaration that:

Centres gender-transformative HIV responses, promotes gender equality and girls' and women's human rights;

1. Implements the 2021-2026 Global AIDS Strategy.
2. Prioritises meaningful participation from women and girls living with and affected by HIV.
3. Amplifies the lived realities of women and girls globally in a pandemic context.

From April 2021 to the HLM in June 2021, ATHENA mapped opportunities for civil society to collaborate on HLM centred advocacy. ATHENA leveraged opportunities as an advocacy roadmap amplifying voices of girls and young women.

Opportunities included global advocacy processes like the CSW, International Women and HIV Conference, strategic engagements leading to and during HLM, and mobilizing girls, young women and civil society nationally to consolidate policy demands for a gender-transformative Political Declaration.

Lessons learned: There are eight years to end AIDS as a global health crisis by 2030.

Commitments to adolescent girls and young women are ambitious with little time to achieve them by 2025

Like HIV, there is a relationship between COVID-19 and heightened GBV

Like HIV, COVID-19 has gendered impacts and there is an emerging consensus to centre women in the recovery.

Conclusions/Next steps: Through the #WhatGirlsWant campaign ATHENA conducted an intersectional feminist analysis of the 2021 HLM Political Declaration to access if it meets the demands previously mentioned by women's civil society and feminist movements.

ATHENA developed a feminist roadmap which will be disseminated across our networks for endorsement and to inform our advocacy as we work towards ending AIDS as a health threat.

Children's rights and HIV

EPF087

Promoting health equity for orphans and vulnerable children through birth registration: a case study from Nigeria

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Background: In sub-Sahara Africa, 38% of children under five are registered at birth, with wide urban (54%) and rural (30%) disparities. A birth certificate is a gateway to certain rights and protections, facilitates linkages to health services, education, and social security. In Nigeria, policies to address under-registration have been sub-optimal. Despite increased total numbers of births registered from 3 million (2012) to 5 million (2016), inequities between the rich and poor have widened; from 41.9% in 2007 to 64.9% in 2016. Birth registration coverage in Akwa Ibom and Cross River is reported by Government to be at 8% (157,121) and 7% (104,205) when compared with the children population requiring birth registration. The scenario is worse for children from vulnerable households especially those at risk of or living with HIV.

Methods: The Integrated Child Health and Social Services 1 (ICHSSA-1), a five-year program funded by the United States Agency for International Development (USAID) launched in December 2019 in Akwa Ibom and the Cross River States, Nigeria as part of its mandates serves as a vehicle to upscale birth registration (BR) for the 76,375 (61.2%) of the 195,236 enrolled children without BR. A monthly target of 5000 birth certificates was set with the goal to increase registration from 38% at baseline in 2019 to 75% within six months. This invariably aimed to contribute to the BR upscale and coverage in project states.

Results: Strategies included community-level sensitization by community caseworkers; creating easy-to-understand guidance on the process; supporting digitalization of the BR process; bringing BR closer to the community and offering incentives for each completed enrolment (50cents). Within the first month, 3,460 OVC received birth certificates with an additional 3,400 in the second month. By the 6-month mark, nine ICHSSA-1 supported organizations in the target local government areas- 31 in Akwa Ibom and 6 in Cross River had facilitated the registration of 1,212 OVC representing 1.2% of the unmet need.

Conclusions: This initiative has shown that community-based approaches are key strategies to bridging BR inequities for marginalized groups and concerted efforts are needed for efficient digitalization and uptake of BR in order to scale up nationwide coverage.

EPF088
Strengthening children and parents living with HIV - a family centered approach

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Background: Children rarely understand the concept of stigma, however they are intimately connected to their caretakers. Instead, stigma is mediated through adults' perceptions, attitudes and responses to HIV and to stigma. Studies reveal that children living with chronic illness (e.g. epilepsy) often worry about being perceived as "different" and can react through externalizing behaviors such as anxiety, rage, and irritation. Adolescents are often able to interpret complex information and are thus more susceptible to people's reactions to disclosure.
For children and adolescents, these concerns can affect how they develop social relationships, self-esteem, mental health, sense of community, and overall quality of life.
Description: We used an established working model by combining educational activities, psychosocial support, and community building activities to address the emotional, intellectual and supporting needs of PLHIV. To adopt a family centered approach, we integrated relation- ship building methods that address the basic components of living as a family with a chronic condition.
1. Group Theraplay – a non-verbal and adult directed method helps caretakers and children build better relation- ships through attachment based play.
2. Workshops and educational activities were adapted to the intellectual and support-needs of both children and parents in topics such as disclosure, adherence parenting, and how these elements connect and affect parent-child relationships. We used Good2Talk – a resource used for parents and caretakers.
3. We integrated community-building activities for families who lack social network, and who need to feel a sense of community and support among other families living with HIV.
Lessons learned: We achieved our aims by combining educational and community building activities with relationship strengthening activities. For children and families living with HIV, taking a family approach has revealed several benefits: caretakers reported increased confidence in parenting, willingness to disclose their HIV to children and kin, greater skills in dealing with HIV related stigma, and feeling a strong sense of community.
Conclusions/Next steps: A family centered approach strengthens both children and families living with HIV. As practitioners, we need to improve support and services that empower children and families to live full and independent lives.

EPF089
Using mobile courts and community and religious leaders to strengthening justice for children

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Background: Access to justice by children remains a challenge in Malawi due to barriers in the criminal justice chain of action in the management of sexual violence against children. With funding from the Centre for Disease Control and Prevention (CDC), in January 2019, Malawi Interfaith AIDS Association (MIAA) started engaging communities and stakeholders in the justice sector to understand the barriers/gaps in the criminal justice chain of action in the management of sexual violence against children.
Description: Working in partnership with community and religious leaders, MIAA started implementing SASA faith initiative in Blantyre, Zomba, Thyolo, Mzimba and Chiradzulu districts where leaders are brought together to take action to eliminate cases of violence against children.
The initiative encourages communities to be part of the justice chain of action and uses community action groups and community and faith leaders as ambassadors in promotion of awareness on sexual violence against children and reporting of cases.
MIAA is also working with the Judiciary through facilitation of hearing and prosecution of cases using mobile courts. The use of mobile courts allow community members to follow all the court proceedings.
Lessons learned: Through the project, a total of 115 cases have been reported out of which 46 have been concluded and 15 convictions made. A total of 41 780 Community members (16,380 men and 25,400 women) have participated in the court hearings. There has been an improvement in effectiveness and efficiency in case management (50%) which is attributed to the use of mobile courts and involvement of community and religious leaders.
Conclusions/Next steps: Sexual violence against children can be eliminated communities have access to justice system and community and religious leaders take action.
There is also a need to scale up the use of Mobile Courts from the current five district to cover all the twenty eight districts in Malawi.

Representations of stigma: Social attitudes, media and public debate

EPF090

Turning the tide against PrEP misinformation: temporal analysis of news media framing throughout Taiwan's PrEP implementation

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Background: Since Taiwan's government-led PrEP roll-out in 2016, the rampant misinformation has constantly challenged the public's acceptance of and willingness to use PrEP. We present a temporal analysis to reveal the prevalence and change of PrEP misinformation in Taiwan's media framing.

Methods: We performed a quantitative content analysis of media coverage in eight websites (i.e. Google News and seven Taiwanese media with the highest traffic), using 'PrEP' and '(pre-exposure) prophylaxis' for keyword search. Only news articles published from 1/1/2010 to 31/12/2021, written in Traditional Chinese and published in Taiwan were included. PrEP misinformation was defined as inaccurate information presented in news headlines or contents. We mapped out articles aligned with Taiwan's three-stage PrEP roll-out: PrEP Demo Project (limited access to partially-reimbursed PrEP at five hospitals), PrEP 2.0 (national programme with fully-reimbursed PrEP) and PrEP 3.0 (nationwide scale-up with partially-reimbursed PrEP). Two researchers appraised the included articles adapting Young et al.'s analytical framework.

Results: Of 1090 records identified, 158 were included for analysis. The number of articles aligned with each PrEP programme was 52, 71 and 35, respectively. Overall, the majority of included articles provided educational information or raised PrEP awareness of the public. The proportion of articles describing opportunities for PrEP access rose from 19% to 40%, whereas those covering acceptance/motivation dropped from 19% to 3% across all stages. The proportion of articles conveying PrEP misinformation steadily declined from 27% to 14% throughout (Figure). Regarding approaches to framing PrEP, almost all articles (96%) narrated the risk of HIV infection, with few emphasising PrEP's benefits (e.g., improving sexual pleasure and reducing anxiety).

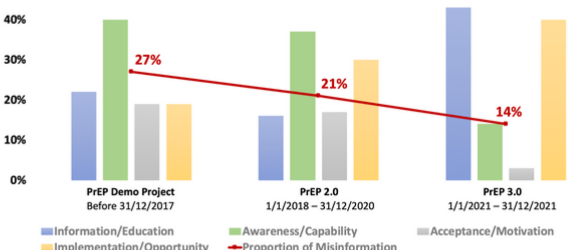

Figure. Topic framing and misinformation on PrEP in Taiwan's news media.

Conclusions: The declining trend of PrEP misinformation in Taiwan's news media may imply a positive shift in public attitudes towards PrEP. Public health messaging comprising both risk and benefit-oriented narratives may facilitate future PrEP scale-up.

EPF091

Media involvement in the fight against HIV and the discrimination suffered by LGBT people in Benin

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Background: In Benin, the social environment is hostile for same-sex sexual relations. This social reality is heightened by the media. In 2019, through a media watch carried out by Benin Synergies Plus Network (BESYP) and its allies, 80 cases of incitement to antipathy were expressed in the Benin media, including radio, print and television.

This atmosphere of widespread homophobia constitutes a barrier for LGBT people in accessing health services.

Description: In 2020,BESYP, an identity network of LGBT organizations developed activities aimed at reducing media homophobia by targeting the media that relay it.

Two training workshops were organized nationally in 2021 and 25 journalists took part. As a result of these two workshops, there was media coverage aimed at raising awareness, such as the celebration of the World Day against Homophobia. BESYP assisted journalists in the preparation of various print, radio and television productions, such as a special broadcast on a national television channel on key populations and the right to health in June 2021. Another show on a national radio channel has been broadcasting since June 2021 tackling the violation of LGBT rights.

An exchange platform that serves as a risk management committee was created in 2020, bringing together 10 journalists, 5 members of the BESYP, 2 lawyers, 8 republican police officers, and 4 health professionals, and a network of LGBT Friendly actors was set up to improve the response to violence based on sexual orientation and gender identity.

Lessons learned: As a result of the workshops, 10 print journalists effectively modified their publications and published articles openly fighting against homophobia.

A better involvement of the media in LGBT issues has been observed. This has been particularly reflected in the facilitation of discussion panels and debates on homosexuality by allied journalists in the media sphere. These actions contributed to a reduction in the number of homophobic productions in the Beninese press.

Conclusions/Next steps: BESYP is thus seeking government support and Amnesty International to strengthen the institutional legitimacy of this approach.There remains an important need to improve media communication on homosexuality and to develop strategies and collaborations for working toward this cause.

EPF092

Addressing hate speech towards men who have sex with men (MSM) in the Ugandan media sector

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Background: Men who have sex with men (MSM) living in Uganda are frequently the target of hate speech used in print, broadcast and online media. In addition to promoting negative sentiments, discrimination and violence, hate speech reinforces myths and misconceptions about homosexuality and make it more difficult for MSM to access much needed HIV prevention, testing and treatment services.

To address this problem, an LGBT-led organisation based in Kampala engaged journalists and editors in an advocacy campaign aimed at reducing hate speech towards MSM and at improving the relationship between the Ugandan media sector and the local MSM communities.

Description: Between August and December 2021, Spectrum Uganda Initiatives, an LGBT-led organisation based in Kampala, Uganda, implemented an advocacy campaign articulated into three main work-streams

1. Tracking and reporting hate speech appeared in Ugandan print, broadcast and online media (from January 2014 to August 2021),

2. Engaging local journalists and editors in workshops exploring the implications of hate speech on MSM communities and

3. Training local journalists and editors on myths and misconceptions related to MSM and on unbiased reporting.

Lessons learned: Over the duration of programme implementation the team implementing the campaign successfully produced a report tracking hate speech used in Uganda mainstream media and engaged 25 journalists and 25 editors in dialogues related to the evidence produced in the report. Moreover, a total of 45 people working in the Ugandan media sector were trained on unbiased reporting and on identifying and correcting misconception related to MSM and homosexuality in general. The campaign implementation phase also revealed how little some media houses knew about the local MSM communities.

After the training activities, some journalists decided to write favourably about this learning experience and how the dialogues with the MSM community change their perceptions towards homosexuality.

Conclusions/Next steps: Based on articles published after the campaign implementation and on anecdotal evidence, the meetings and training activities organised between the media sector and the community have contributed to improving the relationship between the two.

However, more initiatives similar to the one described are needed to achieve a sustained reduction of hate speech towards the MSM community.

EPF093

Media and HIV: Addressing sensational media reporting through empowering senior editors and media reporters. Experience from Uganda

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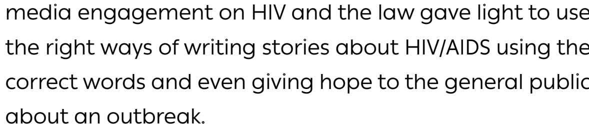
Background: In 2019, Uganda was washed with sensational HIV media reporting which led to the increase in HIV- related stigma. A case in point is of the lady (and for this abstract, I will SK). SK was imprisoned for 7 months in one of the prisons in Uganda for the crime she never committed but because of her HIV status and the way media picked up the story which influence a court of public opinion to judge her so was the criminal justice court.

This influenced UGANET to train media senior editors and reporters to incorporate a human rights-based approach in HIV – related reporting.

Description: The program brought together senior editors and reporters to train on HIV and the law. 30 media personalities were trained. Key areas of focus were on investigative reporting, avoiding sensational reporting and carbing emotions from influencing the reporting. After the training, media personalities were given the opportunity to pitch HIV -related stories on human rights. 70% of those who submitted pitches were facilitated to carry out a thorough investigation and published stories in their specific media houses. HIV social justice media group – a platform used to share experience in HIV reporting on a quarterly basis was formed. As a result, they acquired skills in HIV ethical reporting and 40% won the UNAIDS HIV media reporting award.

Lessons learned: The program that started with only 30 journalists and editors has attracted more media personalities. HIV reporting has greatly improved and we now register ethical reporting as a country on both television media, radio, print, and online media. In fact, one of the reporters noted that the training and other



media engagement on HIV and the law gave light to use the right ways of writing stories about HIV/AIDS using the correct words and even giving hope to the general public about an outbreak.

Conclusions/Next steps: The HIV and the law empowerment training and dialogues with media personalities have changed HIV case reporting. We have registered improved reporting in the context of HIV oftentimes. Media personalities now appreciate the need to use evidence and research on HIV science when reporting HIV-related cases.

Racism and other forms of ethnicity-based social exclusion

EPF094

The effects of structural racism and discrimination on HIV health outcomes: a systematic review

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Background: Despite the availability of effective antiretroviral therapy (ART), racial and ethnic minority populations continue to be disproportionately impacted by the HIV epidemic. These disparities shed light on systemic and structural inequities that contribute to the persistence of poor health outcomes.

However, the impact of structural racism and discrimination (SRD) on quantitative HIV health outcomes has not been well described.

Methods: This systematic review searched PubMed and PsycInfo databases using keywords including and related to HIV, racism, and healthcare disparities. Inclusion criteria were peer- reviewed, U.S.-based studies in the English language published between 2001 and 2021, reporting an objective HIV outcome. Non-U.S. based studies and qualitative analyses were excluded. Exposures were defined as SRD at the interpersonal (ex. patient-provider interaction), intra-organizational (ex. health clinic structure), and extra-organizational (ex. community) level.

Primary outcomes included adherence to ART, HIV viral load, or CD4 count. Secondary outcomes included the use of PrEP, mental health, or substance abuse services.

Results: The search returned 4802 papers. Based on the inclusion and exclusion criteria, 28 papers were selected. At the interpersonal level, studies show that Black and Hispanic people living with HIV (PLWH) experience substandard patient-provider interactions compared to White PLWH as demonstrated by shorter visits, greater provider verbal dominance in conversations, fewer provider open-ended questions, and less psychosocial conversations (n=11 studies). At the intra-organizational, measures of SRD are generally lacking but some studies have tied a favorable organization climate to PrEP prescription and service coordination; for example, nurse practitioners are more willing to prescribe PrEP and patients have higher odds of linkage to HIV testing, mental health care, and public health services in settings where the clinic climate and culture are favorable (n=2 studies).

At the extra- organizational level, PLWH residing in high-poverty neighborhoods are less likely to maintain viral suppression or to have higher CD4 counts and more likely to have greater risk for mortality (n=15 studies).

Conclusions: We found evidence that SRD negatively impacts ART adherence and viral suppression at the interpersonal, intra- and extra-organizational level.

Alongside the advances made in ART, strategies that reduce SRD may help to largely mitigate HIV health disparities between racial groups.

Experiences and impacts of homophobia and transphobia

EPF095

Relationship between background characteristics of MSM and transwomen experiencing sexual and gender-based violence: focus for HIV prevention

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Background: Sexual and gender-based violence has over the years in Nigeria been perceived as a problem only affecting women and girls. While SGBV among women and girls has been studied extensively, SGBV among MSM and transwomen has not received proportionate attention. These sub-population may face higher violence due to societal perceptions. Outright criminalization of their activities in Nigeria may also expose them to SGBV and subsequently HIV.

Therefore, this study is designed to identify factors associated with its occurrence among MSM and TGF in Nigeria.

Methods: The respondents of the study were MSM residing in any part of Nigeria. A total of 382 respondents completed the online questionnaire. Snowballing method was used to recruit participants while the initial seeds were gotten through interactive sessions with members of the study population. Data analysis was descriptive summarizing important features of numerical data.

Results: There is a relationship between some background, community and societal characteristics of MSM and transwomen and experience of sexual and physical violence. The respondents' background characteristics studied that significantly influenced MSM and transwomen experiencing physical violence were age (adjusted odds ratio:0.06 $p<0.05$), current gender ((adjusted odds

ratio:0.20, p<0.01), BMI (adjusted odds ratio:2.92, p<0.05) and condom use (adjusted odds ratio:2.00, p=0.05) while respondents' wealth quintile significantly influenced MSM and transwomen experiencing sexual violence (adjusted odds ratio=2.52, p<0.05). Marital status (adjusted odds ratio=8.44, p<0.05) as well as sex work (adjusted odds ratio=2.27, p<0.01) have significant effects on intimate partner violence against MSM and transwomen. Community members, male sexual partners and unknown persons were the commonest perpetrators of sexual and physical violence against MSM and transwomen.

Socio-Economic Factors	Sexual Violence (n=382) (%)	Physical Violence (n=382) (%)	IPV (n=382) (%)
Sexual partners in the last 12 months			
1	27.9 (19)	30.9 (21)	14.7 (10)
2-4	30.1 (47)	39.1 (61)	16.7 (26)
5-9 10+	43.5 (40) * 46.4 (26) *	50.0 (46) * 53.6 (30) *	18.5 (17) 28.6 (16)
Sex work in the last 12 months			
No	27.6 (68)	35.8 (88)	12.6 (31)
Yes	47.8 (65) ***	53.7 (73) ***	27.9 (38) ***

Table.

Conclusions: Gender-based violence is in no doubt one of the factors that exposes MSM to HIV infection especially when medical care to prevent HIV transmission is not received. Deliberate efforts should be made to abate exposure of gay and transwomen to sexual violence as to reduce HIV infection among them.

Human rights programmes

EPF096

"Up Against the Wall: Art, Activism, and the AIDS Poster": Lessons and Inspiration from the 8000-strong (and growing!) collection of HIV/AIDS posters at the University of Rochester

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Background: The University of Rochester's Department of Rare Books, Special Collections, and Preservation is home to one of the largest, if not the largest collection of HIV/AIDS education posters. A gift from the late Dr. Edward Atwater, the over 8000 posters represent the HIV/AIDS epidemic and messages and means of prevention, activism, and philanthropy from 130 countries and in 76 languages and dialects from 1982 through the present. With a deep commitment to the significance of this collection, every poster has been digitized and made available online at: *https://aep.lib.rochester.edu/*

Jessica Lacher-Feldman, the curator of this collection, will present on the history of the HIV/AIDS poster and illustrate the tactics used over time and space to meet individuals where they are in order to prevent the spread of HIV/AIDS. The first major exhibition of the collection will open on March 6, 2022 at the Memorial Art Gallery at the University of Rochester.

Up Against the Wall: Art, Activism, and the AIDS Poster, will feature 200 of the most visually arresting posters along with personal stories and information that illustrate the use of the poster as a means for advocacy, health management, behavior modification, and beyond. *A book of the same title was published by RIT Press in August of 2021.*

Description: This is a presentation about the significance of the AIDS poster from a global perspective based on extensive work with the collection housed at the University of Rochester, in Rochester NY.

Lessons learned: The significance of the collection, and the individual posters illustrate that everyone on earth has a shared responsibility and vulnerability regarding HIV/AIDS. The posters themselves illustrate the visual and linguistic tools used to get those messages across.

It is illuminating to view the posters from specific countries (abstinence, overt sexual language, use of humor and euphemism) and for specific audiences (IV drug users, women who sleep with men who sleep with men, etc), specific professions (prison guards, sex workers, for example), etc. to deliver messages and change behaviors.

Conclusions/Next steps: This presentation will illustrate the historical significance of the AIDS poster in context.

EPF097

Barriers that prevent adequate access to human rights and justice mechanisms among key vulnerable to HIV groups in Ukraine: evidence collected through the community-based monitoring approach

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Background: Access to human rights and justice mechanisms among vulnerable to HIV populations has a significant impact on overall HIV response.

Identification of barriers for such access from a client's perspective creates a background for promotion and protection of human rigths and facilitate appropriate conditions for the effective delivery and uptake of essential HIV services.

Description: Data was collected using the Rights - Evidence - ACTion (REAct) system that allows not only to document legal barriers and rights violations of the key groups in their access to HIV and other health care services, but also to respond to barriers identified. REAct is implementing in 18 regions out of 24 in Ukraine by 70 community-based organizations.

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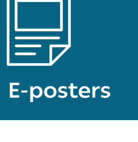
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More than 2000 cases of violations were registered in the system in 2021 (dissagregation of clients by key group is in the Table).

REAct clients key group	% of all registered REAct cases in 2021
People living with HIV	30%
Opioid substitution therapy (OST) patient	22%
People who inject drugs	18%
Men who have sex with men	10%
People living with TB	8%
Sex worker	5%
Prisoner	3%
Other	3%

Table.

Lessons learned: Among the major barriers identified are lack of knowledge on how to interact with human rights and justice mechanisms, in particular, about institutions and procedures of submitting applications, lack of faith in a positive result of resolving the case, fear of disclosure of personal and health information, fear of unfair or stigmatizing treatment, fear to contact the human rights and justice mechanism alone without any other professional support.

Conclusions/Next steps: Collected evidence of barriers that prevent key populations from adequate access to human rights and judicial systems can be used to strengthen legal framework for HIV, as well as for futher adoption and integration of human rights-based approaches into HIV programs.

Creation of non-discriminatory environments in healthcare settings and law enforcement agencies, provision of comprehensive information on different legal and human rights mechanisms, ensuring equal access to adequate and affordable legal assistance, consolidated efforts to empower the rights holders to protect their rights are crucial in setting the HIV-related legal environment where human rights are respected, implemented and enforced.

EPF098

Two punishments for one crime

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Background: At the end of 2021, the estimated number of people living with HIV (PLHIV) in Ukraine is up to 255 000 people. People, who inject drugs (PWID) remain one of the most affected populations with HIV prevalence 20,3% in 2020. Despite of the efforts of national HIV response, people in prison are very limited in access to HIV services and treatment. Prevalence among prisoners increases from 4,4% among imprisoned for the first time to 12,2 % among imprisoned multiple times.

Methods: This quantitative research was conducted in February-November 2017 in Kyiv PDC. Supported by AFEW International within the "Community Involvement Research" program.

The design, questionnaire were developed with the participation of community representatives. A sample of n = 120 HIV-infected prisoners.

Results: The average age of the respondents was 35.8 years, men - 73.3%, women - 26.7%. Have experience of using, also in prison, drugs 60% and alcohol 28.3%.

43% of respondents indicated that they were not tested for HIV before and learned about being HIV-positive for first time in PDC. Among 120 HIV-infected prisoners in Kyiv PDC, only 62.5% receive antiretroviral (ARV) therapy. 53.3% of respondents were not offered medical and social assistance.

The survey revealed the lack of necessary assistance for HIV-positive prisoners and the need for the following services:

Medical	Infectionist consultation	70,8%
	Phthisiatric consultation	26,7%
	Purpose of ARV-therapy	20%
	Diagnostic tests	65%
Psychological	Psychologist consultation	41,7%
	Self-help group	28,3%
	Psychotherapy	25%
	Consultations of social worker	34,2%
Preventive	Disposable syringes, needles	48,3%
	Information-educational materials	55,8%

Conclusions: PLHIV in PDC have limited access to medical and psychological services, including their needs due to HIV infection.

There is a low awareness of PLHIV about their HIV status before entering the PDC. This indicates that PDC is an entry gate for HIV testing and other related services for people.

Obtaining HIV status can be a critical moment for making important decisions, therefore, it is necessary to find opportunities for access to counseling and help PLHIV in prisons. A harm reduction program component is needed in PDC as respective treatment.

EPF099

Address gender based violence and promote access to social and legal justice among women who use drugs in Mombasa and Kilifi Counties

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Background: In Kenya, over 40% of the women and girls face physical and sexual GBV including lifetime physical or sexual, one in every five girls facing early childhood marriages or forced FGM.

Despite the much-reported data on drug use amongst women, there is inadequate robust data and research on drug use and related health issues.

Given the high prevalence of violence against WWUDs and global evidence linking violence to increased HIV risk, decreased HIV testing uptake, and decreased initiation and

adherence to antiretroviral therapy, a central strategy to improve outcomes across HIV prevention, care, and treatment cascade is addressing GBV prevention.

Description: MEWA a local NGO with the 2 years funds from OSIEA has been promoting a human rights approach to complement the public health approach in the fight against Drug use in Kenya. The project goal is to have an inclusive multi-sectorial responsive approach to address GBV and promote social and legal access to justice, among WWUDs and their male counterparts.

MEWA has been working to implement comprehensive GBV prevention, mitigation and response strategies for WWUDs as part of the harm reduction package. Interventions have included medical, case management and psychosocial support, safety and security, mental health, access to justice and rule of law, advocacy and coordination of the various stakeholders.

MEWA has veered towards research and data collection especially on lived experiences of WWUDs..

Lessons learned: MEWA Conducted mobile National ID outreaches at the DIC by the registrar. 1447 clients were screened, 686 benefited, 49 GBV victims rescued, 1019 HIV tested, New HIV Infection 2 (M-1, F-1), PREP (M-39, F- 4), Family planning F-118, Cervical cancer screening F-259.

MEWA is now actively involved in GBV policy reform and engaging with the Mombasa County Ziro draft framework and championing adoption GBV curriculum.

Conclusions/Next steps: Reporting IPV is viewed as family issues to be solved by the families and religious leaders, it always favors the perpetrators.

To be able to develop appropriate interventions, it is important to document the experiences and prevalence of GBV among WWUD. Collecting evidence from the victims of GBV by doing a survey can influence the change of Policy on GBV.

Legal advocacy tools and strategies

EPF100

The changing demands and demographic of HIV-related legal needs in New South Wales, Australia, and its divergences with the epidemiology of HIV in Australia

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Background: An enabling legal environment is essential for effective HIV responses. In an Australian-first, we analyse the legal needs of those with HIV-related legal issues in New South Wales, Australia, today. We do so by examining the self-reported legal needs of people living with HIV, contextualising and comparing these with the legal services delivered between 1992-2020 by a community-based not-for-profit legal service which delivers high-volume legal services, free at the point of use, to those with HIV-related legal issues.

Description: We elicited information regarding the legal needs facing those living with HIV in NSW through a focused pilot that includes a self-report questionnaire (n = 25) based on a well-established legal needs assessment method used in Australia for the general community. Legal needs were characterised whilst comparing their profile with administrative data on legal services provided to individuals from administrative records and databases held by the HIV/AIDS Legal Centre (HALC).

HALC provides legal services to approximately 10% of all PLHIV in New South Wales per annum, and our administrative data set extends to data relating to 18,833 legal services between 1992-2020.

Lessons learned: At present, the legal needs facing those living with HIV include matters related to immigration, wills and estates, and consumer law, followed by the sorts of matters which have typically been associated with HIV-related law, namely, forms of discrimination. This profile of the legal needs facing those living with HIV is in continuity with current service delivery provided by HALC, but in discontinuity with the legal needs those living with HIV have sought assistance for in the past.

The rise of immigration-related legal needs is particularly pronounced in this regard. A notable change in the demographic profile of people accessing services over time was also identified. They became younger, were more likely to have been born overseas and increasingly identified as heterosexual. The changing demographic of those seeking legal services indicates divergences with the epidemiology of HIV in Australia.

Conclusions/Next steps: Our results provide evidence regarding the contemporary nature and past trends in HIV-related legal needs. When unmet, these legal needs form a barrier to an enabling legal environment for effective HIV responses.

EPF101

No rights, no health: Women Sex Workers in Latin America and the Caribbean build evidence on cases of violence and violation of our rights

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[1]RedTraSex, Buenos Aires, Argentina

Background: We understand HIV prevention from a comprehensive and universal health perspective and a rights-based approach. Women sex workers are subjected to acts of violence and discrimination, especially institutional violence exercised by the security forces that should protect us.

The context of quarantine in our countries has shown that there is no way to guarantee our rights, including the right to health, if there is no recognition of sex work as work.

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Description: RedTraSex designed and implemented a system for the collection of information on cases of rights violations against WSWs in 15 countries. Members of the organizations are responsible for searching for and documenting any rights violations that sex workers may have suffered and include the information in a standardized tool accessible through the Internet, which allows for an analysis of the situation by country, as well as aggregate analyses by sub-region or at the regional level.

Lessons learned: *Training for Empowerment.* The fact that we are sex workers who collect the information and interview the affected sex workers facilitates the approach with the victims and the delivery of the information.

We build evidence for advocacy and political communication. In 2021, we managed to collect 1,369 cases. A regional report was prepared and results were presented at national advocacy roundtables in each country to disseminate these results to key actors in government and civil society.

Conclusions/Next steps: *"We broke the HIV corset" for full access to rights and a life free of violence.* We do not only provide services but work comprehensively for our colleagues to dare stopping being spectators of reality and becoming lead actors in their lives. We stopped taking care of ourselves for others and developed a rights-based perspective, away from the "from the waist down" approach.

Moving towards the regulation of sex work is the key."It is time to unite so that we can defend ourselves and guarantee the rights of FSW (...) not only because we are professionals, but because we are women." (LC, Colombia).

EPF102
Strengthening crisis management cells to include emergency HIV-related services and care

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Background: LGBTQ+ communities are vulnerable to violence, blackmail, extortions and other threats including forced/gang rapes. Many LGBTQ+ victims do not seek legal recourse and emergency health care services for HIV prevention due to fear of stigma, shame, and lack of support/sensitization among law enforcers.

To combat this, The Humsafar Trust (HST)—an LGBTQ+ organization in Mumbai instituted a crisis center to support LGBTQ+ communities.

Description: The HST set up a crisis cell team in 2005 to assist LGBTQ+ individuals seeking health services and legal recourse following experiences of threats, violence including violence induced unprotected sex. This crisis cell comprised of field workers and admin support to document the cases.

With support from the district AIDS Control society, we analyzed 100 high crisis sites in Mumbai City. The field outreach staff identified crisis cases in these sites and linked them for immediate health and socio- legal services.

Lessons learned: Since the inception [April2005], over 2000 crisis cases are addressed. In the year 2021, a total of 12 cases of forced sex were provided with PEP services that resulted in averting HIV positive for 9 individuals. As part of the larger intervention, over 5000 police personnel were trained on legal challenges faced the LGBTQ+ communities.Emerging preventive methods such as administration of PEP especially to rape victims is an emergency HIV preventive measure not widely known or available to key populations. The LGBTQ+ community members need to be made aware about newer preventive measures to access emergency services.Ongoing sensitizations of police personnel is key towards ensuring safety, health, and wellbeing of LGBTQ+ individuals.

Conclusions/Next steps: Outcomes from this crisis cell reveal that existing HIV interventions must focus on integrating crisis redressal as a component within their programs for a holistic approach to ensure the health of vulnerable key populations.

Thus, the HST model of LGBTQ+ crisis management makes a compelling case to upscale this intervention model for emergency HIV prevention and enable other socio-legal services.

EPF103
Securing justice for women living with HIV who were sterilised at State Hospitals in South Africa

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Background: In 2014, women living with HIV approached the International Community of Women Living with HIV (ICW) reporting that when accessing maternal or gynaecological services, they were sterilised without their informed consent at State hospitals. Although multiple human rights violations occurred, the pathway to ensure recognition of these violations and redress was not straightforward. ICW and their allies faced a lack of political will and a range of legal barriers.

To address this, ICW developed and implemented a strategic advocacy plan that included research, media engagement, awareness-raising, community education, and a quasi-legal process.

The execution of the strategy secured a successful outcome with the Commission for Gender Equality(CGE). In 2020 CGE released a report that both confirmed that women living with HIV had been sterilised against their will at State Hospitals due to their HIV status and made concrete recommendations to the government.

The evidence in the form of affidavits, the CGE report and sustained pressure from civil society resulted in the National Department of Health appointing an independent committee that is mandated to reach a mutual agree-

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ment on redress with the complainants. The independent committee and complainants are in the process of negotiating suitable redress packages.

Description: This presentation will describe the advocacy and legal strategies used to achieve justice for women living with HIV who experienced coerced or forced sterilisation at State Hospitals in South Africa.

Lessons learned: First, women living with HIV continue to face severe forms of discrimination within health systems at the hands of medical service providers. Second, *joint* strategic legal advocacy by women living with HIV and civil society organizations can produce dramatic changes in the government's willingness to provide redress and effect policy changes. Third, raising awareness about coerced sterilization and other forms of obstetric violence has encouraged more women to come forward. Fourth, the fact that these forms of discrimination occur is often denied and dismissed.

Conclusions/Next steps: The effort to confront and transform stigma and severe forms of intersectional discrimination experienced by women living with HIV in health care settings can benefit from utilizing quasi-legal entities to support demands for dialogue and processes for justice.

EPF104

The right to privacy for persons living with HIV: impact litigation and the judicial response

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Background: Discrimination of persons living with HIV within the health care system and in employment spaces has resulted in high stigma. The decision to disclose HIV status in the context of employment remains at the sole discretion of the person living with HIV.

Description: KELIN undertakes impact litigation for redress for individual clients whose rights have been violated as well as secure lasting social change that secures the rights of persons living with HIV.

Through our litigation department, KELIN supported a woman whose private medical information, including her HIV status and the treatment she had been receiving, were disclosed to her insurance company and her employer, which resulted immense psychological suffering as well as in the termination of her employment.

Lessons learned: In 2020, the court made declarations affirming that the client's right to privacy had been violated by the insurer and the health facility when they disclosed the HIV status to her employer.

The client in this case was awarded a sum of money to be paid by both the hospital and the insurance company. The Court also made a determination that in limited circumstances, hospitals could disclose a patient's HIV status to an insurer including where the viral load was so high as to affect the costs of treatment or where HIV was the sole reason for the medical condition under treatment.

Conclusions/Next steps: This pronouncement made by the court in this case affirm in positive terms the rights to privacy of persons living with HIV, and set out reasonable limits where disclosure of the status of patients can be made to insurance companies by hospitals. We intend to educate persons living with HIV on the implications of this judgment to increase awareness of their rights as they seek health care services in private medical facilities.

EPF105

Human rights defenders at risk: inequalities in access to mechanisms for reporting human rights violations in eleven Latin American countries

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Background: The grant in Latin America, financed by the Global Fund to Fight Tuberculosis, Malaria and HIV, led by the Alianza Liderazgo en Positivo y Poblaciones Clave consortium, during 2020, implemented research to review the mechanisms for the interposition of denounce and their variables in the region for people with HIV and key populations.

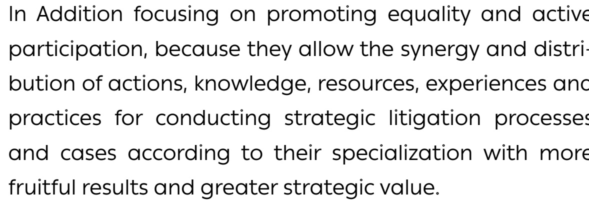
Methods: For the review of the existing mechanisms for filing denunciations in the region and their variables, the main instrument for collecting information was an online questionnaire. The design was made for key populations, people with HIV, key actors, representatives of human rights defenders, leaders and regional secretariats of networks of people with HIV and key populations. Interviews and focus groups were also applied.

204 surveys were applied, although not all were completed. Therefore, only 108 surveys were analyzed, 32 people interviewed and 4 participants in a focus group.

Results: Among the most alarming findings is that only 4 out of 10 people surveyed know how the mechanisms for filing denunciations operate; 3 out of 10 people surveyed do not know; and 2 out of 10 people surveyed have a negative perception of the operation of these mechanisms for reporting human rights violations.

In terms of accessibility and response to the needs of the population, 7 out of 10 people state that the mechanisms are only present in the city. 4 out of 10 people mention that they have virtual spaces to facilitate access to the rural population. 1 out of 10 people considers that the gender perspective and cultural adaptation have been incorporated.

Conclusions: The participation of civil society in defense mechanisms for filing denunciations and reports of human rights violations against people with HIV and populations in situations of vulnerability should be strengthened as joint regional initiatives.



In Addition focusing on promoting equality and active participation, because they allow the synergy and distribution of actions, knowledge, resources, experiences and practices for conducting strategic litigation processes and cases according to their specialization with more fruitful results and greater strategic value.

Stigma and key populations

EPF106

Stigma and discrimination experienced for reasons other than HIV status among Key Populations (KPs) living with HIV in Uganda

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Background: In 2019, NAFOPHANU implemented the People Living with HIV Stigma Index (SI) survey in 9 regions of Uganda. The survey explored stigma among key populations, mental health, resilience and coping mechanisms despite HIV stigma. The goal of survey was to estimate the prevalence of HIV related stigma and discrimination among the PLHIV with an aim to develop evidence-based responsive strategies. The KPs specific objective was to describe how different groups are affected by HIV related stigma especially the key populations.

Description: The SI introduced a concept of double stigma key population face because of belonging to some groups as well a second form of stigma associated with living with HIV. A total of 1398 respondents, 874 (62.47%) females and 524(37.46%) males participated in the second national PLHIV Stigma Index survey. 423 (20.36%) belonged to a KP category (sex workers, PWUID, gay, transgender and MSM). Within the KP category, non- HIV related stigma and discrimination was almost six times more than the HIV related stigma compared to the general population. Discriminatory remarks or gossip about the PLHIV were the commonest non-HIV stigma discriminatory experiences within among all the groups e.g. transgender at 33.65%, MSM at 24.24%, gay homosexual at 16.67%, gay lesbian at 39.39%, sex workers at 28.78 and PWUID at 28.92%. This data confirms the concept of double stigma-that KP face both sex/work-oriented stigma in addition to HIV related stigma and implies the need to deal with both.

Lessons learned: Within the KP categories, non- HIV related stigma and discrimination is almost six times higher than the HIV related stigma. Discriminatory remarks or gossip about the PLHIV were the commonest non-HIV stigma discriminatory experiences within and among all the groups. The opportunity to reach these groups is quite huge as the proportion of those who belong to a support group is high, therefore interventions should target the groups with relevant information and support.

Conclusions/Next steps: The study confirmed double stigma that KPs face; both sex-oriented stigma as well as HIV related stigma and implies the need to deal with non- HIV related stigma for this group as a priority.

EPF107

Internalized and enacted stigma linked to depression and reduced health-related quality of life in the Stigma Index 2.0 survey in Indonesia

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Background: HIV stigma can manifest itself in discriminatory behaviors enacted against people living with HIV (PLHIV) or internalized negative feelings. Both can compromise health.

In this study, we examined the correlates of HIV stigma and its impact on anxiety/depression and health-related quality of life (HRQoL) from the Stigma Index 2.0 survey conducted in Indonesia.

Methods: From June to December 2019, we surveyed 744 adult PLHIV in 11 districts across the country. The standard Stigma Index 2.0 questionnaire was used to document experiences of stigma. Counts of stigmatizing behaviors that PLHIV experienced in the household, community, and health care settings were used to quantify enacted stigma and factor analysis was conducted to confirm the reliability of the latent construct underlying internalized stigma (α=0.78). Anxiety/depression was assessed using the Patient Health Questionnaire-4 with four grades of severity from minimal to severe. Respondents self-rated HRQoL using EQ-5D-5L from which an index was computed where a maximum score of 1 indicates perfect health. Regression with survey design adjustments was used to estimate the correlates in the correct distributional form for internalized stigma (Gaussian), enacted stigma (negative binomial), anxiety/depression (ordered logistic), and HRQoL index (beta).

Results: Respondents averaged 35 years of age (range: 19-72 years) of whom 92% were on antiretroviral treatment, and nearly one-third were female. Factor analysis supported the latent construct of internalized stigma from six response items, which was used in regression analyses. Age, time since HIV diagnosis, and current enrolment in antiretroviral treatment were associated with internalized and enacted stigma (P<0.05). No other correlates were found, including membership to a key population. The adjusted odds of more severe grades of anxiety/depression increased by 60% and 28% respectively with internalized and external stigma (P<0.001). Decrements

in HRQoL index were 0.022 and 0.015 for internalized and enacted stigma, respectively, in the adjusted analysis (*P*<0.05).

Conclusions: Key populations in Indonesia face a similar likelihood of experiencing internalized and enacted HIV stigma, which in turn elevates anxiety/depression and diminishes HRQoL. These findings add to the evidence for targeting elimination of HIV stigma or mitigating its negative health effects through HIV programming.

EPF108

HIV treatment and hepatitis B, C within the center for harm reduction from substance abuse to increase access to inspections - treatment of drug users

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Background: Because it was found that drug users dropped out of the HIV, AIDS, hepatitis B, C treatment system in government services. For reasons, the government service system takes a long time to maintain. Some services have unfriendly services. Drug users are often stigmatized. discriminated against and restrictions on the travel of substance abusers.

Description: APASS organizes testing and treatment services for HIV, AIDS, hepatitis B, C in the Center for Harm Reduction from Drug Abuse. in Bangkok Capital of Thailand since 2021 by developing a model and service management mechanism which is the cooperation of doctors and nurses to perform examination and treatment within the Center for Harm Reduction from Substance Use and Substance Abuse Volunteers public relations function Prepare service recipients, including follow-up and give advice during examination-treatment.

Lessons learned: The result of the provision of examination and treatment services within the Harm Reduction Center was that substance abusers were more interested in receiving services in DIC than hospital admissions, and reduced the ratio of those who received intermittent treatment because there was no cost. pay take less time And there is no concern about stigmatization.

In 2021, it can provide services to drug users as follows:
Access to ___206___ drug users
HIV test,____66___ persons
Test for hepatitis B, Cof ___93____ persons
undergoing treatment for hepatitisof ___20_____ persons
to fill in the number of other services
Drug users infected with COVID-19 taken care of and referred for treatment and have better prospects for accessing our support services.

Conclusions/Next steps: The key findings from the operation were the provision of testing and treatment services for HIV, AIDS, hepatitis B, C. within the Center for Harm Reduction from Substance Abuse As a result, substance abusers are able to receive services in a familiar setting and a friendly environment, including arranging a pre-treatment process and counseling during treatment. by drug users volunteers who have experience to undergo examination-treatment

This helps them to understand their concerns and to provide better advice about the effects during treatment for substance abusers.

EPF109

Influence of boarding secondary school environment on HIV positive students in South Western Uganda

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Background: Human Immunodeficiency Virus (HIV+) positive adolescents have increased in number since the 1980s. The ability of these students to cope with their academic and healthcare needs while living in a boarding school has been qualitatively unknown. This research investigation is to explore the experiences of HIV+ students surrounding their adherence to antiretroviral therapy.

Methods: A qualitative study that employed in-depth interviews amongst purposively selected 19 HIV positive adolescent students in boarding secondary school and 7 key informants was conducted. Key informants were members of the boarding secondary school staff directly taking care of the HIV+ students and had spent at least two academic terms in that school.

The study participants were recruited from four health facilities in Bushenyi, southwestern Uganda, and key informants from five boarding secondary schools in Bushenyi. Interviews lasted 30 to 40 minutes and were guided by an interview guide. Data was transcribed, coded and the content analyzed thematically.

Results: HIV+ adolescents in boarding secondary school have similar challenges to those outside boarding school settings; however, some are unique to them. They have numerous barriers to their adherence to medication and experience stigmatization in its different forms. Limited disclosure of the student's sera-status was beneficial to the students since it guaranteed support while at school; thus, facilitating adherence and better living. However, students were uneasy to disclose their status and some adopted negative coping mechanisms such as telling lies, escaping from school, and class to access medication and rationalization among others.

Conclusions: Adolescents in boarding secondary schools face similar challenges as compared to their counterparts with some being unique to them. These challenges need to be addressed and a safe environment to encourage limited disclosure should be made.

EPF110

Leading the challenge: lessons learned on HIV/AIDS advocacy and partnership programs of a local university

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Background: The Benguet State University, Benguet, Philippines started in 2016 to advocate adolescent health programs and advocacy lectures, a school community-led interventions to address HIV/AIDS stigma, misconceptions and young key populations (students and LGBTQ+ groups) both in higher and secondary education and out-of-school youth in partnership with the Commission on Population and Department of Health in the province.

Description: The increasing cases of HIV/AIDS from 23 in 2016 to 104 last year prompted the nursing faculty to facilitate and continuously conduct orientations at the start of school year in the University, training for peer educators and teaching faculty, including capacitating secondary education teachers on how best approach in facilitating discussions on HIV/AIDS with their students.

This program hoped to contribute to eliminating inequality and eliminating HIV- related misconceptions, stigma and discrimination.

Lessons learned: Based on observations and evaluation of the activities conducted from 2016 to 2020, though the advocacy lectures increased their knowledge on basic HIV/AIDS, prevention and management, and value the consequences of risky behaviors, the problem lies on how they share their learnings with their colleagues and peers. Capacitating adult and young learners especially teachers are quiet challenging among non- health practitioners and even students. A partnership model program with the local health authorities and student's groups launched to strategize how different stakeholders coming from various key institutions and interest groups will help in the advocacy.

Through curriculum integration of HIV/AIDS in different degree programs and conduct series of orientation in partnership with the Gender and Development Office in the University for funding helped to sustained the programs.

Conclusions/Next steps: With the increasing HIV/AIDS cases in our locality and despite of restrictions due to pandemic, we are leading the challenge to continuously promoting and conducting the HIV/AIDS advocacy programs with trained and committed facilitators in the University, and the student interest groups who always partner with us.

This presentation will put premium also on the partnership model used in this advocacy and highlights the best practices given the clients (young key populations and teachers) are coming from diverse occupations, ideals, cultures, and multi-linguistic backgrounds in preventing stigma, discrimination and eliminating misconceptions.

EPF111

Social stigma, discrimination, and its determinants among people living with HIV and AIDS in Sudharpaschim province, Nepal

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Background: From the start of the AIDS epidemic, stigma and discrimination have exacerbated the transmission of HIV and greatly increased the negative impact associated with the epidemic. HIV-related stigma and discrimination continue to be manifest in every region of the world and every age group, creating major barriers to preventing further infection, alleviating impact, and providing adequate care, support, and treatment. HIV-related stigma and discrimination adversely affect the health, quality of life, social support, and well-being of people living with HIV/AIDs (PLWHA).

This study assessed the perceived stigma and discrimination and its determinants among PLWHA in the Sudharpaschim province of Nepal.

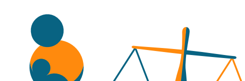
Methods: This study adopted a cross-sectional survey in 2020 to sample 167 PLWHA using a semi-structured questionnaire. Information about sociodemographic characteristics, stigma domain, and discrimination domain was obtained through face-to-face interviews. Ethical clearances were obtained from the Institutional Review Committee of Nepal Health Research Council. Bivariate and multivariate logistic regression models were used to identify the factors associated with perceived stigma and discrimination among PLWHA. R program was used for statistical analysis and creating graphs.

Results: The overall stigma and discrimination was 70% and discrimination was 34%. In the multivariate logistic regression, age [AOR=2.42 (95%CI:1.04-6.62; p-value=0.009], male gender [AOR=1.09(95%CI:1.03,1.15; p-value <0.001], high level of public health concerns [AOR = 12.9 (95% CI: 8.9-37.5; p-value <0.001)], high level of negative self-image [AOR = 10.3(8.8,39.6); p-value <0.001)] were factors significantly associated with higher perceived stigma.

