

Conference Report



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Acronyms and abbreviations

aHR	Adjusted hazard ratio
AIDS 2022	24th International AIDS Conference
ART	Antiretroviral therapy
CAB-LA	Cabotegravir long-acting
COVID-19	Coronavirus disease 2019
DSD	Differentiated service delivery
EFV	Efavirenz
FIND-Seq	Focused Interrogation of Cells by Nucleic Acid Detection and Sequencing
FTC	Emtricitabine
HBV	Hepatitis B virus
IAS	International AIDS Society
IAS 2023	12th IAS Conference on HIV Science
MPXV	Mpox virus
NCD	Non-communicable disease
NGO	Non-governmental organization
NK	Natural killer
PEP	Post-exposure prophylaxis
PEPFAR	President's Emergency Plan for AIDS Relief
PrEP	Pre-exposure prophylaxis
SARS-CoV-2	Sudden acute respiratory syndrome coronavirus 2
STI	Sexually transmitted infection
TAF	Tenofovir alafenamide fumarate
TB	Tuberculosis
TDF	Tenofovir disoproxil fumarate
TLD	Tenofovir disoproxil fumarate, lamivudine and dolutegravir
Trans	May refer to trans, transsexual or any other non-binary identification of sex or gender
UNAIDS	Joint United Nations Programme on HIV/AIDS
U=U	Undetectable equals untransmittable
WHO	World Health Organization

Terminology

Key populations refers to men who have sex with men, people who inject drugs, sex workers and trans people.

Vulnerable populations refers to people living with HIV and groups outside of key populations who may be at increased vulnerability to acquiring HIV, for example, adolescents, Indigenous peoples, migrants, refugees, internally displaced persons, people with disabilities, people in prisons and other closed settings, people of advanced age, women and girls.



AIDS 2022 at a glance



Almost **13,000** delegates from **173** countries participated in AIDS 2022.



Just over half (**52%**) of delegates at AIDS 2022 were based in low- or middle-income countries. More than one in three (**35%**) were based in Africa.



56% of participants attended AIDS 2022 in person in Montreal, with **37%** of in-person attendees coming from low- and middle-income countries.



56% of delegates were aged **45** years or younger.



AIDS 2022 awarded **1,602** in-person and virtual scholarships; **42%** of scholarships were awarded to participants from Africa.



92% of delegates agreed the conference objectives were met.



Over **600** original news stories were generated.



46 million people were reached through **91,478** social media posts from AIDS 2022.



Introduction

Almost 13,000 HIV professionals and members of civil society, including approximately 3,600 virtual delegates, took part in AIDS 2022, the 24th International AIDS Conference, from 29 July to 2 August 2022. In-person attendance at the conference in Montréal, Canada, considerably exceeded organizer expectations despite the difficulties encountered by numerous delegates in obtaining visas for travel to Canada. More than half (56%) of participants attended AIDS 2022 in person in Montreal, with 37% of in-person attendees coming from low- and middle-income countries.



AIDS 2022 called on delegates to *re-engage and follow the science*, emphasizing the risk to the global HIV response if scientific innovations and evidence-based policies are not implemented with renewed energy. The conference also highlighted the need to overcome inequities in global health and place community leadership at the heart of the HIV response.

During the five-day conference, delegates heard new data on cases of HIV remission, a novel technology for measuring the HIV reservoir, long-acting PrEP and the use of an antibiotic as post-exposure prophylaxis (PrEP) to reduce the incidence of sexually transmitted bacterial infections.

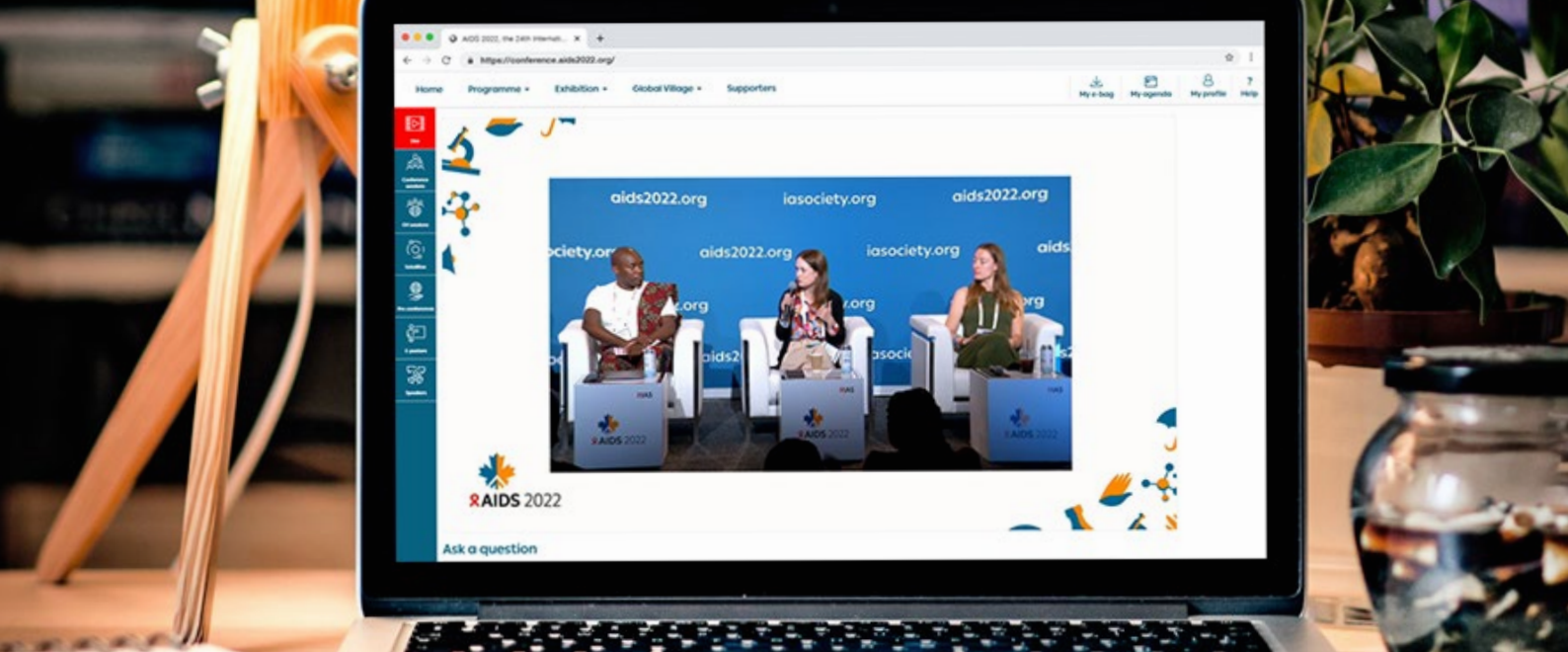
The undetectable = untransmittable (U=U) concept was a major thread running through AIDS 2022, with HIV professionals and communities working through the practical and policy implications of science presented at previous IAS conferences – the International AIDS Society.