Similarly, female gender [AOR=15.4(95% CI:8.2-35.3) p-value <0.001] and high level of perceived community support [AOR = 8.86 (95% CI: 3.86-32.1; p-value <0.001)] were factors significantly associated with higher perceived discrimination.

Conclusions: The study revealed that HIV-related stigma and discrimination remain ubiquitous and epitomize a core facet of the experiences of PLWHA in Nepal. Stigma and discrimination remain pervasive among PLWHA in this province and most emanate from communities, presenting negative impacts on PLWHA.

Unprecedented measures to enhance the awareness of the PLHIV, their families, and their community about perceived stigma and associated factors are needed to reduce stigma and achieve the commitments of Fast-Tracking towards ending the AIDS epidemic.



EPF112

Experience of stigma and discrimination in health care setting by HIV-positive adolescent girls in Ukraine

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Background: In 2020, there were an estimated 3,412 people under the age of 18 who live with HIV in Ukraine. The objective of this study was to explore the needs of HIV-positive girls aged 14-18 that live with HIV in Ukraine and analyze if they face HIV-related stigma and discrimination in health care units.

Methods: The cross-sectional study included 250 respondents from 14 regions of Ukraine aged 14-18. Interviews were conducted by trained peer researchers between December 2019 and February 2020. Quantitative and qualitative methods were used. 15 individual girls participated in in-depth interviews.

Results: Majority of the girls experienced respectful and supportive attitude in health care settings (66%), however, 34% of respondents reported rude or biased attitude from health workers. Prejudice in health care units were noticed by 40 girls (16%), isolation in separate rooms during hospitalization were seen in 12% cases, HIV status was disclosed by healthcare workers in 7% cases without girls' permission, 16 girls (6%) did not receive medical care when requested for. Young girls lacked trust in doctors when talking about sexual health, one in five respondents were not able to talk to their doctor about sexual health and needs. Results of in-depth interviews showed that girls were experiencing stigma among their relatives, who forbade girls talking about their status to friends and restricted communication. Only a third of girls knew their rights and where to turn for help in case of any violations, and less than half could rely on receiving legal protection.

Conclusions: This was the first study that investigated the needs of girls living with HIV in Ukraine in relation to attitudes in medical care. The study highlights the need to improve the attitudes towards adolescents who live with HIV at healthcare settings and increase HIV awareness at healthcare settings in general.

Sexual and reproductive health topic was seen by the girls as an area requiring improvement during consultations. Issues related to disclosure and need for legal assistance for the girls and their families were identified.

EPF113

Experiences of MSM and transgender women in accessing healthcare services from public hospitals: a qualitative study from India

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Background: Stigma and discrimination have been shown to reduce access to health services for sexual and gender minorities. This study was aimed to explore the experiences of MSM and TGW in accessing healthcare, including HIV services, in public healthcare facilities in two metros in India.

Methods: This qualitative study was conducted in January-June, 2021 among a purposive sample of MSM and TGW accessing healthcare services from public hospitalsin Chennai and Mumbai in India.

We conducted a total of 12 focus group discussions (FGDs) with MSM and TGW, including two FGDs with MSM living with HIV. Key informant interviews with 3 health care providers and 4 community leaders were also conducted. Data were explored using a combination of framework analysis and grounded theory analytic techniques to identify key themes.

Results: A total of 37 MSM (median age 31) and 38 TGW (median age 29) participated in the FGDs. Among them, 40.5% MSM and 10.5% TGW were PLHIV, and 35.1% MSM and 63.2% TGW engaged in sex work. Some facilitators of healthcare access identified were the availability of free antiretroviral treatment and quality counselling by some community-friendly counsellors. However, several layers of stigma/ discrimination were identified as well: odd stares at TGW, verbal abuse, body shaming, and sexual harassments from the hospital staff and co-patients.

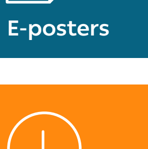
These incidents were more commonly reported by TGW and*Kothi*- identified MSM (feminine/receptive role). TGW expected free or affordable gender-affirmative hormone therapy and gender-affirmative surgeries to be provided with minimal waiting time, which are currently considerably delayed due to bureaucracy/paper work in the hospital.

Conclusions: Stigma experiences could delay or prevent access to healthcare services, or reduce the perception of service quality in public hospitals.

The findings from this study will be used to inform designing theory-driven multi-level stigma reduction interventions to reduce stigma/discrimination faced by MSM and TGW in public health care settings.

Oral abstracts

Poster exhibition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EPF114

A qualitative study on the stigma experienced by HIV/AIDS positive students in the urban schools of Uganda: a case of Wakiso, Kampala and Mukono districts

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Background: An estimated 150,600 children are living with HIV in Uganda today. More than 27,000 children are estimated to be born with HIV, 50% of whom will die before their second birthday. There are about 76,000 children who urgently need ARVs in the country, but cannot readily obtain them. Only 28% of the eligible HIV-positive children are on antiretroviral therapy. Even the few who start treatment later stop taking the drugs.

This study set out to explore the major cause for the abandonment of ARVs by HIV positive school going children in Uganda.

Methods: A sample of volunteers (N=400) of HIV/AIDS infected students was taken from 50 schools in Wakiso, Kampala, and Mukono districts of Uganda. Requests seeking for a meeting/interview were sent to these volunteers through their counselors. Each of the volunteers was given a questionnaire that they completed in the presence of the researcher. These volunteers were both day and boarding students.

The questions were focused on; access to ART/Vs, caretakers knowledge of serostatus, disclosure to school administration or peers, continued taking of ARVs while at school. School nurses (n=50) were also interviewed on why students didn't want to disclose, and w the effects of non-disclosure to the students that were found HIV/AIDS positive.

Results: Of the n=400, 90% indicated that they had not disclosed and the main reason for none disclosure was fear of stigma/discrimination from fellow students.

Of the 90%, 50% were not sure whether if they disclosed to the school administration, their status would be kept confidential. 50% preferred taking their medication in secret or stopping altogether for fear of stigmatization from their fellow students. 40 out of the 50 nurses had witnessed students with health-related complications i.e. depression and drug resistance as a result of student abandonment of ARVs.

Conclusions: Even with the existence of a government policy to combat stigma in schools, the vice is still rife. HIV/AIDS positive students rarely disclose their serostatus. Even student caretakers fail to disclose to the school administration, all because of fear of stigma and/discrimination. Therefore, there is a need to push HIV/AIDs awareness and fight stigma in school.

EPF115

Healing together through common threads©: combatting trauma and stigma for better health outcomes

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Background: The goal of Healing Together, which is an authorized adaptation of Common Threads© is to create a Community of Storytellers to Combat HIV-Related Stigma and Improve Health through Adherence is a community-informed, evidence-based home-grown intervention. This three-stage, small group peer-led HIV training addresses social determinants of health as an integrated health, vocational development, and prevention intervention over 6 one-hour sessions.

Healing Together/Common Threads will reduce stigma, increase social and health support, and decrease isolation for women living with HIV.

Description: Many WLH are plagued by stigma, inequality, and other factors. Women who have had traumatic life experiences are disproportionately vulnerable to acquiring HIV and prematurely dying from complications arising from HIV, substance use, and violence. The reasons for this inequality are complex. Healing Together/ Healing Together/Common Threads provides an avenue for women living with HIV to overcome these issues. Due to the sensitive nature of these sessions, any information disseminated more broadly is limited to anonymous demographic information, overall success, and testimonials (with participant consent).

Lessons learned: For Programmatic Outcomes, we offer culturally appropriate education that helps reduce stigma, combat common myths about HIV/AIDS, and break down barriers between communities and service providers.

We collect information from participants at registration, 3 months, and 6 months and one year. This helps us understand both the immediate and long-term impact of the program on participants.

Survey data is analyzed quantitatively to first generate descriptive statistics of variables at each time point. We then use analytic methods appropriate for repeated measures research designs to understand how variables change over time. For notes and text, data is analyzed qualitatively to identify challenges and strengths as well as other common themes across discussions.

Conclusions/Next steps: We will continue to work with networks and providers to further expand the program to more women and communities affected by HIV. We also believe that the outcomes of our work will be of interest to the community of HIV researchers interested in improving lives for women living with HIV. We will work with our academic partners to write scientific manuscripts, manuscripts designed to describe practitioner's experiences, and present our work at scientific conferences.

EPF116

Hear us, see us, respect us: respecting the expertise of people who use drugs

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Background: Harm reduction organizations, through their advocacy and activism, have worked to address the overdose deaths, blood-borne infections, and other health and social related harms facing people who use drugs (PWUD). The Canadian Association of People Who Use Drugs (CAPUD) identified the need for more tools and resources on how best to include PWUD in the program and policy decisions and to equip ally organizations to better include PWUD in meaningful, engaging, and equitable ways.

The few guiding documents that exist to provide guidance on these issues were created by large institutions and not by and for PWUD.

Description: This policy document identifies practices that can be used by governmental agencies, non-governmental agencies, research institutions, academics, and community-based organizations who serve PWUD. This report defines standards for proper engagement of PWUD, as defined by PWUD across Canada. This report not only provides a solid evidence base from which to advocate for better inclusion in programs, policies, protocols, and initiatives, and a framework for organizations to reflect on and adapt their own policies, practices and structures to meet the needs of those they seek to engage and empower.

Lessons learned: Some of the best practice recommendations to ensure that PWUD feel feel valued and respected:

- Acknowledge the unique expertise that PWUD bring from drug use culture, and draw from that expertise to educate other staff, managers, and community members
- Acknowledge that PWUD are often hired because of their intimate connection to the PWUD community and their knowledge of the local drug using culture. Thus, it is contradictory to penalize PWUD workers when these relationships enter the workplace context
- Extend your harm reduction philosophy to your own employees and normalize the culture of drug use
- Recognize the trauma, grief, stress and potential burnout for their staff, and provide genuine emotional and psychological supports for PWUD workers

Conclusions/Next steps: The practices recommended in this document have been developed through extensive collaboration with PWUD to ensure these recommendations are grounded in the perspectives, voices and experiences of PWUD and to create equitable spaces that consider individuals' physical, emotional, mental, and spiritual needs that recognize and respect drug culture.

Discrimination and key populations

EPF117

Mistreatment experiences among sexual and gender minorities in Brazil: the burden of racism for Blacks

L. Freitas[1], T.S. Torres[1], D.R.B. Bezerra[1], L.M.S. Marins[1], B. Hoagland[1], V. Veloso[1], B. Grinsztejn[1], P.M. Luz[1]
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Background: Sexual and gender minorities (SGM) are exposed to recurring marginalizing experiences, which have a negative impact on their health. Moreover, mistreatment may stem from other axes of inequality, such as from race or social class, intersectionally.

We assessed differences in the frequency and reasons for the experiences of mistreatment among Brazilian SGM and explore how race, one axis of inequality, influences the interpretation of mistreatment.

Methods: Cross-sectional online study among SGM ≥18 years living in Brazil recruited on social media (Facebook/Instagram) and dating apps (Grindr/Hornet/Scruff) between November/2021 and January/2022.

We used the 18-item Explicit Discrimination Scale (EDS) which assess experiences of day-to-day mistreatment with possible response options: Never [0], One/two times [1], Many times [2], Always [3].

Scores were calculated by summing all 18-items (range 0-54, higher scores=more experiences of mistreatment). Additionally, for each of the 18-items, participants were asked to indicate the main reason for mistreatment.

Results: Of 8464 SGM, 4961(58.6%) were White, 2174(25.7%) Pardo (Mixed-Black) and 1024(12.1%) Black. Mean age was 37.1 years, 98% were cisgender men, 74% had college education.

EDS scores (mean, standard deviation) were higher among Black SGM (11.3,8.4) [Pardo (8.1,6.8), White (6.7,5.9)]. Black SGM reported more mistreatment in health care (19%, White 11%, Pardo 13%) and physical violence (18%, White 11%, Pardo 13%).

Across the 18-items, Black SGM reported their skin color/race as the main reason for mistreatment in 15 items. In contrast, sexual orientation or social class were selected as the main reason for mistreatment among White and Pardo for all items, except for perceived mistreatment in affective relationships among White (being overweight; Figure).

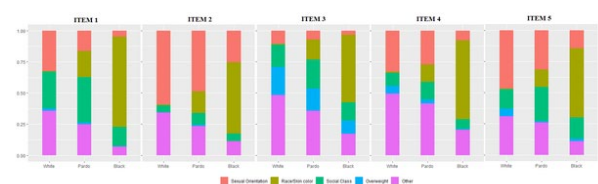

Figure: Distribution of the main reason for mistreatment among participants who reported mistreatment for 5 of the 18 items by race. Item content: item 1: "While at government agencies, such as registry offices, traffic departments, water, electricity, sewage companies or other, have you ever been treated in an inferior manner compared to other people?", 2: "Have you ever been physically assaulted by policemen, security guards, unknown people or even acquaintances without giving reasons for that?", 3: "While trying to date somebody, have you ever been treated with contempt, without having given reasons for that? Consider only situations in which you were treated worse compared to others that also tried to date with this person.", 4: Have you ever taken part in a selection process for a job in which you were rejected despite seemingly having the best qualifications among all candidates?", 5: "While visiting health centers, hospitals or other health services, have you ever been treated in an inferior manner compared to other people?"

Figure.

Conclusions: In Brazil, a setting that severely mistreats and discriminates SGM, we found that Black SGM experience higher mistreatment than other races. Moreover, racism, rather than homophobia, was perceived as the main reason for the mistreatment among Black participants.

EPF118
Using the beauty pageant to fight HIV stigma and discrimination in Uganda

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[1]African Young Positives Network, Programs/Field Officer, Kampala, Uganda, [2]Uganda Network of Young People living with HIV, Y+ Ambassadors, Kampala, Uganda, [3]Reach A Hand Uganda, Programs, Kampala, Uganda, [4]Reproductive Health Uganda, Youth Office, Kampala, Uganda, [5]African Young Positives Network, Programs/Field Officer, Kamapala, Uganda, [6]FHI- 360 Zambia, Client Experience Associate TQLA, Lusaka, Zambia, [7]UNAIDS, UNAIDS PCB, Lusaka, Zambia, [8]African Young Positives Network, Head of Programs, Kampala, Uganda, [9]Uganda Network of Young People living with HIV, Mr. Y+ 2021-2022, Kampala, Uganda, [10]Uganda Network of Young People living with HIV, Miss Y+ 2021-2022, Kampala, Uganda, [11]Population Services International - PSI, Youth Office, Kampala, Uganda

Background: The Y+ Beauty pageant by Uganda Network of Young People Living with HIV and supported by African Young Positives Network, GNP+, UNAIDS, PATA, Y+, The PACT, to mention a few, is a unique model campaign promoting beauty with "Zero Discrimination" fighting stigma and discrimination against young people living and affected with HIV. The pageant takes place annually and builds a brand of Y+ ambassadors to re-echo their voices and change the perception that comes with living with HIV and AIDS.

The Y+ model turns around stigma into pride to promote inclusiveness and acceptability of HIV+ persons in society and focuses on beauty and not on the challenges the young people living with HIV face. It creates a platform of learning and showing communities their (inner) beauty and therefore enables YPLHIV to become champions in the fight against stigma and discrimination.

Description: The Y+ Beauty Pageant is a national campaign carried out across Uganda that attracts all YPLHIV. It also attracts different stakeholders such as community leaders, Members of Parliament, government officials working with young people, relevant civil society organizations promoting the fight against stigma, media, religious institutions/leaders and international funding organizations supporting youth-related programmes for YLHIV.

Specific Results

1. 1235 young persons living with HIV reached
2. 98 partnership registered
3. 1,035,000 people reached
4. 10,201.687 people reached on social media

Lessons learned:

1. *Use new ways to communicate about HIV.* The Y+ Beauty pageant has become a national look at the event that attracts representatives of heads of state (ambassadors), ministries, and key other players. We have used this as an opportunity to reach more people where we couldn't have.
2. *Stigma and discrimination are still rampant.* Through the different engagements, there is a need to make leaders understand HIV and they play their part. This will, in turn, lead to more awareness.

Conclusions/Next steps: HIV-related stigma continues to exist in Uganda and Africa in general. Therefore, continuous efforts must be done to ensure that leaders and communities are made aware of HIV.

This, will in turn make it easy to draft meaningful campaigns that promote HIV/AIDS awareness and prevention.

EPF119
The involvement of drug users in advocating for the improvement of their legal and social environment: the example of the Phoenix Group

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Background: Since 2015, Médecins du Monde (MdM) has been implementing a harm reduction (HR) program for drug users (DU) in Abidjan. An advocacy componentisdeveloped to improve the legal and social environment forDUand the respect of their rights. Improving these elements would also contribute to improving the health situation ofDU, a key population for HIV and tuberculosis.

According to the principle of "nothing aboutDUwithoutDU" and in line with the program's community and empowerment approaches, MdMhas promoted the creation in 2019 of an advocacy group called the Phoenix Advocacy Group (GPP), made up ofDUor ex-DU.

Methods: The objectives of the group are:

- To allow DU to position themselves as credible interlocutors to defend their rights and influence decisions with decision-makers;
- To present HR and the situation of DU to decision-makers and otherstakeholders
- To obtain from the authorities and other key actors their involvement in the promotion and protection of the human rights of DU.

For this, in conjunction with the MdM advocacy officer:

- 15 DU were selected
- Group members have been reinforced on advocacy techniques and human rights
- An annual action plan is developed
- Bimonthly meetings are organized to monitor activities

Results: At least one member of the group systematically takes part in the advocacy meetings organized by MdM with the administrative and institutional authorities.

In particular, the group played an important role in the process of adopting the new Ivorian law on the use of drugs (more favorable to the HR approach) which will be adopted in 2022.

Thus, their speeches during 3 awareness-raising workshops with deputies, 1 with senators and 2 with magistrates were essential in the consideration by these actors of the obstacles faced by DU in their accesstocare, respect for their rights, etc. and their adherence to the project and the law.

Conclusions: The establishment of the GPP has enabled DU to take an active part in advocacy actions aimed at improving their living conditions and to significantly influence decision-making that concerns them.

EPF120

Breaking silence: understanding administrative inclusion of LGBTQIA+ employees at Indian healthcare facilities and its impact on HIV/AIDS

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Background: Lesbian, Gay, Bisexual, Transgender, Queer, Intersex, Asexual and others (LGBTQIA+) employees in hospitals encounter several incidents of hidden and explicit discrimination. Literature shows that workplace discrimination also has an impact on organizational commitment, organizational self-esteem, job satisfaction, satisfaction with opportunities for advancement, intentions for turnover, overall career commitment, patient satisfaction and patient retention. A huge research gap exists in studying the experiences of LGBTQIA+ employees in Indian hospitals.

This qualitative exploratory study aimed to explore the experiences of discrimination faced by LGBTQIA+ employees, administrative policies associated with diversity and inclusion and its association with HIV/AIDS.

Methods: Twenty two in-depth interviews of self-identified LGBTQIA+ employees and cis-gender heterosexual administrators were conducted in public, private and trust hospitals of Mumbai and Delhi cities between March 19 and May 2019 and the data was analyzed thematically. Secondary data was analyzed through existing strategic human resources management policies.

Results: 'Discrimination' emerged as the central theme with silence, stigma and violence and administrative policies and practices as core themes. Most of the administrators were ignorant about LGBTQIA+ spectrum and viewed them as a homogeneous group posing explicit (public facility) or implicit (private facility) discrimination.

Mumbai based hospitals were found to be more sensitized with stereotypes in certain departments like Orthopedics and Gynecology.

There were no separate HR department in public hospitals, consideration for social acceptability in trust hospitals and accreditation requirements in private hospitals while considering LGBTQIA+ inclusive policies and practices.

Most of the LGBTQIA+ employees, including doctors and nurses, gave an affirmative response that an inclusive hospital environment can foster HIV/AIDS sensitization among co-employees as well as patients. Healthcare providers also responded that this has the possibility for enhanced HIV testing and treatment adherence.

Conclusions: Further, quantitative research has to be proposed for testing this correlation. Policymakers and executives' accountability rests in better enforcement of ratified human rights treaties and laws, designing inclusive labor laws and health policies and reforming education curricula.

Hospital administrators have to be accountable for implementing inclusive policies and practices and creating non-discriminatory environment for LGBTQIA+ employees which can also reduce the stigma, increase HIV/AIDS testing and adherence in an integrated approach.

EPF121

Factors associated with transphobia among travestis and transgender women in Rio de Janeiro, Brazil: results from an open, prospective cohort

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Background: Gender-based discrimination is associated with poor mental health, unemployment, and poverty. Travestis and transgender women (TGW) frequently experience discrimination, but associated factors are understudied. Our objective was to identify factors associated with discrimination among TGW from Brazil.

Methods: We used data from Transcendendo, an HIV clinic-based cohort focused on risk factors and health outcomes among TGW in Rio de Janeiro, Brazil. Eligible participants were aged ³ 18 years, assigned male sex at birth, and self-identified as TGW or other identities from the trans feminine spectrum.

We analyzed baseline data for participants enrolled from August 2015 to March 2020. Questionnaires were administered face-to-face and collected socio-demographic data, gender identity, family support, self-reported HIV status, and discrimination experience.
Discrimination was assessed with eight discrimination-related items (example: "were you discriminated against in school for being a transgender person") with response options: "yes", "no", "I don't want to answer"/"I don't know". Total scores were the sum of "yes" responses (range 0-8), with higher scores reflecting more discrimination experiences. Associations were evaluated through multivariable linear regression models among participants with complete data. Estimated Betas>0 imply variables that significantly increased discrimination scores.
Results: There were 559 participants included (28[5%] not included due to missing data); 225 (40%) identified as TGW, 182 (33%) as travesti, and 135(24%) as women. Mean age was 33 (SD=11); 262 (47%) identified as Parda, 139(25%) as White, and 142 (25%) as Black; 240 (43%) self-reported as living with HIV.
In multivariable regression models, factors significantly associated with more experiences of discrimination included: having only one supporting parental figure (Beta=0.44 [95%CI:0.08-0.81]) or no support (Beta=1.55 [95%CI:1.03-2.08]) compared to support from both parents; living in poverty (vs. not) (Beta=0.90 [95%CI:0.35-1.46]); and current (Beta=0.51 [95%CI:0.12-0.91]) and past (Beta=0.59 [95%CI:0.18-1.01]) sex work (vs. never).
Conclusions: The most vulnerable TGW, those with no family support or who were economically deprived, were more prone to experience transphobia. We highlight the lack of parental support, the strongest independent predictor of discrimination experiences, as it likely contributes to emotional and structural vulnerabilities.
The complex interactions that lead to negative health outcomes among TGW must be addressed when developing trans-specific HIV prevention and care strategies.

EPF122
Putting money where our mouth is: the importance of vastly scaled up support to stigma and discrimination reduction

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Background: Intersectional stigma, discrimination and other human rights barriers continue to impede access to HIV and TB programs. The societal enablers 10-10-10 targets in the global AIDS Strategy provide an impetus for action. The Global Fund (GF) has vastly increased funding for human rights programs across its portfolio. Its Breaking Down Barriers (BDB) initiative supports comprehensive programs in 20 countries to remove human rights barriers to HIV and TB services. Mid-term assessments and implementation support TA have documented what works to reduce stigma and discrimination as part of a multi-program effort. The Global Fund is a co-convenor of the Global Partnership for action on all forms of HIV-related stigma and discrimination (GP).
Description: Under the GF Strategy, a key performance indicator tracks human rights investments in all HIV and HIV/TB grants. Midterm evaluations of BDB were conducted through interviews with key informants supplemented by desk research.
Further qualitative analysis has been undertaken of programs in each of the GP settings. TA needs assessments identified implementer capacity gaps and informed a prioritized TA plan.
Lessons learned: In 2017-19, over 120 millionwere allocated to human rights programs, 1/3 of them specifically focused on reducing stigma and discrimination. In the 2020-22 funding cycle, investment in these programs increased further, to an estimated 180 million.
In BDB countries, mid-term assessments showed significant progress, both in terms of creating a supportive environment and of program scale-up, and point at the importance of community-led stigma and discrimination reduction programs and action across multiple settings and program areas. To empower communities, GF funds Stigma Index and community-led monitoring of human rights violations in many of its grants.
Partnerships in support of country-owned national strategic plans and implementation of evidence-informed programs at scale are effective vehicles for delivering progress towards global targets.
Conclusions/Next steps: The new GF strategy (2023-28) reconfirms the centrality of reducing stigma and discrimination and calls for intensified efforts and partnerships to safeguard the rights of affected communities and individuals and realize more equitable health outcomes. Lessons from BDB countries in stigma and discrimination reduction will inform such actions and partnerships.

Punitive laws and enforcement practices directed at or impacting on key populations)

EPF123
Violence and harassment among the key population in Nigeria

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Background: Harassment and violence against key populations (KP) have existed for a long time. However, recent emphasis has been focused on this group, despite the fact that the issue continues to be a concern for the health system in the management of HIV/AIDS. Despite progress in the fight against HIV-related stigma and prejudice, discriminatory attitudes continue to exist in far too many countries. Discriminatory legislation, harsh law enforcement, harassment, and violence can push vulnerable people to the margins of society, denying them access to important health and social services, including HIV services. The focus of this research is on violence and harassment directed at KP.
Methods: The rate of reported violence and harassment across the four KP typologies was described in a descriptive analysis of the 2020 Integrated Behavioural and Biological Surveillance Survey (IBBSS) encompassing 17975 KP (Female Sex Workers (FSW), Men who have Sex with Men (MSM), People Who Inject Drugs (PWID), and Transgender (TG)). Microsoft Excel and STATA 13 software were used to sort and analyze the data retrieved.
Results: There are 17975 KP in total. 4974 FSW, 4397 MSM, 4414 PWID, and 4190 TG. 8.8% of FSWs, 16.1% of MSMs, 6.5 percent of PWIDs, and 15.1 percent of TGs had been forced to have sex in the year leading up to the poll. Forced sex was forced on 41.9 percent of FSW, 72.9 percent of MSM, 69.7% of PWID, and 61.4 percent of TG, among which 33.3 percent of FSW, 35.7 percent of MSM, 36.9 percent of PWID, and 54.6 percent of TG were forced without a condom. Prior to the study, 38 percent of FSWs, 17 percent of MSMs, 51 percent of PWIDs, and 32 percent of TGs had been harassed or arrested by law enforcement.
Conclusions: The level of violence and harassment among Nigeria's KP remains alarming, with over 70% of MSM reporting forced sex and over 50% of PWID reporting law enforcement harassment.
As the country works to eliminate the HIV epidemic by 2030, this indicates that violence and harassment among MSM and PWID is a cause for concern.

EPF124
The impact of Ghana's proposed homophobic legislation on men who sleep with men and the LGBTQI community as a whole

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Background: Ghana's legislature is seeking to pass a legislation to outlaw gay rights and any advocacy which is associated with it. This has led to tremendous fear and panic in the LGBTQI community for their lives and has greatly impacted their need to seek for healthcare and other needed help to prevent HIV/AIDS.
Methods: We used our underground organization that offers support and advocacy to the LGBTQI's to undertake a qualitative study to ascertain the effects of these proposed legislation on their lives and also offer voluntary HIV testing. Twenty people took part in our research and voluntarily answered some questionnaires which have been developed for the research. The location have to be kept secret due to the volatile nature of the situation in Ghana.
Results: It became clear in our research as we expected that accessing health care and other fundamental needs of these individuals have been greatly affected due to the fear of being harmed or jailed. Also, following the voluntary HIV testing, five individuals texted positive for HIV.
These are individuals who were too afraid to seek medical help or even go out to get condoms or other materials which could have prevented the contraction of the disease for fear of being attacked or harmed.
Conclusions: It is very clear from our research that the proposed legislation of criminalizing homosexuality in Ghana will greatly affect the LGBTQI community and more especially Men who sleep with men (MSM) and eventually erode the gains achieved so far in the country in the fight against HIV/AIDS.

EPF125
Perspectives of key stakeholders on the potential impact of Ghana's anti-LBTQ bill on provision of and access to HIV services

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Background: In Ghana's Parliament today is a bill entitled Promotion of Proper Human Sexual Rights and Ghanaian Family Values Bill, 2021 (PPSRGFV) seeking to among other things "proscribe LGBTQ+ and related activities". Its introduction has stoked fierce public debates at home and abroad. This study sought to determine the potential impact of the ensuing law, if passed in its current form, on HIV service-delivery and access by KPs from the perspective of key stakeholders.

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Methods: Using a qualitative cross-sectional design, data was collected virtually from: focus group discussions with MSM (n=25) via zoom; semi-structured interviews with MSM peer educators (n=19) via phone-call, service providers (n=15), independent experts (n=2).

Public discourse on the matter in print, electronic and social media were analyzed. Transcripts were coded, themes identified and analyzed.

Results: Respondents unanimously agreed that the bill was likely to be passed into law albeit with some modifications. This, they attributed to the overwhelming public support for it, the preponderance of memos submitted in its favour, inability of affected populations to publicly oppose it due to fear of violence, and supportive public utterances of some prominent public figures and politicians.

By criminalizing advocacy and funding for LGBTQ and related activities and requiring people to report offenders, the ensuing law, service-providers and other experts contend, will jeopardize the national HIV response by deepening inequality, stoking fear and mistrust which will drive KPs underground, increase violence, stigma and discrimination against affected population and stifle donor funding to HIV and TB.

Likewise, service-providers and other key-informants predict the bill will pose a structural barrier to provision of and access to HIV services by KPs. MSMs and their peer-educators were concerned about worsened stigmatization, discrimination, violent attacks, mental health challenges, restricted service access, worsening HIV incidences and conditions among them.

Conclusions: There's a high-likelihood that Ghana's PPSRGFV bill will be passed into law with far-reaching consequences for the national HIV response. Key actors should therefore focus on championing extensive modifications to mitigate the predicted impacts on HIV service delivery and access. If passed into law, a study is recommended to establish actual impact on HIV service delivery and access.

EPF126
Road to ending compulsory drug treatment in East and Southeast Asia

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Background: Compulsory drug detention is a form of custodial confinement in which perceived or known people who use drugs are forcibly placed to undergo forced abstinence and "treatment" for a pre-determined period of time. Given these facilities' lack evidence-based drug treatment, harm reduction or after care services and evidence of human rights violations their ongoing use has been widely condemned by UN entities.

This study aims to estimate numbers of compulsory facilities and people detained and assess progress toward the transition to voluntary community-based alternatives in 9 countries in Asia.

Methods: Cross-sectional data were collected using a questionnaire distributed to health and drug authorities and a literature review of publicly available governmental records in nine countries: Cambodia, China, Indonesia, the Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, Thailand and Viet Nam.

A validation process was conducted with national authorities. Descriptive analyses were computed for available data from 7 countries.

Results: The overall number of people detained in compulsory facilities remained the same or increased in most countries between 2012 and 2018. The number of compulsory facilities for people who use drugs remains high. In 2018, there were at least 886 compulsory facilities for people who use drugs in seven countries. Since 2012, 440,000 - 500,000 people were detained annually in compulsory facilities.

Punitive practices including substandard living conditions and overcrowding levels of over 400%, continued in compulsory facilities, exacerbating the risk of HIV, tuberculosis and now COVID-19 transmission. Voluntary community-based drug treatment services remained insufficiently available.

Conclusions: Despite commitments to phase out such facilities, political and financial support for compulsory treatment in Asia continues, evidenced by the high numbers of facilities and people detained. Renewed advocacy efforts and policy reforms are needed to permanently discontinue compulsory treatment modalities and transition to an integrated continuum of voluntary, evidence-based services in the community.

Decriminalisation of drug possession for personal use and expansion of continuum of services rather than compulsory treatment modalities will effectively contribute to ending AIDS and enhancing access to universal health care among people who use drugs in Asia.

Investing in regional HIV programmes and regional key population movements

EPF127

Leveraging regional economic communities to promote equitable access to HIV services for key populations: Lessons from the Southern Africa Development Community and the Economic Community of West African States

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Background: According to UNAIDS, in 2020 39% of all new HIV infections in Sub Saharan Africa, and 72% of new infections in West and Central Africa occur among key populations, i.e., sex workers, men who have sex with men, people who use drugs, transgender people, and prisoners. Recognizing the importance of addressing this issue for an effective national response, countries are putting in place a range of strategies in their National AIDS Strategic Plans. However, significant challenges remain in achieving the desired result due, inter alia, to long standing opposition to rights of key populations in African countries.

One way of changing such entrenched legal and social sanctions is development and adoption of regional strategies that provide collective guidance, direction, and mutual accountability, to Member States through Regional Economic Communities.

Description: With technical support from UNDP, WHO, UNAIDS, and UNFPA, the Southern African Development Community (SADC) and the Economic Community of West African States (ECOWAS) developed regional strategies for HIV, TB and Hepatitis prevention and improving Sexual Reproductive Health Rights of key populations in 2017 and 2019 respectively.

These regional strategies covering thirty-one countries and approved by the Minsters of Health, constitute a major milestone in recognizing key population issues as integral and critical aspects of national and regional responses to HIV and AIDS in the two regions.

Lessons learned: Development of the regional strategies required a long, rigorous, and coordinated effort by all stakeholders. Member States, through the SADC Secretariat and the West Africa Health Organization (WAHO), fully owned and led the process. Key population communities, through the Africa Key Population Experts Group (AKPEG), extensively and directly contributed to the development of the strategies. UN agencies and regional CSOs provided continuous technical support and mobilized the financial resources.

Conclusions/Next steps: While the regional strategies are technical documents that provide detailed approaches, interventions, targets, and indicators for HIV prevention and SRHR, they are also political commitments demonstrating the collective will of Member States to protect the rights of key populations for effective and equitable HIV, TB and SRHR services. Implementation of the strategies, therefore, needs to take this dual nature of the strategies into consideration.

EPF128

The importance of regional spaces for local HIV outcomes: enacting lessons from the Global Commission on HIV and the law

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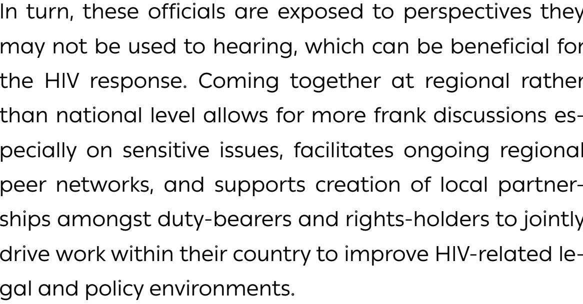
Background: The Global AIDS Strategy (2021-2026) and the Political Declaration from the 2021 High Level Meeting on HIV and AIDS set forth a necessary and ambitious agenda. Based on findings from the evaluation of the Global Commission on HIV and the Law ("the Global Commission"), evidence highlights the importance of regional spaces for collective action within the HIV response, for countries and across regions, to help deliver on these commitments.

Description: A mixed-methods evaluation of the impacts and legacy of the Global Commission was carried out in 2021. This included a desk review and 30 key informant interviews. Data were collected and thematically analyzed in an iterative process drawing from the different sources.

Lessons learned: The Global Commission created regional spaces for consultation, collaboration and knowledge exchange, ensuring that affected communities could interact with judges, lawyers, police, health workers, policymakers, and one another, with their collective deliberations informing efforts towards legal change at global, regional and national levels. Regional level discussions can foster fruitful peer-to-peer knowledge exchanges, particularly in the context of similar legal systems. Individuals who face restrictive legal and policy environments at home can voice their experiences with HIV and the impacts of the law in a safe space, even if shared with government officials from their home country.



In turn, these officials are exposed to perspectives they may not be used to hearing, which can be beneficial for the HIV response. Coming together at regional rather than national level allows for more frank discussions especially on sensitive issues, facilitates ongoing regional peer networks, and supports creation of local partnerships amongst duty-bearers and rights-holders to jointly drive work within their country to improve HIV-related legal and policy environments.

Conclusions/Next steps: Regional level activities facilitated by support for follow-on work within countries play a critical role in improving national HIV-related laws and the lives of key populations, demonstrating the powerful potential of investing in regional spaces for the HIV response.

Sustained support for regional spaces, and the knowledge and experience sharing they facilitate, is key to supporting local HIV responses and achieving the end of AIDS by 2030.

EPF129

The power of our voices: adolescent girls and young women engagement in decision-making platforms

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Background: In sub- Saharan Africa, AGYW aged 15 to 24 years accounted for 24% of HIV infections in 2019, more than double their 10% share of the population and continue to be disproportionately at risk of new HIV infections. The low level of participation of young women in decision-making processes and programming is one of the key enablers of this situation and puts AGYW in a disadvantaged position in the HIV response.

Relying on the HER Voice Fund model across 13 African countries, the HER Voice Fund's mission is to provide funds to grassroots organizations to contribute to change in non-gender-transformative laws and policies, processes, and events related to the health and rights of adolescent girls and young women from local, subnational to national levels.

Description: HER Voice Fund works through appropriate systems, national processes and structures including Country Coordinating Mechanism (CCM) and Country Operational Plan (COP) meetings, which directly link to the development of concrete national health strategies and funding requests e.g. to the Global Fund, National Strategic Plan (NSP) consultations, Technical Working Groups (TWGs) and other fora related to HIV, sexual and reproductive health and rights (SRHR), gender, and violence against women and girls to maximize AGYW engagement, create ownership and strengthen synergies.

Lessons learned: The HER Voice Fund model has concreted diversity and left no AGYW behind by providing funds to support the engagement of grassroots organisation. Currently, the fund has elevated ten (10) of the grantees serve LGBTQI AGYW, four (4) of the grantees serve AGYW with disabilities; four (4) of the grantees serve AGYW internally displaced, eleven (11) of the grantees serve AGYW living in fishing camps areas, twenty-eight (28) of the grantees serve AGYW living with HIV, seventeen (22) of the grantees serve AGYW in general, two (2) of the grantees serve young women selling sex.

Conclusions/Next steps: Strengthening AGYW's capacity to participate and exercise leadership in key decision-making spaces has significantly improved the power and agency among women and girls. Contracting 94 grassroots grantees facilitated and supported a stronger role for AGYW to participate in existing community-led monitoring mechanisms to ensure and promote accountability.

Ethical aspects and standards in research (including clinical trials)

EPF130

The practice of pilot/feasibility studies in informing the conduct of HIV clinical trials in sub-Saharan Africa: a scoping review

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Background: Pilot/feasibility studies represent a fundamental phase of the research process and play a vital role in the preliminary planning of a full size clinical trial. They are essential in assessing the feasibility, acceptability, safety of treatment or interventions, recruitment potential, randomization and blinding processes, and provide estimates for sample size calculation. Indeed, pilot/feasibility studies can result into improvements in the quality of research conducted and reduces waste. Despite the potential benefits however, the practice of undertaking pilot/feasibility studies as a pre-requisite for conducting HIV research is not well documented.

We conducted a scoping review of published HIV clinical trial protocols in sub Saharan Africa, to establish the extent to which the proposed clinical trials are informed by a prior pilot/feasibility study.

Methods: We followed the Joanna Briggs Institute methodology for scoping reviews. Six databases (MEDLINE, CINAHL, EMBASE, Web of Science, Cochrane Central Register of Controlled Trials databases, and African Index Medicus) were searched to identify eligible papers.

We included protocols in the English language, were published in the previous 10 years (2011-2020) and whose proposed (ongoing or completed) HIV clinical trials were undertaken in sub-Saharan Africa. Data were extracted using a structured tool and were analysed and interpreted using simple descriptive statistics.

Results: Thirty two (32)protocols were included. The results showed that the majority (56%) of proposed HIV clinical trials were not informed by pilot/feasibility studies.

The number of HIV clinical trials informed by a pilot/feasibility study were found to be steadily increasing in the preceding 8 years, from 1 in 2012 to 5 in 2020, a trend that indicates positive uptake of pilot/feasibility studies in HIV research.

Only five countries (South Africa, Uganda, Zimbabwe, Malawi and Kenya) contributed to more than 70% of all protocols that were informed by a pilot/feasibility study.

Conclusions: Although there is an increasing interest among researches to integrate pilot/feasibility studies in HIV research, limited countries in sub-Saharan Africa appear to have embraced this trend. This is an evolving area of research, with more evidence needed to inform policy recommendations.

EPF131

Development of quality standards for the ethical and meaningful participation of children and young people in clinical trials and research

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Background: Fondazione Penta ONLUS (Penta) is a leading international research organization in paediatric infectious disease.

The UN Convention on the Rights of a Child (UNICEF, 1989) states children have 'the right to freely express their views on all matters' and for them to be given 'due weight'. Paediatric clinical trials seldom engage children in their development and delivery. Children are disengaged with the science relating to their healthcare, and funders and trialists feel ill equipped to deal with this.

Description: Since 2017 Penta has developed a model of engaging young in research. In 2021, Penta engaged expert consultants and key stakeholders to develop a set of Quality Standards on the 'meaningful participation of children and young people in the design and delivery of clinical trials and research'.

The Standards were developed over through research and consultation, which included:

- A Steering Group representing: Researchers, WHO, CIPHER, ATC, Y+Global, EGPAF, Zvandiri, conect4children and ViiV Healthcare.
- YPLHIV consultation workshops.
- Key stakeholder interviews.
- Analysing current Standards in youth participation and health.
- A extensive editing process.

This provided insight that directed the content and structure of the final Standards.

Lessons learned: The consultation process provided essential direction on user needs and content. This included the Standards needing to be:

- Concise, clear and accessible.
- Exploring the wider structures beyond individual trials, prioritising topics to be investigated and governance of research sites.
- Focused on key roles across design, development and delivery.
- Suitable for large multi-trial institutions through to small-scale projects.
- Able to recognise current practice.
- Realistic of resource constraint.
- A progressive challenge for higher engagement and power sharing.
- Practical, covering engagement issues: safeguarding, reward and recognition of participants and costs.

Conclusions/Next steps: The Standards have strived to be clear and accessible, covering: Funders/Sponsors, Research Centre Leadership; Research Project Leadership, REC/IRBs .

They explore five core themes: Institutional and governance issues; Research agenda setting; Plan and Design; Delivery and management; Reporting of results.

They offer three indicators: 'Foundation, Emergent and Progressive' to support those new to engagement, through to improving existing participation models. The Standards are available online: (https://penta-id.org/) and Penta is now developing plans to support implementation where required.

EPF132

Ethical considerations of international transfer of biospecimens out of Kenya for research: a scoping review of literature and policy

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Background: International research partnerships between high-income and low-or-middle-income (LMIC) countries can facilitate access to sharing of resources for biospecimen analysis. Bioethical challenges may arise as research partners navigate current and historical cultural and regulatory environments. As members of a multi-national research team including investigators from North American universities and Moi University in Kenya, we

sought to review and synthesize existing data, to identify gaps related to ethical considerations of international sharing of biospecimens and inform future improvements.

Methods: We conducted a scoping review of global academic literature as well as national and institutional guidelines promulgated by Kenyan governing bodies regarding ethical considerations for the international transfer of biospecimens for research. We searched peer-reviewed literature in Google Scholar and PubMed by combining variations of the following terms with Boolean operators: *bioethics*, *research regulation*, *biospecimen*, *data sharing*, and *Kenya*.

We also conducted a review of guidelines published by the National Commission for Science, Technology and Innovation (NACOSTI) and Kenyan research and academic institutions. Articles and guideline documents that met inclusion criteria were analyzed inductively to identify key themes.

Results: Five peer-reviewed articles conducted in South Africa and Malawi and by international research groups, and five guidelines authored by Kenyan institutional ethics committees and the Kenya Medical Research Institute were included, and the following themes were derived:

1. Need to utilize ongoing consent processes that address specimen exportation and allow agency over biospecimen use;
2. Need for detailed Materials Transfer Agreements between institutions; and
3. Ensuring approval from, and the continuing involvement and development of research infrastructure at the institution where samples originated.

Conclusions: Despite their abundant use and necessity, limited peer-reviewed literature is available on the ethics related to international transfers of biological specimens for research. Guidelines from Kenyan institutions outline the minimum ethical standards for the process of transferring biospecimens internationally and some terms of specimen and data ownership.

Further research is needed to expand bioethical guidelines to ensure and inform ethical transfers of biospecimens between institutions. Additionally, research teams should invest in capacity-building for biospecimen research testing in-country.

EPF133

The inclusion of children accompanied by caregivers in research to validate a paediatric screening tool for HIV: an ethical conundrum

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Background: There is a need to advance testing, treatment and care for children living with HIV (CLHIV). In South Africa, there is a strict requirement for parental consent to participate in research for children under 18 years old, however many children reside with another caregiver, limiting their inclusion in research. We conducted a study to optimise a screening tool for identifying children 5-14 years old needing HIV testing.

The research ethics committee required that children accompanied by their father or a caregiver were not eligible to participate, unless their mother had died, in order to prevent indirect disclosure of maternal HIV status.

Methods: The study took place in 14 health facilities in urban Johannesburg and rural Mopani districts, South Africa. Data was captured for all children screened for eligibility on who accompanied them and whether they were able to consent, from June to December 2021. The number and proportion of children included and excluded is reported and HIV prevalence in included children was calculated, by type of caregiver.

Results: A total of 8,278 children were screened for inclusion with 675 children excluded based on their attendance with a caregiver ineligible to provide consent (8.3%). Of the 6,620 children tested for HIV in the study, 36 were found to be HIV positive (0.5%). The HIV prevalence in children with their mother was 0.5% (30 CLHIV), compared with 3.1% in maternal orphaned children with a caregiver (6 CLHIV). The HIV prevalence of children with a caregiver ineligible to consent is unknown. For children attending with ineligible caregivers, an older sister was the most common (24.6%) followed by their grandmother, father or aunt (24.0%, 17.9% and 15.6%).

Conclusions: Ethical considerations when researching CLHIV need to balance the risks of the research to the mother and child, both together and separately. However, ethical requirements regarding parental consent for minors resulted in the exclusion of vulnerable children who could benefit from the intervention being studied and the resulting tool.

Ethics bodies should work together with researchers to balance the risks of inclusion and exclusion of vulnerable children in research. Alternative models of consent for vulnerable children should be considered.

EPF134

Still talking about us, still not listening to us. Women and trans people living with HIV at AIDS2020

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Background: WHO's 2017 Guideline on Sexual and Reproductive Health and Rights (SRHR) of women living with HIV states we should be equal partners in research.
We explored whether AIDS2020 provided meaningful opportunities for women living with HIV as co/authors of oral abstracts, compared to our AIDS2018 findings.
Methods:

- AIDS2020 Abstract Book manual search for abstracts co/authored by organisations of people living with HIV and/or key populations.
- Abstracts identified as community co/authored were read for relevance to women (including trans women) living with HIV.
- Keyword search of the abstract books for 2020, 2018 and 2016 (see Table).

Results: Oral abstracts: While 55% of presenting authors at AIDS2020 were women, and 0.05% were transgender women, there were even fewer opportunities than at AIDS2018 for women living with HIV to present our work in oral abstracts: only 1 oral abstract was co/authored by organisations of people living with HIV and specifically focused on women living with HIV, down from 2 oral abstracts at AIDS2018, one of which focused on trans women living with HIV.
At AIDS2020, 13/202 (6%) oral abstracts were co/authored by organisations of people living with HIV or key populations, and were of (potential) relevance to women living with HIV in all our diversities (ie not specifically focused on women living with HIV, but indicate some inclusion of or possible relevance to women living with HIV). This compared to 8% of oral abstracts at AIDS2018.
Key word search: The search of abstract books shows mentions of women has fallen between 2016 and 2020. There were strikingly few mentions of SRHR and GIPA, particularly in 2020.

Key word	2016	2018	2020
Women	3009	3378	2519
[ ]Gender	667	731	716
Transgender	409	603	556
SRHR	78	117	38
GIPA	9	7	5
Human rights	277	303	215

Table.

Conclusions: At AIDS2020 women living with HIV were rarely co/authors of oral abstracts. Future conferences must not talk ABOUT us but hear FROM us, not as subjects/objects of research but as researchers, co/authors and presenters, in order to adhere to WHO Guidelines. Co-production, community co-authorship or community-led research should be recognised in abstract selection criteria.

EPF135

Perspectives on research participation from pregnant women living with HIV

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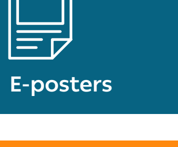
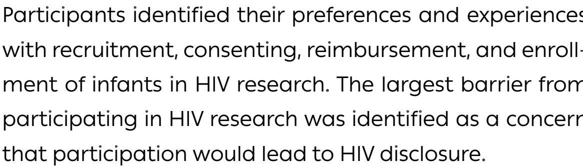
Background: Pregnant women living with HIV (PWLHIV) are becoming increasingly involved in HIV research; however, the ethical concerns regarding their decision-making in relation to research participation are understudied.
This qualitative study aimed to understand the perspectives and lived experiences of PWLHIV, with the goal of identifying important considerations to inform best practices related to involving this population in research.
Methods: This study used semi-structured interviews (SSIs) of PWLHIV who participated in research studies in Eldoret, Kenya. Participants between the ages of 26 to 51 were recruited from the Academic Model Providing Access to Healthcare (AMPATH) program's Maternal-Child Health (MCH) clinic at Moi Teaching and Referral Hospital.
Before each interview, multiple choice and short answer questionnaires were distributed to obtain demographic information and past research experiences. All interviews were conducted between October 2019 and November 2020 and were audio-recorded, transcribed, and translated.
Qualitative analyses were performed, with line-by-line coding, constant comparison, axial coding, and triangulation to identify central concepts. Twelve PWLHIV participated.
Results: Overall, participants had positive experiences with HIV research. Most participants had difficulty distinguishing differences between the research process and enhanced clinical care. They viewed research as access to healthcare as they sometimes received medications and diagnostic testing that they hadn't previously had.
The majority of participants recalled providing informed consent prior to serving as research subjects; however, only a few understood the key features of the study and none knew the findings of the study in which they had participated. They reported a willingness to participate in future HIV research studies and indicated altruism as the primary motivator.





Participants identified their preferences and experiences with recruitment, consenting, reimbursement, and enrollment of infants in HIV research. The largest barrier from participating in HIV research was identified as a concern that participation would lead to HIV disclosure.

Conclusions: Researchers should be cognizant of particular challenges that PWLHIV might have and understand the importance of sharing abnormal findings and referring appropriately.

By understanding the lived experiences of PWLHIV who participate in HIV research, future researchers can design studies and consenting processes to optimize ethical research practices.

Ethical aspects and standards in prevention programmes

EPF136

Project PrEP 1519 Brasil main actions to guarantee the rights of participating men who have sex with men (HSH) and transgender women (TGW) adolescents, in accordance with research ethics guidelines

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Background: PrEP demonstration studies conducted with vulnerable adolescents face unique ethical/legal constraints. We describe actions taken to guarantee the rights of vulnerable adolescents participating in Project PrEP 1519 in Brazil.

This demonstration study to evaluated PrEP effectiveness among MSM and TGW adolescents aged 15-19 years in three cities: Belo Horizonte, Salvador and São Paulo. It followed the Brazilian research ethics directives (Resolution CNS/CONEP 466/2012) and was approved by local and WHO institutional ethical review committees.

Methods: We will emphasize some unique vulnerable situations faced by this population, especially those between 15-17 years as according to Brazilian laws they are not legally responsible and also, they are more exposed to personal risks while participating in a such a study, including among their families, which many times are not aware of their sexual orientation.

We describe main actions taken to guarantee their rights, especially those aged 15-17 yo., including those related to confidentiality; adequate information; clinical and psychosocial care and especially post-trial guarantee to care and to PrEP/combined prevention.

Results: Complying with Brazilian guidelines, the Project developed several actions, including: implementation of appropriate informed consent/assent processes; access to information during and post-study (legacy); effective participation of adolescents in the entire process of study implementation; ensuring access to necessary healthcare during the study, including adaptations during the Covid19 pandemic.

And especially and more complex, ensuring post-study access to PrEP and combination prevention until health public guidelines, currently approved for 18y+, include 15-17 years adolescents.

Conclusions: In the current global backlash against sexual and reproductive rights, it is critical that projects like this are designed and implemented with a special focus on human rights and ethics, considering the specific vulnerabilities of young people belonging to sexual minorities. This will generate evidence to be applied in public health, aiming at guaranteeing respect, protection and fulfilment of their rights.

In this direction it is fundamental to expand and deepen the discussion on their needs, always with the involvement of the affected population, aiming at transforming study results in effective human rights and public health policies to all.

Ethical aspects of public health policy and programmes (including allocation of resources)

EPF137

HIV molecular surveillance in HIV prevention: Stakeholders' views on repurposing drug resistance tests without patient consent

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Background: Across the US, HIV sequence data collected in the context of clinical care to identify drug resistant mutations are repurposed by public health departments for HIV molecular surveillance (HMS). In HMS, HIV sequences are analyzed with surveillance data to better understand transmission dynamics and "clusters", to inform focused public health responses. Ethical concerns surrounding HMS have been raised, including the lack of an informed consent process.

We conducted a qualitative study among key stakeholders in North Carolina (NC) to explore ethical considerations surrounding consent and HMS to inform community engagement approaches.

Methods: Semi-structured interviews were conducted with 41 stakeholders including PLWH (n=15), providers (n=8), public health professionals (n=10), advocates (n=6),

and bioethicists (n=2). As appropriate, participants were provided with a written introduction to HMS. Interviews probed awareness, perceived risks and benefits, consent, cluster response and communication strategies.

Interviews were analyzed using a thematic analysis approach. This analysis focused on views surrounding the reuse of HIV sequence data for HMS without patient consent.

Results: Across groups, stakeholders expressed a range of views on repurposing HIV sequence data for HMS without consent. Those who asserted consent should be required believed not doing so violated individuals' rights to privacy and control of their personal health data.

In contrast, those who did not believe a consent process was needed described the significant public health benefit of HMS outweighing low potential risks to patient privacy, the similarities to surveillance approaches used for other communicable diseases, and decreased participation and data utility if consent were required.

However, these same respondents also commonly described a strong need for greater transparency around HMS, noting this was critical for patient and community trust and demonstrating respect.

Conclusions: HMS stakeholders expressed a variety of considerations and perspectives on the conduct of HMS without patient consent, weighing the public health benefits of the approach against individuals' rights and autonomy. Across respondents, the need for greater transparency and communication with PLWH and communities surrounding the HMS process was an overarching theme.

These findings will importantly inform the development of practical recommendations within a community engaged partnership framework surrounding HMS in NC.

Inclusion considerations for research and development and other trials

EPF138

New opportunities in engagement: the expansion of Civil Society advisory groups by product developers

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Background: Civil society (CS) engagement is foundational to ensure clinical and implementation research is conducted ethically and reflects community needs, priorities and interests, as highlighted by Good Participatory Practice (GPP) Guidelines. Product developers are increasingly committed to engaging with impacted communities throughout research to rollout.

While an important step toward expanding GPP, this work deviates from traditional engagement mechanisms used in publicly and philanthropically funded clinical trials and requires innovative, co-created engagement strategies between advocates and product developers.

Description: Prior to developing study-specific stakeholder engagement plans for their respective protocols, Gilead (PURPOSE program), Merck (IMPOWER program), CONRAD (Project Engage), Viatris & Populations Council (under the Dual Prevention Pill Consortium) participated in independent consultative meetings with AVAC and partners over 2020-2021 to discuss stakeholder engagement models.

Subsequently, formal global and regional CS advisory groups were established. Advocates supported by identifying other members, including Africa-based and young women, to participate.

Terms of Reference (ToR) were co-created and clear communication plans established as part of the engagement model. ToRs highlighted unique roles and responsibilities of members and product developers.

Lessons learned: Establishing expectations for global and regional advisory mechanisms brought clarity to members' roles. Where ToRs were co-created and detailed, discussions were most efficient and productive.

Formal mechanisms allowed for a partnership dynamic, and better supported members to identify where and when their input resulted in changes in protocols and decision-making. In most cases, formal mechanisms ensured consistent and ongoing engagement.

Global and regional advisory group members, some of whom participate in multiple mechanisms, noted the need for coordination across groups so that input on key issues could be shared.

Conclusions/Next steps: Civil society representatives welcome the growing interest from product developers to engage. To be successful, all advisory groups should co-create formal terms of engagement that outline roles, responsibilities, and communications plans. Greater coordination across advisory groups is also essential; the establishment of an umbrella CS advisory network could help ensure perspectives are shared across product developer-led groups, as well as with independent groups and advisory bodies to publicly-funded trials, allowing for greater impact and less duplication of efforts by advocates.

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Policies regarding HIV services and programmes

EPF139

Access to pre-exposure prophylaxis for HIV prevention among young people aged 15-24: a global policy review

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Background: In 2020, young people aged 15-24 accounted for 31% of new HIV infections globally. Oral pre-exposure prophylaxis (PrEP) remains a priority intervention for young people at substantial risk of acquiring HIV, yet access is often limited and uptake and effective use have been low in many countries. This global review aimed to determine the extent to which national policies and guidelines are enablers or barriers for young people's PrEP access.

Methods: We conducted a comprehensive search of national policy and guideline documents from 2019 or earlier pertaining to PrEP. We extracted data on the following indicators related to PrEP initiation:

1. Age requirement;
2. Weight requirement;
3. Parental/guardian consent requirement;
4. Statements indicating that young people can or cannot access PrEP.

Results: We reviewed documents for 70 countries. Thirty-three countries' guidelines (n=33/70, 47%) included an age requirement for PrEP initiation, a weight requirement for PrEP initiation, or language regarding PrEP for young people. Eighteen countries' guidelines (n=19/70, 27%) stated an age for PrEP initiation ranging from 12-21 years. Of these guidelines, thirteen guidelines (n=13/70, 19%) stated a minimum age of 18 years. Five guidelines allowed adolescents <18 years to initiate PrEP; an additional four allowed adolescents <18 years to initiate PrEP in certain circumstances. Eight countries' guidelines (n=8/70, 11%) included a weight requirement, ranging from ≥ 35 to 40 kilograms. No guidelines explicitly stated requirements for parental/guardian consent. Twenty-three countries' guidelines (n=23/70, 33%) included language indicating that young people could use PrEP.

Conclusions: Restricting PrEP to those at least age 18 years misses a large segment of the population at risk of HIV. No guidelines in this review included parental/guardian consent for PrEP initiation; however, guidelines for programs that serve as an entry point to PrEP, such as HIV testing services or family planning services, may include age, weight, or parental/guardian consent requirements. If PrEP for young people is not explicitly endorsed in national guidelines, their access to PrEP may be limited, preventing them from accessing the complete range of HIV prevention options.

EPF140

The Australian Community Accord on Quality of Life for People with HIV — an agenda for action to achieve good quality of life for people with HIV by 2030

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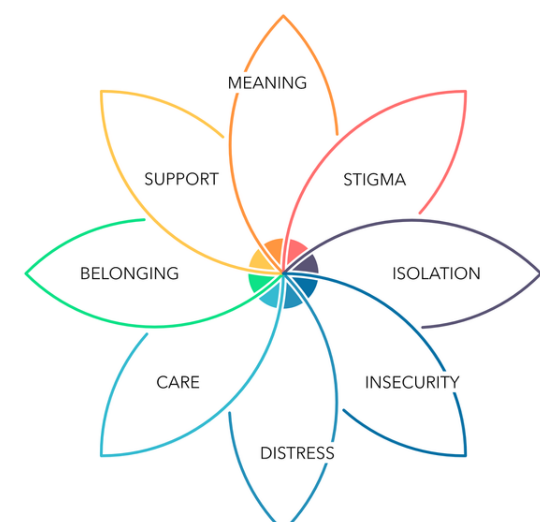
Background: There are calls to recognise quality of life as the 'fourth 90' in WHO and UNAIDS targets for the global HIV epidemic response (Lazarus, *2016*). In order to reduce the incidence*and* impact of HIV, achieving high rates of viral suppression is not enough. However, quality of life is a broad concept and local consultation is required to give it concrete meaning.

Description: With funding from ViiV Healthcare, the National Association of People Living with HIV Australia (NAPWHA) delivered an interactive webinar series that invited participants (n=389) to share their insights and experiences. Findings were used to develop an *Australian Community Accord on Quality of Life for People with HIV*.

Lessons learned: Thematic analysis revealed eight drivers of quality of life (see image). These factors vary in personal salience across the life course and according to individual circumstances. They represent accumulated evidence, lived experience and practice wisdom.



The Accord calls for Australia's National HIV Strategy to recognise quality of life as the goal underpinning all of its 95-95-95 goals. It proposes an ambitious, measurable target of achieving 'good' quality of life for 95% of people with HIV by 2030 (up from 63-64% currently: Power, *2019*; Allan, *2021*).

To monitor achievement of this target, consultation participants strongly endorsed use of the PozQOL instrument, a short (13-item) validated scale with four domains including physical and mental health, social wellbeing and functional capability (Brown, *2018*). The validation study (ibid) defines 'good' as scoring 3.3–3.5 out of five on most items.

Conclusions/Next steps: Development of the Accord and the availability of the PozQOL measure put Australia in position to lead in the global push to recognise good quality of life as a central goal for national and global strategies that seek to reduce both the incidence and impact of HIV.

EPF141

Monitoring the development of HIV policy at the sub-national level through Indonesia policy lab

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Background: The main problem in implementing the HIV response in Indonesia is more on governance because Indonesia is decentralized governance where sub-nationals have the authority to determine autonomous policies for public services in their respective regions.

Monitoring the existence of policies that support or hinder the HIV response at the sub-national level is a strategic step to create a conducive environment for equitable HIV services.

Description: In mid-2021, UNAIDS Indonesia together with the AIDS Research Center, Atma Jaya Catholic University developed a Policy Lab which is an initiative to monitor policies at the national and sub-national levels relevant to the HIV response. Four policy domains are monitored in this policy lab, including policies on treatment and care services, prevention and testing, structural and health sector at large. The initial stage of developing a policy lab is focused on monitoring policies at the national and 34 provinces in Indonesia. In later stages, monitoring will be carried out for 514 districts.

The results of this monitoring are presented in the form of a dynamic dashboard available at www.labkebijakanhiv.org

Lessons learned: HIV policies in Indonesia are still dominated by sectoral national policies, especially the Ministry of Health. Structural policies are not yet available. Only less than half of the provinces have regulations on HIV response in their area. Implementation of the HIV response for key populations has been hampered by regulations related to public order or security. The disparities between provinces in current HIV outcomes may be explained contextually if policy data is at the district level where services are directly provided to the communities.

Conclusions/Next steps: The next stage of developing this policy lab is to identify policies at the district level according to the specified domain. Policy advocacy will be carried out in collaboration with the Indonesia HIV AIDS Research Network (IHAR-Net) whose members consist of policymakers, researchers, program implementers, and key population spread across various provinces in Indonesia.

EPF142

Maternal HIV testing after first ANC visit: country guidelines and implementation

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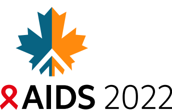
Background: To eliminate mother-to-child-transmission (MTCT), more timely diagnosis of HIV in pregnant and breastfeeding women (PBFW) is needed. Global guidelines recommend HIV testing after the first antenatal clinic visit (post-ANC1) and during the third trimester of pregnancy and postpartum in high HIV prevalence (≥5%) settings. However, post-ANC1 testing has lagged in many countries.

We analyzed program and survey data to understand guidelines and practices, including facilitators and barriers, to post-ANC1 testing implementation.

Methods: Thirteen USAID PEPFAR country teams and implementing partners completed a 19-question survey on post-ANC1 testing policies and practices. Results from the survey were analyzed thematically.

In addition, routine aggregated post-ANC1 data from October 1, 2018 to September 30, 2021 (Fiscal Years [FY] 2019-2021) were analyzed. Post-ANC1 testing rate was calculated as a proportion of total clients who did not test positive at ANC1 (either tested negative at ANC1 or recently tested negative prior to ANC1).



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Results: Between FY19 and FY21, the proportion of women tested for HIV in post-ANC1 settings remained constant (FY19, 32%; FY20, 33%; FY21, 33%) (Table 1). All countries reported post-ANC1 testing policies at one or more of the following periods: every three months during pregnancy and/or breastfeeding (n=4); labor and delivery (n=4); third trimester (n=3), and/or six months after delivery (n=4). Reported facilitators for post-ANC1 testing include use of HIV risk screening tools to identify high-risk PBFW (n=2), testing at alternative entry points (n=10), and self-testing (n=4). Reported barriers include inability to attend all ANC visits (n=9), insufficient demand creation (n=8), limited staff (n=7), commodity shortages (n=7), and clinic workflow (n=4).

Fiscal Year (FY)	USAID PEPFAR Results		
	Number of HIV-negative PBFW identified at ANC1	Number of PBFW Tested Post-ANC1	Proxy proportion of HIV-negative PBFW tested post-ANC1
FY19 (Oct 1, 2018 to Sept 30, 2019)	3,735,209	1,192,300	32%
FY20 (Oct 1, 2019 to Sept 30, 2020)	3,331,440	1,087,852	33%
FY21 (Oct 1, 2020 to Sept 30, 2021)	3,517,110	1,164,190	33%

Table 1.

Conclusions: Although national guidelines support post-ANC1 HIV testing of PBFW in all 13 countries, data revealed challenges with taking testing to scale. Preventing MTCT of HIV and eliminating new child infections requires focused efforts to actively facilitate enablers and reduce country-level barriers to post-ANC1 testing.

Policies addressing social and economic determinants of vulnerability

EPF143

Accelerating the efforts to end HIV in the United States: the U.S. Department of Health and Human Services' priorities

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Background: On December 1, 2021, President Biden marked World AIDS Day by announcing the release of a new National HIV/AIDS Strategy (NHAS). The updated NHAS aims to accelerate efforts to end the HIV epidemic in the United States by 2030. NHAS was informed by substantial contributions from stakeholders within the HIV community, including people living with HIV, and supported by partners at the federal level. It recognizes racism as a public health threat, places an emphasis on addressing the of people with HIV who are aging, and expands the focus on addressing the social determinants of health.

This session will feature senior HHS staff and Harold Phillips, Director of the White House Office of National AIDS Policy, as well as two community stakeholders, including one from the rural South and one from Presidential Advisory Council.

Description: NHAS and the EHE initiative were both molded by national stakeholder involvement. The Strategy and the initiative will both guide the development of federal policies and priorities in the coming years, including working with the Department of Justice, and others to reform HIV criminalization laws.

The process used to develop the NHAS included expanded involvement from across the U.S. government, including the Departments of Agriculture and Education, in recognition of the whole-of-government approach that must be taken to comprehensively address HIV and tackle ongoing racial disparities.

Lessons learned: During the development of the current NHAS, ongoing community engagement was key in refining messages and tactics included in the Strategy. Additionally, COVID-19 has drastically affected data collection and service delivery in the United States. HHS has invested in the interventions of HIV home testing, telehealth, including telePrEP and tele-harm reduction, and virtual planning and convenings.

Conclusions/Next steps: The current NHAS will continue to be implemented through 2025, with the goal to decrease new infections in the United States by 2030. The panel will discuss the NHAS Federal Implementation Process, the involvement of the community in that process, and how progress will be tracked and reported.

Information will be shared about the process to develop a new indicator for NHAS focused on quality of life for people with HIV.

Policies addressing HIV in the workplace and/or educational institutions

EPF144

HIV and labour relations in Kenya: combatting discriminatory workplace practices

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Background: The Law in Kenya does not mandate employers to have in place a workplace policy on HIV and AIDS. While the public sector has a policy that applies to government employees, the private sector which forms the largest employer in Kenya is left at discretion to choose whether or not to have HIV policy.

This study is an analysis of workplace practices that violate the rights of people living HIV and the legalities of such practices in Kenya.

Description: The Constitution of Kenya and the Employment Act of 2007 prohibit direct or indirect discrimination or harassment against an employee or prospective employee on grounds of HIV status. The reality is far from the aspiration of the law, as witnessed in multiple lawsuits heard before Kenya's HIV and AIDs tribunal and the Employment and Labour Relations Court pertaining to HIV discrimination at various stages of employment. The study is an analysis of ten such employment lawsuits determined between the years 2010 and 2021.

Lessons learned: Common violations were perpetrated by way of disguising unfair termination of employees on basis of HIV to read 'dismissal on grounds of non-performance' or ‚redundancy.' Other discriminatory practices were demonstrated by concealing the HIV test as a 'routine test' and not disclosing to the employee that the test will entail a HIV test. Some organizations made the HIV test compulsory during the recruitment process, and proceeded to deny the person employment on HIV status while citing other non-existent legal grounds for non-employment. Lack of workplace policy guidelines on HIV continued to perpetuate human rights violations against people living with HIV.

Conclusions/Next steps: This study establishes the existence and continued tolerance of discriminatory workplace practices against People living with HIV. The study proposes a comprehensive HIV framework that encompasses prevention, care and treatment without jeopardizing the rights of employees. It establishes the niche to build the capacity of employers to develop and implement workplace policy on HIV pursuant to the ILO code of practice.

The study shall inform the Kenya National Aids Control Council and Ministry of Labour to develop guidelines on HIV at work in Kenya.

Policies related to treatment access (including intellectual property policy)

EPF145

Increasing patient access to improved ART regimens through Vietnam's Social Health Insurance drug list with modeling data

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Background: As donor funding for ARVs decreases in middle-income countries like Vietnam, many are turning to their national health insurance schemes to integrate and finance their HIV programs. In line with global HIV treatment guidance, the Government of Vietnam (GVN) transitioned first-line antiretroviral therapy (ART) from Tenofovir/Lamivudine/Efavirenz (TLE) to Tenofovir/Lamivudine/Dolutegravir (TLD) fixed dose combination in 2017. In 2018, nearly 115,000 HIV patients in Vietnam were slated to transition to TLD.

However, wide-scale uptake of TLD was not likely until 2021 because the GVN required additional evidence on budgetary implications before including it in the Social Health Insurance (SHI) drug list.

Description: The USAID funded Local Health System Sustainability (LHSS) project has worked closely with Vietnam's Ministry of Health (MOH) to generate the evidence on TLD's clinical benefits and financial impact required to advocate for its inclusion on the SHI drug list. LHSS then collaborated with MOH to organize technical meetings and advocacy workshops with the SHI Drug Council and policymakers to disseminate evidence showing that TLD is an effective and cost-efficient treatment.

Lessons learned: LHSS's analysis demonstrated that TLD meets treatment needs, is cost-effective compared to alternatives, and has fewer side effects than other drugs resulting in lower attrition. Compared to TLE, TLD increased patient life-years from 21.5 to 25.2 and decreased SHI costs by approximately USD $4.75 million per year. These findings demonstrate that TLD meets Vietnam SHI inclusion criteria.

Analysis findings were included in the comprehensive TLD dossier submitted to the MOH, resulting in the MOH mandating that TLD to be included in the SHI drug list for the benefit of HIV patients.

Conclusions/Next steps: With the new policy in place, people living with HIV (PLHIV) in Vietnam can access a fixed-dose combination of TLD covered through the SHI fund, effectively reducing barriers to life-saving treatment. The MOH started procuring TLD in early 2021 and distributed it to more than 50,000 PLHIV beginning in July 2021, which was 6 months earlier than planned. TLD is now the ARV regimen for the majority of PLHIV in Vietnam.

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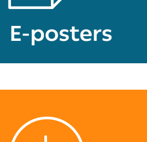
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Monitoring and evaluation of policies and their impact on people living with HIV and key populations

EPF146

Community advocacy actions to breaking ID card barriers on transgender people in Indonesia

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Background: The issue of ID-Card ownership among KAP had been incriminating HIV response since it has led to challenges in accessing health services and government social support and was aggravated in COVID-19 pandemic situation, whereas ID-Card required to access COVID-19 vaccination. Transgender people are difficult to obtain ID-Card due to complicated beuracratic system and practices of stigma and discrimination.

This programme aims to facilitate transgender community in accessing ID-card, initiated by a group of community-based organizations that grew into an extensive community movement involving transgender community across the country, which highlights the power of community collaboration in a comprehensive and structured advocacy actions, and the existance of voluntarism.

Description: Period: July-December 2021

Location: National and 29 Districts

Advocacy Activities:

1. Community National Advocacy to Directorate General of Civil Registry.
2. Community Mobilization: increase awareness of ID-Card ownership importance to improve livelihood and recruitment of voluntary district focal points.
3. District Advocacy: intense communication between community and district government to ensure district implementation.
4. Programme Evaluation to document activities and initiatives conducted to enable knowledge and information sharing.

Lessons learned: To date, the programme had facilitated 480 Transgenders obtained ID-Card, which opened access to other necessities e.g. national health insurance and government social supports. The collaborative efforts of the community indicates that voluntarism is not yet extinct, as the programme was conducted without specific donor. However, donor support might broaden intervention areas and promote programme sustainability.

National Regulation/Policies are not automatically be implemented in district level, and community monitoring is essential to encourage implementation. Each district has various initiatives and innovation to ease the procedures and mechanism for ID-Card registration and printing.

Lack of interest from the community to obtain ID-Card is driven by life-long stigma and discrimination, and scepticism towards government bodies. Extended socialization and community focal points are necessary to tackle this issue.

Conclusions/Next steps: This programme had marked that significant changes are possible through strong community collaboration. Further investment will focus on expanding this intervention to other districts and key population groups, and also applying its methods to facilitate access to other necessities e.g. national health insurance, and other social supports, particularly health services.

EPF147

Understanding gaps in implementation of national HIV policies in South African public health facilities using Ritshidze community-led monitoring data

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Background: South African HIV policies and guidelines incorporate human-rights and people-centered approaches to healthcare, a critical strategy for closing retention and viral suppression gaps. These standards include guidelines for friendly, efficient, and private/non-coercive healthcare services that are not often captured by traditional service delivery monitoring.

Using data from the Ritshidze Community-Led Monitoring (CLM) Programme in South Africa, we describe the extent to which quality of care aspects of policies are being implemented with fidelity.

Methods: Ritshidze community monitors conducted electronic surveys at 402 PEPFAR-funded facilities in South Africa, surveying 7,654 public healthcare users from April 1 to June 30, 2021. CLM data from indicators on friendliness of staff (n=2), efficiency (n=1) and privacy/non-coercion (n=2) were compared to HIV-related National Department of Health (NDOH) standards, charters, and guidelines to measure the extent to which public healthcare users reported adherence to national policies.

Results: CLM indicator alignment with NDOH guidelines on friendliness was low, with 16% of PLHIV reporting staff are welcoming when they return to the facility after missing a visit and 62% of respondents reporting that staff are always friendly and professional (Table 1). Alignment with guidelines related to privacy/non-coercion was higher, with 90% of PLHIV reporting the facility keeps people's HIV status confidential, and 79% of respondents report being told they could refuse to give the names of their sexual partners during index testing. Clinic efficiency was rated generally low, with 31% of respondents reporting the queue at the facility is not long. Provincial variation was reported, with ranges from 14% (efficiency) to 29% (non-coercion).

Category	Guideline (Source)	CLM Indicator	National (Provincial Range)
Friendliness	"All staff in the facility are welcoming, acknowledge it is normal to miss appointments and/or have treatment interruptions, support and empower patients to improve retention after re-engagement." (Standard Operating Procedures: Minimum package of interventions to support linkage to care, adherence, and retention in care, 2020)	% of PLHIV reporting staff are welcoming when they return to the facility after missing a visit	16% (4-25%)
	"A positive disposition displayed by health care providers that demonstrate courtesy, human dignity, patience, empathy and tolerance." (The Patients Right Charter, 2019)	% of public healthcare users reporting staff are always friendly and professional	62% (51-72%)
Privacy/ non-coercion	"Voluntary, freely, and no-coercive: The principles of human rights should be maintained. The index client may opt out of/withdraw from ITS at any stage without providing a reason and without punishment or denial of other services." (Standard Operating Procedures for HIV Index Testing Services, 2020)	Among public healthcare users reporting having participated in index testing, % reporting they were told they could refuse to give names	79% (64-92%)
	"Information concerning one's health, including information concerning treatment may only be disclosed with informed consent, except when required in terms of any law or an order of the court." (The Patients Right Charter, 2019)	% of PLHIV reporting they think the facility keeps people's HIV status confidential and private	90% (77-95%)
Efficiency	"Patients are attended to within an acceptable period of time and in accordance with their needs." (National Core Standards, 2011)	% of public healthcare users reporting they don't consider the queue at the facility to be long	31% (22-36%)

Table 1. Comparison of NDOH guidelines and CLM indicators

Conclusions: In South Africa, CLM data highlights substantial gaps and provincial variation in the full implementation of policies meant to protect the rights of people in South Africa to adequate healthcare services. CLM data should be used by the NDOH to monitor and address gaps in the implementation of policies to ensure friendly, efficient and private/non-coercive service delivery.

Policies supporting increased demand, uptake and retention of key populations for HIV services and programmes

EPF148

On the way out of HIV treatment refusal in China: a mixed-methods study

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Background: Treatment refusal negatively impacts the well-being of people living with HIV (PLWH). We aimed to assess the prevalence and correlates of HIV treatment refusal in China.

Methods: A mixed-methods study was conducted among PLWH and health care providers (HCPs) in China April-December 2021.

A telephone-based semi-structured interview of PLWH and HCPs was conducted to understand existing discrimination. Thematic analysis was employed to qualitatively analyze potential themes. An online survey among PLWH was conducted to collect information about treatment refusal. Correlates of treatment refusal during the most recent non-HIV-related outpatient and inpatient visits were assessed using multivariable logistic regression.

Results: We enrolled 30 PLWH (gender: 83% male; age: median 34 years, IQR: 27-45) and 27 HCPs (gender: 41% male; specialty: 63% non-infectious diseases departments) in the interview and 902 PLWH (gender: 91% male; age: 32 years, 27-38; time since HIV diagnosis: 3.2 years, 1.6-5.4; CD4 count: 47% were >500 per mm3) in the online survey. In interview, PLWH reported various forms of discrimination, including treatment refusal, humiliation, excessive precautions of HCPs, and breaches of confidentiality. HCPs suggested preparedness of HIV occupational post-exposure prophylaxis (PEP) at work, clear definition of responsibility, financial compensation to HCPs and HIV testing for all emergency patients may help minimize treatment refusal. In online survey, 56% (n=502) PLWH reported non-HIV-related outpatient experience, 42% (n=212) of whom experienced treatment refusal. Just under 30% (n=262) reported non-HIV-related inpatient experience, 63% (n=165) of whom experienced treatment refusal. For outpatients, PLWH who were <30 years (AOR 0.51, 95%CI: 0.33-0.79), infected through male-male sex (0.47, 0.27-0.83), and attended service after Jan 23, 2020 (0.57,0.33-0.99) were less likely to experience treatment refusal. Whereas PLWH who were ART naïve (11.09, 1.20-102.61), disclosed HIV infection to HCPs (1.54, 1.02-2.33), and attended the department of surgery (2.11, 1.23-3.61) were more likely to experience treatment refusal. For inpatients, PLWH from Central China (2.94, 1.18-7.30) and whose HCPs were male (2.16, 1.1-3.97) reported more treatment refusal.

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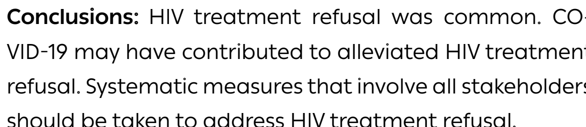

Conclusions: HIV treatment refusal was common. COVID-19 may have contributed to alleviated HIV treatment refusal. Systematic measures that involve all stakeholders should be taken to address HIV treatment refusal.

EPF149

"RIPOSTE - the voice of key populations": towards a better valorization and recognition of the role and status of peer educators of key populations

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Background: According to the recommendations of the last UN High-Level Meeting on HIV/AIDS (June-July 2021), ending the global HIV epidemic will require a greater commitment to address inequalities, stigma and discrimination that continue to fuel the epidemic and prevent many people, in particular key populations (KPs), from accessing the services they need. In this context, the "peer education" strategy of community-based and ledorganizations fighting HIV, viral hepatitis and STIs is essential to ensure access to health services for these populations. Through their field work and the various training programs they follow, peer educators (PEs) develop skills in health mediation, legal assistance, support for people living with HIV and/or hepatitis, etc. Still, despite their involvement at all stages of the HIV/hepatitis care cascade, their contribution to community mobilization and the protection of KPs from stigma and discrimination, the status of PE remains mostly undervalued and precarious.
In 2021, the PE and KP leaders participating inthe RIPOSTE project,i.e. the community-based organizations (CBOs): REVS PLUS (Burkina), ANSS (Burundi), ARCAD Santé PLUS (Mali) and PILS (Mauritius) came together to collectively analyze this issue and identify solutions.
Description: The analysis of the role and status of PEs in the HIV, viral hepatitis and STIs responses, was done through an experience capitalization process that took place between June and October 2021. It involved the participation of 35 PEs and KPs community leaders. The main objective of this process was to identify concrete solutions for a better valorization/valuing of PEs' roles.
Lessons learned: The capitalization process allowed the identification and prioritization of PE requests, the most important of which weremoral and formal recognition of the contribution of their work in the fight against HIV/AIDS, viral hepatitis and STIs; legal recognitionas employees with all the rights deriving from this status.
Conclusions/Next steps: As actors on the front line in the fight against the various epidemics and an indispensable interface between health systems and KPs, the legitimate demands of PEs must now be heard and translated into public policies and concrete measures in employment law.

EPF150

Engaging and empowering LGBTQand PLHIV multicultural communities, to increase access to services and encourage health seeking behavior

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Background: New South Wales (NSW)has seen significant declines in HIV notifications among Australian-born gay, bisexual and other men who have sex with men (GBMSM). However, data has shown little decrease in notifications among overseas-born GBMSM, especially those from East and South-East Asia.
LGBTQ people from multicultural backgrounds also experience poorer mental health outcomes due to racism, homophobia and transphobia.
Australia's largest LGBTQ organisation, ACON, has developed a comprehensive Multicultural Engagement Plan (MEP) to address these intersecting health needs by increasing the cultural safety and equity of HIV testing and prevention initiatives for LGBTQ people from multicultural backgrounds.
Description: The Plan was led by an internal working group of staff with lived experience and an external advisory panel of experts(researchers,community leaders and government).
An extensive community consultation process was conducted with 55 stakeholders including community members and professionals working in the HIV, LGBTQ and multicultural sectors. Of the participants, 74% were from a non-Anglo/European backgrounds. In terms of gender, 46% were women, 40% were men and 14% were non-binary. Of the women, 13% were transgender, and of the men, 14% were transgender.
The Plan was directly informed by the findings from these consultations and centred the voices of multicultural and migrant LGBTQ communities.
Lessons learned: The Plan was led by an internal working group of staff with lived experience and an external advisory panel of experts(researchers, community leaders and government).
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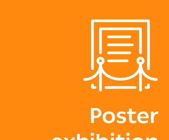

Conclusions/Next steps: ACON has launched the MEP and appointed a project officer to oversee the implementation of the Plan.
Further, the consultation findings and consultation methodology from this project can be adapted to other organisations working with multicultural and migrant communities to meaningfully address their intersectional health needs.

EPF151
COVID 19 Lockdown policies leading to late presenters, co-morbidities and delayed initiation to ART – Need to re-shape HIV services policies during COVID lockdown

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Background: AIDS HEALTHCARE FOUNDATION – India implements community based rapid HIV testing (CBT) across ten states. The objective of the program is early detection and linkage to treatment in order to compliment the efforts of the National Program in reaching 95- 95 -95.Due to COVID lockdown and restrictions in 2020, many HIV related services were hampered including community based testing and new enrolments to treatment. Before COVID, 30% of the enrolments in the clinic were late presenters who had less than 200 CD4 count.
It was decided to undertake an operational study to understand the scenario after the onset of COVID.
Description: The study considered all new enrolments to the clinic in 2019 and 2020/2021 with the objective to compare the percentage of late presenters among enrolments, before and after COVID 19 lockdowns and restrictions were imposed. In 2020 the CBT was halted and there were no active enrolments to the clinic due to lockdowns and curfew. The testing services were partially resumed by the end 2020 and went to full capacity by mid-2021.
Lessons learned: The results showed that in 2019, 30% of the new registrations in the clinic were late presenters with < 200 CD4 Counts. These 30% late presenters were represented by 86% Men, 13% Women and 1% Transgender. The data post-COVID-19 lockdown and restrictions revealed that there is a steep increase (67%) in late presenters, who included 82% men, 15% women and 3% from the transgender community.
The restrictions imposed by COVID-19 led to low CD4 Counts and presence of various co-morbidities at the time of registration in the clinic.
Conclusions/Next steps: The National Policies needs to be augmented to facilitate continuity of HIV Services especially in Community Based HIV Testing and pave way to easy access testing services and early detections. This will reduce the presence of co-morbidities and facilitate early initiation of ART.

COVID-19 and politics, human rights, ethics or policy

EPF152
Combining online and offline approaches to protect the rights of PLHIV on the basis of a community-led organization during the lockdown caused by COVID-19 in Ukraine

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Background: New officially registered cases of: HIV-infection - 31000, AIDS - 8282 in Ukraine during the COVID-19 pandemic (2020-2021).
Violations of rights of PLHIV is a serious problem in Ukraine. According to the PLHIVStigma Index 2.0 Ukraine 2020 report, 50% respondents knows about laws that protect PLHIV from discrimination. 41% - do not know about it, 6% are convinced that there are no such laws. However, only 17% of respondents whose rights were violated tried to take action to protect them.
Many people with HIV and tuberculosis and representatives of vulnerable groups (hereinafter the Clients) did not have access to offline services during the lockdown. Therefore, there was a need to combine online and offline ways to provide legal aid.
Description: The response to these challenges was a chatbot "Legal Bot 100% LIFE" (hereinafter the Legal Bot) that has been implementing by CO "100 PERCENT LIFE" in the Project of Legal Network.
The Legal Bot became a topical way to obtain legal advice during lockdown by giving legal answers to the most common questions remotely, optionally and anonymously which helped to reduce the negative impact of lockdown on the Clients.
Lessons learned: There were 3590 answers to legal questions through the Legal Bot and almost 6000 legal consultations provided by legal office concerning issues of violation of rights to access to medical care, services and family rights, etc. in 2020-2021.
Legal support was provided in 296 pre-trial cases (83% of cases were resolved in favor of the Clients) and 51 strategic cases (10 of them are proceeding in the European Court of Human Rights) in the Project.
The combination of efforts of 12 legal offices and the Legal Bot has made the most convenient way for the Clients

to get legal aid using online or offline or combining these methods at the same time.

Conclusions/Next steps: The Project implementation shows the high level of efficiency of combining free legal aid by offline 12 legal offices and online Legal Bot within the restrictions of the lockdown and quarantine measures. It ensures the sustainability of legal services for the Clients using modern digital technologies.

EPF153
State of vaccination in hospitalized and deceased patients with HIV in Mozambique

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Background: The first case of COVID_19 occurred in March 2020 and immediately the Government of Mozambique declared a state of emergency. A variety of intervention were taken in order to slow the increase the number of cases such us social distance, compulsory use of masks and regular wash hands. In March 2021 the country started the vaccination of priority groups like health providers, patients with Diabetes and Hypertension with age above 60 years old. In June 2021 more groups were included and expansion started for the second phase of vaccination. After 10 months the country has vaccinated 10.3 million of general population vaccinated, approximately 30%, and out of that 8.5 million completed the doses (2 or 1) and this includes HIV patients.

Description: Routine data from hospitalizations were analyzed from June 2021 till January 2022 (January 19th). It was possible to observe the proportion of vaccinated people among hospitalized and deceased patients living with HIV.

Lessons learned: From June 2021 to January 2022 (19th), it was registered that 628 patients with COVID_19 were hospitalized and only 51 of them were vaccinated (8.1%). Also, it was observed that 275 death that occurred in patients with HIV and only 26 of them were vaccinated (9.5%). There is a noticeable difference in the number of vaccinated COVID-19 patients from July and August 2021 (third wave) to the number in the fourth wave in December 2021 and January 2022. The percent of PVHIV vaccinated rose from 5% in the third wave to 14% in the fourth wave.

Conclusions/Next steps: The vaccination for COVID_19 still ongoing and efforts are being made by the Government of Mozambique to include all the eligible populations. Despite the protective factors of the COVD-19 vaccination, there were still a higher proportion of vaccinated PVHIV in the fourth wave than in the first, a worrying indicator for future COVID-19 waves.

EPF154
Upholding human rights and the rule of law during a pandemic - lessons from the judiciary in Africa's response to the COVID-19 pandemic

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Background: Across the world, COVID-19 resulted in the use of extraordinary laws, law enforcement limiting rights, including through extreme restrictions on freedom of movement and access to services, as well as laws criminalising behaviours, in the interests of public health. The panic occasioned by the pandemic raised concerns that the rule of law might take second place in courts and police actions, with a disproportionate impact on marginalized groups.

Description: The project monitored the response of African Courts during the COVID-19 pandemic to assess adherence to the rule of law. Engagements with KP organisations indicated that measures addressing the pandemic were often blind to the real-life impact on marginalised groups. The measures also impacted the ability of marginalised groups to access the courts to assert their rights. The Siracusa Principles on the Limitation and Derogation Provisions in the ICCPR continue to guide the judiciary to ensure emergency measures are also proportionate.

Lessons learned: Initial court responses to restrictions allowed States to decide adequate measures to curb the pandemic. Typical arguments used focused on the Precautionary and Greater Good Principles, and Doctrine of Necessity. Courts were however alive to the need for the State to use its powers in accordance with the law and in a proportionate manner, and were willing to set aside measures that ignored the potential negative impact on vulnerable communities except where that impact was adequately demonstrated through evidence by the appropriate applicants. Courts further urged States to restrict policing powers and address impunity and lack of oversight of the police.

Conclusions/Next steps: As with the HIV pandemic, courts' ability to assess whether measures were a disproportionate violation of rights relied on the judiciary's ability to understand and evaluate the evidence. Cases were often brought on urgency with inadequate evidence placed before the courts for decision-making. Coupled with misinformation and panic, courts struggled to overturn measures without the necessary evidence. Where the courts' jurisprudence cautioned against abuse of power, it was ineffective, the judgments were neither acknowledged nor implemented. Availability and accessibility of complaints mechanisms would better address rights violations occasioned by a breakdown of the rule of law and police impunity.

EPF155

Communities committed to promote the human rights, sexual and reproductive rights, and the eradication of violence against people living with HIV and key populations in the context of COVID-19

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Background: *https://youtu.be/olw5Tb3ILtY*
In Peru, discrimination constitutes a crime (Penal Code and Law N°27270). However, currently 7 out of 10 Peruvian feel that human rights are little or not protected at all and that it will not improve in the coming year. In this regard 1 out of 3 people has suffered discrimination, mainly on the street (28%) and workplaces (29%); 1 in 5 people maintain that homosexuality is a disease and 71% maintain that LGBTQ+ people are the first group discriminated against; like so 7 out of 10 consider that people with HIV, being the second group most discriminated.
This figure increases when they are women, mainly in rural areas where prejudice accentuates discriminatory behaviors.
Description: *https://drive.google.com/drive/folders/1-NdYeXBX0tYLpVQdiP0ynHbxKEIb25GE?usp=sharing*
The Ministry of Justice and Human Rights with technical assistance from UNAIDS, UNFPA and the NGO Flora Tristan launched a community campaign, with emphasis on the gender and human rights approach, to raise awareness, inform and educate populations about situations of normalized discrimination against women: indigenous, LGBTIQ, living with HIV, migrant and domestic workers, exacerbated in the context of COVID-19.
4 lines of action:Participatory assessment to explore the social norms and discriminatory practices in key populations; capacity building of community leaders, civil society activists and the media; high-impact communication campaign to change social norms, attitudes and behaviors that violate the rights of key populations: through radio micro-programmers and other strategies prioritizing the intersectional approach; M&E and partnership with key actors (public and private sector, SCO, etc.)
Lessons learned: The citizens valued that the government leads a campaign to make visible the discrimination and defense of human rights of key population.
The intersectional approach of the discrimination and violence has been key to understand the multiple impact of discrimination.The active participation of key populations, activists and media guaranteed the success of the initiative.
Conclusions/Next steps: The justice sector has been strengthened in its leading role in protecting the human rights of key populations.736,000 people recognize discrimination as a public problem and are willing to take action to eradicate it, including native communities (Amazon).69 journalists are sensitized against discrimination and committed to eradicating it.
Local Municipalities are committed to sustainability.

EPF156

Building partnerships with Civil Society to prioritize resourcing for children and adolescents in the HIV and TB response in the face of Covid-19

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Background: Children and adolescents living with HIV experience poorer health outcomes across the clinical care cascade compared to adults with HIV, but pediatric populations are often insufficiently prioritized when allocating resources for national HIV/TB strategies.
To meaningfully engage diverse stakeholders and civil society organizations during the COVID-19 pandemic, the Elizabeth Glaser Pediatric AIDS Foundation (EGPAF) developed a replicable model for virtual engagement of civil society to create a consensus charter delineating policy priorities to ensure inclusion of children in national HIV/TB responses.
Description: EGPAF collaborated with Kenyan civil society organizations (CSOs) to engage the Global Fund Country Coordinating Mechanism to ensure that pediatric resource needs were prioritized in Kenya's Global Fund funding proposal. Due to the COVID-19 pandemic, several virtual consultations were convened in order to develop a consensus charter advocacy tool enumerating national priority needs of children/adolescents related to prevention, diagnosis, and treatment of HIV/TB. An analysis of national gaps in pediatric HIV/TB response that require resourcing informed the charter, including the need for optimization of pediatric antiretroviral therapy and procurement of point-of-care commodities. Due to the success of the initial civil society convening in Kenya, a second convening was hosted in Lesotho with civil society partners. The Lesotho National AIDS Commission, which coordinates HIV/TB programs, was part of the discussions with civil society, highlighting the value of partnerships with various stakeholders.
Lessons learned: The virtual consultations in Kenya and Lesotho led to the development of critical advocacy tools to ensure strategic and targeted engagement with key

decision makers (e.g., Global Fund and PEPFAR), in the HIV/TB response on priorities for children/adolescents. These consultations and resulting charters serve as a replicable model for successful virtual engagement of civil society, which has been a key challenge during the COVID-19 pandemic.

Conclusions/Next steps: The charters will coordinate advocacy and fund mobilization, ensure effective program implementation, and assist CSOs to speak with one voice. Additionally, the process identified for virtually consulting CSOs will be replicated in additional countries, providing a method to ensure community voices are represented in decision making, even under adverse circumstances.

EPF157

Can podcasts be reliable sources for informing policy makers and general public on the lessons from AIDS for the COVID-19 pandemic?

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Background: Forty one per cent of US citizens listened to at least one podcast per month in 2021. A Shot In The Arm Podcast with 65 episodes, was launched in 2019 and is a video podcast about innovation and equity in global health. In March 2020, we pivoted to identify lessons from HIV to inform the COVID-19 pandemic and expanded our audience significantly to share these lessons more broadly.

Description: We report on how we are balancing "quality" with "quantity" in audience size, in collaboration with with podcast hosting platforms and public health academia.

Our guests are multidisciplinary, including Anthony Fauci, Barbara Lee, Peter Piot, Micheal Ighodaro, Yvette Raphael, Martina Clark, Peter Staley and Emily Bass. The podcast's most popular episode is with Dr Huma Abbasi of Chevron on how corporate health and medical functions are now the frontline of the COVID response, building on the company's HIV workplace programs, with over 125,000 listens/views via Linked In. A two part episode on India's 2021 COVID outbreak, and its impact on Hijra marginalized communities, generated 59,000 listens, through Instagram, primarily from South Asia.

However, audience expansion brought increased content and speaker criticism by "bots" and "trolls". Many of these were associated with anti-vax and misinformation groups. We have removed obvious bots and trolls, prioritized distribution through Linked In, and focused Facebook engagement, away from imprecise promotion tools to targeted interaction with interested networks - for example, nurse practitioners and vaccine implementers, and communities of people with HIV.

Lessons learned: Clear guidelines for managing podcast subscriptions are a central priority for all health-related podcasts and social technology outreach. Size of podcast audience is not, in itself, an indicator of success. We are now a project of the Ikana Health Action Lab and are collaborating with the Health Podcast Network to build an expanded targeted public health audience, and to articulate further impact of the content with influencers and stakeholders.

Conclusions/Next steps: While the reach of the podcast has been evaluated with Facebook and Linked In metrics, we are now collaborating with Brown University School of Public Health to further understand impact with key audiences.

EPF158

Legal and human rights interventions for persons living with HIV, KVPs, other vulnerable and marginalized groups during COVID 19 lockdown 2020-21: Uganda Network on Law, Ethics and HIV/AIDS (UGANET) experience

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Background: Uganda implemented lockdowns, curfew,banning of both private and public transport systems and mass gatherings to minimize spread of COVID19.Media reports indicated that cases of domestic violence increased and these accounts of violence were commonly sexual and gender-based violence against women and girls.

The lockdown also saw a great number of Persons Living with HIV, women, girls and vulnerable communities face gross human rights violations; domestic violence, stigma and discrimination,denial of access to medical services (ART) for PLHIV who missed appointments because there was no public transport and even those with cars were unable to because of lockdown.

Community paralegals were great resources to the communities during lockdown, they worked with Lawyers and ensured that Persons Living with HIV and other vulnerable and marginalized communities are/were not left behind.

Description: Human rights violations across Uganda increased exponentially during the COVID 19 lockdown. This kept Human rights Lawyers on their feet. UGANET found innovative ways of responding to needs of communities by starting a toll-free line in handsets with 16 channel 24 hours Call center, coordinating with community paralegals and picking cases from media. To get the community served, adverts were put on TV and in local radios in all regions of the country.

UGANET also established a GBV shelter and rescue program by 29thMay 2020,to provide holistic support; legal, psychosocial, safe space, security for survivors of violence.

Lessons learned: 70 calls received per day 55% F with about 40, 57% cases were for serious follow up and most of the cases had TB/HIV/GBV context.

167(M-30, F137) 82% F and 17%M supported through legal interventions. This impact was realized through availability of lawyers and community paralegals.

751(M248,F503) community members across the country called through Call center toll free and sought legal services. The findings were 66% F comprised of mainly Adolescent Girls and Young Women and also PLHIVs. This impact was made possible because of the 24/7 legal support.

Conclusions/Next steps: Social injustices and human rights violations for vulnerable and marginalized groups can be mitigated through legal and community led interventions. However, the availability of lawyers who are willing to offer free legal services remains an issue.

Impact of COVID-19 on HIV risk and HIV care among refugees, migrants, asylum seekers and internally displaced persons

EPF159

Access to HIV care and treatment before and during the COVID-19 pandemic for Venezuelan migrants in four urban settings of Colombia

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Background: Colombia hosts the largest population of Venezuelan migrants, more than 1.7 million, as of March 2021. People living with HIV (PLHIV) are among those leaving Venezuela, often in search of better healthcare. However, most migrants enter Colombia with irregular immigration status and do not have access to national health services, including HIV care, and can access only emergency services and vaccines.

We describe access to HIV care and treatment before and during the COVID-19 pandemic for recently migrated Venezuelan adults residing in Colombia.

Methods: We conducted formative research for a biobehavioral survey of recently migrated (since 2015) Venezuelan adults (≥18 years) residing in Bogotá, Soacha, Barranquilla, and Soledad. In-depth interviews (IDIs) were conducted with 24 stakeholders and 31 adult migrants, between June and October 2020 and April and June 2021, respectively. During the latter timeframe, a single focus group discussion was held with adult migrants. Stakeholder interviews included staff and healthcare workers from humanitarian organizations and government entities. The 31 adult migrants included 16 males, 15 females, 10 PLHIV, and 21 non-PLHIV. Transcripts were thematically coded in ATLAS.ti following study domains and new codes were generated as themes emerged.

Results: Participants reported migrants' barriers to accessing HIV care and treatment, including immigration status and navigation of healthcare options, prior to the COVID-19 pandemic. Humanitarian organizations significantly facilitate healthcare provision for migrants, both prior to and during the pandemic. Multiple impacts to HIV healthcare provision during the first year of the pandemic include inadequate healthcare staffing and delay or pauses in services (e.g., antiretroviral medications (ARVs) delivery and rapid HIV testing). Participants also reported healthcare organizations utilizing telehealth appointments, delivering ARVs to patients' homes, and disseminating sexual health information via electronic channels. Participants experienced continued necessity for in-person services like HIV testing and medication pick-up due to service delays and inadequate medication supply.

Conclusions: COVID-19 exacerbated existing challenges to accessing HIV care and treatment in addition to creating new disruptions in the HIV care continuum for Venezuelan migrants in Colombia. Despite telehealth availability and medication delivery during early peaks in the pandemic, these results emphasize a continued need for in-person services.

EPF160

AMPF Strategy for Combination Prevention and rights-based care to migrants and refugees living with HIV during the Covid-19 pandemic

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Background: HIV prevalence remains low in Morocco, among the key populations are IDPs and migrants with an observed prevalence 7.1% and 3% respectively (National Screening data, 2017). Women refugees and migrants are at a higher risk to HIV and SGBV due to their high exposure to sexual coercion (IBBS, 2013). With the onset of the COVID-19 pandemic all health efforts focused on reducing the spread of COVID-19 and services suffered from disruptions. To protect some of the gains reached by the National Strategic Plan for the fight against AIDS 2017-2021, AMPF with partners intervened quickly through targeted response to PLHIV, recruiting volunteer doctors to monitor vulnerable cases and digitalised services to reach those at risk.

Description: The COVID-19 HIV and SGBV multisectoral rapid response started in 2020 based on the assessments of the COVID-19 situation in Morocco. The action plan included key areas:

a. Strategy to reach the most vulnerable refugees and migrants with rights-based prevention and care;

b. The design and development of education information materials (in Arabic-French and English) on COVID 19 and HIV;

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c. Referral system of health services for refugees/migrants, contacts of focal points for HIV and COVID19 treatment;
d. Setting up telehealth platforms for the community to reach health Workers, volunteer doctors and AMPF project officer when in need.

Lessons learned: - Using comprehensive SRHR to reach refugees and migrants especially those at risk of HIV and SGBV proved to be successful during the pandemic.
- using telehealth approaches (hotline services, social media channels and WhatsApp accounts, home delivery of medications and testing at home, virtual prescription services) with the support of the volunteers from the refugee and migrant communities ensured their trust in the services.
- Well connected referral systems with partners is a best practice preparedness tool to response to the needs of those affected by HIV and SGBV.
- Enabling self-care services for HIV and SRH enhances reproductive autonomy and increased quality of care.

Conclusions/Next steps: Responsive, innovative and rights-based service the refugees and migrants impacted by HIV and SGBV during the COVID-19 pandemic should continue. Self-care, telemedicine, digitalisation and community engagement are key enables of this strategy.

EPF161
Water and food insecurity are linked with increased HIV vulnerabilities during the COVID-19 pandemic among urban refugee youth in Kampala, Uganda

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Background: It is critical to understand COVID-19 impacts on HIV vulnerabilities among refugee youth in Uganda—Sub-Saharan Africa's largest refugee hosting nation. This is particularly salient in Kampala, where youth HIV prevalence is 7.7%. To understand HIV prevention needs during COVID-19, we conducted a multi-method study with urban refugee youth living in informal settlements in Kampala, Uganda.

Methods: We conducted in-depth individual interviews (IDI) with refugee youth aged 16-24 (n=24), followed by cross-sectional surveys with a peer-recruited sample of urban refugee youth (N=440) in Kampala. We applied thematic analyses across qualitative data to explore linkages between ecosocial factors and sexual and reproductive health (SRH). Multivariable logistic and linear regression assessed quantitative associations between food insecurity and water insecurity and: pandemic-related disrupted SRH access; past 12-month transactional sex; pandemic-related unplanned pregnancy; condom efficacy; and sexual relationship power (SRP), adjusting for age, gender, and informal settlement.

Results: Key themes across qualitative narratives (n=24; n=12 women, n=12 men; mean age: 21 years old) included:
a. Pandemic-related economic insecurity contributed to survival sex, migration, and subsequent unplanned pregnancy;
b. Reduced SRH service access (e.g., condoms, HIV testing, contraception) was amplified by pre-existing low SRH knowledge and pandemic-related lockdowns; and,
c. Water-insecurity (WI) and food-insecurity (FI) magnified chronic stress.

Survey participants (n=440; mean age: 21 years old, 51% women, 49% men) reported high FI (65%) and WI (47%). In adjusted analyses, WI (adjusted odds ratio [aOR]: 1.82, 95% confidence interval [CI]:1.12-2.96) and FI (aOR: 1.89 95%CI=1.10-3.27) were associated with increased odds of disrupted SRH access. WI was associated with increased likelihood of unplanned pregnancies (aOR: 2.49, 95%CI=1.11-5.62) and transactional sex (aOR: 2.67, 95%CI=1.03-6.93) and reduced SRP (adjusted β= -2.34, 95%CI= -4.58, -0.09). Women (vs. men) (adjusted β= -3.61, 95%CI= -5.07, -2.16) and water insecure participants (adjusted β= -3.96, 95%CI= -5.44, -2.47) reported reduced condom efficacy. WI was associated with higher odds of FI (aOR: 2.27; CI:1.40-3.68).

Conclusions: Multi-method findings suggest that co-occurring FI and WI were associated with HIV vulnerabilities and also described by refugee youth as central stressors. Understanding interactions between FI and WI within larger socio-structural risk environments can advance localized HIV prevention with refugee youth.

EPF162
Impact of COVID-19 on HIV treatment and care among refugees, a call for action, Uganda experience

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Background: Uganda is hosting 1,446,378 refugees, 17,000 live with HIV/AIDS, on track to achieve UNAIDS "90-90-90" 2030, 84% (know their HIV status),87% on ART, 88% virally suppressed. However COVI 19 pandemic, strict lockdown, threatened reverse achievements, presented barriers to HIV testing (0%) mainly to vulnerable refugees in 12 districts. no care services and access to ARVS, HIV clin-

ics closed, health workers focused on COVID, neglecting other health conditions. ART refills not accessible, 98% telehealth services derailed, nutritional levels drooped as no incomes, donor agencies not available, as they faced COVID

Methods: A mixed-methodology employed targeting districts hosting refugees, 1220 living with HIV, (920 F, 300 M) 99 households reached.

Pre, post COVID-19 literature on restrictions, impact on HIV/AIDS infections among refugees reviewed.

Quantitative household survey in settlements, host community to assess impact of COVID 19 on refugees with HIV/AIDs.

Quantitative survey among HIV/AIDs refugees in settlement and surrounding communities assess accessibility to HIV/AIDs services.

Qualitative key informant interviews, HIV/AIDS services providers, local leaders, expert clients interviewed to support HIV/AIDs refugees, policy consideration, building refugees capacities to be resilient in case of epidemics.

Results: 98% reported almost 100% reduction HIV testing services, 70% increased death due to opportunistic infection, 90% women, 60% men reported loss of HIV/AIDS services, 95% were on ART pre COVID, accessing service centers was possible, with restriction 45% women, 30% males were on involuntary default on ART.. 100% reported, transport restrictions, abuse by security agencies resulting in involuntarily default on ART, 100% reported loss of income, 95%have their nutrition affected, 30% women and 20 males were reported lost clients, none availability of a functioning telehealth services (89%). 95% of respondents requested for policy change for epidemics management for continued HIV services, 100% requested a transfer of funds to boost incomes.

Conclusions: Measures implemented to mitigate COVID spread impacted refugees, more for COVID positive, lessons learnt must guide effective strategies allowing access to HIV/AIDS care, continued service provision, policy reforms, stakeholders' interventions for a strong supporting functioning environment, health system for uninterrupted timely, equitable HIV/AIDS care for refuges and a community epidemic resilience.

EPF163
Who is paying attention? The impact of COVID-19 laws on sex workers in Southern Africa

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Background: The purpose of the research was to assess the impact of COVID-19 laws among sex workers in 7 SADC countries (Botswana, Namibia, Eswatini, Tanzania, Zambia, Zimbabwe, Malawi). The research also assessed how sex worker NGOs addressed the challenges brought by movement restrictions.

Description: In 2019 as COVID-19 hit the world, Governments' across the globe introduced movement restriction laws and travel bans to control infections. These laws affected the provision of HIV services for sex workers. The research assessed the impact of COVID-19 laws on sex workers accessing HIV services and how sex worker organisations manoeuvred policy restrictions to reach an already marginalised population.

Lessons learned: Conversations conducted with eight activists leading sex worker organisations revealed that COVID-19 regulations reversed the progress made in enabling sex workers to access services in a stigma-free environment. Movement bans restricted access to community drop-in centres to refill medications. Organisations providing mobile services could not track clients to link them to services. The focus on enabling access to HIV service provision for sex workers shifted to sensitising sex workers on COVID-19 and providing food packages to families of sex workers.

Conclusions/Next steps: Sex worker activists have over the years presented evidence to show how perceived criminalisation of sex work makes them easy targets of harsh laws and exacerbate exclusion, discrimination, and violence. COVID-19 pandemic has shown that governments made decisions without due consideration of the human rights of sex workers.

EPF164
Sexual behaviours and condom use among young refugees in Acholi and West NileSub-Regions

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Background: Uganda is a host to over 1.5 million refugees (UNHCR, 2021), majority from South Sudan and DRC. The refugees experience challenges accessing and utilizing health care, including Sexual and Reproductive Health and Rights. Young refugees adopt negative coping mechanisms as their rights are suppressed by negative cultural norms such as early marriages and stereotyped gender roles, which place them at higher risk of HIV infection. There is however a general lack of evidence on factors that influence behaviours to inform targeted programming thus the necessity for a Knowledge, Attitudes, and Practices (KAP) study.

Methods: A household study based on a mixed-methods approach was conducted between June-October 2021 to establish KAP on SRHR/GBV among young refugees across seven refugee hosting districts.A total of 840 refugees aged 10-24 years were surveyed.

Results: At least 53.5% of young refugees had ever had sex. Among those that have ever had sex, six in ten had their sexual debut while they were still children (below 18

years); while half of these (50.8%) sexually active (SA) had had sex in the last four weeks. One in five young refugees engages in sex with multiple partners while 20.4% have been coerced into sex.

One in ten young refugees reported engaging in transactional sex in the last 12 months. Further, of the SA, at least 35.2% reported not to have used a condom at the last sexual act while 42.4% of those engaged in high-risk sex used a condom at the last high-risk sex.

This is alarming given that only 41% of the SA had taken an HIV test in the last six months and 27.8% are currently using any method of contraception. However, nearly all (97.6%) of those that have never had sex plan to abstain consistently.

Conclusions: These findings highlight that young refugees engage in sex at an early age with many coerced calling for emphasis on enforcement of defilement laws as well as development of life skills for assertiveness, negotiation, and self-efficacy amongst young people, especially young women to negotiate for delay of sexual debut and safe sexual practices including condom use.

Late-breaker abstracts

OALBA01 Late Breaker Track A:

OALBA0102
Immune correlates analysis of the Imbokodo HIV-1 vaccine efficacy trial

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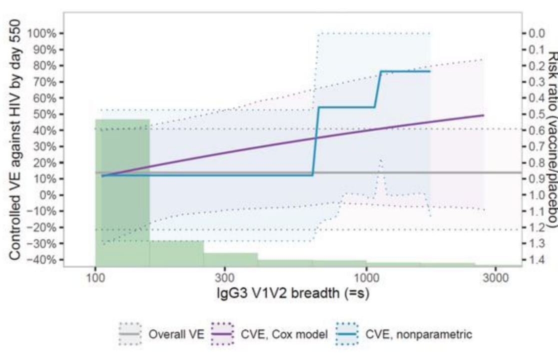
Background: In the phase 2b Imbokodo clinical trial (HVTN 705/HPX2008; NCT03060629), the investigational HIV vaccine regimen consisting of a vector-based vaccine (Ad26.Mos4.HIV) in combination with clade C gp140 protein was evaluated. Our analyses evaluated immune response markers as correlates of risk (CoR) for HIV-1 acquisition and protection (impact on VE).

Methods: Immune markers were measured in samples from month 7 (4 weeks post-third vaccination) in a breakthrough case-control cohort (n=52 cases, 231 non-cases) from per-protocol vaccinees (HIV negative through month 7, received first 3 vaccinations within vaccination windows, without major protocol deviations). Binding and functional antibodies were measured in sera by ELISA, BAMA, ADCC, and ADCP; T-cell functionality was assessed via IFN-γ ELISpot and ICS. Forty-one markers (6 primary, 35 exploratory), including IgG and IgG3 magnitude-breadth and multi-epitope function scores, were assessed as univariate CoR and correlates of protection for HIV-1 acquisition over 550 days post-month 7 via Cox and nonparametric modelling adjusted for baseline prognostic factors. Multivariable CoR were assessed by Cox modelling (primary markers) and machine learning (all markers).

Results: The analyses did not support statistically significant CoR (p-values for multivariable Cox model of primary markers: 0.11-0.72). There was a consistent trend toward IgG3 V1V2 breadth being associated with decreased HIV-1 acquisition, suggesting an immune correlate with a hazard ratio of 0.51 (p=0.11) in the multivariable analysis and 0.67 (p=0.24) in the univariable analysis per 10-fold increase, and increased VE with this marker (Figure).

VE mediated through this marker was 25.3% (95% CI: 6.2%, 40.5%). The preclinical correlate combining ELISA and ELISpot responses was not recapitulated in this clinical trial.



CVE, covariate-adjusted vaccine efficacy; HIV, human immunodeficiency virus; IgG3, immunoglobulin G3; V1V2; first and second variable regions; VE, vaccine efficacy.

Notes: Covariate-adjusted VE with 95% CIs by IgG3 V1V2 breadth score, estimated using proportional hazards (purple) or nonparametric modelling (blue). The purple and blue shaded areas represent 95% CIs. The green histogram is an estimate of the density of the month 7 marker. VE curves are plotted over marker values from smallest value (100) to the 97.5th percentile (2710) for Cox modelling and the 95th percentile (1451) by nonparametric modelling.

Figure. IgG3 V1V2 breadth (weighted avg log10 Net MFI): Month 7

Conclusions: Multiple statistical analyses revealed a trend of high IgG3 V1V2 BAMA breadth scores associated with lower infection risk and partial vaccine protection.

OALBA0103
Flt3 agonist enhances immunogenicity of arenavirus-vector based vaccines in macaques

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Background: Strong virus specific CD8 T cell responses are associated with viral control, in both non-human primate models of SIV infection and in HIV infected elite controllers. Arenavirus vectors elicit potent antigen specific CD8 T cell responses by infecting and activating dendritic cells (DC) and other antigen presenting cells. In clinical oncology studies, Flt3 receptor activation expands peripheral DCs. Here, we evaluate the potential of Flt3 receptor agonism to enhance immunogenicity of an arenavirus-based alternating two-vector SIV vaccine in rhesus macaques.

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Methods: Healthy rhesus macaques (n=13/group) were immunized with attenuated replicating arenavirus-based vectors, with artificial genome organization, i.e. artPICV (Pichinde Virus) and artLCMV (Lymphocytic choriomeningitis virus) in alternating sequence.

Both vectors encode SIVsmE543 Gag, Env and Pol immunogens and were administered alone (Vaccine vectors on weeks 0, 4, 8, 12) or in combination with Flt3 agonist (Flt3 ligand-Fc fusion protein dosed on weeks -1, 3, 7, 11).

Vaccine immunogenicity was assessed by SIV-specific IFNγ ELISpot, using SIV peptide sub-pools for cellular breadth, and Env-binding antibodies by ELISA. SIV-specific T cell polyfunctionality, activation of T cells, DCs and innate immune cells was evaluated by multi-parameter flow cytometry.

Results: No safety concerns or drug accumulation was observed with repeated Flt3 agonist dosing. In combination with Flt3 agonist, the alternating prime-boost dosing with artPICV/artLCMV resulted in a robust increase of conventional type 1 DCs (14-fold, $p<0.001$) and activated monocytes (2-fold, $p<0.01$) over baseline.

Combination treatment significantly increased SIV-specific IFNγ T cell responses (8-fold, $p<0.0001$), expansion of SIV-specific cellular breadth (9-fold, $p<0.0001$), T cell activation (2-fold, $p<0.001$), and SIV Env-binding antibodies (3-fold, $p<0.0001$) after the 4 vaccine doses.

Importantly, Flt3 agonism significantly augmented vaccine induced peak polyfunctional SIV-specific CD4 and CD8 T cells (by 2-4-fold, $p<0.05$) that express IFNγ, TNFα and IL-2 after each vaccine dose.

Conclusions: Flt3 agonism is a novel immunomodulatory strategy that augments the magnitude, breadth, and polyfunctionality of SIV-specific T cell responses and SIV-specific antibody responses induced by arenavirus vaccination with a potential to be part of a combination therapeutic approach for HIV cure.

OALBA0105
Metabolomic and lipidomic correlates of time-to-HIV-rebound in viremic controllers treated with vesatolimod

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Background: Metabolites andlipids are biologically active molecules involved in several cellular processes and immunological functions. Recently, several metabolites and lipids were suggested as potential correlates of time to HIV rebound (TTHR) post-antiretroviral therapy (ART) interruption in chronically-infected people living with HIV. We examined plasma metabolite and lipid profiles in a placebo-controlled Phase 1b study of the TLR7 agonist vesatolimod (VES) in ART-suppressed viremic controllers.

Methods: We enrolled 25 ART-suppressed HIV viremic controllers [pre-ART plasma viral load (pVL) 50-5000 copies/mL]. Seventeen participants received ten biweekly doses of VES, and eight received placebo, followed by an analytical treatment interruption (ATI) phase for up to 48 weeks. pVL was measured by qPCR, proviral HIV DNA was measured by the intact HIV proviral DNA (IPDA) assay, and plasma metabolites and lipids were measured by HPLC-MS/MS. Baseline (predose) levels of metabolites and lipids were used to determine associations with time to pVL of 200 or 1000 copies/mL, or the duration of HIV control below 400 copies/mL during ATI, using the cox proportional hazard model and Spearman's correlations.

Data collected at 1-day after VES dose 10 were used to evaluate the effect of VES. Wilcoxon Signed-Rank test and Rank-Sum were used to compare between timepoints and populations.

Results: VES treatment resulted in induction of pro-inflammatory tryptophan metabolism, increased protein-synthesis-related aminoacyl-tRNA biosynthesis, and enhanced the phosphatidylinositol signaling pathway.

At baseline, glycoursodeoxycholic acid, some ceramide lipid groups, and cholesterol ester (ChE 20:2) were associated with longer TTHR and larger reduction in IPDA; while phosphatidylcholine (18:3_18:3), and phosphatidylethanolamine (19:1_18:1) were associated with shorter TTHR. Pathways associated with TTHR or changes in IPDA included several pathways which were previously reported to be associated with delayed HIV rebound, such as the Glutamine/Glutamate and Histidine metabolic pathways, and arginine biosynthesis.

Additional pathways found in this study included beta-Alanine metabolism and pantothenate and CoA biosynthesis, which were associated with accelerated immune recovery.

Conclusions: This exploratory analysis highlights potential metabolic and lipidomic changes mediated by VES treatment and/or associated with viral control post-ART-cessation in HIV viremic controllers. These findings warrant further investigations in larger independent cohorts.

OALBB01 Late Breaker Track B:

OALBB0102
Phase I/II study of monoclonal antibody VRC01 with early antiretroviral therapy to promote clearance of HIV-1 infected cells in infants (IMPAACT 2008)

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Background: VRC01 is a broadly neutralizing antibody (bNAb) targeting CD4 binding sites with demonstrated anti-HIV-1 activity in adults. Safety and efficacy in infants living with HIV-1 are unknown.
Methods: Infants, age <12 weeks initiating antiretroviral therapy (ART), were randomized to four doses (Weeks 0, 2, 6, 10) of open-label, subcutaneous VRC01 (VRC01) at 40mg/kg or no VRC01 (No-VRC01). Follow-up was 48 weeks, with primary safety and efficacy outcomes assessed at Week 14. Laboratory testing included VRC01 plasma troughs, droplet digital PCR for HIV-1 DNA and Genosure® MG and PhenoSense® Neutralization assays for ART and VRC01 resistance.
Results: Infants enrolled (30 to VRC01; 31 to No-VRC01) between April 2019-March 2020 in Malawi, Botswana, Zimbabwe, and Brazil; 84% Black non-Hispanic, 57% female. Baseline characteristics were (VRC01 vs No-VRC01): median age (72 vs 73 days), $\log_{10}$ plasma HIV-1 RNA (4.10 vs 4.35 copies/mL), and $\log_{10}$cellular HIV-1 DNA (3.12 vs 3.16 copies/million PBMCs). Initial ART included nevirapine (53% of VRC01; 29% of No-VRC01) or lopinavir/ritonavir. Baseline ART resistance was detected in 44% (VRC01) and 33% (No-VRC01) of infants, mostly NNRTI. Baseline resistance to VRC01 (IC50 ≥50mcg/mL) was detected in 5/17 (29%) infants receiving VRC01. All VRC01 doses were administered.
Local injection reactions (all Grade ≤2) occurred in ≥90% of infants. Adverse events Grade ≥3 (none attributed to VRC01) through Week 14 occurred in 40% of VRC01 (95% CI:23%, 59%) and 47% of No-VRC01 (95% CI:28%, 66%), and most were anemia, neutropenia and gastrointestinal disorders. Median (Q1, Q3) VRC01 plasma trough was 83.1 (36.1, 111.8) mcg/mL, however 31% were <50mcg/mL.
No VRC01 anti-drug antibodies were detected. HIV-1 DNA $\log_{10}$ copies/million PBMCs median (Q1, Q3) declines from Week 0-14 were 0.41 (0.30, 0.56) in VRC01 and 0.53 (0.33, 0.70) in No-VRC01 (Wilcoxon p=0.42).
Conclusions: Subcutaneous VRC01 was feasible and no safety concerns were observed in this first treatment study in infants living with HIV-1. HIV-1 DNA declines did not differ by treatment arm, however ART and VRC01 resistance and VRC01 troughs <50 mcg/mL may have lessened VRC01 effectiveness.
Further studies are needed to determine optimal approaches with more potent bNAbs for early treatment of perinatal HIV infection.

OALBB0103
Enhanced tuberculosis screening using computer-aided X-ray diagnosis and novel point of care urine lipoarabinomannan assay among adults with HIV admitted to hospital (CASTLE study): a cluster randomised trial

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Background: People living with HIV (PLHIV) have high mortality if admitted to hospital.Tuberculosis (TB) is a major cause of death, reflecting diagnostic challenges. This randomised trial investigated whether screening for TB using high-sensitivity urine lipoarabinomannan (LAM) testing and digital chest Xray with computer aided diagnosis (dCXR-CAD) could improve TB diagnosis and reduce mortality.
Methods: We conducted an unblinded cluster randomised trial among adult PLHIV admitted to medical wards at Zomba Central Hospital, Malawi, with admission-day the unit of randomisation.

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Admission-days were randomly assigned to: enhanced TB diagnostics using high sensitivity urine LAM (SILVAMP-LAM, Fujicorp, Japan), dCXR-CAD (CAD4TBv.6, Delft, Netherlands: provides score 0 to 100 with higher scores more likely to be TB) plus usual care; or usual care alone.

The primary outcome was TB treatment initiation during admission.

Secondary outcomes were 56-day mortality, TB diagnosis within 24-hours and microbiologically-confirmed undiagnosed TB at discharge. Trial registration NCT04545164.

Results: Between 2 September 2020 and 15 February 2022, 415 adults in 207 clusters were included in intention-to-treat analysis. At admission, 90.8% (377/415) were taking ART and median CD4 cell count was 249 cells/mm^3 (IQR 124 - 440). In the enhanced diagnostic arm, the median CAD4TBv6 score among participants was 60 (IQR: 51 - 71), and 4% (9/207) had SILVAMP-LAM-positive urine. TB treatment was initiated in 46/208 (22%) in the enhanced TB diagnostics arm and 24/207 (12%) in the usual care arm (risk ratio [RR] 1.93 [95% CI 1.21-3.08]).

There was no difference in mortality by 56 days (enhanced TB diagnosis: 54/207 [26%]; usual care: 52/207 [25%]; hazard ratio 1.05, [95% CI 0.72–1.53]) or TB treatment initiation within 24 hours (enhanced TB diagnosis: 8/207 [3.9%]; usual care: 5/208 [2.4%]; RR 1.61 [95% CI 0.53–4.71]). Undiagnosed TB at discharge based on sputum culture was 0/207 (0.0%) and 2/208 (1.0%) enhanced TB diagnostics and usual care arms, respectively (RR not estimated).

Conclusions: High sensitivity urine LAM plus dCXR-CAD screening led to more hospitalised PLHIV initiating TB treatment, but did not reduce mortality. Better understanding of the causes of death and additional interventions are required to improve clinical outcomes for people with HIV admitted to hospital.

OALBB0104

The "City of Hope" Patient: prolonged HIV-1 remission without antiretrovirals (ART) after allogeneic hematopoietic stem cell transplantation (aHCT) of CCR5-Δ32/Δ32 donor cells for acute myelogenous leukemia (AML)

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Background: HIV-1 remission has been described post aHCT. We report a 66-year-old Caucasian male, diagnosed with HIV-1 in 1988 (CD4 nadir <100 cells/uL), undetectable HIV-1 viral load on ART since 1990s. In 2018, he developed AML, treated with chemotherapy followed by aHCT from unrelated HLA-matched CCR5-Δ32 homozygous donor. He continued emtricitabine/tenofovir alafenamide/dolutegravir 25 months (m) post-aHCT. After analytic treatment interruption (ATI), he remains in HIV-1 remission.

Methods: 3/2019-current, City of Hope.

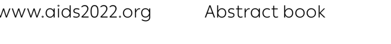
Pre-aHCT: HIV-1 DNA quantification, sequencing of genotypic tropism. Post-aHCT: blood, intestinal biopsies were obtained for cellular HIV DNA, RNA (by droplet digital PCR); compartmental testing for donor cells; ART levels; HIV-1 antibody quantification; peripheral blood mononuclear cells (PBMC) challenged with HIV-1; HIV, CMV T-cell responses.

Results: Pre-aHCT: 80 HIV-1 DNA copies/million PBMC, majority R5 tropic virus (10% false-positive rate). Post-aHCT, 14m post-ATI: 100% donor chimerism.

Post-aHCT: HIV-1 RNA undetectable (<20 copies/mL), sporadic (low-level) detectable cellular HIV-1 DNA, RNA in PBMC, gut tissue:

Date post-aHCT months (m)	RNA: msTatRev copies/1 million CD4+ T cells	RNA: skGag copies/1 million CD4+ T cells	DNA: skGag copies/1 million CD4+ T cells
+ 2m PBMC	0	35	0.00
+ 3 months PBMC	0	0	0.00
+ 6m PBMC Gut biopsy	0	0	0.00 4.22
+ 10m PBMC	11.4	0	0.00
+ 13m PBMC Gut biopsy	0	0	0.00 0.00
+18m PBMC	21.9	0	0.00
+ 24m PBMC	0	0	0.00
+ 30m PBMC (5 months post-ATI)	0	0	0.00
+ 37m PBMC Gut biopsy (12m post-ATI)	0	0	0.00 0.00

Table.



ART levels unremarkable at 7m, 12m post-ATI. We observed declining HIV-1 specific humoral, no detectable HIV-specific cellular immune response. Participant's CD8-depleted PBMC remained uninfected after ex vivo challenge with HIV R5 strains. Immunological studies 37m post-aHCT, 12m post-ATI: viral recall antigen analysis showed robust response to CMV stimulation, no response to HIV (CD4, CD8 T-cells).

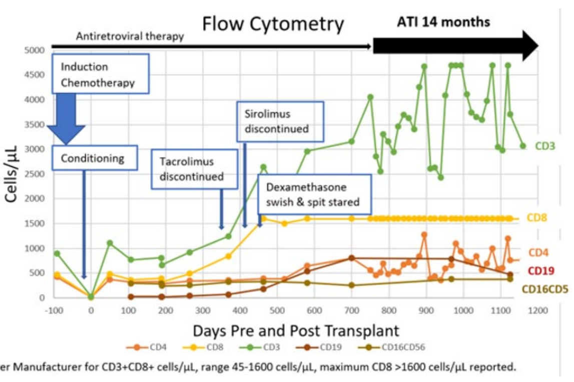


Figure.

Conclusions: We report an individual with HIV-1 transplanted for AML with CCR5-Δ32/Δ32 donor cells who at 14m post-ATI, 39m post-aHCT, has no evidence of HIV-1 RNA rebound and no detectable HIV-1 DNA. HIV cure is feasible post-aHCT as described here and in previously described reports.

OALBB0105

Incident tuberculosis as a risk factor for viral non-suppression 48 weeks among patients switched to dolutegravir based therapy with recycled nucleoside reverse transcriptase inhibitors in Lusaka, Zambia

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Background: Dolutegravir (DTG) based therapy has been hailed as the missing key to quickly curb the HIV epidemic in resource-limited settings. Inadequate viral load testing had slowed the rate at which individuals currently on nucleoside reverse transcriptase inhibitors (NRTI)-based regimens could be transitioned to DTG based therapy. However, as evidence emerges on the utility of recycled NRTIs, it remains to be known which factors could contribute to viral non suppression on Dolutegravir based therapy.

Methods: We conducted a retrospective sub-analysis for individuals enrolled in the VISEND study at the University Teaching Hospital in Lusaka, Zambia; with a baseline viral load >1000 copies/ml at the time of the switch and analysed virological outcomes at 48weeks post transition. Data on patient demographics, duration of previous antiretroviral therapy, and occurrence of opportunistic infections. Descriptive statistics were computed using STATA version 13. Viral suppression rates, Incidence rate ratios, and Multivariate logistic regressions for common factors associated with treatment failure were computed

Results: 786 records were screened, with 675 individuals with baseline viral load >1000copies/ml whilst on Tenofovir + Lamivudine + Efavirenz (TLE) meeting eligibility. 375 individuals were transitioned to Tenofovir Disoproxil Fumarate + Lamivudine + Dolutegravir (TLD) or Tenofovir Alafenamide +Emtricitabine + Dolutegravir (TafED) and 300 were to Zidovudine + Lamivudine + boosted Lopinavir or Atazanavir (AZT/3TC/LPV-r or ATV-r). Viral suppression rate was 87.9% on PI-based therapy versus 94.7% on TLD/TafED at 48 weeks (p-value = 0.002). There was a three-fold higher chance of virological failure with a TB event during the 48 weeks (p = 0.022) but no significant difference in TB outcomes between the groups nor any other significant factors associated with virological non suppression.

Variable	Crude OR [95% CI]	Adjusted OR [95% CI]	P value
Male Gender	2.14 (1.3 -3.69)	1.95 (1.08 -3.53)	0.027
Extremes of age (≤20 or≥60)	1.71 (0.87 -3.38)	1.55 (0.77 – 3.10)	0.215
TB Event	**3.19 (1.13- 8.93)**	**3.46 (1.19 -10.01)**	**0.022**
Baseline BMI	0.94 (0.88 -1.01)	0.98 (0.91-1.04)	0.533
Missed visit(s)	0.95 (0.44 -2.07)	0.98 (0.44 -2.16)	0.914

Table.

Conclusions: The results of this study emphasise the need for thorough screening for TB for patients being transitioned to DTG based therapy with recycled NRTI backbone and the need for prospective follow-up studies to establish utility of newer molecules such as Tenofovir Alafenamide/Emtricitabine/Dolutegravir with antituberculous therapy.

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OALBC01 Late Breaker Track C:

OALBC0102
High prevalence of asymptomatic Omicron carriage and correlation with CD4⁺ T cell count among adults with HIV enrolling in COVPN 3008 Ubuntu clinical trial in sub-Saharan Africa

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Background: The COVID-19 wave driven by the SARS-CoV-2 Omicron variant prompted the need to explore asymptomatic carriage among HIV-immunocompromised adults.

Methods: In the trial we are assessing COVID-19 mRNA-1273 vaccine efficacy in persons with HIV (PWH) or another COVID-19-associated comorbidity across 7 sub-Saharan African countries. Previously vaccinated persons were excluded. Baseline testing included HIV screening, CD4⁺ T-cell count and HIV viral load (if HIV⁺), anti-SARS-CoV-2 antibodies, and nasal swab SARS-CoV-2 reverse-transcriptase polymerase chain reaction (RT-PCR). Participants had to be without COVID-19 signs/symptoms to be vaccinated at enrollment. Here we examine December 2021-April 2022 data to characterize asymptomatic SARS-CoV-2 infections and assessed correlation with CD4 count.

Results: 6397 adults, including 4437 PWH, were enrolled (median age: 38 years; female: 75%). Baseline nasal swab data were available for 5772/6397 (90.2%). 336/5772 (6%) had asymptomatic SARS-CoV-2 infection, more frequent among SARS-CoV-2 seronegative than seropositive participants (9% vs 4%, p<0.001). Infection was detected among 98/1463 (7%) of PWH with a CD4 count<500 cells/mm³ vs 152/2974 (5%) with counts ≥500 cells/mm³ (p=0.037), an association irrespective of SARS-CoV-2 serostatus. A 10-fold CD4 decrease corresponded to 1.72-fold higher odds of PCR positivity, adjusting for serostatus, sex, and non-linear temporal trends (95% confidence interval [CI]:1.09-2.72-fold higher, p=0.019, *Figure 1*).

Over time, the adjusted odds of PCR positivity were highest during the Omicron surge in December 2021 and 44% lower in men than women (95% CI: 17%-62% lower, p=0.004). Gene sequencing on a subset confirmed Omicron.

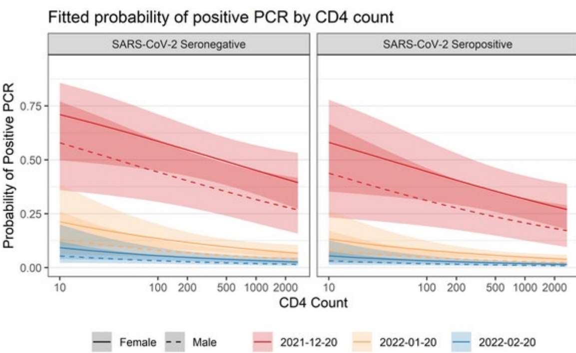

Figure 1. Estimated probability of positive PCR by baseline SARS-CoV-2 serostatus and sex assigned at birth, with corresponding 95% CIs. Logistic regression was used to model the probability of PCR positivity by CD4+ T-cell count, adjusting for baseline serostatus, sex assigned at birth, and a nonlinear temporal effect via a cubic spline. Fitted probabilities are summarized at three points: near the peak of the Omicron wave (December 20, 2020, in red) and at one and two months after the peak (in orange and blue, respectively).

Conclusions: Our study of the largest cohort of PWH in a COVID-19 vaccine clinical trial to date reports the asymptomatic SARS-CoV-2 carriage rate was 3-6-fold higher than COVID-19 vaccine trials before Omicron. Additionally, lower CD4 count in PWH strongly correlated with increased odds of SARS-CoV-2 PCR positivity.

These data highlight the urgent need for larger studies to better characterize how HIV-associated immunocompromise influences infection acquisition/clearance.

OALBC0103
A phase IV open-label evaluation of safety and tolerability of coformulated bictegravir/emtricitabine/tenofovir alafenamide for post-exposure prophylaxis following potential exposure to HIV-1

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Background: Single-tablet regimen provides a convenient once-daily regimen for the prevention of HIV infection. Here, we investigated the adherence and safety of co-formulated bictegravir/emtricitabine/tenofovir alafenamide (BIC/FTC/TAF) as a 3-drug, single-tablet regimen for post-exposure prophylaxis (PEP) in China.
Methods: This was a prospective, open-label, single-arm trial conducted in an STD/AIDS clinic of a tertiary hospital in Beijing, from May 2021 to February 2022. Adults requiring PEP were prescribed BIC/FTC/TAF one pill once a day for 28 days. Clinical and laboratory data were collected and analyzed at baseline, weeks 2, 4, 8, 12, and 24.
Results: Of 112 participants enrolled in the study, 109 (97.3%) were male and the mean age was 30±8 years. PEP completion was 96.4% (95% CI: 91.1-99.0). Two participants stopped PEP after 2 days because the source partner was identified as HIV uninfected. One participant was excluded due to hepatitis B virus infection according to the exclusion criteria. One discontinued due to the participant's decision. No participant acquired HIV through week 24. Adherence was 98.9% (standard deviation [SD], 3.3) by self-reporting and 98.5% (SD, 3.5) by pill count.
Only 5 participants experienced mild clinical adverse events attributed to study drug (including headache, diarrhea, and nausea) and 4 participants had elevated serum creatinine (grade 1).
Conclusions: A once daily, single-tablet regimen of BIC/FTC/TAF used as PEP was safe and well-tolerated with a high rate of completion and adherence. BIC/FTC/TAF may be a good option for PEP.

OALBC0104
National roll out of community HIV screening among key populations in Indonesia: assessment of early results

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Background: Although progress has been made, Indonesia remains far from achieving the first "95" of the UNAIDS 95-95-95 framework with only an estimated 43% of PLHIV knowing their HIV status in 2019. In response, the Indonesian Ministry of Health has revised its HIV testing guidelines to permit community-based HIV screening/self-testing using oral fluid rapid tests. National roll out of the new strategy began in late 2021.
This study assesses the early results in terms of community response, impact on HIV testing coverage, and linkage with treatment.
Methods: Test kits distribution and outcome data, including linkage with confirmatory testing and as needed with treatment, were compiled from four MoH implementing partners covering the October 2021 – March 2022 period. Distribution data were analyzed in terms of distribution models and modalities, as well as in terms of the characteristics of persons engaging in community screening. Testing-to-treatment initiation cascades were constructed both in the aggregate and for key population subgroups.
Results: A total of 34,981 valid community screening tests had been performed by April 2022. Hotspot distribution of test kits for assisted screening was the most common distribution mechanism (76.7% of all test kits distributed) followed by workplace distribution with assisted screening (8.4%). 95.2% of persons undergoing community screening were male, reflecting a late start in distribution to female sex workers. Of the persons screened, 75.8% were MSM, 14.3% were male employees of strategically chosen companies, 3.9% were transgendered females, 4.7% person who inject drugs, 0.9% female sex workers, and 0.3% others. 98.7% were first-time HIV testers. The HIV positivity rate in community screening was 3.6% (5.1% among transgendered females). Among persons with reactive community screening tests, 42.4% had received a confirmatory test at a health facility, and among those with reactive confirmatory tests 50% had initiated ART. The rates of both confirmatory testing and treatment initiation were especially low among FSW and male PWID.
Conclusions: Community-based HIV screening is reaching previously under-served segments of HIV key populations as evidenced by the high first-time tester rates. However, linkage with confirmatory HIV testing is low, as is linkage between confirmatory testing and treatment initiation.

OALBC0105

Predictors of high viral load among adult HIV recipients of care in Zambia, 2021: a cross-sectional analysis of HIV case-based surveillance data

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Background: Controlling the HIV epidemic in Zambia will require achieving high viral suppression coverage, as outlined by UNAIDS 95-95-95 targets. Identifying and characterizing predictors of high viral load among recipients of care (RoC) could help guide development of interventions critical to improving HIV treatment outcomes.

Methods: We conducted a cross-sectional analysis of HIV case-based surveillance data from January to December 2021 of adult RoC (≥15 years) in Zambia with record of receiving antiretroviral therapy (ART) for ≥ 6 months and latest valid viral load (VL) measurement per national electronic health record.

We assessed association of sociodemographic characteristics and ART duration on 31 December 2021, with high VL load, defined as >1,000 copies RNA/mL, based on the latest VL measurement in 2021. Regression analyses were conducted to estimate unadjusted and adjusted odds ratios to estimate effects of covariates independently associated with high VL.

Results: A total of 531,864 HIV RoC met inclusion criteria with majority (64.8%) female, median age of 35 years (interquartile range [IQR] 29-42), and median ART duration of 52 months (IQR: 29-99). High VL occurred in 18,540 (3.49%) RoC, of whom 11,083 (59.90%) were females, and 13,822 (74.55%) had been on ART for > 18 months.

Factors independently associated with high VL included: being male (adjusted odds ratio [aOR]=1.42, 95% confidence interval [CI]: 1.37-1.46), younger age: 15-19 (aOR=2.68, 95% CI: 2.52-2.85), 20-24 (aOR=1.78, 95% CI: 1.70-1.86), 25-29 (aOR=1.40, 95% CI: 1.35-1.46) compared to those > 30 year; shorter ART duration: 6 months (aOR =4.54 95% CI: 3.99-5.17), 7-12 months (aOR =2.75, 95% CI: 2.64-2.87), 13-18 months (aOR =1.42, 95% CI: 1.35- 1.49) compared > 18 months; and rural setting (aOR=1.15, 95% CI: 1.10- 1.19) compared to urban setting.

Conclusions: We identified being new on ART, male and young adult as predictors of high VL and intensifying activities centered on service delivery models for these risk groups will help the Country in its efforts to achieve high viral suppression coverage.

Further evaluation of health services in rural settings may identify gaps in HIV service delivery. Identifying pathways for high VL among identified sub-populations may represent an opportunity to reach the UNAIDS 95-95-95 targets.

OALBD01 Late Breaker Track D:

OALBD0102

Understanding COVID-19 vaccine confidence in people living with HIV in Canada: a pan-Canadian survey

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Background: While the advent of safe and effective COVID-19 vaccines for the general population has led to mass vaccination roll-outs, certain populations may lack vaccine confidence. Our objectives were to determine demographic factors associated with taking at least 1 COVID-19 vaccine, and to determine whether there were particular elements of vaccine hesitancy associated with vaccine behaviour.

Methods: With community members, we developed a study questionnaire with items from the validated National Advisory Committee on Immunization Acceptability Matrix. PLWH were recruited via social media and community-based organizations from January-April 2022. Descriptive statistics were used to summarize results and compare responses between PLWH who have received vs those who have not received COVID-19 vaccine(s).

For each participant, scores on the 5-point Likert scale were added together (reversing for direction, as necessary). Logistic regression models were used to identify factors associated with COVID-19 vaccine uptake such as age, sex, gender, and responses to the vaccine confidence questions.

Results: 205 individuals completed the survey and indicated whether or not they received≥1 vaccine dose. Mean age was 47±14 (SD) years and 73% were male. Eighty percent had completed at least some highschool. Mean VHS scores were 33 ± 17 for the 153 individuals, and 17± 6 for the 21 individuals, who did and did not take at least one COVID-19 vaccine, respectively. Univariate analyses revealed that the odds of taking at least one vaccine dose were increased 2.80-fold [95% CI 1.91, 4.41] with each increase in age of 10 years ($p<0.0001$).

No effect was observed for sex or education. Individuals accepted COVID-19 vaccines more for altruistic reasons (i.e., protection of community) than individual reasons (i.e., protection of self). Individuals who felt that the pandemic would linger on longer were more likely to accept the vaccine than those who did not feel the pandemic would last that long.

Conclusions: Older PLWH and those who anticipated that the pandemic would be prolonged in duration were more likely to accept COVID-19 vaccines. PLWH appear to accept COVID-19 vaccines more for altruistic rather than individual reasons.

OALBD0104

A community-based participatory approach to understanding preferences, needs, and barriers to uptake of longer-acting formulations of PrEP in transgender and gender diverse Texans

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Background: It is estimated that only 3% of transgender and gender diverse (TGD) people currently use PrEP despite the carrying a disproportionate incidence and prevalence burden. Long acting formulations of PrEP (LA PrEP)

may improve uptake and adherence, but little is known about TGD individuals' preferences, needs, and barriers related to LA PrEP.

The purpose of this community-based participatory research (CBPR) project was to better understand the needs of TGD individuals, healthcare providers, and the similarities and differences between these groups.

Methods: Using a CBPR approach, our team consists five researchers, three co-investigators who represent Texas Health Institute, Trans*FORWARD - a Patient Centered Outcomes Research Institute Engagement Project (EASC-COVID-00284),*Transgender Education Network of Texas, and a community advisory board (CAB) that includes 6 TGD community members. Participants were recruited online, through existing participant pools, and through the social/professional networks of the CAB and other community partners.

We conducted semi-structured, virtual interviews with health care providers (HP; n = 20) and TGD (n = 10) participations and hosted 2 virtual world café conversations (WCC) with TGD Texans (n = 20) via Zoom. Interviews and WCCs were recorded, transcribed and are currently being thematically coded by three members of the team to ensure reliability and validity of the coding process.

Results: Preliminary results identify a number of barriers and facilitators to LA PrEP uptake related to contact with the healthcare system, trauma/discrimination, and reduced worry around adherence.

However, of note is a disconnect between HP and TGD participants regarding intramuscular (IM) LA PrEP, with TGD indicating they did not want it, but HP believing this would be the most suitable formulation for TGD patients. Further, there is a also concern among healthcare providers regarding the rollout of LA PrEP.

Conclusions: Cultural humility or shared decision-making strategies are likely needed to increase uptake of LA PrEP in TGD patients, as are interventions that leverage community leaders or trusted members of the community, such as community health worker programs or social network interventions. Also, TGD community members should be included in paid roles to support the development of strategies to increase uptake and support LA PrEP roll out.

OALBD0105

Assessing stigma as determinant of HIV and sexually transmitted infections among sexual minority men in the United States in 2021 from the American Men's Internet Survey (AMIS)

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Background: The American Men's Internet Survey (AMIS) is an annual electronic survey for sexual minority men (gay, bisexual, same-gender loving, and other men who have sex with men (MSM)) aged 15+ in the United States. Given a sustained rise in sexually transmitted infections (STI) in the US, we use stigma frameworks to characterize risk factors associated with HIV and any STI (gonorrhea, chlamydia, or syphilis) diagnosis.

Methods: Using AMIS data collected September 2021 to February 2022 and STATA 16.1, correlation matrices were developed to inform Pearson's chi-squared tests and model building. Multivariate logistic regression was used to assess associations between stigma-related factors and STI diagnosis in the past 12 months, while controlling for HIV status, age, education, race, and region.

Another model was developed for individuals not living with HIV infection, additionally controlled for PrEP use in the past 12 months.

Results: Overall, 9,061 individuals were included (13.1% Hispanic, 14.1% Black, 64.3% white, non-Hispanic) with mean age 44.3 years. HIV and STI prevalences were 14.3% and 13.0%, respectively. STI diagnosis was more common among those who experienced stigma from family, friends, and the general community ($\chi^2 > 23.0$, Pr<0.01). Adjusting for age, education, race, HIV status, and region, those with an STI diagnosis were twice as likely to have experienced general community stigma (aOR=2.0; 95% CI= (1.8, 2.3). Among 7,758 people not living with HIV, 2,652 (34.2%) used PrEP in the past 12 months and while controlling for this PrEP use, the association between general community stigma and STI diagnosis remained (aOR=1.8; 95% CI=(1.5,2.1)).

Conclusions: Given sustained HIV and STI epidemics among sexual minority men, these results highlight complex relationships between stigma, HIV, PrEP, and STIs. Stigma may be positively associated with STI diagnosis due to (1) screening or treatment-seeking delays, or (2) differences in outness and provider screening recommendations. If people experiencing stigma are more likely to be diagnosed with an STI, there are potential consequences with how stigma varies treatment behaviors.

Characterizing the mechanisms by which stigma increases odds of HIV and STIs is central to intervention development and ultimately, changing the trajectory of these epidemics in the US.

OALBE01 Late Breaker Track E:

OALBE0102

SEARCH-Youth: a cluster randomized trial of a multilevel health system intervention to improve virologic suppression in adolescents and young adults living with HIV in rural Kenya and Uganda

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Background: Social and cognitive developmental events disrupt care and medication adherence among adolescents and young adults living with HIV in sub-Saharan Africa. We hypothesized that a dynamic multilevel health system intervention helping adolescents and young adults and their providers navigate life-stage related events would increase virologic suppression compared to standard care.

Methods: This was a cluster-randomized trial of 28 clinics and youth aged 15–24 years living with HIV in rural Kenya and Uganda. Participants in intervention clinics received life-stage specific assessment and counseling at the start of routine visits, choice of flexible clinic access and rapid viral load feedback. roviders had a secure mobile platform for inter-provider consultation. The primary endpoint was virologic suppression (< 400 copies/ml) two years from enrollment and compared by arm using targeted minimum loss-based estimation, adjusting for clustering by clinic.

Results: Among 1834 participants, median age was 21 years and 82% were female; 85% of intervention participants had life-stage assessments performed ≥ 4 times, 60% opted for phone visits at least once, and >87% of participants in 13/14 clinics received viral load feedback within 72 hours. The proportion of participants with virologic suppression was higher in the intervention arm [88% (95%CI: 85-92%)] than in the control arm [80% (95%CI: 77-84%)], for an adjusted risk ratio of 1.10 (95%CI: 1.03-1.16; p=0.002).

The intervention resulted in increased virologic suppression within subgroups of sex, age, and care-status at baseline, with greatest improvement among those re-engaging in care [adjusted risk ratio =1.60 (95% CI:1.00-2.55; p=0.03)] (Figure).

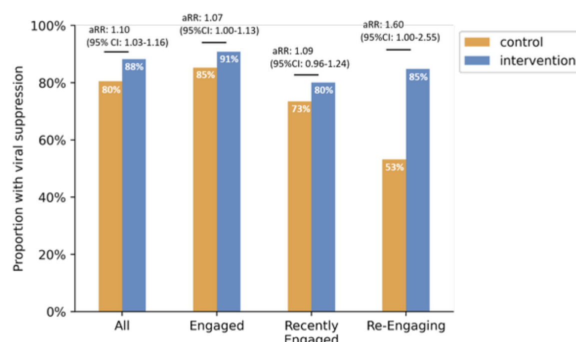

Figure. Proportion with virologic suppression at 2 years, overall and stratified by care status at enrollment

Conclusions: The multilevel SEARCH-Youth intervention resulted in increased virologic suppression compared to standard care, during a period of transition to dolutegravir and during the COVID19 pandemic.

Added to current efforts, systematic life-stage-based assessment and support could help bring adolescents and young adults living with HIV closer towards a goal of universal virologic suppression.

OALBE0103

A tale of two countries: assessing the transition, scale-up, and sustainability of HIVST introduction in India and Indonesia

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Background: Limited research is available to describe the key factors attributable to the introduction and scale-up of HIV self-testing products in India and Indonesia. The Unitaid-funded STAR-III initiative uses a multidisciplinary monitoring and evaluation (M&E) approach to introduce, evaluate, and transition HIV self-testing products in its implementing countries by partnering with government entities to strengthen policy and regulatory procedures, fortify monitoring and evaluation processes, and introduce communications and demand generation practices to increase uptake and use of HIV self-testing products.

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Description: The STAR-III Initiative developed an M&E framework to track and monitor progress towards the transition, scale-up, and sustainability of HIVST across India, Indonesia, and its other implementing countries. This framework consists of 28-indicators across 6-domains:

1. Governance & Policies;
2. Funding Security;
3. Supply & Delivery;
4. M&E;
5. Supervision;
6. Scale-up.

Primary and secondary data for these indicators were collected through literature reviews and/or key informant interviews at the start (02/2020) and end (05/2022) of the program and compared to measure progress.

Lessons learned: Ourassessment found improved performance across the six evaluative domains, with scalability strongest across Funding Security and Supervision domains.This was largely due to several actions takento operationalize HIVST, including:

1. The development of training modules and processes by civil society organizations that have been endorsed by MoH,
2. The operationalization of HIVST delivery channels, and,
3. A standing HIVST agenda within the national HIV/AIDS Technical Working Groups.

The supporting infrastructure acrossGovernance & Policies, Supply & Delivery, and Scale-up domains remain a work in progress.

Conclusions/Next steps: Although STAR-III has built the foundation for institutionalization and sustainability of HIVST in Indonesia and India, the policy environment and supporting infrastructure remains a work in progress. HIVST implementation in these countries is being constrained by the unavailability of registered HIVST products which has had direct and indirect impacts on domains of Governance & Policy, Supply & Delivery, and Scale-up of HIVST. There is an urgent need to work with regulatory authorities to support the registration of HIVST products in India, Indonesia, and also other countries looking to introduce or scale-up HIVST.

OALBE0104

What women want - results from discrete choice experiment about preferred PrEP method from Khomas region of Namibia

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Background: Adherence to Pre-exposure Prophylaxis to reduce new HIV infection among Adolescent Girls and Young Women (AGYW) of age 10 to 24 years remains a critical challenge. Under the USAID/Namibia-funded DREAMS project, PrEP is offered as part of the package with limited continuation.

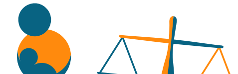
Besides daily oral PrEP, with recent positive results from HPTN-084 on Cabotegravir Long-Acting Injectable (CAB-LA) and WHO approval of Dapivirine Vaginal Ring (DAP-VR), this study had an objective to take end-user perspectives on their preferred PrEP method of choice.

Methods: A survey was conducted using a convenient sampling method with 1,675 active AGYW from the Khomas region. The interview questions included demographics, PrEP knowledge, attitude, practices, and preferred PrEP options. Before the PrEP preferred options section was administered, DREAMS Nurses used visual and narrative descriptions to educate AGYW on the attributes of PrEP options (i.e., oral, DAP-VR and CAB-LA). From April 26 to 28, 2022, DREAMS staff utilized the REDCap mobile application to collect data. Data was analyzed in STATAv15.

Results: Of the 1,656 respondents, 92% heard about PrEP for HIV prevention, and the primary sources of information were DREAMS staff (85%). Of these, 79% believed PrEP could reduce new HIV infection, and 68% knew PrEP could not prevent other STIs. Moreover, 97% knew where to get oral PrEP, 31% were current/previous users of oral PrEP, and 41% agreed/strongly agreed that PrEP has serious side effects.

Oral PrEP was well known to AGYW (85%), while 3% and 8% were aware of DVR and CAB-LA, respectively. If all three PrEP options are available, 83% (n=1262) of AGYW were willing to use any of them. Of these, 61% indicated a preference for CAB-LA, while 27% and 12% preferred oral and DVR. HIV prevention efficacy was a strong determinant of stated reason, followed by the desire for less frequent use and discreteness of the option.

Conclusions: The results from this study provide vital information for the successful introduction, scale-up, and continued use in the target population. CAB-LA injectable is the preferred PrEP option among AGYW mainly due to its efficacy, every eight-week administration instead of a daily pill, and its discreteness.



OALBE0105

The catalytic role of dual HIV/syphilis rapid diagnostic tests in accelerating national elimination of mother-to-child-transmission in Nigeria

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Background: HIV and syphilis prevalence among pregnant women attending antenatal clinics in Nigeria is 1.4% and 0.7% respectively. The disparity between national maternal syphilis testing rates at 16% and maternal HIV testing at 66% represented an opportunity to leverage higher HIV testing coverage to increase syphilis testing coverage, thereby accelerating progress towards dual elimination targets. Dual HIV/syphilis RDTs allow providers to simultaneously screen clients for HIV and syphilis, eliminating the need for multiple tests.

Description: Between 2019 and 2021, CHAI collaborated with NASCP to pilot dual HIV/syphilis RDTs in 31 high volume ANC facilities across all health system tiers in Akwa Ibom, Anambra, and Rivers states. 1,678 healthcare workers were trained to counsel and test pregnant women using dual RDTs, administer Benzathine Penicillin-G for syphilis treatment, and manage syphilis program data. CHAI institutionalized the dual program within the priorities of existing HIV Technical Working Groups, leveraging the platform to share key learnings and advocate scale up.

Lessons learned: 45,413 pregnant women were tested for HIV and syphilis using dual RDTs (15,662 in Akwa Ibom, 13,369 in Anambra and 16,382 tested in Rivers state). HIV and syphilis positivity rates were 2.0% and 0.2% respectively. BPG treatment uptake was 90% and partner testing rate for syphilis-positive pregnant women was 80%. Analysis of HCW feedback from CHAI and MOH facilitated learning sessions revealed a 95% satisfaction rate with the implementation model and 15% improvement in pre- and post-training aptitude assessments. 100% of participants said they would recommend dual RDT scale-up.

Conclusions/Next steps: Evidence generated through these pilots informed national scale-up efforts, leading to the inclusion of dual RDTs in annual operational plans of not just the three states, but also NASCP and Nigeria's major HIV program funders– PEPFAR and Global Fund. Building on these lessons, the Nigerian Government directly procured 2.5million dual RDTs in late 2021, backed by an additional 1.2million and 350,000 RDTs funded by PEPFAR Nigeria in COP-22 and Global Fund respectively. The congenital syphilis burden in Nigeria is comparable to other LMICs and Health Ministries are encouraged to learn from this model to scale up such novel diagnostics in support of national dual elimination priorities.

OALBF01 Late Breaker Track F:

OALBF0102

Canada's criminal injustice: new national community consensus on law reform to end HIV criminalization

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Background: Canada has been a global 'hot spot' of HIV criminalization. There is no HIV/STI-specific offence; prosecution of alleged HIV/STI non-disclosure occurs through application of general Criminal Code offences. The charge most frequently used is *aggravated sexual assault*, following Supreme Court of Canada decisions that if there is a "realistic possibility of HIV transmission," non-disclosure amounts to "fraud" invalidating consent to sex. Prosecutors' and courts' interpretations of this legal test have led to prosecutions that perpetuate HIV stigma and are at odds with the international scientific Expert Consensus Statement (released at AIDS 2018), recommendations of the Global Commission on HIV & the Law, and the Global AIDS Strategy. Analyses by Justice Canada and NGOs highlight a disproportionate impact on Black, Indigenous and gay communities.

Description: In 2017, the Canadian Coalition to Reform HIV Criminalization, supported by 174 organizations nationwide, called on Parliament to legislate an end to sexual assault charges and limit any criminalization to cases of intentional, actual transmission. In 2019, a Parliamentary committee recommended reforms to limit HIV criminalization, but through the adoption of a new offence of transmitting an infectious disease. From 2019-2022, the Coalition explored options for reform, including through a national community consultation, which underscored widespread concern about the status quo and strong consensus in favour of reform. In July 2022, the Coalition is releasing its new Community Consensus Statement outlining detailed legislative proposals to limit HIV criminalization.

Lessons learned: As there is no existing HIV/STI-specific law in Canada to repeal or modernize, the Coalition's proposed legislative changes would (1) preclude sexual assault charges entirely, and (2) add provisions to the Criminal Code strictly limiting the use of any other, existing offences. The proposed amendments avoid the stigma of creating a new HIV/STI-specific offence, limit criminalization to purposely (and actually) transmitting HIV/STIs, and avoid expanding criminalization to other transmissible infections.

Conclusions/Next steps: The new national Community Consensus Statement is the result of extensive community consultation and reflection regarding the best options to limit HIV criminalization in Canada in line with international recommendations. It will be a key advocacy tool for engaging policymakers to enact necessary legislative reforms.

OALBF0103
Preliminary report on the provision of HIV care to war refugees living with HIV who are migrating from Ukraine - data from ECEE Network Group

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Background: The armed conflict in Ukraine resulted in humanitarian crisis with over five million people migrating to neighboring countries and ten million being displaced within Ukraine.

The HIV epidemic in Ukraine is the largest in Europe with approximately 130 000 adult people on ART, half of them being women, and 2700 children.

It is important to understand the impact of war on continuum of HIV care for displaced people and the impact on national HIV programs, especially in countries from Central and Eastern Europe (CEE).

Methods: The ECEE Network Group consists of 47 experts in infectious diseases from 24 countries, actively involved in patients' care. The group was established in 2016 to endorse and disseminate the standards of care for HIV and hepatitis.

In March 2022, an online survey (28 questions) was created on MonkeySurvey® and disseminated by group members.

Results: 22 (75.9%) centers from 14 countries (Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Greece, Hungary, Latvia, Lithuania, Malta, Poland, Republic of Moldova, Romania, Slovakia) were admitting war refugees from Ukraine as of 31 March 2022 and completed the survey.

Most centers (86%) organized promptly providing access to ARVs on the same day, for 30 days or longer in 77% of the centers.

Continuation of ART was manageable with brand or generic drugs in 64% centers, whereas 36% were switching ART (Table). 81.8% of respondents indicated that increased workload with could affect local HIV care.

Conclusions: CEE countries receiving war refugees implemented prompt measurements to provide continuity of HIV care including universal healthcare insurance, waiving most administrative requirements, providing same day doctor's consultations and ART disposal.

Barriers identified were lack of medical documentation, language barrier (shortage of translators) and psychological trauma.

Our study identifies gaps which should informs international stakeholders on how to assist countries in delivering undisrupted HIV care to war refugees from Ukraine.

Table. Survey question	N (%)
Patterns of migration and registration to HIV clinics	
Number of war refugees registered per week	
▪ <10	14 (63.6)
▪ 10-50	8 (36.4)
What is the most common patterns of migration you observe in your clinic	
▪ Refugees see my country as final destination	15 (68.2)
▪ Refugees are transiting to another destination in Europe	14 (63.6)
▪ Refugees prefer to go back to Ukraine	11 (50.0)
Do you have non-Ukrainian refugees reporting to your clinic	
▪ No	13 (59.1)
▪ Yes, but few	7 (31.8)
▪ Yes, many	2 (9.1)
Barriers experienced by healthcare workers and solutions adapted	
Please identify difficulties you face while working with refugees from Ukraine	
▪ No medical documentation confirming HIV ot any other diagnosis	17 (77.3)
▪ Language barrier and shortage of translators	14 (63.6)
▪ No information on current ARV regimen	10 (45.4)
▪ Administrative requirements	5 (22.7)
▪ Psychological trauma related to war and migration	4 (18.2)
What are the administrative requirements to provide ARVs for war refugees	
▪ Copy of a passport	16 (72.7)
▪ Refugee registration number or certificate from the competent foreign and immigration office	9 (40.9)
▪ Medical documentation that refugee is HIV positive and/or receives ARV	6 (27.3)
In case there is no documentation confirming patients HIV status, what is current practice at your center	
▪ Oral declaration from refugee	6 (27.3)
▪ Written declaration from refugee	7 (31.8)
▪ Testing for HIV	9 (40.9)
If the confirmation is needed which tests do you use	
▪ Rapid HIV testing	6 (27.3)
▪ Standard HIV serology (3rd or 4th generation test)	3 (13.6)
▪ Western blot or Immuno blot	2 (9.1)
▪ HIV RNA test	3 (13.6)
Healthcare and antiretroviral treatment strategy for refugees	
Which ARVs strategy is adapted at the moment for war refugees in your clinic	
▪ Continuation of the regimen received in Ukraine with substituting unavailable brand drugs with generic drugs	10 (45.5)
▪ Continuation of the regimen received in Ukraine with generic drugs	4 (18.2)
▪ Switching to regimen which is available in your national program	8 (36.4)
What is the timespan to issue ARVs for war refugees in your center	
▪ Same day delivery of ARVs within working hours	17 (86.4)
▪ Patient needs to come back to collect ARV on another day	3 (13.6)
▪ Immediate delivery of ARVs even during night shifts	2 (9.1)
For how long is your clinic providing ARVs	
▪ 30 days	10 (45.4)
▪ 60-90 days	7 (31.8)
▪ No restrictions	3 (13.6)
▪ Shorter time if refugee in transit	2 (9.1)
Is TB screening routinely performed for HIV positive war refugees in your center	
▪ Not routinely	7 (31.8)
▪ For all patients symptom based assessment	7 (31.8)
▪ For all patients radiological examination	5 (22.7)
▪ Only a history of TB is collected	2 (9.1)

Table.

OALBF0104
Education as an enabling factor to HIV prevention and adherence to treatment

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Background: The World Food Programme, UNAIDS, the Ministry of Health and the Ministry of Solidarity and Social Affairs conducted a study in Djibouti Ville to better understand the relationship between basic education and HIV treatment and care outcomes among people living with HIV and TB patients.

Methods: This was a cross-sectional study with 805 PLHIV included in the analysis from a total of 9 ART and TB clinics. Sampling was based on the probability proportional to size model. Data collection was done by trained social workers and stored in the encrypted WFP cloud system. Descriptive analysis was done for PLHIV including those co-infected with TB. Levels of education and the associated HIV prevention and treatment adherence variables were the outcomes of interest.

Results: A high proportion of PLHIV have no formal education (47.6%; n=383) with 19.0% (n=153), 19.5% (n=157) and 10.1% (n=81) reporting highest level of education as

primary (grade 1-5), middle (grade 6-9) and secondary school (grade 10-13) respectively. Only 3.9% (n=31) of PLHIV attended tertiary school (college/university). An inverse linear relationship exists between one's level of education and skipping doses of ARV in the 30 days prior to the study. Out of a total of 251 PLHIV who reported missing doses of ARV medication in the 30 days prior to the study, 57% (n=143) did not have formal education while the lowest proportion was reported in those who had attended university/college (3.6%; n=9). A similar trend was observed with respondents' engagement with multiple sexual partners. The study found that from a total of 275 PLHIV who reported engaging with multiple sexual partners in the 12 months prior to the study, 49.8% (n=137) had no formal education.

Conclusions: An indirect relationship exists between the study participants' level of education and their propensity to engage in risky sexual behaviours and their likelihood of non-adherence to the ARV regime. Literacy coupled with an adequate knowledge of the effects of non-adherence as well as of the risks associated with risky behaviour are among some of the most effective HIV prevention means, preventing the spread of the virus and fostering treatment outcomes.

OALBF0105

Strengthening TB/HIV human rights programming to overcome barriers to accessing TB services

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Background: TB remains the biggest killer of PLHIV. Despite this, very little effort and investment has been directed to TB and TB/HIV human rights programming. To help build the evidence base, engagement and investment in TB and TB/HIV human rights programming, Between 2018 and 2021, 20 National Assessments of human rights and gender assessments were undertaken in countries in Asia, Africa and Europe in order to better understand human rights related barriers to accessing TB services and inform human rights programming. Significantly, these assessments were led by TB and TB/HIV affected communities and civil society in close partnership with the National TB Programme to ensure national ownership and sustainability.

Stop TB Partnership provided technical assistance in this USAID and Global Fund funded initiative.

Description: In a first for TB and TB/HIV programmes, national assessments of human rights and gender related barriers to accessing TB services were conducted in 20 countries and focused on:

1. identify legal, policy and programmatic human rights and gender related barriers to access;
2. Identify and prioritize TB key and vulnerable population;
3. Recommend priority interventions to strengthen human rights related TB and TB/HIV programming in country.

These three areas of investigation were guided by a Communities, Rights and Gender Protocol which included desk review, focus groups, and national validation.

Lessons learned: All 20 completed CRG assessments have subsequently been analysed using the right to health framework:

1. Accessibility, acceptability, affordability and quality of services;
2. Stigma and discimination;
3. Freedoms (information, privacy, confidentiality)
4. Gender
5. Key and vulnerable populations
6. Participation of key and vulnerable populations
7. Legal remedies.

Responses to these barriers has now been operationalised through costed TB CRG Plans in several countries.

Conclusions/Next steps: There is now unprecedented evidence on TB/HIV human rights programming that must be operationalized and implemented in order for countries to realize the UN HLM targets on human rights.

Next steps: develop costed CRG Action Plans; integrate recommendations into NSPs; human rights investments in national TB/HIV responses is increased; monitoring and evaluation of human rights investments in national TB/HIV is enhanced; and, community led monitoring of of rights is integrated into national responses.

OALBX01 Co-Chair's choice

OALBX0102

Transcriptional programs of HIV silencing and cell survival in HIV-infected memory CD4 T cells under antiretroviral therapy

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Background: Rare memory CD4 T cells harboring HIV under antiretroviral therapy (ART) represent an important barrier to HIV cure, but the infeasibility of isolating and characterizing these cells in their "natural" state has bred uncertainty about whether they possess distinctive attributes that HIV cure-directed therapies might exploit.

Methods: We developed a custom microfluidic process termed Focused Interrogation of cells by Nucleic acid Detection and Sequencing (FIND-Seq), which captures polyadenylated RNA and genomic DNA from millions of single cells within water-in-oil droplets and then sorts single-cell transcriptomes based solely on HIV DNA detection.

Using blood cells from people with HIV (PWH) who had initiated ART during chronic infection and experienced >1 year of virologic suppression (n = 6), memory CD4 T cell transcriptomes were sorted by FIND-Seq into HIV DNA^{+} and uninfected cell fractions and sequenced.

Host cell transcriptomic profiles of HIV DNA^{+} and uninfected memory CD4 T cells were compared by differential gene expression, co-expression network analysis, and gene ontology.

Results: HIV DNA^{+} memory CD4 T cells from ART-treated PWH consistently showed inhibition of six transcriptomic pathways including death receptor signaling, necroptosis signaling, and Gα12/13 signaling. Gene co-expression network analysis revealed two small gene clusters associated with HIV DNA^{+} cells. Gene ontology revealed significant enrichment of these clusters for factors related to epigenetic gene regulation, RNA processing, and the regulation of cell death signaling. Individual genes in these clusters included HIV transcriptional activators that were lower in HIV DNA^{+} cells and HIV silencing factors affecting both transcriptional and post-transcriptional steps in HIV gene expression that were higher in HIV DNA^{+} cells.

Remaining genes in these clusters not previously associated with HIV gene expression had roles in chromatin modification, RNA processing, and the survival and proliferation of CD4 T cells.

Conclusions: Whole transcriptome sequencing of unmanipulated HIV DNA^{+} memory CD4 T cells under ART reveals these cells as a highly selected population with distinctive gene expression patterns that can promote HIV persistence through HIV silencing, cell survival, and cell proliferation.

These findings help reconcile previous observations made in *ex vivo* and *in vivo* studies, and suggest important next steps in research towards an HIV cure.

OALBX0103

Doxycycline post-exposure prophylaxis for STI prevention among MSM and transgender women on HIV PrEP or living with HIV: high efficacy to reduce incident STI's in a randomized trial

A. Luetkemeyer[1], J. Dombrowski[2,3], S. Cohen[4,5], D. Donnell[2], C. Grabow[2], C. Brown[2], C. Malinski[2,3], R. Perkins[2], M. Nasser[4], C. Lopez[6], S. Buchbinder[4], H. Scott[4], E. Charlebois[5], D. Havlir[6], O. Soge[2], C. Celum[2]

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Background: With a sexually transmitted infection (STI) epidemic among men who have sex with men (MSM) and transgender women (TGW), interventions to reduce STIs are needed.

Methods: DoxyPEP is a randomized open-label trial among Seattle and San Francisco MSM/TGW living with HIV or on PrEP who had *N. gonorroheae* (GC), *C. trachomatis* (CT), or early syphilis in the past year. Randomization was 2:1 to 200 mg doxycycline hyclate within 72 hours of condomless sex or no doxycycline with STI testing at enrollment, quarterly, and when symptomatic. An independent committee adjudicated STIs. The trial had >80% power to detect a 50% reduction in STI incidence, assuming a 10% quarterly STI incidence. The intent to treat analysis compared relative risk of an STI per quarter.

A single interim analysis at ~50% of follow-up time occurred May 2022; the DSMB recommended stopping the control arm based on prespecified efficacy thresholds measured independently in PLWH and PrEP cohorts.

Results: Of 554 enrolled, 360 were on PrEP, 194 PWLH, 65% white, 8% Black, 10% Asian, 30% Latinx. 19 (3%) identified as TGW or nonbinary. Median sex partners in past 3 months was 9. In the past year 67% had GC, 58% CT, 20% syphilis;

at enrollment, 18% had GC, 10% CT, 2% syphilis. Among 360 on PrEP, 65 STI endpoints (29.5%) occured in controls and 47 (9.6%) in doxyPEP participants (RR 0.33; 95%CI 0.23-0.47; p<0.0001). Among 194 PLWH, 30 STI endpoints (27.8%) in controls and 31 (11.7%) in doxyPEP participants (RR 0.42; 95% CI 0.25-0.75; p=0.0014). GC, CT, and syphilis were each reduced. No serious or ≥ Grade 2 AEs were attributed to doxycycline.

	HIV uninfected MSM/TGW on PrEP		MSM/TGW living with HIV		Total	
	Doxy arm N=240	Control arm N=120	Doxy arm N=134	Control arm N=60	Doxy arm N=374	Control arm N=180
Follow up quarters	491	220	266	108	757	328
Participants with an incident STI (GC, CT or syphilis)	41	42	24	18	65	60
Primary STI endpoints	47 (9.6%)	65 (29.5%)	31 (11.7%)	30 (27.8%)	78 (10.3%)	95 (29.0%)
Gonorrhea	40 (8.1%)	45 (20.5%)	21 (7.9%)	20 (18.5%)	61 (8.1%)	65 (19.8%)
Chlamydia	7 (1.4%)	23 (10.5%)	12 (4.5%)	16 (14.8%)	19 (2.5%)	39 (11.9%)
Syphillis	1 (0.2%)	5 (2.3%)	3 (1.1%)	2 (1.9%)	4 (0.5%)	7 (2.1%)

Table. Quarterly STI incidence by HIV status and by randomization to doxyPEP & control arms.

Conclusions: Doxycycline 200 mg taken within 72 hours after condomless sex significantly reduced STIs in MSM/TGW. Effects on antimicrobial resistance, gut microbiome, and sexual behavior are being assessed as important considerations for this STI prevention strategy.

OALBX0105

Week 48 results of a Phase 3 randomized controlled trial of bictegravir/emtricitabine/tenofovir alafenamide (B/F/TAF) vs dolutegravir + emtricitabine/tenofovir Disoproxil Fumarate (DTG+F/TDF) as initial treatment in HIV/HBV-coinfected adults (ALLIANCE)

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Background: The clinical course of HBV in individuals with HIV coinfection is marked by accelerated disease progression. A tenofovir-containing anti-retroviral regimen is recommended in most people with HIV-1/HBV-coinfection but there have not been randomized studies of TDF vs TAF in treatment-naïve HIV-1/HBV-coinfected individuals.

We report primary endpoint results from a phase 3 study comparing B/F/TAF vs DTG+F/TDF at Week (W) 48 in participants initiating treatment for both viruses.

Methods: Adults with HIV-1/HBV coinfection were randomized 1:1 to initiate blinded treatment with B/F/TAF or DTG+F/TDF (with placebo).

Primary endpoints were proportion of participants with HIV-1 RNA <50 copies/mL (FDA Snapshot) and plasma HBV DNA <29 IU/mL (missing=failure) at Week 48. Noninferiority was assessed with 95% CI (12% margin).

Secondary and other endpoints included change from baseline CD4 count, proportion with HBsAg and HBeAg loss/seroconversion, and ALT normalization (AASLD criteria).

Results: 243 participants were randomized and treated (121 B/F/TAF, 122 DTG+F/TDF) from 11 countries in Asia, Europe, North and Latin America. Baseline characteristics were median age 32 years, 4.5% female, 88% Asian, 30% HIV-1 RNA >100,000 c/mL, 40% CD4 <200 cells/mL, median HBV DNA 8.1 $\log_{10}$ IU/mL, 78% HBeAg+. At W48, B/F/TAF was noninferior to DTG+F/TDF at achieving HIV-1 RNA <50 copies/mL (95% vs 91%, difference 4.1%; 95% CI -2.5% to 10.8%, p=0.21), with mean CD4 gains of +200 and +175 cells/mL, respectively. B/F/TAF was superior to DTG+F/TDF at achieving HBV DNA <29 IU/mL (63% vs 43%, difference 16.6%; 95% CI 5.9% to 27.3%, p=0.0023). Participants treated with B/F/TAF vs DTG+F/TDF had numerically higher HBsAg loss (13%, 6%, p=0.059), HBeAg loss (26%, 14%, p=0.055), HBeAg seroconversion (23%, 11%, p=0.031), and ALT normalization (73%, 55%, p=0.066). Most frequent AEs were upper respiratory tract infection (17%, 11%), COVID-19 (13%, 11%), pyrexia (9%, 12%), ALT increase (7%, 11%), and nasopharyngitis (11%, 4%). ALT flares (elevations at ≥2 consecutive post-baseline visits) occurred in 11 participants (7 B/F/TAF, 4 DTG+F/TDF) which resolved.

Conclusions: In adults with HIV-1/HBV-coinfection starting antiviral therapy, both B/F/TAF and DTG+F/TDF had high HIV-1 suppression at year 1, with B/F/TAF resulting in superior HBV DNA suppression and significantly more HBeAg seroconversion. Safety findings were similar between groups.

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OALBX0106

Trends in PrEP inequity by race and census region, United States, 2012-2021

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Background: PrEP was approved for HIV prevention in the US in 2012; uptake has been slow. Black and Hispanic people have higher rates of new HIV diagnoses than White non-Hispanic people in the US. We describe the inequitable use of PrEP by race within US regions from 2012-2021.

Methods: We used commercial pharmacy data to enumerate PrEP users by race and US Census region from 2012-2021. Race/ethnicity data were available for 124,835 (34%) of PrEP users; to estimate total PrEP users by race, we assumed that the racial distribution was the same in PrEP users with missing race data as in those with reported race data. The PrEP-to-Need Ratio (PnR), a metric of PrEP equity, was defined as the number of PrEP users in a group divided by the number of new diagnoses in that group in the same year.

Results: PnR increased from 2012-2021 for all races and regions, but levels of PrEP use were not consistent across regions (See Figure) and were not equitable (defined by differences in PnR by race/ethnicity). In all regions, PnR was highest for White and lowest for Black people. By region, the highest region- and race-specific PnR was for White people in the Northeast in 2021: the PnR was 48.7 and the absolute difference in White versus Black PnRs was 44.5 (White:48.7; Black:4.2).

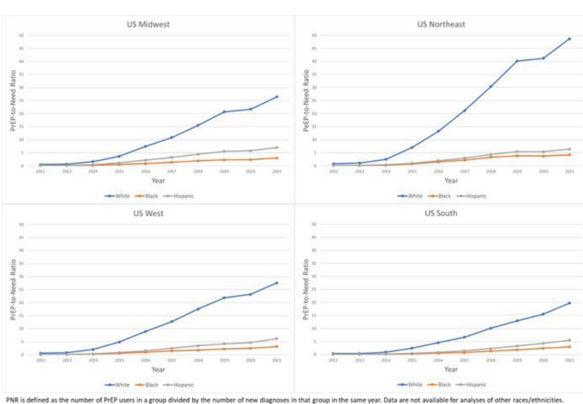

Figure.

Conclusions: Prevention programs should be guided by PrEP equity (use relative to epidemic impact), not PrEP equality (equal use in groups, regardless of HIV diagnosis proportion). By this measure, US prevention programs in all regions demonstrated decreasing PrEP equity over time (e.g., larger gaps in PnR by race/ethnicity). The US South lagged all regions in equitable PrEP use, with the lowest PnR overall compared to other US regions. Better programs are needed to provide PrEP to people at greatest risk for HIV infection.

OALBX0107

Long acting cabotegravir: updated efficacy and safety results from HPTN 084

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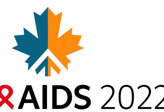
Background: HPTN 084 is an ongoing Phase 3 randomized, controlled trial that demonstrated the superiority of long-acting injectable cabotegravir (CAB) compared to daily oral TDF/FTC for HIV prevention in individuals assigned female at birth. The blinded portion of the trial was stopped at a planned interim review in November



2020. Participants were subsequently unblinded and continued on their original randomised study regimen pending a protocol amendment to offer open-label CAB.

Methods: We report on HIV infections detected in the 12-month period following trial unblinding (11/5/20-11/5/21, detected through 12/31/21) based on site and HPTN Laboratory Center testing. We estimated cumulative HIV incidence for the combined primary blinded and 12-month unblinded follow-up period, by study arm. Grade 2+ adverse events (AEs), injection site reactions (ISR), pregnancy incidence and outcomes are reported for the 12-month post-unblinding period only.

Results: Twenty-three incident infections (3 CAB, 20 TDF/FTC) were detected in the 12-month unblinded period. Of these, two (1 CAB, 1 TDF/FTC) were determined to have occurred during the blinded phase. Only one of the CAB cases (blinded phase case) had ever received an injection. Cumulatively, 62 incident HIV infections (6 CAB, 56 TDF/FTC) have been observed over 6626 person-years of follow up (HIV incidence 0.94%, 95% CI 0.72, 1.20). The superiority of CAB appears sustained (HR 0.11, 95% CI 0.05, 0.24). No new safety concerns were identified. For the 12-month unblinded period, 2.4% (32/1318) of participants in the CAB group reported a Grade 2+ ISR.

Overall, Grade 2+ AEs in this period were balanced by study group; 20% were assessed as related to study product (CAB 19%, TDF/FTC 21%). Two deaths occurred in the CAB group; both were assessed as unrelated to study product. An additional 83 confirmed pregnancies (43 CAB, 40 TDF/FTC) occurred in the unblinded period (incidence 3.20%, 95% CI 2.56, 3.98). No congenital anomalies were reported.

Conclusions: Reductions in HIV incidence were sustained. CAB continues to be superior to TDF/FTC in preventing HIV infection in individuals assigned female at birth. Pregnancy incidence was higher in the unblinded period highlighting the importance of ongoing evaluations of CAB safety in pregnancy.

Late breaker posters

EPLBA01 Track A late-breaker posters

EPLBA01
Protective potential of non-neutralizing mAbs targeting immunodominant Env epitopes against tier-2 HIV-1

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Background: A robust non-neutralizing antibody (Ab) response to the immunogenic regions of the gp120 envelope (Env) protein was identified as an immune correlate for reduced risk of HIV acquisition in the RV144 vaccine trial, which showed a vaccine efficacy of 31%. Our initial study showed that mAbs against V3 (2219) with poor neutralizing activities displayed protective capacity upon passive transfer to humanized mice that received a rectal challenge of an infectious molecular clone (IMC) expressing a tier-2 Env of JRFL. To understand the immune functions contributing to protection, we examined the Fab- and Fc-mediated activities of 2219 and other mAbs targeting similarly immunogenic epitopes of Env.

Methods: To evaluate the Fab functions of vaccine-mediated mAbs against tier-2 HIV-1, we examined 1) ELISA reactivity of 2219 mAb from an infected individual versus two vaccine-induced mAbs with solubilized Env of JRFL and REJO IMCs, 2) their neutralization capacities. To investigate their Fc-mediated activities, we assessed 1) antibody-dependent cell-mediated cytotoxicity (ADCC), 2) antibody-dependent cell-mediated phagocytosis (ADCP), 3) Fc receptors binding, and 4) complement binding.

Results: Two vaccine-induced IgG1 mAbs with the highest ELISA reactivity were selected: RH16 (V3 mAb) and HH1G9 (conformational C2/C5 mAb), for comparison with 2219 (V3 mAb). These three mAbs had no neutralization activity, and all mediated ADCP. Interestingly, they displayed differential complement binding and ADCC. 2219 bound C1q and C3d but had undetectable ADCC, whereas RH16 did not bind complement but displayed ADCC. In contrast, HH1G9 bound complement and showed ADCC.

To examine the Fc functions of 2219 that contribute to protection, Fc mutations that affect complement binding and ADCP were introduced. Passive transfer of these Fc variants to humanized mice challenged rectally with HIV demonstrated that the KA mutation, which abrogated mainly complement binding, reduced protection to the same or greater levels as the LALA mutations, which reduced ADCP and complement binding. Currently, Fc mutations that enhance ADCC are being tested.

Conclusions: Antibodies against immunogenic regions of Env have Fc-mediated activities, especially complement binding, that can contribute to protection against mucosal HIV-1 infection, even though these antibodies have no neutralization activity.

EPLBA02

Analysis of the HVTN 702 Phase 2b-3 HIV-1 vaccine trial in South Africa assessing RV144 antibody and T cell correlates of HIV-1 acquisition risk

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Background: Whether the immune correlates of HIV-1 acquisition risk identified in the Thai HIV-1 vaccine efficacy trial of an ALVAC/gp120 pox-protein vaccine regimen (RV144) generalize to other at-risk populations is a critical question. Although the clade C-adapted vaccine regimen was not efficacious in preventing HIV-1 acquisition in South African participants, HVTN 702 (NCT02968849) provides a unique opportunity to answer this important question and to raise hypotheses regarding the observed lack of efficacy.

Methods: Among 3909 female vaccinees, 60 HIV-1-seropositive cases and 60 matched seronegative controls were sampled. HIV-1-specific CD4+ T-cell and binding antibody (bAb) responses were measured by intracellular cytokine staining and bAb multiplex assays 2 weeks post-fourth and fifth immunizations.

Three primary vaccine-matched immunological endpoints that were strong inverse correlates of HIV-1 risk in RV144 were assessed as predictors of HIV-1 acquisition among vaccinees using Cox proportional hazards models: Env-ZM96-specific CD4+ polyfunctionality score based on six markers and total IgG and IgG3 binding antibody responses to A244 and 1086.C V1V2.

Secondary endpoints included polyfunctional CD4+ T-cell responses to other Env vaccine inserts, IgG bAbs to gp120 and Env consensus antigens, and IgA bAbs. Interactions among pre-specified primary and secondary endpoints were also assessed using Cox models, with low/medium/high categories defined by tertiles.

Results: Although no significant association was observed between any T-cell or bAb response and HIV-1 acquisition, significant interactions were seen in pre-specified analyses (multiplicity-adjusted p-values <=0.03). Among those with highest tertile IgG A244 V1V2 bAb responses, vaccine-matched CD4+ T-cell endpoints (polyfunctional scores to Env-ZM96 and 1086, triple-functional cells expressing IFN-g, IL2, and CD40L to Env-ZM96) were associated with decreased HIV-1 acquisition risk with estimated hazard ratios=0.40-0.49 per 1-SD increase in the respective CD4+ T-cell endpoint.

Conclusions: Our study interrogated previously identified correlates of HIV-1 risk and their interplays for an ALVAC/gp120 vaccine in the South African population. We hypothesize that due to low IgG V1V2 bAb responses in HVTN 702 vs. RV144, Env-specific CD4+ T-cell responses were not confirmed as predictors of risk.

Higher bAb V1V2 responses in combination with polyfunctional CD4+ T-cell responses may be necessary to reduce HIV-1 acquisition.

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EPLBA03

Transcriptome analysis to identify the changes in microRNA expression profile and their targeted pathways in the cervicovaginal mucosa of HIV-infected women

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Background: Cervicovaginal mucosa (CVM) plays a key role in HIV acquisition among females during heterosexual contact, hence understanding of immune mechanisms and their regulatory factors is warranted. MicroRNAs are important regulators of cellular events, however limited is known about their involvement at CVM. We performed a detailed transcriptome analysis to identify dysregulated microRNAs and their associated cell-signaling pathways at CVM during HIV infection.

Methods: Cervical samples collected from 25 HIV-infected and 33 HIV-uninfected women were tested for HBV, HCV, TV, BV, NG, CT and syphilis for screening other STIs. Cytobrush samples from STI-negative women were used for transcriptome analysis. Briefly, cervical cells isolated from cytobrush samples of 13 HIV-infected and 8 HIV-uninfected women were used for small-RNA sequencing. Dysregulated microRNAs were identified using log2fold changes and their targets using miRanda tool. Functional annotations of microRNA target genes were performed using KEGG Ortholog database and Gene Ontology.

Results: All the study participants tested negative for other STIs, except BV which was present in 28% HIV-infected and 10% in HIV-uninfected women. RNA sequencing yielded 12-13x10^6 total and >1-1.8x10^6 unique reads. Unique reads were mapped to human genome, annotated and classified into different categories of RNAs. HIV-uninfected participants had 2% higher proportion of microRNA reads than HIV-uninfected participants. Total 20410 microRNAs were identified, of which 314 known microRNAs were differentially expressed in HIV infected women. Using Fisher exact test, 19 known microRNAs were found to be significantly dysregulated among HIV-infected women. Their target genes were identified and functionally categorized for biological process, cellular component and molecular functions. Majority of these were involved in transcriptional regulation, signal transduction, binding of molecules etc. Pathway enrichment data showed their involvement in important immune pathways including TLR signaling, NLR signaling NF-κB signaling, MAPK signaling pathway as well as in HIV-1 infection.

Conclusions: We identified the profile of dysregulated microRNAs, their key targets and associated signaling pathways using *in silico* approaches in the cervical samples of HIV infected women. These are mainly associated with innate immune responses and inflammation, which are critical during HIV infection; hence their targeting may be helpful in devising immunotherapeutic strategies to combat HIV infection/ inflammation at CVM.

EPLBA04

CD8 depletion and N-803 plus anti-SIV Env RhmAbs in ART-suppressed rhesus macaques

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Background: Building upon the robust latency reversal with CD8+ cell depletion and IL-15 superagonist N-803 in SIV-infected, ART-suppressed rhesus macaques (RMs), we developed a cure strategy with these latency reversal agents (LRAs) plus a cocktail of four anti-SIV Env-specific rhesus IgG1 monoclonal antibodies (RhmAbs) targeting V2, CD4 binding site, CD4 binding site proximal, and membrane proximal external region (MPER) with the goal of reducing reservoir cells.

Methods: 28 adult RMs were infected with $SIV_{mac239}$and began ART at 8 weeks post infection (wpi). Study arms included ART controls (n=7), ART + RhmAbs controls (n=7), and intervention (ART + CD8a depletion + N-803 + RhmAbs, n=14). After 96 weeks of ART, RhmAbs were administered; three days later, the CD8a depleting MT807R1 was co-administered with N-803, followed by 3 additional weekly N-803 doses. During this period, on-ART viremia measured by qPCR of SIV*gag* RNA. CD8+ T cell depletion efficacy was assessed by flow cytometry and serum RhmAb concentrations were measured longitudinally by indirect ELISA. RhmAb effector functions were determined using infected cell Ab binding and infected cell elimination assays.

Results: We first demonstrated that the combination of four RhmAbs binds to SIV-infected cells and exerts ADCC *in vitro*.We next found that CD8a depletion was efficient (>99% in blood and ≥95% in lymph nodes)and circulating RhmAbs levels were high *in vivo*.During the first four weeks following MT807R1 + N-803, on-ART viremia >60 copies/ml was seen in 28 of 56 viral load measurements (50%) with 1/56 (1.8%) >1,000 copies/ml. In comparison, a historical comparison group of RMs that received MT807R1 + N-803 without RhmAbs experienced more frequent on-ART viremia of 73%, with 23% of measurements >1,000 copies/ml.

Conclusions: During latency reversal with CD8a depletion + N-803 in combination with RhmAbs, we demonstrate a similar but diminished magnitude of on-ART viremia compared to prior work by McBrien et al (*Nature*2020). This effect may result from RhmAb neutralization of virions released from infected cells and, combined with the additional antibody effector functions identified, supports a role for therapeutic RhmAbs as potential clearance agents in cure approaches.

EPLBA05

Translational potency of the antisense protein ORF in the proviral DNA context

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Background: Previous *in silico* analyses of HIV-1 isolates provided strong evidence of the existence of the antisense open reading frame overlapping the HIV-1 *envgene*, termed Antisense Protein (ASP). The detection of the resulting protein has been a challenge and, although we were successful in studying ASP in cells transfected with expression vectors, its detection and understanding of its regulation in the context of proviral DNA remain difficult.
Our objective was thus to test new proviral DNA-based constructs in which different reporter versions were inserted.
Methods: Proviral DNA NL4.3 and NL4.3 BaL were used to insert the Myc tag or the luciferase reporter gene at the amino/COOH end or other positions. The 11 HiBiT peptide of the split Luc-based Nano-Glo® HiBiT System was similarly inserted in proviral DNA. The 5'LTR was removed in certain constructs. Proviral DNA were transfected in HEK293T cells alone or with tat/rev expression vectors. Luciferase activity was measured and confocal microscopy analyses were performed.
Results: NL4.3-based proviral DNA in which the luciferase gene was inserted next to the ASP initiation codon (termed NL4.3LucASP) generated a significant signal in transfected cells, but, as expected, was lower than the classical NL4.3Luc+env- vector. Interestingly, signals were lost in versions of NL4.3LucASP deleted of its 5'LTR (no sense expression) or of a previously identified polyA signal.
Furthermore, Tat could importantly induce luciferase expression in 5'LTR-deleted proviral DNA. Insertion of the luciferase reporter gene or the short HiBiT tag (complemented with the large Luc subunit by co-transfection of an expression vector) at different positions in the ASP ORF showed similar luciferase activity, again suggesting that the ASP ORF is translated. Addition of the Myc tag in the ASP ORF also led to the detection of ASP signals in transfected cells by confocal microscopy.
Conclusions: These results further add to the growing evidence that the ASP protein exists and has functional relevance. Such proviral DNA constructs should also provide important tools to study transcriptional and post-transcriptional regulation of ASP expression and lead to novel approaches for ASP detection in infected cells.

EPLBA06

Deep down in the gut: analyzing the connection between epithelial cells and ART-induced inflammation

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Background: Despite virologically suppressive combination antiretroviral therapy (cART), people living with HIV are more likely than HIV-negative people to experience comorbidities, mainly due to chronic immune activation. Here, we focused on the gastrointestinal (GI) tract because it represents the largest HIV reservoir.
We tested the hypothesis that certain nucleoside/nucleotide reverse transcriptase inhibitors (NRTI) drugs, mainstay cART components, induce interferon-stimulated-genes (ISGs) in GI cells.
Our previous work suggested that chronic exposure to NRTIs induces the proliferation of microfold ("M") cells, a relatively rare type of enterocyte. Because M-cells have been shown to be immunologically active, we tested whether supernatants from cultures containing M-cells induce HIV reactivation in latently infected T cells.
Methods: We exposed colorectal and duodenal cell lines to tenofovir (TFV) and quantified by the level of three ISGs: *ISG15*, *IFI6* and *MX1* using digital droplet PCR. We used two models of the small intestinal epithelium:
i. A triple-coculture system containing colon carcinoma Caco-2, mucus-producing HT29, and Raji B cells and;
ii. An *ex vivo* duodenum and ileum organoid model, in which four differentiation factors (noggin, retinoic acid, LTα2β1 and sRANKL) generate functional M-cells.
We exposed HIV latently infected GFP-expressing J-Lat 11.1 cells to culture supernatants from both models (separately) and measured HIV reactivation by flow cytometry and RT-ddPCR.
Results:
- After 3 days of treatment, TFV induced *IFI6* mRNA in duodenal carcinoma cells (2.5-4-fold increase).
- Culture supernatants from the triple-coculture model but not from single cultures induced HIV reactivation (5-fold increase in % GFP$^+$ cells, 3-fold increase HIV-LTR-polyA RNA).
- By qPCR, both the duodenum and ileum organoids expressed the M-cell factors *SpiB*, *CCL20* and *GP2*. When tested separately, LTα2β1 but not noggin, retinoic acid or sRANKL induced HIV reactivation by ~10-fold.

Conclusions: Soluble factors related to the differentiation and activation of the GI epithelium elicited HIV reactivation.
Furthermore, we show that NRTI can trigger the expression of inflammatory ISGs in duodenal cells. Collectively, this suggests that activation in the gut may influence the dynamics of the HIV reservoir.

EPLBA07

Host genetic variants regulates CCR5 expression on immune cells: a study in people living with HIV and healthy controls

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Background: CCR5 plays an important role in the acquisition of HIV and it is associated to immune activation in people living with HIV (PLHIV). Understanding the genetic regulation of CCR5 is crucial for HIV susceptibility and pathogenesis.

Methods: Quantitative trait loci (QTL) mapping analysis was performed to assess genetic variants associated with CCR5 expression on circulating immune cells in 209PLHIV using ART and 304 healthy controls, all Western European ancestry. The proportions of CCR5 positive cells and CCR5 mean fluorescence intensity (MFI) were assessed by flow cytometry in monocytes and CD4$^+$and CD8$^+$T cell subsets using flow cytometry.

Results: We identified distinct genetic variants that are associated with CCR5 cell proportions or mean fluorescence intensity in subpopulations of T cells with memory functions in both healthy and PLHIV (Figure 1).

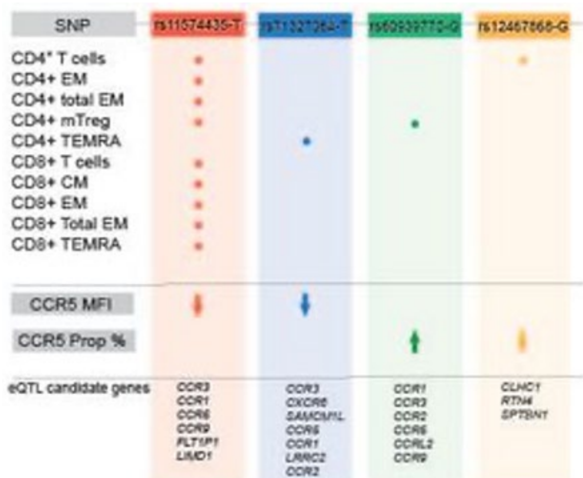

Figure 1. Genetic variations that regulates CCR5 expression in T lymphocytes

We identified the rs60939770, which is an intergenic variant in*cis*-region to *CCR5* gene not in linkage disequilibrium with *CCR5d32,* related to the proportion of CCR5$^+$memory T regulatory cells, both in PLHIV and healthy controls.Two genome-wide significant loci, in linkage equilibrium with *CCR5d32*, were found to be associated with CCR5MFI of-multiple subsets of mostly differentiated memory T cellsin both groups. The expression of nearby chemokines receptors (*CCR1*, *CCR2*, *CCR3*, *CCRL2*), existing in the same the same topologically associating domain, were also influenced by these genetic variants.

Furthermore, we show the genetic variants which modulate CCR5 surface expression affect the production of other inflammatory mediators, including monocyte- and lymphocyte-derived cytokines as well as CCL4 and IL-8.

Conclusions: We demonstrated that the genetic regulation of CCR5 expression is cell-type specific and may impact HIV susceptibility and disease progression.

EPLBA08

ILC3s in HIV-infected lymph nodes up-regulate inflammatory pathways linked to tissue fibrosis

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Background: People living with HIV (PLWH) develop extensive fibrosis and collagen deposition throughout their lymphoid tissues not reversed by antiretroviral therapy (ART). Innate lymphoid cells (ILCs) play essential roles in tissue homeostasis and repair. However, no studies exist on ILCs in lymph nodes (LNs) during HIV infection.

We hypothesized that ILCs are modulated by HIV infection and participate in the subsequent immune response.

Methods: We obtained fresh mesenteric, celiac and hepatic LNs immediately after gastrointestinal surgery from patients recruited from areas in South Africa which were subject to flow cytometry (n=64), F-IHC (n=8) and scRNA-seq (n=7).

Results: LNs from PLWH receiving ART exhibited extensive collagen deposition and CD4 T-cell depletion compared to uninfected controls characteristic of HIV LN pathology. We found no correlation between CD4 T-cell levels and ILC subsets in LNs, but reduced CD4 levels in both blood and LNs of HIV suppressed PLWH.

Strikingly, we found no depletion of any of the ILC subsets in LNs, except a slight reduction of the dominant ILC3s in LNs located outside the germinal centers and close to HIV-infected cells.

In contrast, circulating ILC3s were severely depleted in PLWH and consistent with our previous work. Single-cell transcriptional profiling revealed activation of the dominant ILC3 subset during HIV infection, suggesting ILC3s are directly involved in the HIV response. HIV-infected LNs expressed more heterogenous ILC3 subsets, includ-

ing NK-like or 'ex-ILC3s' with cytotoxic potential, suggesting that HIV infection induces trans-differentiation away from conventional ILC3 subsets towards cytotoxic type I responses.

Moreover, we consistently found elevated levels of TGF-beta producing ILC3s. This subset was enriched in inflammatory pathways in PLWH, suggesting that these cells may play a central role in fibrosis formation through fibroblast-induced collagen deposition. Transcriptional profiling of the myeloid populations from matched LNs identified macrophages as the dominant source of IL1-B production and, therefore, may serve as innate sensors and drivers of ILC3 activation and differentiation in HIV-infected LNs.

Conclusions: Here, we performed the first single-cell analysis of ILCs in HIV-infected LNs and identified ILC3s as potential contributors to lymph node fibrosis, a major pathological consequence of HIV infection that warrants further investigation.

PELBA01

Antibody-mediated prevention of vaginal HIV transmission is dictated by IgG subclass in humanized mice

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Background: HIV broadly neutralizing antibodies (bNAbs) are capable of both blocking viral entry and recruiting innate immunity to HIV-infected cells through their fragment crystallizable (Fc) region. Vaccination or productive infection results in a polyclonal mixture of class-switched IgG antibodies comprised of four subclasses, each encoding distinct Fc regions that differentially engage innate immune functions.

Despite evidence that innate immunity contributes to protection, the relative contribution of individual IgG subclasses is unknown.

Methods: We constructed Adeno Associated Virus (AAV) vectors expressing VRC07, a potent CD4-binding site direct bNAb, as each of the IgG1-4 heavy chains. In vitro testing was performed to assess the functionality of each IgG subclass against multiple HIV strains. Vectored ImmunoProphylaxis (VIP) was administered to bone-liver-thymus (BLT) humanized mice to interrogate the efficacy of individual IgG subclasses during low-dose repetitive vaginal HIV challenge by the REJO.c transmitted molecular founder strain of HIV.

Results: In vitro studies revealed that each IgG subclass exhibited distinct patterns of innate cell function. In vivo studies found that although IgG1, IgG3 and IgG4 exhibited similar protective efficacy, IgG2, which lacked Fc-mediated functionality, exhibited significantly reduced protection. A Cox proportional hazards model found that IgG2 was 5.6-fold less effective at preventing infection than IgG1 when controlling for antibody concentration. Interestingly, these studies also found that concentrations of VRC07-IgG1 as low as 2 µg/mL yielded substantial protection against vaginal challenge.

Conclusions: Our results suggest that antibody dependent cellular cytotoxicity may be dispensable for protective efficacy in BLT humanized mice, but antibody dependent cellular phagocytosis may contribute substantially to prevention at low bNAb concentrations.

As such, interventions capable of eliciting modest titers of functional subclasses may provide meaningful benefit against infection.

PELBA02

First-in-human evaluation of safety and pharmacokinetics of intravenous or subcutaneous infusions of PGT121.141.LS, an anti-V3 HIV-1 broadly neutralizing antibody in healthy volunteers without HIV

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Background: Multiple broadly neutralizing antibodies (bnAbs) targeting domains of gp120 are in development for prevention of HIV-1. PGT121.414.LS, a modification of the anti-V3 glycan bnAb PGT121, potently neutralizes multiple HIV-1 clades *in vitro*.

Methods: The ongoing, phase 1 HVTN 136/HPTN 092 trial assesses the safety, tolerability, and pharmacokinetics (PK) of PGT121.414.LS in 13 healthy adults without HIV. We evaluated IV dose-escalation and SC infusion in four groups: 3 mg/kg IV (group T1, n=3), 10 mg/kg IV (T2, n=4), 30 mg/kg IV (T3, n=3) and 5 mg/kg SC (T4, n=3). Serum con-

centrations of PGT121.414.LS were measured on days 0, 1, 2, 3, 6, 14, 28, 56 and 112 after a single infusion. Non-compartmental PK analyses were performed.

Results: The median participant age was 30 years; 77% were assigned female sex at birth; 15% Black and 85% White. IV and SC infusions were safe and well-tolerated, with no related serious adverse events or dose-limiting toxicities. Peak concentrations after IV infusions were observed on day 1, increasing linearly with higher doses (median = 525.8 in T3 vs 164.7 µg/mL in T2). Peak concentrations after SC infusion occurred on day 14. On day 112 (trough visit), T1 and T4 concentrations were similar (12.1 and 13.7 µg/mL); T2 concentrations (31.3 µg/mL) were lower than those predicted for T3 (78.8 µg/mL). Day 112 concentrations for T3 are in progress. PGT121.414.LS estimated clearance was 0.06-0.12 liter/day in T1-T4. PGT121.414.LS estimated elimination half-lives were 3 times longer than its precursor, PGT121, with medians of 53.6 -74.3 days in T1-T4. The estimated bioavailability of SC PGT121.414.LS was 70%, twice the bioavailability of its precursor.

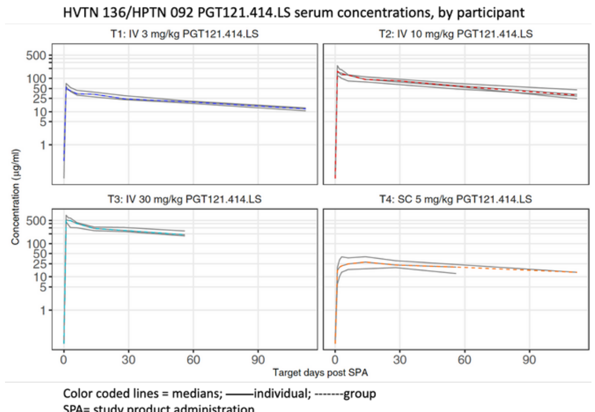

Figure. HVTN 136/HPTN 092 PGT121.414.LS serum concentrations, by participant.

Conclusions: PGT121.414.LS was safe and well-tolerated following IV or SC infusion in healthy US adults. These preliminary safety and pharmacokinetic findings support further development of PGT121.414.LS in combination with other bnAbs for global HIV-1 prevention.

PELBA03

In-vitro/ ex-vivo contribution of antiretroviral drug and alcohol exposure to blood-brain barrier disruption: relevance to the pathogenesis of HIV-1 associated neurological disorder

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Background: HIV-1-associated neurological disorder (HAND) and alcohol use disorder (AUD) are common among people living with HIV/AIDS and significantly compromise their quality of life. Lines of evidence suggest that the toxicity induced by alcohol and antiretroviral drugs (ARVs) in the central nervous system (CNS) can potentially contribute to the pathogenesis of HAND. We aimed to investigate the effect of several recommended first-line ARVs and alcohol in inducing blood-brain barrier (BBB) dysfunction using human and mouse*in-vitro* and *ex-vivo* BBB models.

Methods: Brain Microvascular endothelial cells of human (hCMEC/D3) and mouse (primary cultures) origin, and isolated mice brain capillaries were used as in-vitro and ex-vivo models of the BBB and treated with alcohol or ARVs at clinically relevant plasma concentrations. Gene expression of tight junction proteins, drug efflux transporters, pro-inflammatory cytokines and oxidative stress marker were analyzed by qPCR using TaqMan gene expression assays.

Results: We observed a significant downregulation of TJP1/ZO-1, OCLN and CLDN5 mRNA expression following efavirenz, dolutegravir and emtricitabine exposure, and upregulation of pro-inflammatory cytokines (IL6, IL1β, IL8) and oxidative stress marker (NOS2/iNOS) by efavirenz, dolutegravir, emtricitabine, bictegravir and abacavir treatment in hCMEC/D3 cells. The mRNA expression of drug efflux transporters, P-glycoprotein (ABCB1/P-gp), Breast Cancer Resistant Protein (ABCG2/BCRP), and glucose transporter1 (SLC2A1/Glut-1) was altered by efavirenz, dolutegravir, emtricitabine, bictegravir and abacavir. In mouse brain microvessel endothelial cells, alcohol, efavirenz and dolutegravir exposure significantly downregulated Tjp1, Ocln and Cldn5, upregulated Il6, and altered Abcb1a, Abcg2 and Slc2a1 gene expression. Experiments using mouse brain capillaries further confirmed the significant effect of efavirenz and dolutegravir in disrupting Tjp1, Ocln, Cldn5, inducing Il1β and downregulating Abcb1a, Abcg2 and Slc2a1 mRNA expression.

Conclusions: Our studies demonstrated the effect of alcohol and ARVs in dysregulating TJ proteins, drug efflux transporters and pro-inflammatory cytokines at the BBB. By assessing the CNS toxicity of first line ARVs, our research reveals the potential contribution of ARVs in the pathogenesis of HAND and provides insights into optimal use of such ARVs in AUD population.(Supported by CIHR and OHTN).

EPLBB01

Standard versus double dose dolutegravir in patients with HIV-associated tuberculosis: a phase 2 non-comparative randomized controlled trial

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Background: Rifampicin reduces the exposure of co-administered dolutegravir. This can be overcome with a supplemental dose of dolutegravir, which is difficult to implement in high burden settings. Dolutegravir trough concentrations of standard dosing with rifampicin were above the protein-adjusted IC_{90} in a healthy-volunteer study – this finding, coupled with the long dissociative half-life of dolutegravir from integrase, suggests supplemental dosing of dolutegravir with rifampicin may be unnecessary.

We hypothesize that virologic suppression with standard dose dolutegravir-based antiretroviral therapy (ART) will be acceptable in patients on rifampicin-based antituberculosis therapy (ATT).

Methods: We conducted a phase 2, non-comparative, randomised, double-blind, placebo-controlled trial of standard versus double dose dolutegravir among adults living with HIV on rifampicin-based ATT who were ART-naïve or had interrupted ART in Khayelitsha, Cape Town, South Africa. Participants were commenced on tenofovir/lamivudine/dolutegravir (TLD) and randomised to supplemental dolutegravir or placebo.

The primary endpoint was the proportion virologically suppressed (HIV-RNA viral load <50 copies/mL) at 24 weeks analyzed according to modified intention-to-treat using the FDA snapshot algorithm.

Results: We enrolled 108 participants: median age 35 years (IQR 32 to 41), 38% female, median baseline CD4 cell count 184 cells/mm³ (IQR 145 to 316) and HIV-RNA viral load 5.2 $\log_{10}$copies/mL (IQR 4.6 to 5.7). Baseline characteristics were similar between arms. Proportions with virologic suppression at weeks 12 and 24 were similar between arms (*Table 1*). No participants developed dolutegravir resistance. Grade 3 and 4 adverse events occurred at similar rates in both arms. Insomnia developed in more participants in the double dose arm (n=12) than in the single dose arm (n=4).

	TLD + Dolutegravir arm (n=53)	TLD + Placebo arm (n=55)
Week 12		
mITT, n (% [95%CI])	42/53 (79% [66-89%])	46/55 (84% [71-92%])
PP, n (% [95%CI])	42/53 (79% [66-89%])	46/54 (85% [73-93%])
Week 24		
mITT, n (% [95%CI])	43/52 (83% [70-92%])	44/53 (83% [70-92%])
PP, n (% [95%CI])	43/51 (84% [71-93%])	44/52 (85% [72-93%])
TLD = tenofovir/lamivudine/dolutegravir, mITT = modified intention-to-treat, PP = per protocol		

Table 1: Proportions with viral load <50 copies/mL

Conclusions: Virologic outcomes in both arms were acceptable. Our findings should be confirmed by adequately powered randomised controlled trials before implementation.

EPLBB02

Chronic/latent viral infection prevalence and estimated all-cause mortality risk among women living with HIV and HIV-negative women participating in the British Columbia CARMA-CHIWOS Collaboration (BCC3) study: preliminary findings

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Background: Women living with HIV (WLWH) have shorter life expectancy compared to HIV-negative women, which suggests accelerated/accentuated aging. Healthy aging is affected by chronic inflammation caused by HIV and other persistent viral infections, as well as socio-structural stressors that disproportionately affect WLWH.

Methods: The BCC3 cohort takes a holistic approach to examine healthy aging and enrolls WLWH and HIV-negative women living in British Columbia, Canada. Prevalence of 8 chronic viral infections was assessed by serology (hepatitis B and C viruses (HBV, HCV), herpes simplex viruses (HSV-1, HSV-2), Epstein-Barr virus (EBV), human herpesvi-

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rus-8 (HHV-8), and cytomegalovirus (CMV)), or self-report (varicella-zoster virus (VZV)). The Veterans Aging Cohort Study (VACS) index, which estimates 5-year all-cause mortality risk based on clinical and demographic parameters, was calculated based on data from the BCC3 survey. The groups were compared by Fisher's, Chi-Squared, and Mann-Whitney tests, as appropriate.

Results: Table 1 describes demographic characteristics of the study participants. WLWH were more likely to harbor CMV (77% vs 53%, p<0.001), HSV-2 (73% vs 27%, p<0.0001), HCV (37% vs 7%, p<0.0001), and HBV (23% vs 4%, p<0.001), but not EBV (98% vs 91%, p=0.06), HSV-1 (72% vs 63%, p=0.17), VZV (74% vs 80%, p=0.3), and HHV-8 (8% vs 18%, p=0.04). After excluding participants with missing data, WLWH (n=90) had significantly higher VACS scores compared to controls (n=96) 8.2 [3.7-23.1]% vs 4.2 [3.7-10.7]%, p<0.001.

	WLWH (n=100)	Controls (n=100)	P-value
Age (years), median [IQR] (range)	51 [42-58] (20-73)	47 [27-56] (17-80)	**0.01**
African / Caribbean / Black / White / Indigenous / Asian / other, %	13 / 38 / 29 / 9 / 11	3 / 53 / 3 / 24 / 7	**<0.001**
Graduated high school, %	69	96	**<0.0001**
Currently employed, %	36	57	**0.003**
Individual income <$20.000, %	64	33	**<0.0001**
Have experienced homelessness, %	51	21	**<0.001**
Current smoking, %	45	21	**<0.001**
Current substance use, %	48	38	0.15
Current opioid use, %	27	11	**0.004**

Table 1.

Conclusions: In this interim analysis, WLWH were more likely to have 4/8 chronic/latent viruses and almost twice the estimated risk of mortality within 5 years compared to controls. These observed differences may be partially mediated through biological variables, age, and/or socio-structural factors.

This type of analysis can shed light on the factors that affect aging in WLWH, to ultimately inform action(s) to improve quality of life and close the health gap between WLWH and HIV-negative women.

EPLBB03

Cervical cancer screening outcomes among women living with HIV In Malawi

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Background: In comparison to HIV-negative women, women living with HIV (WLHIV) are six times more likely to develop persistent precancerous lesions that advance to cervical cancer, with more aggressive forms and higher mortality. Since 2018, PEPFAR Malawi has helped the Ministry of Health integrate cervical cancer screening and treatment into high-volume ART clinics, increasing the number of facilities from 39 to 129. PEPFAR Malawi used a "screen and treat" strategy that included visual examination with acetic acid (VIA) and treatment of precancerous lesions with thermocoagulation, cryotherapy, and LEEP (for lesions covering more than 75% of the cervix).

All PEPFAR-supported sites have skilled providers, a continuous supply of critical goods, and at least one thermal coagulator.

Our objectives is to describe patterns of cervical cancer screening using VIA testing among WLHIV in Malawi from 2020 to 2021.

Description: We retrospectively analyzed 2020-2021cervical cancer program data. Our analysis focused on 116,023 women (20–49 years). Chi-square test for bivariate analysis, and proportional tests were used to analyze independent association between individual-level factors and women who have had VIA. Statistical significance was set at p < 0.05.

Lessons learned: Using program data, we calculated descriptive statistics and proportion tests to test statistical significance differences in VIA-positivity by age and screening type. Between October 2020 and September 2021, the program conducted 116,023 cervical cancer screenings. Proportion of WLHIV who tested VIA-positive was 3% (3,621/116,023).

Among 3621 women who screened VIA-positive, positivity was 4% (2,382/67744) from first time screening, 2% (1170/47283) from rescreening and 7% (69/996) from follow up screening. By age, positivity was 4% for women aged 20-34 years, 3% for ages 35-44 years and 1% for ages above 39 years. Although the age range 20-24 years is outside the PEPFAR targeted population, we noticed a positivity of 4%.

Conclusions/Next steps: There is a need to discuss the possibility of including ages 20-24 years in the PEPFAR targeted population for cervical cancer screening. This group had a positivity of 4% which is higher than positivity reported for other age categories.

In addition, the positivity for follow up screens was 7% which implies a need to evaluate the effectiveness of treatment.

EPLBB04

Randomised study of switch toDTG/RPV in subjects with HIV RNA <50c/ml and archived K103N over 48 weeks

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Background: DTG/RPV 2-drug regimen was studied in virologically suppressed switched subjects with no prior treatment failure history or resistance. Viruses with NNRTI resistance mutation K103N retain in-vitro susceptibility to RPV. Potential to maintain viral suppression with DTG/RPV in subjects with documented K103N currently suppressed on other regimens was investigated.

Methods: This is a European, open-label, multi-centre, exploratory study randomised 2:1 over 48 weeks of switch to DTG/RPV vs continuing current suppressive regimen (CSR) in treatment experienced, HIV-1 subjects with documented, prior K103N mutation. Prior PI and NRTI mutations were permitted. Mutations known to reduce susceptibility to RPV or DTG, INSTI failure history, or contraindications to DTG or RPV were exclusions.

Results: Results were available for all 140 randomised subjects (DTG/RPV: 95, CSR: 45), well matched for baseline characteristics, median age was 52yr, 82% male, 73% white and median CD4 570 c/uL. Baseline regimens included NRTIs 77%, PI/b 63%, INSTI 48%.

Proportion of subject with treatment success (HIV-RNA<50 copies/mL) by ITT FDA Snapshot at week 48 was DTG/RPV 90.5% vs CSR 88.9% (-1.5%, 95% CI -12.3 to +9.8). One CSR (2.2%) and three DTG/RPV (3.2%) subjects were confirmed virological failures (2x ≥50copies/ml >2weeks apart). All virological load failures were <200 copies/ml.

Adverse event occurred with DTG/RPV 80.0% vs CSR 73.3%. Drug-related AE rate was 23.2% for DTG/RPV (mostly grade 1, and one grade 3) with none in the CSR group. Three DTG/RPV subjects out of 13 discontinuations (8 DTG/RPV; 5 CSR) were withdrawn for AEs (Aggressive behaviour; fatty faeces and flatulence; sleep disorder). There were no significant differences in changes to weight, lipids, or renal parameters.

Conclusions: In subjects with archived K103N currently suppressed on standard regimens, switch to DTG/RPV maintains virological suppression in the majority of subjects through week 48. Higher rates of mainly grade 1 AEs were observed, consistent with other switch studies.

EPLBB05

Safety and effectiveness outcomes from the Carisel study: phase 3b hybrid-3 implementation study integrating cabotegravir + rilpivirine long-acting into European clinical settings

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Background: Cabotegravir + rilpivirine long-acting (CAB+RPV LA) dosed every 2 months (Q2M) is a recommended regimen in European and US treatment guidelines for virologically suppressed people living with HIV-1 (PLWH) with no known CAB/RPV resistance. CARISEL is the first study in which all participants switched from daily oral therapy to CAB+RPV LA Q2M. Key safety and effectiveness Month 12 endpoints are reported.

Methods: This single-arm study enrolled virologically suppressed PLWH to receive CAB+RPV LA Q2M. Clinics with no prior experience with CAB+RPV LA were preferentially selected. Effectiveness endpoints were the proportion of participants with plasma HIV-1 RNA ≥50 copies/mL and <50 copies/mL at Month 12 (FDA Snapshot algorithm, intention-to-treat exposed population). Safety outcomes were also reported.

Results: Thirteen of 18 clinics (72%) had no experience with administering CAB+RPV LA at study start. 430 enrolled and treated participants were included; 25% were female (sex at birth), 18% were Black, with a mean baseline age of 44 years (30% >50 years). At Month 12, 87% (n=373/430) of participants maintained HIV-1 RNA <50 copies/mL, and the proportion with HIV-1 RNA ≥50 copies/mL was 0.7% (n=3/430). One participant had confirmed virologic failure (n=1/430; 0.23%) with E138A+M230L RPV resistance-associ-

ated mutations (RAMs) and no INSTI RAMs detected in the suspected virologic failure sample at Month 10; the E138A RPV RAM was present at baseline (retrospective testing of Day 1 peripheral blood mononuclear cell pro-viral DNA). Most AEs and drug-related AEs were Grade 1 or 2 (86% and 94%, respectively). Injection site reactions (ISRs) were reported in 86% of participants; 98% were mild or moderate in severity. The median ISR duration was 3 days, with >80% resolving within 7 days. Few participants (6%) discontinued due to ISRs (Table).

	CAB+RPV LA (n=430) n (%)
Any AEs*	420 (98)
Drug-related AEs	389 (90)
Grade 3–5 drug-related AEs	25 (6)
AEs leading to treatment withdrawal	42 (10)
Recorded ISRs leading to treatment withdrawal	24 (6)
SAEs†	15 (3)

*No Grade 5 AEs or deaths were reported; most common AEs were injection site pain (80%);
COVID-19 infection (16%); injection site induration (10%); injection site discomfort (9%); pyrexia (9%).
†One SAE was reported as drug related and led to study treatment discontinuation.
AE, adverse event; CAB, cabotegravir; ISR, injection site reaction; LA, long-acting; RPV, rilpivirine; SAE, serious adverse event.

Table. Adverse Events Outcomes (Including ISRs)

Conclusions: Across diverse European clinical settings and participants, CAB+RPV LA Q2M was well tolerated and highly effective in maintaining virologic suppression with a low rate of virologic failure.

EPLBB06

Suboptimal lopinavir exposure in infants 1-12 months on rifampicin treatment receiving double-dosed or semi-superboosted lopinavir/ritonavir; results from the EMPIRICAL trial

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Background: Double-dosing of lopinavir/ritonavir (LPV/r) in infants and young children receiving rifampicin resulted in subtherapeutic LPV trough concentrations (<1.0mg/L) in 60% of children. However, only four infants <12 months old participated in that study while activity of LPV metabolism through CYP3A4 changes greatly during the first year of life. Super-boosted LPV/r to a 1:1 ratio is recommended for infants being co-treated with rifampicin. In clinical practice, however, double-dosed LPV/r is frequently given to infants receiving rifampicin due to limited availability of single formulation ritonavir syrup.

We evaluated plasma LPV concentrations in infants with HIV receiving LPV/r according to local dosing guidelines with or without rifampicin-based TB-treatment.

Methods: This is a 2-arm pharmacokinetic sub-study of the EMPIRICAL randomized controlled trial (#NCT03915366) for severe pneumonia in infants with HIV. Eligible infants aged 1-12 months, weighing ≥ 4kg, receiving LPV/r with or without (control) rifampicin-based TB-treatment, were recruited from hospitals in Mozambique, Zambia, and Zimbabwe. Infants received double-dosed or semi-superboosted LPV/r (adding a ritonavir 100mg crushed tablet to the evening LPV/r dose) during rifampicin co-treatment. Six blood samples were taken over 12 hours. This project is part of the EDCTP2 programme supported by the European Union RIA2017MC-2013.

Results: In total, 13/15 included infants had evaluable pharmacokinetic curves; 8/13 had rifampicin co-treatment (5 received double-dosed and 3 semi-superboosted LPV/r). The median (IQR) weight was 5.7kg (5.3-6.7) and age 6.6 months (5.5-9.7), 9/13 were male. 5/8 infants in rifampicin arm had LPV C_{trough} <1.0mg/L (equally divided over those receiving double-dosed and semi-superboosted LPV/r); median (IQR) AUC_{0-12h} and C_{trough} were 47.6 (7.7-96.1) h*mg/L and 0.25 (0.06-2.8) mg/L, respectively.

In the control arm, 1/5 infants had C_{trough} <1.0mg/L; AUC_{0-12h} and C_{trough} were 64.2 (61.8-237.2) h*mg/L and 3.4 (1.6-15.8) mg/L, respectively. LPV apparent oral clearance was 4-fold higher for infants receiving rifampicin.

Conclusions: Double-dosed or semi-superboosted LPV/r for infants 1-12 months old receiving rifampicin resulted in substantial proportions of subtherapeutic LPV levels.

There is an urgent need for data on alternative ARVs in infants with HIV/TB co-infection, such as twice-daily dolutegravir which is being evaluated in an ongoing EMPIRICAL pharmacokinetic substudy.

EPLBB07

A point-of-care triage test for HIV virological failure: filling the gaps in viral load coverage

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Background: Viral load (VL) monitoring in antiretroviral treatment (ART) patients is challenging, especially in high-burden settings. Access to an accurate, affordable point-of-care test (POCT) could greatly enhance ART outcomes.IFN-γ-induced protein 10 (IP-10) is a chemokine strongly correlated with human immunodeficiency virus (HIV) VL that could serve to predict virological failure (VF) and to triage patients requiring VL testing.

This study aimed to evaluate the field performance of a semi-quantitative prototype lateral flow IP-10 POCT as a screening test for VF in South Africa.

Methods: Finger prick capillary blood was collected from patients attending a primary health clinic in the Western Cape for direct application by trained nurses onto the IP-10 POCT (index test) and compared with a plasma VL result taken ≤1 month prior (reference test) amongst adult patients on ART for ≥ 1 year. Logistic regression with penalized likelihood was used to build an IP-10 POCT reading values-based model able to identify individuals with VF (VL > 1,000 copies/mL).

The area under the receiver operating characteristic curves (AUC) was calculated to evaluate model prediction. Testing cost saving was estimated assuming a unit cost of 2 USD for IP-10 POCT, 22 USD for VL test plus 60% of test-associated costs.

Results: Among the 209 participants (median age 38 years and 88% female), 18% had VF. Median IP-10 POCT reading values were higher among individuals with VF compared to those without (24.0 vs. 14.6; $p < 0.001$).

The IP-10 POCT predicted VF with an AUC = 0.76 (95% confidence interval (CI), 0.67–0.85). The model identified VF with 91.9% sensitivity (95% CI, 78.1%–98.3%) and 35.1% specificity (28.0%–42.7%).

Projecting a VF prevalence of 18% in a simulated cohort of 1,000 ART patients, an IP-10 screening POCT would avert > 30% of the routine VL monitoring tests and associated costs.

Conclusions: The IP-10 POCT is an effective triage test for routine VL monitoring. Combining a highly sensitive, low-cost IP-10 POCT-based screening with VL testing in a two-step decision algorithm could provide a greatly needed monitoring tool in settings with low VL coverage, and result in significant savings for health systems.

EPLBB08

Analytical treatment interruption (ATI) among African women with early ART initiation with or without VRC01 circulating at HIV acquisition: study design and early observations of viral rebound and control

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Background: Viremia rebounds rapidly in most people living with HIV upon ART cessation. Early ART initiation is associated with ART-free virologic control, and broadly neutralizing anti-HIV-1 antibodies (bnAbs) may modulate immune responses to HIV. Durable ART-free virologic control has been observed in 20-25% of African women in some cohorts, significantly higher than in other populations. The HVTN 703/HPTN 081 AMP trial evaluated VRC01 bnAb-mediated HIV-1 prevention among African women; those who acquired HIV were linked to early ART. With African community, investigator, ethics and regulatory collaborators, an AMP ATI (HVTN 805/HPTN 093/A5390) was designed to evaluate whether early ART +/- VRC01 circulating at HIV acquisition is associated with virologic control post-ATI and to assess underlying immunologic and virologic dynamics.

Methods: AMP ATI eligibility includes African women with an estimated HIV acquisition date within 8 weeks of receiving VRC01 or placebo in AMP, early ART initiation and ≥1

year of viral suppression. Participants complete an NNRTI switch, as needed, then stop ART and receive frequent viral load (VL) and CD4+ T-cell count monitoring. ART re-initiation criteria include CD4<250, VL>1,000 for 4 weeks without 0.5log decline, or participant/clinician request to restart ART.

Results: Nine participants from South Africa, Malawi, Botswana and Zimbabwe have enrolled, thus far; 7/9 met ART re-initiation criteria (n=5 for VL; n=2 for participant/clinician request). One participant requesting ART re-initiation had tenofovir levels consistent with ART use during ATI. Median time to confirmed VL>200 was 7.3 weeks (range 2.7-20.9+). Median time to meet virologic ART re-initiation criteria was 17.1 weeks (11-21.3). ART was reinitiated a median of 7 days later; all re-suppressed. No SAEs or Grade ≥2 related AEs were reported. See Figure 1.

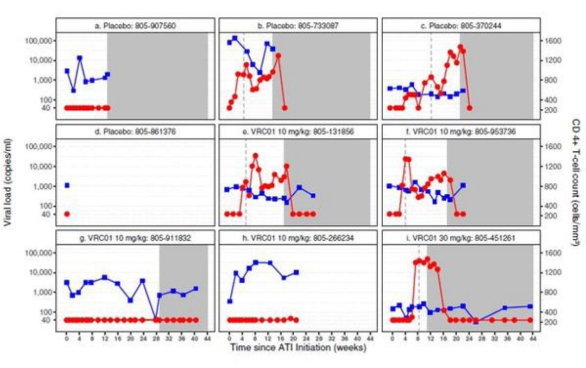

Figure 1. *Individual participant viral load (blue squares) and CD4+ T-cell counts (red circles) over time during analytical treatment interruption (ATI).* The treatment each participant received in the pre-ATI AMP study (i.e., Placebo or VRC01 10 mg/kg or 30 mg/kg) is indicated above each panel. Time of first viremia is indicated with the gray dashed line. Time of meeting ART re-initiation criteria is indicated by the beginning of the gray shaded areas. ART re-initiation criteria met are: viral load (805-733087, 805-451261, 805-953736, 805-131856, 805-370244), participant request (805-911832 and 805-907560), and CRS clinician request (805-907560) due to participant relocation. Participant 805-911832 had tenofovir levels in Dried Blood Spots that were consistent with ART use during ATI.

Figure 1.

Conclusions: In a safe and well-tolerated ongoing ATI developed with local stakeholder engagement, African women with early ART initiation +/- prior VRC01 exhibit evidence of viral rebound and control.

EPLBB09

Risk factors and prognoses for low-level HIV-1 viremia: a long-time observational study

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Background: The risk factors and optimal management of low-level viremia (LLV) in HIV infection is still controversial. Here, we studied the risk factors for LLV in treated HIV patients, and the impact of viral load (VL), CD4 counts, and ART modification during LLV on virological and immunological prognoses.

Methods: We reviewed all outpatients at the HIV clinical center of Peking Union Medical College Hospital in Beijing, China during 2010-2020. Patients who aged 18-65, ever achieved virological suppression (VS), and had at least two documented VLs and CD4 counts were included in the study. A case-control study was designed to figure out the risk factors for LLV. Patients with LLV were then studied to learn the impact of viral load, CD4 counts, and strategies of ART modification on the clinical outcomes including virological failure (VF, VL > 200 copies/ml) and poor CD4 recovery (CD4 counts < 350 cells/mm³).

Results: The case-control study showed that the modification of ART regimens (OR =2.309, 95% CI [1.302-4.191], p =0.005) and higher zenith VL (OR = 1.331, 95% CI [1.091-1.623], p= 0.005) were independent risk factors for LLV. In the second part, of 43 patients with LLV, 2 (7.9%) had a subsequent VF and 17 (44.4%) showed poor CD4 recovery. Immunological suboptimal responder during LLV (HR =3.015, 95% CI [1.000-9.094], p =0.050) and higher zenith CD4 (HR = 0.995, 95% CI [0.991-0.999], p =0.012) were respectively independent risk and protective factors.

However, LLV did not dramatically alter the dynamic of CD4 changes before and after LLV. Modification of ART regimens during LLV did not help to reverse either virological or immunological outcomes.

Conclusions: These findings suggested that a powerful and sustainable initial ART regimen to avoid frequent adjustment of suboptimal regimens may be key to preventing LLV. The incidence of VF post LLV was relatively low but poor CD4 recovery was common. Modification of ART regimens during LLV had no necessity or help for reversing the virological and immunological outcomes post LLV.

PELBB01

Final week 192 results from the ADVANCE trial: first-line TAF/FTC/DTG, TDF/FTC/DTG vs TDF/FTC/EFV

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Background: Current World Health Organization guidelines recommend first-line treatment with tenofovir disoproxil fumarate (TDF)/lamivudine (or emtricitabine (FTC)) and dolutegravir /(DTG) for HIV-1 infection.Tenofovir alafenamide (TAF) is listed as an alternative to TDF for patients with osteoporosis or impaired renal function.

Methods: 1,053 treatment-naïve participants in South Africa were randomized to either TAF/FTC+DTG, TDF/FTC+DTG, or TDF/FTC/EFV and followed up to week 192 under a trial extension. HIV-1 RNA, vital signs and renal and bone adverse events were assessed prospectively.

Results: BMI was balanced between arms at baseline. At 192 weeks, HIV-1 RNA <50 copies/mL was confirmed in 218/351 (62.3%) in the TAF/FTC+DTG arm, 204/351 (58.1%) in

the TDF/FTC+DTG arm, and 177/351 (50.4%) in the TDF/FTC/EFV arm. In the on treatment analysis, HIV RNA <50 copies/mL was 218/226 (96%) for TAF/FTC+DTG, 204/209 (98%) for TDF/FTC+DTG, and 177/179 (99%) for TDF/FTC/EFV.

By Week 192, body weight increased by +8.9kg for TAF/FTC+DTG, +5.8kg for TDF/FTC+DTG, and +3.3kg for TDF/FTC/EFV participants (observed data analysis). By Week 192, 29% of patients on TAF/FTC+DTG, 21% on TDF/FTC+DTG and 15% on TDF/FTC/EFV had developed clinical obesity. The risk of clinical obesity was significantly higher if taking TAF/FTC/DTG (p<0.001), female patients (p<0.001) and those with higher baseline BMI (p<0.001).

Among the women enrolled, 43% on TAF/FTC+DTG developed clinical obesity by Week 192 versus 27% on TDF/FTC+DTG and 20% taking TDF/FTC/EFV (p<0.001). Bone fracture and Grade 3 or 4 renal adverse events were rare and similar across arms.

Treatment arm	TAF/FTC/DTG N=351	TDF/FTC/DTG N=351	TDF/FTC/EFV N=351
HIV RNA <50, ITT	62%	58%	50%
HIV RNA, on treatment	96%	98%	99%
Weight gain	+8.9kg	+5.8kg	+3.3kg
% Clinical obesity	29%	21%	15%
% Obesity: women	43%	27%	20%
Bone fractures	n=5	n=4	n=5
Grade 3 / 4 Renal	n=1	n=2	n=3
Grade 3 / 4 Cardiac	n=1	n=0	n=0
Grade 3 / 4 Diabetes	n=0	n=1	n=0
Grade 3 / 4 Adverse birth outcomes	n=4	n=1	n=1

Table. ADVANCE trial: week 192 results

Conclusions: In the ADVANCE trial, participants taking TAF/FTC+DTG experienced greater weight gain and clinical obesity than TDF/FTC/DTG by Week 192, particularly in women, but no significant differences in HIV RNA suppression or renal or bone-related adverse events.

Both TAF/FTC/DTG and TDF/FTC/DTG had significantly higher rates of HIV RNA suppression than TDF/FTC/EFV at Week 192 in the main ITT analysis.

PELBB02

Update on neural tube defects with antiretroviral exposure in the Tsepamo Study, Botswana

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Background: After reporting a possible association between neural tube defects (NTDs) and exposure to dolutegravir (DTG) from conception in 2018, yearly updates from the Tsepamo study have been increasingly reassuring. We report updated data collected through March 2022.

Methods: The Tsepamo Study conducts birth outcomes surveillance study at government hospitals throughout Botswana, covering ~70% of all births. Midwives perform surface examinations of all live births and stillbirths and describe abnormalities. Research assistants photograph major abnormalities after maternal consent, which are reviewed by a birth defects expert blinded to exposures. Prevalence of NTDs was determined by maternal HIV and antiretroviral (ARV) exposure status (95% CI by Wilson method) and the primary analysis evaluated prevalence differences by exposure status (95% CI by Newcombe method).

Results: Since April 2021, 32,819 additional births were recorded, including 3,780 additional DTG conception exposures. Since August 2014, there have been a total of 224,251 deliveries; 223,797 (99.8%) had an evaluable infant surface exam, with 156 (0.07%, 95% CI 0.06%, 0.08%) NTDs identified (100 with photo, 56 by description only). Among women on DTG at conception, 10/5860 NTDs occurred (0.11%; 95%CI 0.06%, 0.19%): 4 myelomeningoceles, 2 anencephaly, 3 encephaloceles, and 1 iniencephaly. In comparison, NTDs occurred in 25/23,664 (0.11%; 95%CI 0.07%, 0.16%) women on any non-DTG ARVs from conception, 11/14,432 (0.08%; 95%CI 0.04%, 0.14%) on efavirenz from conception, 4/6,551 (0.06%; 95%CI 0.02%, 0.16%) on dolutegravir started in pregnancy, and 108/170,723 (0.07%; 95%CI 0.05, 0.08%) among women without HIV. NTD prevalence did not differ between DTG and any non-DTG ARVs from conception (0.00% difference; 95%CI -0.07%, 0.10%).

Exposure group vs. comparison group	Prevalence difference (%) (95% CI)
DTG at conception vs. Non-DTG at conception	0.00 (-0.07, 0.10)
DTG at conception vs. EFV at conception	0.03 (-0.05, 0.12)
DTG at conception vs. DTG started in pregnancy	0.04 (-0.06,0.14)
DTG at conception vs. non-DTG started in pregnancy	0.04 (-0.07,0.13)
DTG at conception vs. women without HIV	0.04 (-0.01, 0.13)

Table. Prevalence Difference of Neural Tube Defects by ARV and HIV Exposure Categories

Conclusions: The prevalence of NTDs among infants born to women on DTG at conception has declined to 0.11% and does not substantially differ from other exposure groups.

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EPLBC01
Mapping and estimating the size of virtual key populations: potential approaches

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Background: The dynamics of key population is changing very fast all over the world including India. More and more of them shifting increasingly from traditional physical hotspots to the virtual space due to rapid development in information technology as well as other underlying factors. Some discreate efforts are being made across some countries to map the virtual sites as well as estimate the size of key populations operating from there.

However, no sound, reliable and convincing methodology is yet to be available to map and estimate the size of virtual key populations for designing appropriate interventions among them.

Methods: National AIDS Research Institute of India and World Health Organization undertook an in-depth assessment in 2019-2020 to develop few potential approaches based on extensive literature review and informal consultations with key experts, program managers and key population communities.

Results: The in-depth assessment recommended three alternative potential approaches for mapping and estimating the size of key populations, particularly of men who have sex with other men, transgenders and female sex workers:

1. Virtual mapping and respondent driven sampling surveys;
2. Virtual mapping and online surveys, and;
3. Physical mapping and respondent sampling surveys.

All required adjustment factors could be calculated from any of these approaches.

Conclusions: The assessment concluded that the recommended three potential approaches need to be field tested for identifying the best approach for a particular key population group in a specific context.

Currently, the team is gearing up to field test these approaches as the COVID pandemic is now under control in India.

EPLBC02
Opioid-agonist therapy in Ukraine has a large potential for expansion and demonstrates significant reduction of risky injection practices and overdose among people who inject opioid drugs

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Background: Opioid-Agonist Therapy (OAT) in Ukraine is the largest program of its kind in the Eastern Europe and Central Asia (EECA) region, with current coverage of nearly 17,000 clients. Ukraine's OAT program provides methadone or buprenorphine in combination with counseling and social services.

We investigated the reduction in unsafe injection practices and drug overdoses among clients who receive OAT but continue to inject drugs.

Methods: We analyzed the 2020 Integrated Biobehavioral Survey (IBBS) survey data among people who inject drugs (PWID) in Ukraine. Respondent-driven sampling was used to recruit 6,001 those who injected drugs in the past 30 days across 12 cities. The questionnaire captured sociodemographics, OAT awareness, eligibility, and participation, and risk behaviors among PWID who inject opioids (n=3,681). We ran four multivariate logistic models to estimate the preventive effect of OAT on usage of non-sterile syringes, syringe or needle sharing, use of prefilled syringes, and experience of non-fatal overdoses.

Results: In a weighted analysis, 62% of respondents were aware of the OAT program and 19% reported being on OAT. While 24% of respondents expressed interest in OAT, 49% were not planning to ever enroll in it. Other PWID had current or past OAT experience (24%) or failed to provide an answer (2.4%). In adjusted logistic models, current (n=745) OAT users were 25% less likely to report non-sterile syringe use. OAT users had 45% lower odds of sharing syringes than non-OAT users (2,936), and they had 43% lower odds of using drugs in pre-filled syringes. Additionally, OAT clients experienced half the risk of non-fatal overdose compared to non-OAT clients.

Conclusions: In this large PWID survey, OAT was associated with reduction of unsafe injection behaviors and non-fatal overdose, regardless of drug cessation. Allowing clients to enroll in OAT regardless of continuing injection practices would remove barriers to enrollment in OAT programs and potentially increase the benefits of OAT in Ukraine.

These results could be further used to inform a lower threshold of enrollment requirements for OAT among PWID in Ukraine as well as to increase PWIDs' awareness of the program.

EPLBC03

Jitegemee (rely on yourself): acceptability and feasibility of a personal savings intervention to reduce HIV risk among female sex workers in Kisumu and Siaya Counties, Kenya

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Background: Female sex workers (FSWs) in Kenya bear a disproportionate burden of HIV, mainly due to a high premium attached to unprotected sex with partners of unknown HIV status. Jitegemee (rely on yourself) intervention aims to support FSWs to build a small reserve from their earnings for use when sex work business is not doing well or when they want to decline unsafe sex.

Methods: We conducted a cross-sectional survey on acceptability and feasibility of Jitegemee – an intervention that aims to support FSW to put aside small savings from their earnings to fall back on to avoid situations of HIV risk. Eligible FSW were aged ≥18 years living in Kisumu and Siaya Counties. We explored HIV risk-taking behaviours; earnings, savings, and spending practices; views on and concerns over Jitegemee; plans to leave sex work; how to improve savings, among other topics.

To ensure representation of different FSW typologies, we enrolled participants from entertainment joints, brothels, streets, homes and beaches.

Results: Between 01/Feb/2022-02/Apr/2022, we enrolled 370 FSWs (208 in Kisumu, 162 in Siaya); average age 31 years; 55% primary and 40% secondary education; 22% married/cohabiting; 56.5% joined sex work ≤5 years; average monthly income US$1,227; 86% reporting sex work as primary income. Median monthly savings was US$95 (mainly in mobile money and table banking) while expenditures consumed US$1,860; current loans was US$67. Expenditures-plus-loan was higher than income-plus-savings by US$351. To augment their income in order to save, FSWs would seek other sources of income (62%), get more customers (29%) or work longer hours (20%).

Jigetemee intervention was acceptable to 95% of participants; however, 8% had concerns, of whom 42% perceived it as forcing sex workers out of sex work, 35% as disapproval of sex work, and 19% as a scheme to disappear with savings/use FSWs as a source of income.

Conclusions: Jitegemee is acceptable to almost all FWS and would be a sustainable approach to reduce their risk of HIV.

However, in order to reduce the risk of HIV by joining a savings intervention, FSW would need to cut down on non-essential expenses and/or diversity income without engaging in riskier sex.

EPLBC04

Transgender women (TGW) in HPTN 083: an evaluation of safety, efficacy, and gender affirming hormonal therapy (GAHT) interactions with long-acting cabotegravir (CAB-LA)

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Background: HPTN 083 demonstrated a 66% reduced risk of HIV acquisition for long-acting injectable cabotegravir (CAB-LA) vs. daily oral TDF/FTC. As transgender women (TGW) remain a priority group for HIV prevention, we report the safety, prevention efficacy, and pharmacokinetics (PK) of CAB-LA in TGW during the blinded phase of HPTN 083.

Methods: Participant characteristics, including history of interpersonal violence, HIV risk perception, and grade 2+ adverse events, were compared between TGW and the larger study cohort. CAB drug concentrations were measured in a subset of TGW with and without gender-affirming hormonal therapy (GAHT) to evaluate the potential impact of GAHT on CAB PK.

Results: Of 4566 participants enrolled in HPTN 083, 570 (12.5%) were TGW (United States 21.9%, Latin America 36.0%, Asia 39.5%, and Africa 2.6%).During the study, 330 (57.9%) TGW reported GAHT use, with estradiol valerate (44.5%) and spironolactone (32.4%) most frequently reported. HIV incidence among TGW was 1.80% (TDF/FTC) and 0.54% (CAB-LA) during the blinded phase of HPTN 083 (hazard ratio: 0.34, 95%, CI 0.08-1.56).

When compared to the larger HPTN 083 cohort, TGW experienced an increased frequency of sexual (56.7% vs. 45.4%), physical (30.2% vs. 19.2%), and emotional (47.4% vs. 36.4%) interpersonal violence, and lower self-perceived HIV acquisition risk (53.3% vs. 66.5%). CAB-LA was well tol-

erated in TGW; the frequency of grade 2+ adverse events did not differ between TGW receiving CAB-LA or TDF/FTC (92.5% vs. 88.8%). CAB drug concentrations were measured in a subset of TGW who received on-time CAB injections (23 not taking GAHT, 30 taking GAHT).CAB drug concentrations were comparable between the two groups, suggesting the lack of a GAHT effect on CAB PK (*Figure 1*).

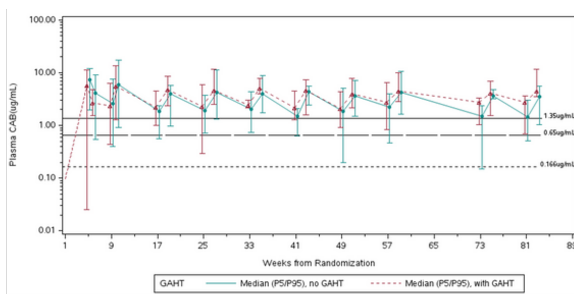

Figure 1. Comparison of CAB concentrations in TGW taking and not taking GAHT.

Conclusions: CAB-LA is a safe and effective HIV prevention strategy for TGW. Initial findings suggest there is no impact of GAHT on CAB concentrations.

EPLBC05

Phase 3B, randomized, open-label, safety study of dapivirine vaginal ring and oral emtricitabine 200mg/tenofovir disoproxil fumarate 300 mg tablet in breastfeeding mother-infant pairs

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Background: World Health Organization (WHO) guidance supports provision of oral pre-exposure prophylaxis (PrEP) for breastfeeding people at substantial risk of HIV acquisition. In January 2021, WHO recommended the dapivirine vaginal ring (VR) as an additional HIV prevention choice as part of combination prevention approaches. In March 2022, the VR was approved by the South African Health Products Regulatory Authority. However, data are lacking on VR safety during breastfeeding, a period of increased HIV acquisition risk.

Methods: MTN-043 was a phase 3b, randomized, open-label trial, with 12 weeks exposure to VR or oral 200 mg emtricitabine/300mg tenofovir disoproxil fumarate tablet. Healthy, HIV-negative, exclusively breastfeeding mother-infant pairs enrolled from September 2020 to July 2021 at sites in Malawi, South Africa, Uganda, and Zimbabwe and randomized in a 3:1 ratio (VR: tablet). Adverse events (AEs) were collected throughout product exposure and two weeks following product discontinuation. Primary safety outcomes for mothers and infants included serious adverse events (SAEs) and Grade 3 or higher AEs in both arms.

Results: Across sites, 197 mother-infant pairs enrolled (VR: 148, oral PrEP: 49). Median age of infants was 9 weeks. Among VR arm participants, two (1%) mothers experi-

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enced an SAE and three (2%) an AE of Grade 3 or higher; four (3%) infants experienced an SAE, and 10 (7%) an AE of Grade 3 or higher (*Table*). No SAEs or Grade 3 or higher events in mothers or infants were deemed related to study product.

	Mothers				Infants			
	Serious Adverse Events		Grade 3 or Higher Adverse Events		Serious Adverse Events		Grade 3 or Higher Adverse Events	
	n/N	% (95% CI)	n/N	% (95% CI)	n/N	% (95% CI)	n/N	% (95% CI)
Dapivirine Vaginal Ring	2/148	1% (0, 5)	3/148	2% (0, 6)	4/148	3% (1, 7)	10/148	7% (3, 12)
FTC 200 mg/ TDF 300mg oral tablet	0/49	0% (0, 7)	2/49	4% (1, 14)	0/49	0% (0, 7)	1/49	2% (0, 11)

Table. Primary safety outcomes among breastfeeding mothers and infants enrolled in MTN-043

Conclusions: In this first evaluation of VR safety during breastfeeding, few SAEs or AEs of Grade 3 or higher occurred among mothers and infants in either study arm; most AEs were mild or moderate, and all infant AEs were unrelated to study product. This favorable safety profile, along with previous data demonstrating low drug transfer to breastmilk, support updates of WHO and other guidelines to include breastfeeding people when recommending the VR as an additional HIV prevention choice.

EPLBC06

iSTAMP: Implementation of HIV self-testing among Black and Hispanic MSM recruited online in 11 States, 2020-2021

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Background: In the US, Black/African American and Hispanic/Latino men who have sex with men (BMSM & HMSM) account for a disproportionate number of new HIV infections. Providing HIV self-tests (HIVST) allows users to learn their HIV status, thereby contributing to achieving the "Ending the HIV Epidemic in the United States" (EHE) goal of diagnosing all people with HIV as early as possible.

Methods: This HIV self-testing study evaluated the effectiveness of marketing strategies in which advertising materials were specifically developed to recruit BMSM and HMSM through 3 media channels (general-interest social media, LGBT interest websites, gay dating apps). Eligibility included: $\geq$18 years old, not taking PrEP, no prior HIV diagnosis, completing online screener survey, baseline survey and providing contact information. Participants were mailed two HIVST. After completing a 4-month (4M) survey, participants who did not opt-out were sent another HIVST and a dried blood spot (DBS) kit.

Participants could report HIVST results online before, during or after their 4M survey. We report test results from participants and their social network associates (SNA).

Results: We enrolled 2,093 participants (55% BMSM, 45% HMSM); 22% had never tested for HIV. Eighty-five percent of BMSM were recruited from dating apps and 52% of HMSM from general-interest social media apps; 1,742 participants provided a HIVST result online before the 4M survey, and 80% (1,668/2,093) completed the 4M survey. 457 participants gave HIVSTs to SNA.

During the intervention period, positive results were reported by 9% (156/1,806) of all participants who reported at least one HIVST result, and 15% (61/396) of those never tested before enrollment.

The highest percentage of all positive HIVST results were reported from participants recruited from dating sites, 12% (133/1,110). 1396 DBS kits were mailed, 515 were tested, of which 6% were reactive for HIV. Additionally, 10 SNA had a positive HIVST result.

Reporting source	Total	General-interest social media	LGBT interest websites	Dating sites	Unknown source
Positive HIVST result reported during 4 month intervention period, by race/ethnicity	**156/1806 (8.6%)**				
Black/AA MSM	108/982 (11.0%)	5/101 (5.0%)	0/3	102/826 (12.4%)	1/52 (1.9%)
Hispanic/Latino MSM	48/824 (5.8%)	24/434 (5.5%)	0/12	23/284 (8.1)	1/94 (1.1%)
Positive HIVST result reported during 4 month intervention period, by history of testing at enrollment	**156/1806 (8.6%)**				
Never tested before enrollment	61/396 (15.4%)	9/152 (5.9%)	0	51/210 (24.3%)	1/34 (2.9%)
Ever tested	95/1410 (6.7%)	20/383 (5.2%)	0/15	74/900 (8.2%)	1/112 (0.9%)
Positive HIVST result from DBS card	**29/515 (5.6%)**				
Black/AA MSM	21/262 (8.0%)	1/26 (3.8%)	0/2	20/215 (9.3%)	0/19
Hispanic/Latino MSM	8/253 (3.1%)	4/125 (3.2%)	0/7	4/88 (4.6%)	0/33
Result of HIVST given to first SNA partner (N=457)	N (Col %)	N (Col %)	N (Col %)	N (Col %)	N (Col %)
Negative	223 (48.8%)	77 (51.0%)	5 (55.6%)	122 (47.1%)	19 (50.0%)
Positive	10 (2.2%)	2 (1.3%)	0	8 (3.1%)	0
Don't know	27 (5.9%)	11 (7.3%)	0	15 (5.8%)	1 (2.6%)
No response	197 (43.1%)	61 (40.4%)	4 (44.4%)	114 (44.0%)	18 (47.4%)
Did SNA know of prior positive result*					
No	9	1	0	8	0

Abbreviations: ST, Self-Testing; RCT, randomized controlled trial; SNA, Social Network Associate, LGBT, Lesbian, Gay, Bisexual, and Transgender; DBS, Dried Blood Spot
*One respondent did not answer whether their SNA had previously tested positive for HIV
[a] Includes all reported infections by participants in surveys or online reporting system.

Table: Reported positive HIV self-test results by iSTAMP participants by recruitment source.

Conclusions: The use of population-specific ads and specific media channels, especially MSM dating and general-interest social media sites could enable programs to remotely provide HIVST to BMSM & HMSM, including those who are not using traditional services.

This approach will increase awareness of HIV status among BMSM and HMSM and contribute to achieving EHE goals.

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EPLBC07

Number of pregnancies and its impact on adherence to ART during pregnancy in women living with HIV, followed up in 2020 in a specialized health center in São Paulo, Brazil

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Background: Being a woman and living with HIV brings enormous challenges: the need to maintain treatment with ART chronically, and the concern with the planning of reproductive life, in order to reduce the risks of maternal and child morbidity and mortality.

The objective of this study was to analyze adherence to ART among women living with HIV (WLHIV) who discovered pregnancy in 2020, according to the number of previous pregnancies, assisted in a Specialized Health Care Center (SAE).

Methods: Descriptive data analysis from cross-reference table in SPSS software, version 26. The sample was composed of all WLHIV (n=15), with onset of pregnancy between 01/01/2020 and 12/31/2020, who knew the previous diagnosis, until the conclusion of the pregnancy process, assisted in a SAE, in São Paulo. Data were collected from the prenatal records and medical records. CEP 3.139.029 - SMS/SP and 3.081.173 - EEUSP/SP.

Results: Analyzing the variables number of pregnancies x use of ART prior to pregnancy, we identified that the group with only one pregnancy (n=4), 75% made irregular use or no use of ART, in the groups with two or three pregnancies (n=7) and four pregnancies or more (n=4), 28.6% and 25% were in the same situation.

In the analysis of the variables number of pregnancies x ART use during pregnancy, analyzing the same groups, we find respective rates of 50%, 0%, and 25% in the category irregular use or no use of ART.

Conclusions: Pregnancy was an important factor in stimulating adherence among WLHIV, promoting a reduction in the rates of irregular use and non-use of ART, especially among women with up to 3 pregnancies. However, it highlights the maintenance of irregular use and non-use of ART among the group of 4 pregnancies or more.

Excessive family responsibilities, psychosocial vulnerabilities and the belief that the child will not acquire HIV due to the negative diagnosis history of previous children are among the justifications reported by WLHIV in medical records for this situation.

Reflection on these data denotes the need for improvement in WLHIV monitoring, adjusting strategies, with opportunities for dialogue about reproductive planning in the assistance.

EPLBC08

Population trends in HIV service delivery, viral suppression, and incidence before and during the COVID-19 era in Rakai, Uganda

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Background: There are limited data on the impact of COVID-19 on African HIV programs. Using data from the Rakai Community Cohort Study (RCCS), we evaluated trends in use of Combined HIV Interventions (CHI) and HIV incidence in southcentral Uganda from 2015 to 2022. During COVID-19 lockdown, HIV services were provided through community outreach and multi-month ART prescriptions.

Methods: Participants aged 15-49 years were surveyed in three surveys before COVID-19 (February 2015– January 2020) and one survey during COVID-19 (February 2021 – March 2022). Participants were classified as HIV prevalent (HP; HIV-positive from prior survey), HIV incident (HI; HIV seropositive with prior seronegative result) or newly diagnosed (ND, HIV seropositive without prior survey result). Participants self-reported HIV testing within 12 months, knowing their HIV status, current use of anti-retroviral therapy (ART) and being circumcised. Viral loads (VLS) (<1,000 cps/ml) were consider as suppressed. Interrupted time series analysis assessed changes in HIV services before and during COVID-19.

Results: 19,390 (52.8% female) participants were included. HIV testing decreased during COVID-19, whereas it had increased before COVID19 ($p<0.001$ change in trend) *(Figure 1).*

Knowledge of HIV positive status was stable for both HP ($p=0.582$) and HI/ND ($p=0.134$). During COVID-19, ART use continued increasing in both HP ($p<0.213$) and in HI/ND ($p<0.242$). VLS was unchanged during COVID19 in both HP

(p=0.296) and HI/ND (p=0.667). MC significantly increased during COVID19 (p<0.001). HIV incidence declined from 1.17/100 person-years(pys) to 0.48/100 pys before COVID-19, to 0.35/100 pys during COVID-19 (p<0.066).

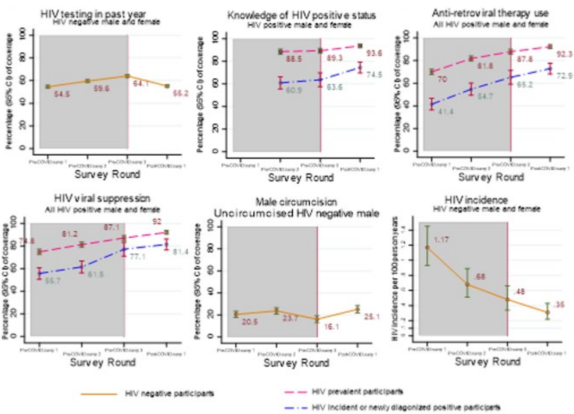

Figure 1. Trends in HIV treatment and prevention key metrics pre and during Covid 19 emergence response.

Conclusions: We were concerned that the COVID-19 pandemic and associated lockdown would negatively affect CHI services, but we did not observe such effects, potentially because of intensified/enhanced new outreach approaches. MC uptake increased possibly because post-operative time off work during lockdown prevented income loss.

EPLBC09

Effectiveness of COVID-19 vaccines in people living with HIV in British Columbia: a test negative design

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Background: The efficacy of COVID-19 vaccines against severe disease, hospitalizations, and deaths were rapidly established in drug approval trials. Less is known, however, about their effectiveness among immunocompromised individuals such as people living with HIV (PLWH). We therefore sought to estimate the effectiveness of Pfizer-BioNTech (BNT162b2), Moderna (mRNA-1273) and AstraZeneca (ChAdOx1) vaccines in a population-based cohort against laboratory confirmed SARS-CoV-2 infections and hospitalizations among PLWH.

Methods: We used the British Columbia (BC) COVID-19 Cohort (BCC19C), which integrates data on SARS-CoV-2 tests, COVID-19 cases, hospitalizations, and immunization with provincial health administrative data. PLWH status was assessed using an adapted version of a previously validated case-finding algorithm. All PLWH who were living in BC, ≥19 years old, and tested for SARS-CoV-2 between December 15, 2020 (when vaccines became available in BC), and November 21, 2021 (time before Omicron variant), were eligible.

Vaccine effectiveness (VE) was estimated by the test-negative design using multivariable logistic regression to compare the odds of vaccination between test-positive "cases" and test-negative "controls", adjusting for age, sex, area-level income, health authority, number of COVID-19 tests 3 months prior to study period, Elixhauser comorbidity index, and bi-weekly testing periods. We used the formula (1-AOR) x100% to compute VE.

Results: There were 9,116 PLWH in the dataset, 2,657 (29.1%) of whom tested for SARS-CoV-2 during the study period and were considered eligible. Of the eligible PLWH, 357 (13.4%) tested positive (cases), while 2300 (86.6%) tested negative (controls); 68 (19.0%) of test positive cases and 254 (11.0%) of test negative controls were unvaccinated. Adjusted VE against SARS-CoV-2 symptomatic infection was 78.7% (95% CI = 63.6, 87.5) ≥ seven days after two vaccine doses. VE was preserved until the period four to six months following receipt of two vaccine doses after which slight waning was observed (VE = 66.4% (95% CI = 21.6, 85.6). Adjusted VE against hospitalizations was 88.4% (95% CI= 19.9, 98.3) ≥ seven days after two vaccine doses.

Conclusions: Findings suggest that receipt of two COVID-19 vaccines doses is effective against SARS-CoV-2 infections. Future efforts will focus on the impact of variants of concern on VE and comparing VE estimates with a matched HIV-negative cohort.

EPLBC10

Using lessons learnt from the implementation of HIV self-testing in decentralized community settings to increase the uptake for community-based COVID-19 Antigen testing in Johannesburg, South Africa

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Background: HIV self-testing (HIVST) has been a successful strategy used in South Africa, to test hard-to-reach individuals and communities. Experience from HIVST points to several barriers that low-income segments of the population face when trying to access services. These include long wait times at testing facilities, the opportunity cost of time away from their places of work, price sensitivity, and

unfriendly services. Accessing target populations in high density community settings such as taxi ranks, plays a vital role in bridging the testing gap. For COVID-19, access to affordable, time sensitive testing required a similar approach to reach those not accessing testing services.

Description: During the third wave of COVID-19 infections in South Africa between July and October 2021, community based screening for COVID-19 using point-of-care Antigen RDT's was employed in three high-density taxi ranks in Johannesburg. The intervention, which was initially successfully employed during the roll out of HIV self-testing in the country, sought to reach populations who may not otherwise access testing services

Lessons learned: A baseline evaluation conducted in the taxi ranks prior to the intervention showed that only 21% of respondents had previously tested for COVID-19 using either PCR or Antigen based testing.

Similar to HIV, community members cited:

1. Lack of access,
2. Price of testing,
3. Long queues at facilities, as the main reasons for not testing.

During the intervention, 15 443 participants were enrolled and screened using a digital risk determination tool. Approximately 33% of all individuals screened were deemed to be at risk of having COVID-19 and referred for testing. Testing was completed in 3997 cases, with 238 positives (6%) identified. 84% of positives completed 2 weeks of phone-based follow up. In the general end-line survey conducted, testing for COVID-19 increased to 67% of the surveyed population.

Conclusions/Next steps: Lessons from HIVST can be applied to implementation of community based Antigen testing for COVID-19 in order to reach individuals not accessing services. With the scale up of COVID-19 self-testing initiatives, utilization of decentralized approaches such as taxi ranks will be required. Coupling of COVID-19, HIV, and other self-care approaches has the potential to maximize screening efficiency in community settings.

PELBC01

Botswana achieved the Joint United Nations Programme on HIV/AIDS (UNAIDS) 95-95-95 targets: results from the Fifth Botswana HIV/AIDS Impact Survey (BAIS V), 2021

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Background: In 2002, Botswana was the first African country to offer free HIV treatment to citizens. Since then, Botswana has expanded treatment coverage and adopted evidence-based practices, including test-and-start and dolutegravir treatment.

The BAIS V survey was used to measure national progress toward UNAIDS 95-95-95 targets (percent of persons living with HIV (PLHIV) aware of status, on treatment, virally suppressed).

Methods: BAIS V used a two-stage cluster design to obtain a nationally representative sample of adults 15–64 years. During March–August 2021, survey teams consented 14,763 participants in their households, administered questionnaires, and tested blood specimens for HIV. Viral load and presence of antiretrovirals (ARVs) in blood were measured.

The first and second 95 estimates were based on self-report and adjusted for detectable ARVs. Viral load suppression (VLS) was defined as HIV RNA <1,000 copies per milliliter. Data were weighted to account for complex survey design, and jackknife methods were used to estimate variance.

Results: National HIV prevalence was 20.8% (men: 15.2%; women: 26.2%). Among PLHIV, 95.1% (men: 93.0%; women: 96.4%) were aware of their status, 98.0% (men: 97.2%; women: 98.4%) of those aware were on ART, and 97.9% (men: 96.6%; women: 98.6%) of those on ART achieved VLS (Table).

Among PLHIV 15–24 years, 84.5% were aware of their status, 98.5% of those aware were on ART, and 91.6% of those on ART achieved VLS. VLS among all PLHIV was 91.8% (men: 88.1%; women: 94.0%).

	Aware of Status N; Weighted % (95% CI)		On Treatment N; Weighted % (95% CI)		Virally Suppressed N; Weighted % (95% CI)	
Men, 15–64 years	989	93.0 (90.8–95.2)	920	97.2 (95.7–98.8)	899	96.6 (95.2–98.0)
15–24 years	39	89.1 (77.3–100.0)	34*	100.0 (100.0–100.0	34	91.8 (83.9–99.8)
25–44 years	360	88.7 (85.0–92.5)	315	94.2 (90.4–98.0)	302	94.9 (91.5–98.4)
45–64 years	590	96.4 (93.6–99.2)	571	99.2 (98.4–100.0)	563	98.0 (97.2–98.8)
Women, 15–64 years	2,428	96.4 (95.0–97.7)	2,342	98.4 (97.5–99.2)	2,309	98.6 (98.0–99.2)
15–24 years	118	82.3 (70.1–94.5)	99	97.8 (94.4–100.0)	96	91.5 (84.2–98.8)
25–44 years	1,302	97.1 (95.9–98.2)	1,256	98.4 (97.7–99.1)	1,235	98.8 (98.2–99.4)
45–64 years	1,008	97.0 (95.0–99.0)	987	98.3 (96.3–100.0)	978	99.1 (97.9–100.0)
Total, 15–64 years	3,417	95.1 (93.8–96.5)	3,262	98.0 (97.2–98.7)	3,208	97.9 (97.2–98.6)

Table.

Conclusions: BAIS V is the first population-based survey to confirm achievement of UNAIDS 95-95-95 goals, overall and among women. Men have achieved the second and third 95 targets and surpassed 90% for the first. Gaps remain in awareness among men 25–44 years and younger adults, particularly young women. Botswana has made tremendous progress in 20 years and is well-positioned to end the AIDS epidemic by 2030.

PELBC02

Identifying women at highest risk for HIV acquisition across sub-Saharan Africa: a risk assessment tool based on machine-learning methods

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Background: Women in sub-Saharan Africa disproportionately acquire HIV. Effective HIV prevention interventions are available, but identification of women in greatest need of these interventions remains a challenge.
To date, HIV risk scores to identify those at highest risk of HIV have been based on non-representative populations, have limited geographic applicability, and have demonstrated sub-optimal performance with area under the receiver operating characteristic curve (AUC) <0.80.
Methods: We sought to develop a regionally representative risk assessment tool to identify women at highest risk of HIV-1 acquisition across multiple high-burden African countries. We pooled, weighted, and analyzed data from Population-based HIV Impact Assessment surveys (PHIAs) from 13 countries in Southern, Eastern, and West/Central Africa. The population comprised 15-49 year-old women who were HIV-uninfected or had recent HIV-1 infection characterized by HIV-Limiting Antigen Avidity enzyme immunoassay, HIV-1 viral load, and antiretroviral drug concentrations. Least absolute shrinkage and selection operator (LASSO) regression models were implemented to create a predictive model for recent HIV-1 infection based on 23 potential variables.
The model was trained in 70% of the sample and tested in the remaining 30%. Model performance was evaluated using AUC. Optimal sensitivity and specificity were reported.
Results: Among 164,935 participants, representing 82.2 million women, 200 had evidence of recent HIV-1 infection. Twelve variables were retained in the LASSO model and were predictive of elevated risk:
1. Age 25-34 years,
2. Any educational attainment,
3. Divorce/separation or widowhood,
4. Age at first sex <18 years,
5. >2 recent sexual partners,
6. Partner with unknown HIV status,
7. Relationship entered for financial support,
8. Receipt of money/goods from sexual partner,
9. Recent condom use,
10. Use of short-acting contraception,
11. Past pregnancy, and,
12. Sub-national male HIV prevalence.
Model AUC was 0.81 (95% confidence interval (CI): 0.77-0.85) in the training sample and 0.80 (CI: 0.75-0.85) in the testing sample. The optimal threshold had 80.0% (CI: 67.7%-89.2%) sensitivity and 71.0% (CI: 70.6%-71.4%) specificity.
Conclusions: Using national surveys representing 82.2 million women, our machine learning tool outperformed earlier models and identified a set of characteristics that was highly predictive of HIV risk, identifying women who would benefit most from prevention interventions.

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EPLBD01

HIV status disclosure and related factors among children aged 6-14 years living with HIV in Kilimanjaro region, Tanzania

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Background: In Tanzania, disclosure of the HIV status to children remains a challenge despite the recommendation from the World Health Organization (WHO) which states that children should be informed about their HIV status between the ages of 6 to12 years.

The aim of this study is to determine factors associated with HIV status disclosure to children living with HIV in Kilimanjaro, Tanzania.

Methods: A cross sectional study using mixed-methods was conducted from September 2021 to February 2022 among children aged 6-14 years receiving HIV care in Kilimanjaro region. Semi-structured questionnaires were used to collect socio-demographic data and reasons of non-disclosure. We in-depthly interviewed twenty caregivers of children who had disclosed and not disclosed the status to their children; we also interviewed children who's HIV status had been disclosed. Bivariate and multivariate Logistic regression analysis was performed to identify factors associated with HIV status disclosure. P<0.05 was considered statistically significant. We did thematic content analysis for qualitative data

Results: Out of 121 children,51 (42%) had been told they were living with HIV. Eighty-six percent of children aged above 12 years were told their HIV status compared to 28% among children aged 6-12 years (P<0.001). The percentage of disclosure among girls was 43% and 41% among boys (P=0.8).

Among children<5years on ART treatment, it was 30% while it was 53% among does on treatment more than 5 years (P=0.01). Lastly, for those with a treatment supporter, the disclosure were 57% and 28% among those without (p=0.002).In the final multivariate model, HIV disclosure was more likely to children aged above 12 years compared to those aged 6-12 years (OR= 13.5; 95%CI= 4-46)and children who have a treatment supporter (OR=2.8; 95%CI=2-7).Through IDI, we revealed the following themes:

1. Challenges of disclosure to children,
2. Importance of early disclosure,
3. Risks of delayed disclosure,
4. Feelings when finding out about HIV and,
5. Accidental disclosure.

Conclusions: HIV status disclosure to children living with HIV in Kilimanjaro region was associated with higher age and having a treatment supporter. New strategies should be introduced in Health facilities to make sure that children know their HIV status as recommended by the WHO.

EPLBD02

Risky business: gender, sexual risk behaviors and vulnerability to HIV infection among South African youth

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Background:
Globally, adolescents and young people account for the largest number of people living with HIV. In 2020, 410,000 young people (ages of 10 to 24) were newly infected with HIV. The 10-19 year category represents the largest proportion of the population in sub-Saharan Africa.

Methods: Utilizing the South African National HIV Prevalence, HIV Incidence, Behaviour and Communication Survey (SABSSM), we conducted a cross-sectional analysis the association of socio-demographics and HIV risk behaviors among youth (n=13,454) aged 10–24 years in South Africa. Frequencies and their respective percentages were determined for categorical variables and stratified by biological sex. Chi-square analysis was used to compare categorical variables and multiple logistic regression to assess associations on two HIV-related risk behaviorial outcomes. All data were analyzed using SAS software.

Results: Results: Of the 13,456 respondents, 3.75 (n=504) were HIV-positive. The data showed 41.9 (n=3,599) had ever had sexual intercourse. The majority had their sexual debut (70.3%, n=2,977) between the ages 15-20 years, 42.5% (n=2,869) had 3 or more lifetime sexual partners; 14.5% (n=209) had 3 or more sexual partners in the last 3 months; 18.4% (n=371) had condomless sex and 53.1% (n=169) had concurrent sexual partners in the last 12 months.

Next, we assessed the role of social-demographicphic characteristics (i.e., age, sex, race, marital status, school status), HIV risk perception, and substance disorder (i.e., alcohol, dagga use) on condom use. We found women and girls were less likely to use a condom (IRR=0.66; C.I. .54-.81) and being married increased the likelihood of using a condom (IRR-1.12, C.I. 1.06-1.28).

We ran the same model for the outcome number of sexual partners in the last 12 months with similar results. Being female (IRR-0.64; C.I. .55-.80. and marital status (IRR-1.18, C.I. 1.07-1.28. were consistently statistically significant.

Conclusions: We found South African youth suffer high rates of HIV prevalence (3.75) and being female increases your HIV vulnerability. There is an urgent need to implement programs and policies that address gender and cultural norms which sustain gender inequities, gender-based violence and economic disparities between men and women, particularly as it relates to condomless sex and multiple sexual partners

EPLBD03

Socio-structural challenges and solutions to PrEP in rural communities: patient and provider perspectives

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Background: Pre-exposure prophylaxis (PrEP) is an effective HIV prevention tool that remains underused among many at-risk rural Americans. Improving PrEP delivery in non-metropolitan areas is essential. HIV cases are rising in the rural U.S., alongside the opioid epidemic, compromised access to healthcare, and high rates of HIV stigma also occurring in these regions.

Methods: In-depth interviews about PrEP knowledge, attitudes, and perspectives were conducted with 47 providers and 40 patients in non-metropolitan Missouri, a state identified by U.S public health agencies as having a substantial rural HIV burden. Theme analysis was used to identify key challenges and solutions to improve PrEP access and uptake.

Results: Patient participants included young people (ages 18-30) from rural or small-town Missouri who recently visited a health clinic. Five themes were present in their interviews: low HIV risk awareness despite risk behaviors, false belief in monogamy as HIV protection, low PrEP-related health and financial literacy, and concern that PrEP conversations were not normative in small towns. Providers included infections disease (ID), primary care (PCP), and AIDS Service Organization (ASO) providers from similar areas in Missouri.

Themes included varying PrEP prescribing beliefs by provider type – ID doctors believed their expertise was important, PCPs wanted to prescribe PrEP but lacked correct information, and ASO providers believed anyone could prescribe PrEP; lack of formal PrEP training; hesitancy to treat high risk patients; desire for help from PrEP "experts" via telehealth; and need for patient awareness of prevention options to facilitate uptake.

Conclusions: Patients and providers need solutions relevant to their rural and small-town context. Patients need information about HIV risk and PrEP through broad, normative, and less personal channels because it is not always safe to ask for it (e.g., incorporating into health education classes, posters in waiting rooms and clinic offices that are visible to all who enter). Providers also said it was easier to address PrEP when patients asked. Providers need education that is tailored to provider type.

Telehealth has introduced a potential PrEP care model by which national experts can support both providers and patients in real-time who have PrEP concerns that cannot be answered locally.

EPLBD04

Gender differences in sexual experience and condom use among in-school adolescents: a multi-country study using the global school-based health survey

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Background: Adolescents are one of the groups that are vulnerable to early and risky sexual behavior. Previous studies have shown that gender plays a role in shaping differences in sexual and reproductive health behavior so that it has the potential to affect an individual's ability to make decisions regarding safe sexual behavior.

This study aims to determine gender differences in sex and condom use in adolescents and their relationship on the Human Development Index and the Gender Equality Index.

Methods: This study is a multi-country study using data from the Global School-based Student Health Survey involving 267,545 global participants to identify adolescent sexual behavior and condom use. We calculated the odds ratios (OR) with 95% confidence intervals for males versus females' sexual experience and condom use.

The regression analyses were examined to look at whether gender differences in sexual experience and condom use are related to gender inequality and human development indices.

Results: The findings revealed significant gender differences in adolescent sexual behavior and condom use. Boys are more likely than girls to have had sex and use condoms at last sex. The effect of gender differences in sex and condom use on the Human Development Index was not found in this study. However, there is a significant effect between gender differences in condom use on the Gender Inequality Index.

Conclusions: The results of this study indicate the importance of sexuality education and the provision of reproductive health services for adolescents in order to minimize the consequences of risky sexual behavior, especially for women.

Focusing on the health condition of adolescents by considering a gender perspective can have an impact on reducing the gap in health conditions based on gender in adulthood.

EPLBD05

Beyond HIV stigma reduction: effects of the CHAMPs-In-Action inervention on stress and coping during COVID-19

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Background: Racialized groups in Canada bear a disproportionate burden of HIV. Their vulnerability to HIV is elevated by structural violence of racism, sexism, homophobia, transphobia, and HIV related stigma. To address these complex challenges, five community HIV/AIDS organizations in Toronto formed an Alliance and secured resources to carry out CHAMPs-In-Action (2017-2022), an evidence-based intervention that consisted of 4-day in-person experiential learning to promote psychological flexibility and reduce HIV related stigma. Implementation was disrupted midway by COVID-19; the intervention was converted to six weekly online modules in 2020 to enhance access.

Methods: CHAMPs-In-Action applied psychological and group empowerment processes to reduce stigma. We engaged participants who self-identified as: aged $\geq$ 16, a service user/volunteer of an Alliance organization, living with or vulnerable to HIV, or a service provider serving people living with HIV (PLHIV). Validated scales were used pre-, immediate post- and 3-month post- intervention to assess effectiveness. Focus groups were used to explore participants' experiences and assess the acceptability, feasibility and sustainability of the program.

Thematic analysis was used with the focus group data. Inferential statistics and analyses of variance were used to determine the effectiveness of CHAMPs-In-Action over time in reducing stigma and increasing psychological flexibility.

Results: A total of 362 participants graduated from CHAMPs-In-Action: 139 (38.4%) service providers; 87 (24%) PLHIV; 38 (10.5%) gay men and MSM, and 98 (27.1%) racialized persons vulnerable to HIV. Survey results indicated significant increase in resilience, mindfulness, empowerment readiness and confidence to engage others to address HIV related stigma.

Focus group results indicated that participants who graduated before the pandemic were able to apply mindfulness and defusion techniques during COVID-19 to cope with social isolation, anxiety, stigma and stress. Participants who engaged in the online intervention during the pandemic also reported improved coping, reduced stress and better social connection.

Conclusions: CHAMPs-In-Action is effective not only in reducing stigma, but also in promoting resilience and mental health. Racialized PLHIV experience intersecting stigma and increased social isolation during a pandemic. Online programs are critical in reducing social isolation among PLHIV. Pandemic preparedness needs to address the digital divide and build mutual support networks that tap into community strengths.

EPLBD06

Factors associated with mental health outcomes among people living with HIV co-infected with SARS-CoV-2 in France: results from COVIDHIV study

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Background: The 2019 pandemic of the coronavirus disease (COVID-19) was found to have a negative impact on vulnerable people, including people living with HIV (PLHIV).

This study aimed to investigate the mental health among PLHIV co-infected with SARS-CoV-2 in France.

Methods: COVIDHIV is a cohort of PLHIV co-infected with SARS-CoV-2 followed-up in France. Socio-demographic, clinical data and those on mental health were collected. The depression and anxiety symptoms, and post-traumatic stress disorder (PTSD) were assessed by the Hospital Anxiety and Depression Scale (HADS) and PTSD Checklist (specific version) (PCL-S), respectively. Multivariable logistic regression analysis was performed to identify factors associated with mental health outcomes at the baseline.

Results: A total of 397 participants were included, with a mean age (±SD) of 52 ±12.0 years. About two-thirds of the participants (64.0%) were male, 61% were employed and half of them lived in a couple.

Rates of mental health symptoms were 22.6% for depression, 34.2% for anxiety, 53.9% for insomnia, and 12.7% for PTSD. In multivariable regression adjusted for age and duration between COVID-19 confirmation and enrolment, female gender (adjusted odds ratio (aOR) = 1.95, 95% CI: 1.13-3.38), being professionally active (aOR = 0.52, 95% CI 0.30-0.90), fatigue (aOR = 3.17, 95% CI 1.75-5.75), and cannabis use (aOR = 2.73, 95% CI 1.03-7.26) were associated with anxiety; being professionally active (aOR = 0.32, 95% CI 0.18-0.59) and fatigue (aOR = 2.04, 95% CI 1.07-3.88) were associated with depression; and fatigue (aOR = 3.15, 95%

CI 1.24-7.98) and self-perceived as vulnerable to COVID-19 (aOR = 2.16, 95% CI 1.03-4.52) were found as associated factors for PTSD.

Conclusions: This study highlighted the high prevalence of mental health outcomes at the baseline, and these symptoms should be part of the management of PLHIV with SARS-CoV-2.

EPLBD07

The COVID-19 health crisis has disproportionately impacted sex workers compared to other key populations: preliminary results from the multi-country community-based EPIC research program

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Background: To describe the impact of the Covid-19 health crisis on specific key populations (KPs): people living with HIV (PLHIV), sex workers (SWs), men who have sex with men (MSM), and people who use drugs (PWUD), in 27 countries.

Methods: Coalition PLUS, an international network of community-based organisations fighting against HIV and hepatitis, initiated the multi-country and community-based research program EPIC to document the impact of the Covid-19 health crisis on KPs and community health workers. Quantitative data were collected among N=10583 respondents from KPs, between June 2020 and March 2022, in 28 countries, mainly from Africa, Latin America, and Europe. We present preliminary data comparing PLHIV (n=3932), PWUD (n=1383), MSM (n=2965) and SWs (n=2303), using Chi-square tests.

Results: Median[IQR] age of respondents was 32[26-41], 39% self-identified as female, 55% male, 6% transgender person. Overall, 16% of foreign-born respondents were undocumented (22% and 25% in PWUD and SWs, respectively, vs. ≤12% in other KPs; p<0.001), and 28% were in unstable housing (60% in PWUD vs. ≤26% in other KPs). The negative impact of the crisis on quality of life was more often reported in SWs and PLHIV (48% and 47%, respectively) than in other KPs (≤39%, p<0.001). SWs also reported more often: a deterioration of their financial situation (85% vs. ≤75% in other KPs; p<0.001) and a negative impact on their personal and professional lives (83% and 84%, respectively, vs. ≤74% and ≤73%, respectively, in other KPs; p<0.001) since the beginning of the health crisis.

Having asked/received support from the organisation that implemented EPIC in their country was less often reported in SWs (36%) than in other KPs (>46%, p<0.001). A significant proportion of SWs reported they felt more at risk of HIV infection with clients and non-clients (28% and 23%, respectively), than before the crisis.

Conclusions: This preliminary analysis highlights the disproportionate impact of the COVID-19 health crisis on SWs compared to other KPs, although all were highly affected by the health crisis.

Deeper analyses are needed to identify possible levers for community health and other health workers to better support KPs in time of health crisis, and especially SWs.

EPLBD08

Limited awareness of HIV status hinders uptake of treatment among female sex workers and sexually exploited adolescents in Wau and Yambio, South Sudan

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Background: HIV prevalence in Female Sex Workers (FSW) is high, approximately 2.2% globally and 29.3% in Sub-Saharan Africa. Several factors determine uptake of HIV testing services (HTS) by female sex workers (FSW) including knowledge of their HIV status. HTS provided entry into the UNAIDS 95-95-95 cascade of care. Data regarding HIV burden and access to HIV services among FSW in South Sudan are limited. We conducted a cross-sectional bio-

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behavioural survey (BBS) to determine HIV prevalence and progress towards UNAIDS 95-95-95 cascade among this population in Wau and Yambio towns in South Sudan in 2019.

Methods: Respondent-driven sampling (RDS) was used to recruit women and sexually exploited girls aged 13-18 years who exchanged sex for goods or money in the past 6 months and resided in the town for at least 1 month. Consenting participants were interviewed using questionnaire programmed in Open Data Kit tablets and then tested for HIV. Those found HIV positive were tested for viral load (VL). Data were weighted in RDS Analyst and analyzed with Stata 13.

Results: A total of 1,284 participants were recruited, 679 in Wau and 605 in Yambio. HIV prevalence was 6.7% in Wau and 13.6% in Yambio. Table 1, presents the HIV cascade for Wau, Yambio and overall for both towns.

Participant location	HIV Prevalence	Self-reported HIV-positive status (1st 95)	Self- reported on ART (2nd 95)	VLS for self-reported HIV-positives on ART (3rd 95)	VLS for all participants testing HIV-positive
Wau	52 (6.7%) 4.1%-9.4%	23 (35.4%) 15.9%-51.9%	23 (100.0%)	19 (91.3%) 6.4% – 100.0%	37 (65.0%) 45.0%-80.8%
Yambio	94 (13.6%) 10.6%-16.5%	68 (73.0%) 62.5% -83.4%	62 (89.8%) 81.0%-98.5%	55 (93.2%) 88.5%-97.9%	77 (86.2%) 77.6%-91.8%
Wau and Yambio	146 (11.2%) 9.3%-13.4%	91 (64.8%) 55.0%-73.6%	85 (91.0%) 80.1%-96.2%	74 (93.0%) 85.9%-96.6%	114 (81.6%) 73.2%-87.7%

Table 1: Participants HIV Cascade
n (%) 95% CI where "n" is absolute number.

Conclusions: Being unaware of HIV-positive status, limits the uptake of HIV treatment among FSW in South Sudan. This underscores the importance of optimised case-finding approaches to increase HTS among FSW and sexually exploited minors.

EPLBD09
Fathering a child with a female sex worker: the experience of male intimate partners of female sex workers in Kampala, Uganda

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Background: The number of women in sub-Saharan Africa who become pregnant, often unintentionally, while engaging in sex work is high. We examine the meaning of fatherhood to men in relationships with FSW, the significance of children, and how these men navigate the economic and cultural challenges of providing for their families, juxtaposed with the social stigma associated with sex work.

Methods: In 2019, we conducted repeat in-depth interviews with thirteen men who were involved in relationships with female sex workers (FSW). These data were augmented by observations in the different settings of the 13 men and with information from focus group discussions with FSW who had children with non-commercial partners.

Results: Accepting the role of a `father' was a challenge for many men because of the circumstances under which they had become fathers. It was a struggle against the ideal way to become a father. Women reported how easy it was for men to shun their responsibilities when they found out about a pregnancy.

Once a FSW became a mother, men who could not severe the relationship, with time, thought about the best way to integrate the sex workers into their extended families. Men were aware that this would not be an easy task given the strong social stigma against sex workers and the moral questions involved. Women's access to money and other opportunities ensured that they were in a strong position to receive approval of the partners' relatives.

Children became a focal point for the men that helped establish and cement relationships. Children conveyed different social meanings to the men such as leading to transitioning to adulthood and were an important resource for constructing a desired masculinity. Being a provider was perceived by the men as the most important of all the roles of a father, and this narrative, often overshadowed the discussion about other parameters of fatherhood.

Conclusions: Men who have children with sex workers face hurdles fitting within the social construction of ideal fatherhood and masculinity. However, when, they come to embrace fatherhood they may wish to deal with the social and economic challenges of raising children, as a couple.

PELBD01
#SafeHandsSafeHearts: a randomized waitlist-controlled trial of an eHealth intervention to increase COVID-19 knowledge and protective behaviors and reduce psychological distress among LGBTQ+ people in India and Thailand

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Background: Lesbian, gay, bisexual, transgender, queer, and other sexual/gender minority (LGBTQ+) people are at heightened vulnerability for COVID-19 morbidity and mortality due to adverse social determinants of health,

and pervasive health and mental health disparities. We tested a theory-based, culturally-tailored, peer-delivered eHealth intervention to increase COVID-19 knowledge and protective behaviors and reduce psychological distress among LGBTQ+ people in Bangkok and Mumbai.

Methods: #SafeHandsSafeHearts is a multisite, pragmatic, randomized waitlist-controlled trial with 1:1 (immediate intervention group [IIG]: waitlist control [WLC]) allocation (ClinicalTrials.gov NCT04870723). Eligibility criteria: self-identified LGBTQ+, ≥18-years-old, resident in Bangkok or Mumbai. Participants recruited from LGBTQ+ listservs and social media completed mobile-optimized baseline, 2-week post-intervention, and 2-month follow-up surveys. The motivational interviewing- and psychoeducation-based intervention was implemented in 3 biweekly 45-minute online sessions by trained peer counselors. Primary outcome measures: COVID-19 knowledge and protective behavior (e.g., masking, physical distancing) scores based on US CDC items, PHQ-2 (depressive symptoms), and GAD-2 (anxiety symptoms). We used multilevel models, accounting for clustering at participant- and country-levels, to estimate outcomes.

Results: From August 2021 to February 2022, participants (n = 650; median age=29.0 years; IQR=10) completed the baseline assessment and were randomized to IIG (n = 320; 49.2%) and WLC conditions (n = 330; 50.8%). 531 (81.7%) completed post-intervention and 452 (69.5%) completed follow-up assessments. Compared to WLC, the IIG had statistically significant improvements in COVID-19 knowledge scores at post-intervention (b=.34; 95% CI .18, .50; p<.001) and follow-up (b=.28; 95% CI .04, 51; p=.01), and COVID-19 protective behavior scores at post-intervention (b=1.12; 95% CI .39, 1.85; p<.01) and follow-up (b=1.00; 95% CI .51, 1.49; p<.001). Compared to WLC, the IIG had a statistically significant reduction in depression scores at post-intervention (b=-.18; 95% CI -.22, -.14; p<.001) and follow-up (b=-.23; 95% CI -.35, -.10; p<.001), with no significant reduction in anxiety scores.

Conclusions: Among LGBTQ+ adults in Bangkok and Mumbai, a tailored, peer-delivered eHealth intervention is effective in increasing COVID-19 knowledge and protective behaviors and reducing depression.

The pragmatic multisite trial design and implementation during a pandemic supports the ecological validity of the findings and suggests #SafeHandsSafeHearts may be effective among LGBTQ+ adults in other middle- and high-income countries.

PELBD02

Implementation of the first PrEP counseling and adherence protocol in a country with high need for and low access to biomedical HIV prevention

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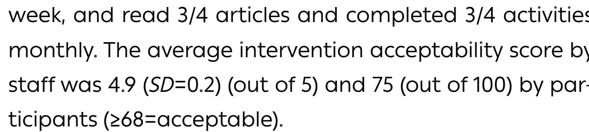
Background: PrEP is not prescribed in Romania, yet the country demonstrates increasing HIV incidence, primarily driven by gay and bisexual men (GBM). Romania displays some of the highest levels of homophobia in Eastern Europe, and high PrEP demand among GBM.

This study evaluates PrEP implementation rollout within the Romanian national healthcare system.

Methods: In Phase 1, the ADAPT-ITT Model was used to tailor and integrate two US evidence-based interventions for pre-exposure prophylaxis (PrEP) implementation (SPARK, brief sex-positive motivational counseling, and P3 [Prepared, Protected, emPowered], social networking gamified app with text-based adherence counseling) to the local context with physicians, psychologists, and GBM. In Phase 2, *PrEP Romania* was theater-tested in clinics in Bucharest and Cluj-Napoca with 10 high risk GBM for 1-month. In Phase 3, *PrEP Romania* was pilot-tested with 20 GBM in a single-arm pilot for *feasibility* (medical visit attendance), *acceptability* (protocol feedback, app usability), and PrEP *uptake* (filled prescriptions), *adherence* (self-reported and dried blood spot samples [DBS]) and *persistence* (still on PrEP) after 3-months.

Results: All 30 PrEP candidates (biological males; *M* age = 29.17; *SD* = 9.28; range = 19-53) attended medical visits and initiated PrEP, and 29/30 continued PrEP through follow-up. All participants tracked medication use on the app (average 4/week dosing), and 98% daily PrEP adherence on the Timeline Followback. All 30 DBS samples were collected and frozen adequately (at -20 degrees Celsius) at baseline; 10/10 DBS samples were collected at the 1-month and 18/20 at 3-month follow-ups. DBS blood plasma concentration indicating ≥4/week dosing (TFVdp concentrations ≥1,000 fmol) were found in 100% of 1-month and 83% of 3-month samples. On average, participants accessed the app once daily, 6 times/week, for 13 minutes/



week, and read 3/4 articles and completed 3/4 activities monthly. The average intervention acceptability score by staff was 4.9 (*SD*=0.2) (out of 5) and 75 (out of 100) by participants (≥68=acceptable).

Conclusions: *PrEP Romania* is an acceptable and feasible hybrid in-person + mHealth PrEP uptake and adherence program, which may empower GBM and healthcare systems in stigmatizing settings to adopt biomedical prevention. Upon future efficacy testing, this protocol blueprint can support PrEP rollout in countries with similar levels of unpreparedness for biomedical prevention.

EPLBE01 Track E late-breaker posters

EPLBE01

Scaling up integrated HIV service delivery for key and priority populations in catholic health facilities in Kampala and Wakiso districts, Uganda

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Background: HIV prevalence among key and priority populations (KP/PPs) in Uganda remains higher than the national prevalence, yet these populations are stigmatized, discriminated against, and excluded from some mainstream HIV programming. Catholic healthcare networks are key partners in the HIV epidemic but are perceived as non-inclusive to KP/PPs, so we used a multi-pronged approach to improve KP/PP service delivery in Catholic facilities in Uganda's Kampala and Wakiso districts.

Description: Uganda Catholic Medical Bureau (UCMB) integrated pre-exposure prophylaxis (PrEP), sexual and reproductive health, HIV care, and gender-based violence services into the KP/PP services package available through Catholic facilities.UCMBtrained and mentored health workers (HWs) on stigma-free screening and conducted Continuing Medical Education to improve HW attitudes and perceptions towards KPs. HWs conducted routine screening with KPs to identify their needs, provided psychosocial support and behavior change communication, and operationalized flexi-hour clinics to improve access and privacy. UCMB partnered with the KP-led Uganda Empowerment Mission (UGEM) for behavior change dialogue meetings and hotspot outreaches, engaging KP peer leaders to mobilize KPs, distribute commodities, scale up partner testing and PrEP and HIV treatment initiation, screen and treat sexually-transmitted infections and TB, and strengthen facility referrals.

The numbers of KPs receiving comprehensive HIV prevention, testing, and treatment initiation services increased 9.7-fold from 746 served in 4 facilities in the first quarter (Oct-Dec 2020) to 7,255 in 21 facilities in the fourth quarter (Jul-Sep 2021). PPs served increased 8.8-fold (874 to 7,700); PrEP distribution to KP/PPs increased 9.0-fold (101 to 907). Served KPs comprised 69% female sex workers, 10% men who have sex with men, 10% transgender persons, and 11% persons who inject drugs. PPs comprised adolescent girls and young women (48%), fisher-folks (23%), migrant workers (23%), truck drivers (23%), and discordant couples (5%).

Lessons learned: Despite Catholic teachings on sexuality, Catholic health facilities have maintained a tradition of compassionate care. They effectively provide KP/PP services if guided by KP/PP peers and sensitized about stigmatizing and discriminatory attitudes and practices.

Conclusions/Next steps: UCMB will continue providing services to KP/PPs and stigma/sensitivity education to Catholic health facilities and solicit client feedback, KP-led civil society monitoring to ensure stigma-free services.

EPLBE02

Assessing fidelity of mobile service provision of PrEP to adolescent girls and young women and female sex workers within decentralized priority population programming in South Africa

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Background: Decentralized, mobile van delivery of pre-exposure prophylaxis (PrEP) is increasingly used to reach priority populations. We assessed the extent to which mobile van PrEP provision is being implemented as planned for female sex workers (FSW) and adolescent girls and young women (AGYW) within a large South African non-profit service provider.

Methods: We assessed PrEP implementation across 13 TB HIV Care program sites from May 2021-April 2022. An observational checklist was used to assess fidelity to standard operating procedures (SOP) and quality of service delivery, including patient-centeredness, amongst a random sample of 116 provider-patient visits.

Weighted fidelity scores were calculated as a proportion of SOP steps completed for each observational visit, upweighting 'essential steps' as identified by program implementers. Scores were assessed per checklist adherence and moderators to fidelity. Case audits among a stratified sample of 1160 user records further measured the proportion of clinical and counseling steps recorded in client files.

Results: The weighted average fidelity score for FSW initiation and follow-up visits was 0.52 and 0.51, respectively, and for AGYW initiation and follow-up visits was 0.60 and 0.56, respectively. In both programs, total visit length was associated with higher fidelity; urban sites were associated with lower fidelity compared to rural sites in the FSW program. The case audits and observations indicated that essential clinical steps such as HIV testing and safety bloods were consistently completed.

Quality of service delivery was high on almost all measures across programs, with over 80% of all service users scoring moderate to high on patience, empathy, and friendliness, except for at AGYW follow-up visits where at least 50% of providers scored moderate to high.

Conclusions: Fidelity across programs was moderate, but critical clinical steps related to safety were followed. Other activities related to building patient comprehension and self-efficacy to use PrEP were minimal, which stresses the urgency for programs to target social, behavioral and cultural barriers to PrEP use.

While mobile PrEP provision shows promise, urgent modifications are needed to better address the persistence gap on PrEP and to have a substantial impact on HIV prevention.

EPLBE03

Maintaining patient care in the context of major and prolonged socio-political turmoil in Haiti through community care centers for antiretroviral therapy distribution and viral load testing

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Background: Persistent and violent civil conflict in Haiti has continued to challenge HIV care provision for patients. To support patient retention, GHESKIO transitioned essential services from its main facilities to community care centers (CCCs), providing antiretroviral therapy (ART) refills, adherence support, and collection of viral load specimens for stable patients in remote locations in and around Port-au-Prince.

Methods: CCC services were offered beginning in May 2019 to patients with at least 6 months of ART treatment. Data on all ART refills in 5/1/2019-12/31/2021 from GHESKIO's electronic health records were analyzed. Patients were defined as on-time if they picked up their ART prescription within 30 days of their scheduled refill date. Viral load (VL) results were analyzed using the latest test for all patients who received valid VL tests in the last 12 months. VL suppression was defined as <1,000 copies/ml.

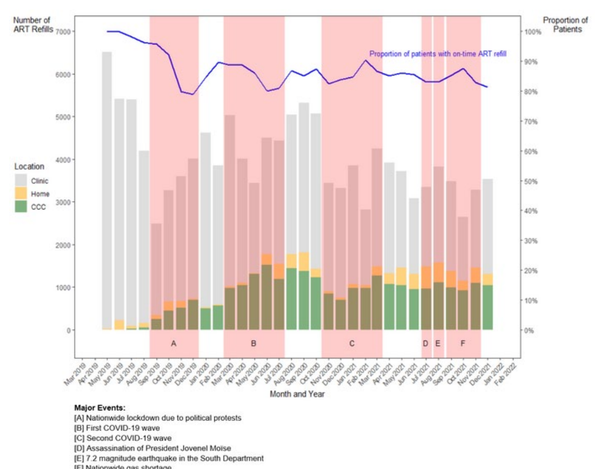

Figure.

Results: 18,625 patients completed ≥1 drug refill visit during the 32-month study period (41.3% male, mean±SD age 44.0±13.3 years). 51.9% of patients had ≥1 non-clinic ART refill. Patients attended 128,740 refill visits (6.9±3.6 per patient), 21.1% and 4.9% of which were CCC and home

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visits, respectively. The proportion of ART refills occurring at CCC and home visits increased from 0% to 39% between May 2019 and June 2020, remaining between 23% and 45% thereafter. Every month, ≥75% of patients were able to receive on-time ART prescriptions throughout the study period, despite persistent obstructive gang violence beginning in 2019 and increased frequency of kidnapping beginning in 2020. Among 12,252 patients who received a VL test in 2021, 92.3% were on-time for ART refill. Overall VL suppression among patients with a VL test was 83.4%.

Conclusions: Transitioning basic care services from facility-based to community-based can support health systems resilience in geographic regions prone to political instability and civil unrest.

EPLBE04

A novel qualitative assessment tool tracking progress towards sustainability of Zimbabwe's voluntary medical male circumcision program

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Background: Since 2009, Zimbabwe has implemented voluntary medical male circumcision (VMMC) as a high-impact, one-time HIV prevention intervention. While the initial goal of the program was to scale VMMC services, stakeholders recognized that scale up and sustainability must be simultaneously pursued in response to differences in sub-national performance. This led to the development of the Sustainability Transition Implementation Plan in 2019 which outlined sustainability goals for the VMMC programme. The VMMC Transition Assessment Dashboard (VTAD) assessments were developed to track progress towards country-defined sustainability goals and to identify health system barriers and enablers to transitioning to sustainability.

Methods: The VTAD assessment is designed to collect data on key processes in the VMMC program while tracking progress towards the development of program characteristics necessary for sustainability by programmatic pillar[1]. Data is collected through a consultative process guided by the Ministry of Health and Child Care that prioritizes understanding the qualitative structure and implementation of VMMC activities. Findings from the assessment are incorporated into the district, provincial, and national program planning.

[1] Leadership, management, and coordination (LMC); Service delivery (SD); Programme Quality (Q); Demand Generation (DG); Strategic Information (SI) and Financing

Results: Progress towards sustainable LMC1 was driven by increased programme coordination, clearly defined roles and responsibilities, and district level program ownership. Lack of integrated VMMC plans and sub-optimal engagement of stakeholders were identified as barriers to sustainable LMC1. Modified service delivery models to support program continuity during the COVID-19 pandemic contributed to a more sustainable SD1. However, vertical and siloed VMMC programming at service delivery points impeded the integrated HIV prevention programming necessary for sustainability.

Under the Q1 pillar, integrated and standardised quality assurance activities managed by the district personnel and timely detection and management of VMMC adverse events accelerated sustainability progress. SI and DG1 remained relatively stagnant after adoption of new HMIS tools and updated global guidance on the priority age group requiring new strategies to engage older VMMC clients.

Conclusions: The VTAD facilitates structured discourse about VMMC sustainability for all stakeholders while promoting greater district-level program ownership, data-driven planning, and identification and monitoring of barriers to and enablers of program sustainability.

EPLBE05

Community and health services together to avoid interruption of HIV treatment during COVID-19 restrictions – a person-centered and a low-cost initiative for antiretroviral delivery in Florianópolis, Brazil

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Background: Avoiding treatment interruption (TI) is among the main challenges in HIV care. COVID-19 pandemic has exacerbated TI by decreasing health services access. In this context, Florianópolis, a 500,000 inhabitants capital in southern Brazil, with antiretroviral medication (ARV) centralized in 4 municipal pharmacies, joined forces with the community to create new free options for accessing ARV: the ARV Delivery Support Project (ADSP).

Description: ADSP was a partnership between the Municipal Health Department of Florianópolis (MHS) and 3 local non-governmental organizations (NGO), GAPA/SC, Acontece LGBTQI+, and RNP+Brasil/SC. ADSP happened from

April 2020 to March 2021, and was publicized by means of local radio, TV, press, and social media. Users, with difficulty in getting their ARV, got in contact with NGO volunteers and had their basic data and request registered. PLHIV also informed how many days of ARV they still had, or if they run out of medication, and could select a nearby primary health care service (PHCS) to withdraw their ARV. This information was shared in a secured digital color coded spreadsheet with the MHS that, subsequently, organized the logistics to send ARV from the pharmacies to one of the 49 capillarized PHCS. NGO volunteers would then contact back PLHIV users to inform that ARV were available for withdraw.

Lessons learned: ADSP helped 297 PLHIV; 63% male, median age 40 yo (18-76); to retrieve their ARV during COVID-19 restrictions, representing 5% of total PLHIV in treatment in Florianópolis. Without new expenditures, the project carried out 573 distributions in 12 months; a median of 2 (1-5) distributions per person, 42% of them in the first 3 months. When contacting the NGO, 45% of PLHIV still had up to 7 days of ARV, 22% more than 7 days, but 33% were already without medication. People with long-term TI (2%) were identified and linked to treatment. Also, NGOs got more visibility and had their staff renewed.

Conclusions/Next steps: With innovative initiatives, community engagement, and political will, it was possible to address part of TI challenge. The project and its results have served as the basis for the new MHS ARV home delivery, in partnership with CDC and PEPFAR support.

EPLBE06

The National Inuit Sexual Health Network - an engagement model for effective health systems transformation across Inuit Nunangat

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Background: Pauktuutit Inuit Women of Canada (PIWC) is the national representative organization of Inuit women in Canada. We advocate for the social, cultural, political, and economic betterment of Inuit women and their families. Most Inuit in Canada live in 53 communities across four Inuit Regions of Inuit Nunangat, which means "the place where Inuit live:"

Sexual health programming has always, and continues to be a cornerstone of PIWC's Health department since the late 1980's.*Tavva – the National Inuit Sexual Health Strategy* was developed by a group of experts representing each of the Inuit Regions and across provincial, territorial governments, and Inuit governance organizations. Following the development of Tavva, the National Inuit Sexual Health Network (NISHN) was created to implement Tavva.

Description: Objectives of the NISHN include:

- Identifying strengths and promising practices within Inuit regions;
- Supporting collaboration among the regions, so efforts are not being duplicated and resources can be shared;
- Providing opportunities for professional development, knowledge transfer and peer support;
- Identifying new trends, emerging issues and infections;
- Clearly identifying priority activities and expectations for the Network.

Lessons learned: *Tavva* provided insight to a holistic conception of sexual health beyond combatting STBBIs. As such, PIWC shifted and expanded the scope of outreach to connect with potential members such as midwives, youth, and other Inuit.

Lessons learned in the past year have been published by the NISHN on the Pauktuutit website:

- *Uuktuutit* brings conversations on healthy Inuit sexuality closer to the lived realities. Listed components of healthy Inuit Sexuality include positive body image, self-determination, and intergenerational communication.

- *Ikajurniq*recommended 12 unique policies and practices to policymakers and healthcare providers, such as implementing strict confidentiality practices and using peer educators for health promotion.

Conclusions/Next steps: Upcoming activities include:

- Supporting the launch of an Inuit-specific lactation clinic.
- Working with territorial governments on a mobile testing clinic to address confidentiality concerns.
- Facilitating a land-based retreat in the Western Arctic to explore how the pandemic has disrupted relational foundations at a community level.

The NISHN has inspired next steps to include maternal health considerations and build up the relational foundations that uphold sexual health such as intergenerational communication.

EPLBE07

Lessons learned in community-led monitoring: early evidence from global study of the implementation landscape

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Background: Achieving the global 95-95-95 targets is critically dependent on finding the missing positives, addressing unacceptably high loss to follow-up rates and

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reengaging people living with HIV into treatment and care. Community-led monitoring (CLM) is an important approach for improving the quality of healthcare services through social empowerment and political accountability. Driven by increasing support from donors, a growing number of countries are implementing CLM, creating an optimal time to identify early best practices in CLM implementation.

Methods: Participants were recruited using a screening tool, disseminated by email and social media.Projects that met inclusion criteria participated in a quantitative survey and an individual interview. Surveys and interviews focused on developing a global mapping of CLM projects, identifying implementation arrangements and activities, and understanding best practices and challenges. Projects monitoring HIV, tuberculosis, malaria, human rights, and/or COVID-19 were included in the sample.

Results: Thirty-five projects, representing 23 countries, completed the survey, of which 25 additionally participated in an interview. Projects most commonly monitored indicators related to HIV (82% of projects) and TB (74%), and most countries represented were in Sub-Saharan Africa (77%). The most commonly-reported donor was the Global Fund (61%), followed by PEPFAR (37%). Among projects' reported achievements were an increased capacity for local organizations to conduct advocacy (63%), collect data (60%), and more frequent and productive engagement with governments (60%).

Respondents described challenges around COVID-19 disruption (57%), sustainability of funding (54%), and human resources (46%). Additional challenges identified during interviews included funding levels and on-time disbursement, challenging funding models, project independence and data ownership, difficulties with timely data analysis, and the need for strengthened advocacy.

Best practices included early and continuous engagement with communities, host governments, and service users, hiring dedicated and paid teams, reducing funding intermediaries and ensuring on-time disbursements, and strengthening technical assistance for data use and advocacy.

Conclusions: With the rapid expansion of CLM, this study serves as a practical guide for CLM implementers, donors, and technical assistance providers. Successful implementation of CLM requires prioritizing community ownership and leadership, donor commitment to sustainable and reliable funding, and strengthened support of projects across the data collection and advocacy lifecycle.

EPLBE08

A modified quality improvement approach yields high TB case-finding rates in newly diagnosed HIV-positive patients in a district health setting in KwaZulu-Natal province, South Africa

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Background: Covid-19 adversely affected TB case finding in South Africa from 2020. A TB case finding quality improvement (QI) project aimed to rapidly restore TB case finding to pre-Covid-19 levels in five districts in KwaZulu-Natal province (September 2020 - June 2022) through Targeted Universal TB Testing (TUTT) in three HIV-positive facility groups (HIV positive pregnant women at 1st antenatal visit, HIV newly diagnosed clients and ART patients at their annual viral load (VL) visit).

In addition, two sputum samples were taken simultaneously to increase secondary sputum culture for HIV-positive GeneXpert negative clients.

Description: A modified QI approach was used, including single A4 implementation worksheets to support testing in each of the four groups. Worksheets included a description of the change, names of staff responsible for implementation and measurement, and a data table for recording monthly progress including the number needing investigation, number investigated, and number TB confirmed. Worksheets were introduced over time, updated monthly by facility QI teams, and posted on a district QI WhatsApp group from which the QI project team collated and shared the TB case finding data.

Lessons learned: 125 facilities participated in the project. Over 12 months (April 2021 – March 2022), 85% of the HIV newly diagnosed clients were tested, with a TB yield of 8.1% (1190/14779) compared with yields of 1.1% (126/11317) and 1.4% (555/39762) in the ANC and VL visit groups respectively. An additional yield of 1.6% (322/20014) was obtained with culture. Culture data was not disaggregated by the HIV-positive group so the specific culture yield for the newly diagnosed HIV group is unknown. However, assuming an equivalent yield across all groups, an overall TB yield of 9.7% may be achievable in HIV newly diagnosed patients in a district setting (range 14.3% - 6.2% between the five districts).

Conclusions/Next steps: While all patients diagnosed with TB are required to have an HIV test, the standard of care currently requires that only TB symptomatic HIV newly diagnosed clients are tested for TB.

These data suggest TUTT and "double-sputum" sampling for this group, supported by a simplified QI approach, is an effective way to increase TB case finding and improve HIV/TB integration.

EPLBE09

Impact of SARS-CoV-2 pandemic on routine HIV care and treatment outcomes in Kenya: a nationally representative analysis

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Background: The COVID-19 pandemic adversely disrupted global health service delivery. We aimed to assess impact of the pandemic on same-day HIV diagnosis/ART initiation, six-months non-retention and initial virologic non-suppression (VnS) among individuals starting antiretroviral therapy (ART) in Kenya.

Methods: Individual-level longitudinal service delivery data hosted at a national repository were analysed. Random sampling of individuals aged >15 years starting ART between Apr'18 and Mar'21 was done. Date of ART initiation was stratified into pre-COVID-19 (Apr'18–Mar'19 and Apr'19–Mar'20) and COVID-19 (Apr'20–Mar'21) pandemic periods.

End-points included:

i. Same-day HIV diagnosis/ART initiation,

ii. Six-months non-retention, defined as either dead or lost-to-follow-up (missed scheduled appointments plus three months grace period), and;

iii. Initial VnS (first viral load test done within 12-months of ART initiation), defined as HIV RNA>1000 copies/ml.

Mixed effects generalised linear, survival and logistic regression models were used to determine the effect of COVID-19 pandemic on same-day HIV diagnosis/ART initiation, six-months non-retention and initial VnS respectively.

Results: Of the 7,046 individuals sampled, 35.0%, 37.1% and 27.9% started ART during Apr'18– Mar'19, Apr'19–Mar'20 and Apr'20–Mar'21, respectively. Compared to the pre-COVID-19 period, the COVID-19 pandemic period had higher same-day HIV diagnosis/ART initiation (adjusted risk ratio [95% CI], p-value: 1.4 [1.2–1.6], p<0.001) and lower six-months non-retention (adjusted hazard ratio [95% CI], p-value: 0.7 [0.6–0.8], p<0.001). Of those sampled, 3,174 (45.7%) had a viral load test done at a median 6.2 (IQR, 5.3–7.4) months after ART initiation. Compared to the pre-COVID-19 period, there was no significant difference in initial VnS during the COVID-19 pandemic period (adjusted odds ratio [95% CI], p-value: 0.8 [95% CI: 0.5–1.2], p=0.238).

Conclusions: Impact of the COVID-19 pandemic on HIV care and treatment outcomes has been less adverse in Kenya. Timely, strategic and sustained COVID-19 response may have played a critical role in mitigating adverse effects of the pandemic and point towards maturity, versatility and resilience of the HIV program in Kenya.

Continued monitoring to assess long-term impact of the COVID-19 pandemic on HIV care and treatment program in Kenya is warranted.

EPLBE10

Expanding viral load coverage in the pursuit of HIV epidemic control in Lualaba province in the Democratic Republic of Congo

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Background: Lualaba, DRC's copper and cobalt-mining hub, with industrial mining attracting regional business people and a vibrant artisanal mining trade of "entrepreneurs" of small and medium industries leading to in-migration from rural areas and neighboring countries including truckers with associated CSW and SUD.

Viral Load testing (VL) and coverage are important indicators of HIV epidemic control. Coverage and suppression of VL are long-standing challenges in Lualaba. A long-term turnaround strategy was implemented using a threefold approach: pre-lab demand generation, intra-lab swift sample analysis and post-lab electronic results delivery system, with optimal patient support for VL suppression.

Kheth'Impilo-DRC (KI-DRC) is a local Non-Governmental Organisation supporting 77 sites in Lualaba in 14 Health Zones (HZs) with a current cohort of 26452 patients in care.

Methods: Demand for VL testing was increased through a micro-management approach that included identifying eligible patients in supported sites, improving support to providers with communication credits for phone calls in following up patients for VL collection appointments, driving community VL sample collection while increasing the frequency of collection between communities, facilities and main laboratory Hubs. Additional personnel were extended to the laboratory to support internal processes and shorten result turnover time through electronic results delivery while individual IEC support was reinforced to patients with unsuppressed VL.

Results: This strategy resulted in an increase of VL uptake from 53% of an active cohort of 19922 in Mar2021 to 99% of an active cohort of 25017 in Dec2021. The viral suppression rate increased from 86% to 95% over the same period. Progress in VL suppression rate registered accross all age groups and gender.

Conclusions: Community VL collection combined with a singularised reinforcing approach to adherence of each patient with individualized follow-up by peer educators of poorly adherent patients are key to improving VL coverage and suppression in pursuit of HIV epidemic control.

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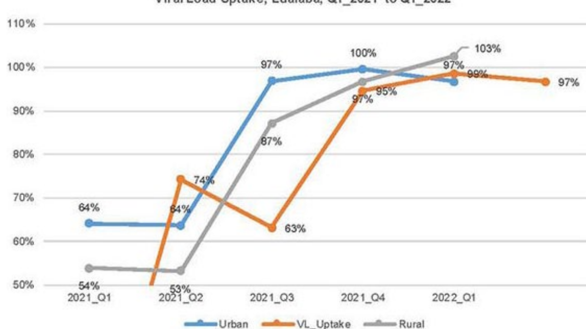

Figure. Progress in VL uptake and coverage in Lualaba province, in the DRC.

PELBE01

Pre-exposure prophylaxis for people who inject drugs: opportunities to expand the program in Ukraine

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Background: HIV has a disproportionate burden on people who inject drugs (PWID) in Ukraine. HIV prevalence in the PWID population is 20 times higher than the national estimate. Rough estimates suggest that 275,000 HIV-negative PWID are at risk of HIV acquisition due to continuing injecting practices. Pre-exposure prophylaxis (PrEP) is an effective biomedical intervention that prevents sexual transmission of HIV and reduces HIV incidence. The World Health Organization recommends that PrEP be offered to PWID with increased sexual risk behavior.

This study explored PrEP awareness, willingness, and eligibility among PWID in Ukraine.

Methods: We analyzed data from a 2020 PWID bio-behavioral surveillance (BBS) survey conducted in 12 cities in Ukraine. The BBS used a cross-sectional study design and a respondent-driven sampling (RDS) approach to recruit 6,001 participants who were PWID. We assessed their sexual risks, their awareness, use, and willingness for PrEP. In addition, using existing PWID population size estimates, we assessed the number of PWID eligible for PrEP and willing to enroll in the program.

Results: Nearly 80% of the PWID participants were HIV-negative. Among them, 10% had previously heard about PrEP, and 1.4% had experience using PrEP. 35.1% of the HIV-negative PWID reported having either increased sexual risk behavior in the past 30 days (i.e., multiple sexual partners or condomless sex with casual or exchange partners) or diagnosis of a sexually transmitted infection (i.e., syphilis, chlamydia, gonorrhea, herpes, papillomavirus). Among this group of PWID with increased sexual risk behavior or diagnosis of an STI, 34.7% expressed willingness to use PrEP. PrEP willingness varied substantially by geography (ranging from 3.3% in Odesa to 22.6% in Kyiv city). Female sex, unmarried status, a low level of education, and stimulant drug use were associated with greater PrEP willingness. We estimate that at least 33,000 active PWID are eligible for PrEP and have expressed interest in participating in the program.

Conclusions: There is a considerable opportunity to expand the PrEP program among PWID in Ukraine. HIV community testing programs might benefit from the development of more efficient pathways to refer and link eligible HIV-negative PWID to PrEP services.

PELBE02

Community led monitoring in PEPFAR Vietnam - innovation and lessons learned

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Background: In 2020 PEPFAR Headquarters required all PEPFAR bilateral and regional programs to initiate in fiscal year 2021 community led monitoring (CLM). However there was very little of guidance from OGAC and no concrete example of a commonly considered „successful CLM model". Taking a serious and comprehensive research of available examples of community monitoring models and an innovative and inclusive approach that ensured the „community led" principle, the PEPFAR program in Vietnam worked closely with community representatives to launch a unique and unprecedented CLM model that now turns out to be an efficient mechanism for community feedback of PEPFAR supported services, highly appreciated by OGAC, and closely watched by regional and international civil society alliances.

Description: A year before CLM actually started, in coordination with in-country stakeholders, the PEPFAR team gathered a task-force of 15 community leaders who had rich experience in service delivery, advocacy and quantitative and qualitative research and a comprehensive understanding of the PEPFAR program. They worked out a comprehensive CLM protocol, together with concrete data collection tools for PEPFAR supported sites which were then presented in a stakeholder workshop for feedback and mutual understanding and agreed implementation principles. The model was then finalized and budgeted in COP20 for implementation in fiscal year 2021.

Lessons learned: The approach up to now is proved to be an efficient mechanism, securing the „community led" nature. While in most other PEPFAR programs, the independence nature of CLM is a concern, the Vietnam model is gradually and increasingly acknowledged by the host government, in-country stakeholders, OGAC, and regional alliances. The concept of a PEPFAR funded yet independent CLM model is now widely understood by both government offices, healthcare workers, program managers, and beneficiaries.

Conclusions/Next steps: Available CLM data is currently at an extent that provides only snap-shot of surveyed sites, and not representational enough to tell stories of provinces, regions, and national trends. At the global level, OGAC is supposed to draw and share widely CLM lessons from countries, particularly approaches, granting mechanisms, cost norms, and data sharing and usage. There is also expectation for CLM to be taken up in the Global Fund and national programs.

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EPLBF01
Community-led humanitarian and HIV/TB interventions in the emergency response to the war in Ukraine

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Background: Community-led organizations in Ukraine play a significant role in the country's response to HIV and TB through provision of prevention services, linkages to ARV and opioid substitution treatment, and persistent efforts to remove human rights barriers such as stigma and discrimination that impede communities' access to services.
Russia's February 24th invasion of Ukraine dramatically changed the operating environment for these organizations as conflict disrupted normal operations in large parts of the country and sent millions of Ukrainians fleeing for their lives.
Description: Community-led organizations quickly adapted their operations to these new conditions. Embracing a "first-save-lives" approach, they used their deep connections in communities to evacuate members of key and vulnerable populations in areas of active combat to safety; organized temporary shelter and nutritional support; facilitated access to emergency medical services; and linked them to HIV, TB and drug treatment services in their new locations. These efforts were closely coordinated with and supported by the government, donors and other partners.
As a result, key and vulnerable populations have been able to continue to receive HIV and TB services with limited disruptions despite the devastating impact of the conflict.
Lessons learned: Our preliminary analysis suggests that a number of key factors facilitated these community-led organizations' ability to respond rapidly. First, these groups generally tend to have light, horizontal organizational structures allowing them to quickly adapt to ever changing local circumstances. Their embeddedness in communities allows them to quickly pick up on changing needs.
Second, the COVID-19 pandemic gave community-led organizations ample practice in adaptability as it forced numerous and substantial change to their operations. It also resulted in innovations such as simplified procedures for ART and substitution treatment, development of security protocols, and psychological interventions that have proven highly relevant during the conflict.
Finally, the Global Fund, the main funder of community-led programs, quickly facilitated the reprogramming of activities allowing organizations to meet the evolving needs of their communities.

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Conclusions/Next steps: Ukraine's experience may hold broader lessons for challenging operating environments. Community organizations can be an important resource in adapting the response to HIV and TB during armed conflicts and other major disruptive events.

EPLBF02

The Venezuelan migration phenomenon and the response to HIV and TB in Colombia, Ecuador and Peru

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Background: Venezuela has faced a humanitarian crisis of significant impact in recent years. As of November 2021, more than6 million migrants and refugees from Venezuela have been forced to leave their country, of which about 5 million reside in Latin America. According to UNAIDS, at least 8,000 Venezuelans living with HIV have left the country to continue their treatment; this number could increase given that it corresponds to 14% of people who require antiretroviral therapy.
This study documents the response to HIV and TB by governments, civil society and the Global Fund in Colombia, Ecuador and Peru, countries with the highest number of Venezuelan migrants.
Methods: A case study methodology was developed with mixed methods and information from primary and secondary sources. In 2021, the team conducted interviews with key actors in response to HIV/TB and related documents were reviewed, the results of which were systematized and analyzed.
Results: Governments have maintained or improved their supportive policies to guarantee access to health services for Venezuelan migrants. International cooperation agencies have a growing interest in directly or indirectly addressing the response to HIV and TB in these countries, including the Inter-Agency Coordination Platform for Refugees and Migrants from Venezuela (R4V).TheGlobal Fund in Colombia and Peru has plans to include services for migrants. Civil society organizations have contributed significantly to the response, mainly to HIV, they have articulated regionally with each other and with the international cooperation agencies. However, they have limited resources and require strengthening to achieve a more significant impact.
The study identified technical assistance needs to improve the response of this sector, as well as barriers to access health services for migrants and gaps in the response.
Conclusions: The results allow us to have an overview of the response to HIV and TB in the framework of Venezuelan migration in the countries studied and the challenges that stakeholders have to improve access to services. It describes access barriers, gaps in response, and technical assistance needs for civil society organizations and provides recommendations for action. The results are also helpful in guiding the response of the Global Fund and other stakeholders.

EPLBF03

A study on association between legal environments, society tolerance, family support and alcoholism, high-risk substance abuse, HIV risk perception among TGE communities, post decriminalization of IPC section 377, India

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Background: Gender Based Violence on (TGE) -Transgender and Gender Expansive communities continue to be existing and seems to be accepted and perceived as NORMAL among the general population of India. Decriminalization of Same Sex relationships and repeal of section 377 from the Indian Penal Code opened the public discourse and added visibility of the TGE communities in India.
The study was intended to explore the association between legal environments, society tolerance, family acceptance and alcoholism, high risk substance abuse, HIV risk perception and Unsafe Sexual behaviors among TGE communities.
Description: 876 TGE living with HIV and enrolled for Anti-Retroviral Therapy (ART) from the "THE PEOPLE'S CLINIC" New Delhi, India, were recruited and a questionnaire was shared via social media and responses collected over a period of nine months. Logistic regression was employed to test Associations between Protective environments and high-risk substance abuse, High risk Sexual behaviors and HIV positivity and Self rated Health outcomes.
Lessons learned: Overall, (18%) reported support of their TGE identity by at least one close family member. Due to fear of stigma and discrimination only (3%) revealed HIV positivity status to a close family member. Owners of rental residences and housing societies exhibited most intolerance (85%) in urban areas and refused letting out their premises to TGE communities. Housing instability further pushed communities to indulge in high-risk substance abuse (36%), alcoholism (63%) leading to High-risk behaviors including unprotected multi-partner SEX (89%) and leading to acquiring HIV infections. Even with repeal of punitive homophobic laws - violence, abuse and body shaming was reported especially from law enforces and police (34%).
Conclusions/Next steps: Decriminalization of punitive laws against sexual minorities without sensitization of general population and law enforcement agencies including Police, does not necessarily bring Protective environments, Societal acceptance or gender-based violence.

The need for revised National level strategies to break structural barriers and promote protective environments for TGE communities are reflected as major findings of this study.
Framing strict laws, in treating violence meted out to TGE communities as a culpable offence, would help create more tolerant and accommodative societies, reduce violence and lead to better health outcomes for the TGE communities.

EPLBF04
Right to quality HIV care for children in trauma and rescue centers in Kenya

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Background: The United Nations-led Sustainable Development envisioned a future free of fear and violence. Governments and non-government entities are putting structures that ensure the peaceful coexistence of the communities globally. Kenya is one of the many governments that has policies and mechanisms to curb all forms of violence.
However, despite having these policies and guidelines in place, gender-based violence (GBV) and Human Immune Virus (HIV) prevention services are still offered perpendicularly (Edwards, etal, 2022).
Description: The recent challenges of COVID-19 have compounded this gap. Rescue and Trauma Centers for abused children and women do not have a legal framework to govern their existence and service delivery to this vulnerable group. According to the research, the crossing of HIV and GBV proves that violence against women and children exponentially raises their vulnerability to HIV (Meffert, etal, 2021). The World Health Organization report states that one in five girls and one in ten boys have gone through one or more forms of violence before they are 18 (Bhatia, etal, 2020).
Currently, this figure has risen to three in five girls and two in five boys who report to have experienced sexual violence before they are adults (Annor, etal, 2022). Rescue and Trauma Centers such as Frolics of Hope Africa requires capacity building, and resources to effectively rescue, report, rehabilitate, reintegrate, and repatriate victims of GBV and human trafficking violence due to their HIV status.
Lessons learned: In Kenya, only about 12 per cent of the 50 Trauma and Rescue Centers have the capacity to refer or serve women and children who have gone through violence and abuse due to their HIV status.
Data has shown that Intimate Partner Violence (IPV) raises a woman's chances of HIV infection due to rape by an infected partner, negligible opportunities for compromise on safer sex, and high-risk adverse tendencies (Ndungu, 2019).
Conclusions/Next steps: Integration of HIV and GBV is critical, especially within the safe houses that offer rescue services for GBV survivors.
The integration will reduce HIV transmission from mother to child, teen, and youth infection rates and help the survivors access the much-needed care and support.

EPLBF05
Post-test and TB survivor grassroots-based CBOs leverage HIV/TB care at The Last Mile; a case of 7 expert PWD-led mobilization HIV prevention groups in Uganda, August 2021-May 2022

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Background: People living with HIV, key populations, and people at risk of HIV grasp such concepts like Public-Private Mix (PPM), Communities of Practice (CoP), Integrated Service Delivery (ISD), human rights, equality, and dignity, action against harmful practices, stigma, and discrimination when there is deliberate, strategic action to take them through participatory training sessions.
This study followed groups from August 2021 to May 2022 and it aimed at gauging TB/HIV-related Prevention campaigns by CBOs which were formed as PWD-led Post-Test and TB Survivor Support Clubs in Uganda.
Description: A 9 month cross-sectional study, using contacts to regularly check compliance to strategic plans, updates of record books, checklists and minutes to track community outreach events promoting prevention.
Lessons learned: The report indicates that the CBOs connected beneficiaries to HIV testing, access to treatment, promoting care, referrals for non-communicable diseases care, attending clinic checkups for viral suppression and uptake of integrated services including addressing vertical HIV transmission, SRH services, dental and ear, Family planning, spacing cancer screening, paediatric AIDS and other services. It is clear that the 7 CBOs were the constant reminders and motivation to adherence during the COVID-19 lockdown and during the easing for 784 Persons Living with HIV and 54 Living with TB. Through constant visibility and mobilization, they maintained a food supply-chain, checked in on each other and mobilized money which sustained 48 who would have faced housing instability and food insecurity.
Conclusions/Next steps: Grassroots-based systems can be leveraged as health and social protection continuum spaces. This in turn supports wellness, livelihood, and enabling environments for people living with, at risk of, or affected by HIV to reduce inequalities and allow them to live and thrive.

EPLBF06

Provision of sexual and reproductive health services to adolescents and young people with disabilities living with HIV (AYPWDSLWHIV): observations from Chipinge district in Zimbabwe

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Background: Despite the existence of the eloquent and sound United Nations Convention on the Rights of People with Disabilities (UNCRPWD) (2008) which articulates on inclusion people with disabilities in all development initiatives and improvement on their access to key welfare resources, it remains disheartening to pick the provision of sexual and reproductive health services (SRHS) to AYPWDLWHIV in a piecemeal worrisome state.
Cultural connotations which place a taboo labelling on the provision of SRHS to AYPWDS remains the most outstanding barrier among other key issues observed.
Description: Inclusion of AYPWDLWHIV in discourses and platforms spearheading provision of SRHS in Chipinge district, Zimbabwe is yet to be implemented. Programming and discussion on the SRHR needs of AYPWDS remains absent in the district. The community holds negative attitude marked with some taboo connotations towards the provision of SRHS to AYPWDLWHIV. Shocking and disturbing from the human personnel of expected high integrity and ethical conduct, health workers at clinics in the district frown at AYPWDLWHIV when they seek condoms and other critical information regarding SRHR. As if that is not enough for the plight of AYPWDS, there are no evident efforts to improve their conducive physical access to SRH services.
Lessons learned: According to district data, over 45% of sexual harassment cases recorded in marriages and other sexual relations in the district involves AYPWDLWHIV as they lack empowerment on their sexual and reproductive health. It is against this background compounded by other factors already observed, that a lot of AYPWDLWHIV are engaging in unprotected sex which is leading to unintended pregnancies, STIs, and HIV spreading.Unplanned children and poor health are exacerbating their entrenchment in the circle of poverty
Conclusions/Next steps: There is need for communities to come up with a home-grown local policy which fosters inclusion of AYPWDLWHIW in all discourses pertaining their SRH needs and also unpacking the UNCRPD article 25 to the communities.
It is also important that public educational interventions are designed and implemented to demystify prevailing beliefs and practices, improve public understanding of the sexual and reproductive health needs of AYPWDLWHIV and ways the public could support AYPWDLWHIV to lead safe and satisfying sexual lives.

EPLBF07

Advancing HIV prevention research in pregnant and breastfeeding populations (PBFP): priority advocacy objectives and next steps

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Background: Growing consensus around the ethical and public health imperative for the responsible inclusion of PBFP in HIV research has gained critical momentum. Milestones include Ethics Guidance from the PHASES Working Group and the WHO/IMPAACT Call to Action to accelerate the study of new HIV drugs for pregnant and breastfeeding populations (PBFP), though much work to realize this vision remains.
To this end, AVAC, supported by the Coalition to Accelerate and Support Prevention Research (CASPR), and the PHASES Project convened a think tank in April 2022 to identify priority advocacy objectives, informed by consensus recommendations, and develop an action plan to accelerate HIV prevention research with PBFP.
Description: Significant stakeholder engagement guided the development of the think tank, in alignment with the Good Participatory Practice Guidelines. This included consultations with researchers and a pre-meeting, co-convened with Pangaea Zimbabwe Aids Trust, with advocates and former trial participants. Sixty-three global stakeholders, including researchers, industry representatives, trial participants, civil society, regulators, and funders attended a half-day virtual workshop which utilized facilitated planning sessions to identify advocacy and action priorities. Think Tank members provided input on a report and action plan and were further engaged for additional information.
Lessons learned: Priority action areas included the need to: strengthen advocates' knowledge about the inclusion of PBFP in research; develop guidance specific to engaging stakeholders in the design and conduct of trials with PBFP, with particular attention to centering PBFP throughout; frame the responsible inclusion of PBFP in research as a reproductive justice issue and align with a broader coalition of advocates and allies; and support the advancement of regulatory authority to require data on PBFP.
Additional priorities raised included development of resources to support ethics review boards to consider responsible inclusion of PBFP; integration of the experiences and needs of adolescents and trans and gender-diverse PBFP in HIV prevention research; harmonization across regulatory agencies, and consistent metrics for trial outcomes.
Conclusions/Next steps: Assessing and implementing this action plan is ongoing. Key accomplishments to date include funder commitment to harmonize outcome mea-

sures and AVAC commitment to the development of an advocacy toolkit, and training resources. Further status updates will be provided.

EPLBF08

The Brazilian response to HIV/AIDS & COVID-19: double standards and rights violations

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Background: The Brazilian response to HIV/AIDS is frequent cited as best practice. Brazil threatened to break patents, issued a compulsory license for Efavirenz and negotiated large discounts to acquire antiretroviral therapy (ART). These strategies allowed free/universal access to ART for all people living with HIV/AIDS (PLWHA) in Brazil since mid 90s'. The country was also a pioneer in offering HIV self-testing, HIV pre- and post-exposure prophylaxis (PrEP/PEP). Why was all this expertise not adapted during COVID-19 pandemic?

Description: The COVID-19 pandemic exposed Brazil to an unprecedented health, social and economic challenge. The country had the third-highest death toll in the world: over 660,000 COVID-related deaths recorded. During COVID-19 wave peaks, hospitals experienced shortages of oxygen and sedatives to intubate patients, ICU and hospitals were working at capacity. In spite of a well stablished immunization program, the country struggled with COVID-19 vaccine rollout.

Lessons learned: Brazilian HIV/AIDS response was guided by scientific and public health evidence, developed in close collaboration with civil society and PLWHA. Policy makers, government, researchers and affected communities worked together to assure that strategies were adequate, feasible and responsive. Open dialogue was key to review problems and address concerns. Conversely, Brazilian COVID-19 response highlighted a completely lack of dialogue with the federal government. The absence of a centrally coordinated strategy and misalignment between federal and local governments regarding COVID-19 response, together with Brazilian president denial of scientific evidence, promotion of ineffective treatments and insufficient vaccination efforts, have led to uncontrolled spread of COVID-19, the near-total collapse of the health system and excess deaths. Overwhelmed by COVID-19, health services reduced their availability of PrEP and PEP, while PLWHIA experienced difficulties in receiving their ART and scheduling follow up exams/appointments. During president Bolsonaro's ultra conservative government, several HIV prevention materials and campaigns were also censored.

Conclusions/Next steps: Decades of effective response to HIV/AIDS have demonstrated the essential relationship between human rights and public health. Countries should build their pandemic responses rooted in respecting science, public health and human rights principles, while hearing and working with populations most at risk. During the COVID-19 pandemic, the current Brazilian president choose to do the opposite, with tragic consequences

PELBF01

HIV criminalization laws, public health trust, and uptake of COVID-19 vaccine among people living with HIV in the United States

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Background: HIV criminalization creates significant tensions in public health practice. The negative effects of HIV criminalization on HIV stigma, disclosure, testing, and engagement in care are well documented.

In this study, we examine the effects of HIV criminalization laws on trust in public health and uptake of COVID-19 vaccination among people living with HIV (PLWH) in the US.

Methods: We use the 2021 National HIV Criminalization Survey conducted by The Sero Project and community partners (N=610). Participants were recruited via community organizations by and for PLWH and invited to participate in an online survey from 18 August 2021 to 31 December 2021.

We restrict analyses to PLWH who are 18 and older, reside in the United States, and provided information on COVID-19 vaccination status (N=554).

Results: Just over half (54.6%) of PLWH lived in states with an HIV-specific criminalization law. Over one-third (36.7%) endorsed the statement "Public health professionals care more about enforcing laws that criminalize HIV transmission than they do about my health," with endorsement higher among PLWH in states with HIV criminalization laws (40.4% vs 32.3%; χ^2=4.226, *p*<.05).

PLWH living in a state with HIV criminalization laws were significantly more likely to have heard of anyone in the state being arrested for nondisclosure of HIV status to a sexual partner (46.8% vs 28.2%; χ^2=22.742, *p*<.001) and to personally know anyone accused, threatened, or arrested on an HIV-related charge (40.1% vs 18.7%; χ^2=32.996, *p*<.001).

Uptake of COVID-19 vaccination among PLWH was high at 90.3%, but we observe significantly lower uptake in states that had HIV criminalization laws (87.4% vs 93.7%; χ^2=6.203, *p*<.05).

In a logistic regression model adjusting for differences in vaccine uptake across individual characteristics (gender, race, age, diagnosis year, employed or volunteer in HIV work), survey timing, and geographic region, PLWH in states with HIV criminalization laws were more than 50% less likely to be fully vaccinated for COVID-19 (OR= 0.478; 95% CI=0.233-0.982).

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Conclusions: Preventing HIV and COVID-19 require trust in public health measures and practitioners. HIV-specific criminalization laws jeopardize trust in public health and are associated with lower uptake of COVID-19 vaccination among PLWH in the US.

PELBF02

Follow the science - addressing resistance to comprehensive sexuality education: lessons from five African countries

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Background: Every week, 4200 girls and women aged 15-24 in sub-Saharan Africa acquire HIV (UNAIDS). Each one of these infections could be prevented if young people had accurate information about how HIV is transmitted, alongside the services they need to make empowered choices. In recent years, countries within the African region have experienced escalating levels of controversy and opposition surrounding Comprehensive Sexuality Education (CSE). Local concerns from religious and socially conservative entities related to the content covered and debates about the information that young people should have. CSE aims to empower young people to build agency, develop skills, knowledge and attitudes required for preventing HIV, reducing early and unintended pregnancies, and eliminating gender-based violence.
Driven by the need for understanding the arguments of the opposition, UNESCO commissioned a study to document the experiences of five countries; Ghana, Namibia, South Africa, Uganda and Zambia with the objective to provide recommendations for governments and partners to respond to it.
Description: A mixed-methods approach was used to gather information to inform the development of five case studies, consisting of a desk review, KIIs, and stakeholder analysis. Background information was gathered through a questionnaire completed by key stakeholders. Data was also collected using social listening methods from open access social media sites. Feedback sessions with case study participants were conducted to validate findings and probe for additional detail when needed. Findings were released in April 2022.
Lessons learned: Opposition tactics include disinformation; use of media to amplify reach of internationally generated materials; personalize attacks and politization of CSE; coordination of messages with specific events. Country response was efficient when:
1. Government is supported and takes firm ownership of CSE,
2. CSOs are engaged and contribute to build public support,
3. Contextually relevant and timely communications strategy is in place,
4. Mobilization of youth voices by CSOs.

Conclusions/Next steps: Focus on ensuring a government-led response where they "take charge of the narrative" was essential. It is key to anticipate opposition and prepare for a coordinated response. Engage stakeholders, formulate common messaging on CSE, share evidence, develop a robust communication strategy using positive stories how CSE has helped learners, plan when and how to disseminate messages.

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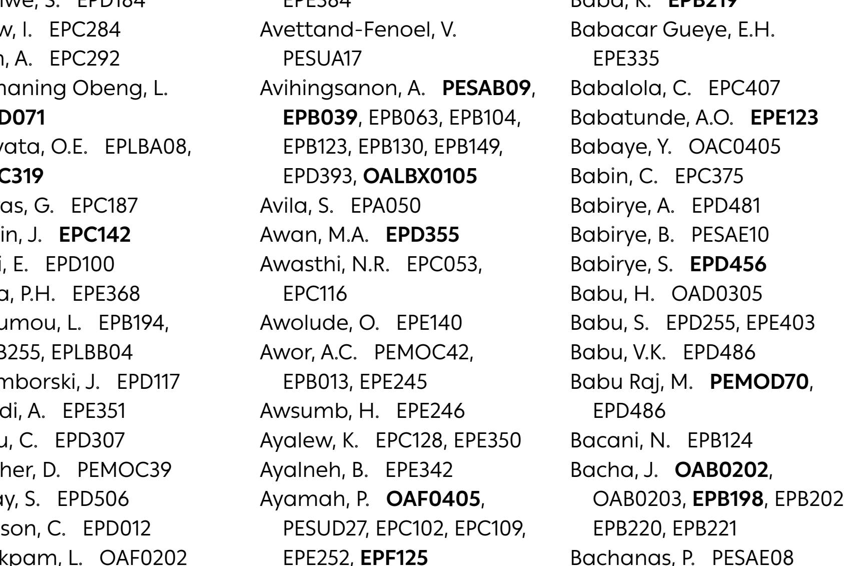

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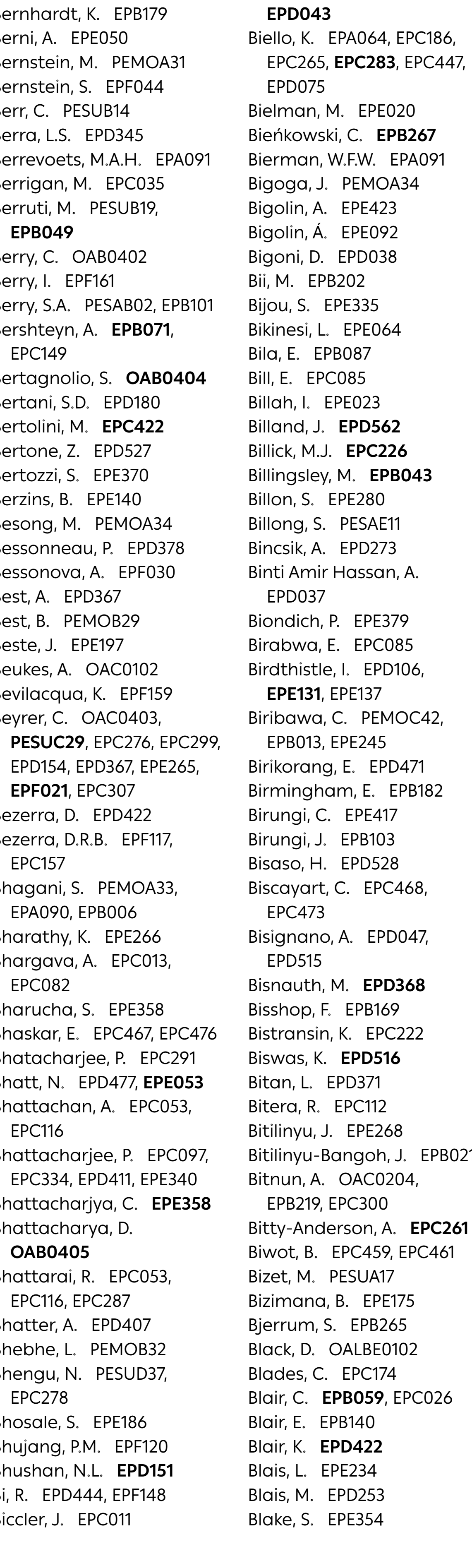
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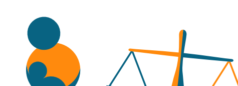

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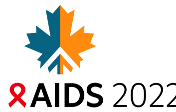

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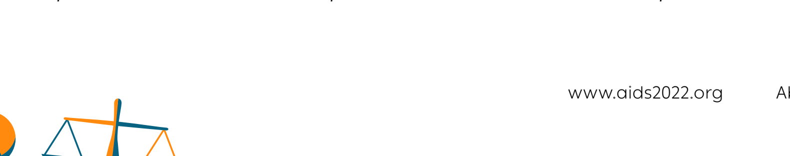

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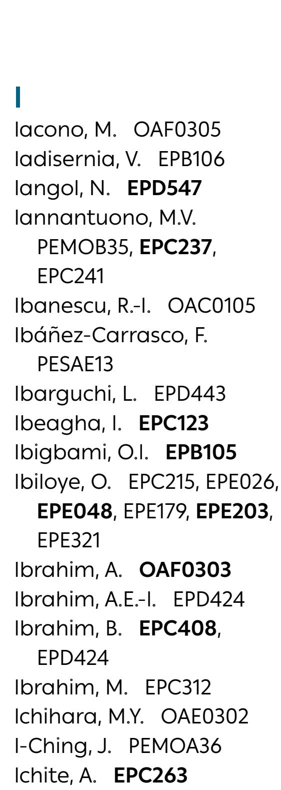

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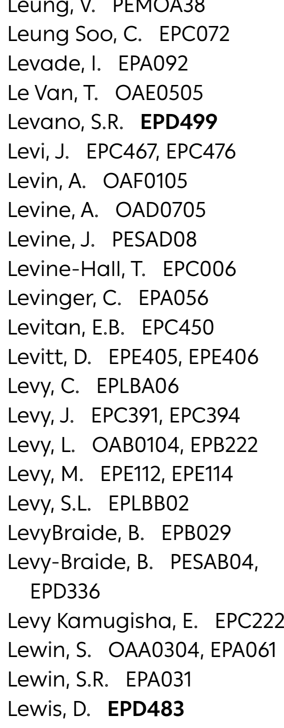

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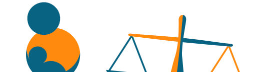

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