"We cannot afford to lose more ground in the global response to HIV. Seventy percent of new HIV infections in 2021 occurred among key populations, which illustrates that the most marginalized are also the hardest hit."

Adeeba Kamarulzaman,
President of the International AIDS Society and AIDS 2022
International Co-Chair ^[1]





“The scientific fact that people living with HIV on effective treatment cannot pass on HIV is revolutionary, changing millions of lives of people and accelerating progress toward ending the epidemic. Yet despite validated evidence and global recognition by health leaders, including the World Health Organization and the International AIDS Society, U=U remains widely unknown. The path to ending the epidemic is right in front of us. By centring treatment access for all people living with HIV, we can stay healthy and stop new transmissions. Everyone wins with U=U.”

Maurine Murenga, Director, Lean On Me Foundation, Kenya ^[2]

AIDS 2022 was delivered as a hybrid conference, enabling the widest possible participation. Almost all of the more than 100 conference sessions were broadcast live and made available subsequently as on-demand recordings. The hybrid conference successfully integrated speakers broadcasting from all over the world into conference sessions and enabled virtual delegates to question presenters and network with other delegates.

The conference featured 37 oral abstract sessions organized into six tracks. The 81 invited-speaker sessions included 12 prime sessions, 38 symposia, 16 in-person workshops and 12 virtual workshops. Nine pre-conferences and 108 satellite meetings complemented the invited-speaker and abstract-driven programme.

A total of 6,900 abstracts were submitted to AIDS 2022, including 652 late-breaker abstracts, 2,846 of which were selected for presentation in sessions and the poster exhibition. The acceptance rate was 41%. More than half (55%) of accepted abstracts had a female lead author, around one in three accepted abstracts came from North America and Mexico (35% of accepted abstracts) and Africa (31%) while Asia and the Pacific Islands and Europe each accounted for 14% of accepted abstracts.

Who was there?

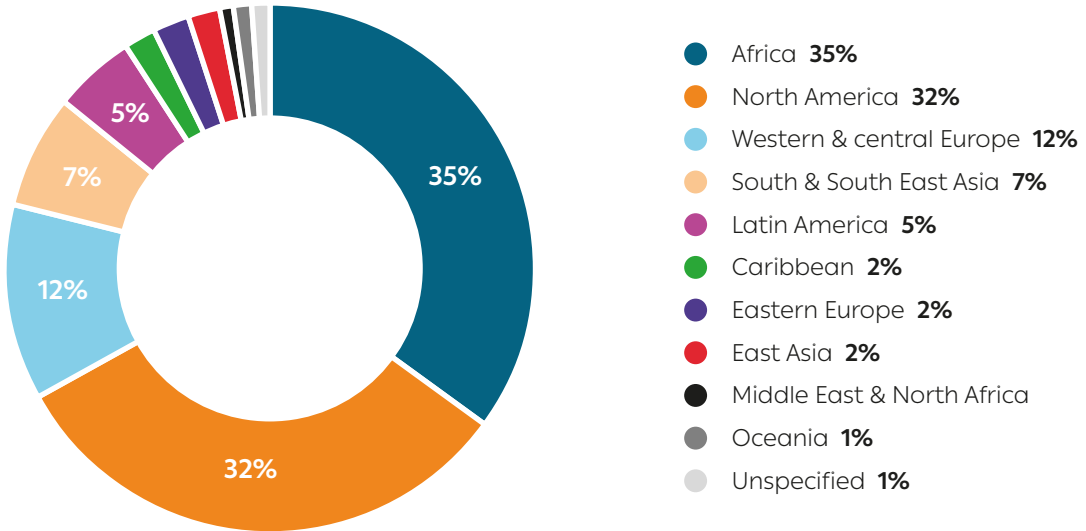
A total of 13,676 participants registered for AIDS 2022: 12,803 were delegates and the remainder were organizers, staff and volunteers. One in eight delegates were scholarship recipients. Twenty-nine percent of delegates had virtual registrations, allowing them to view live sessions, ask questions and network with other delegates online.



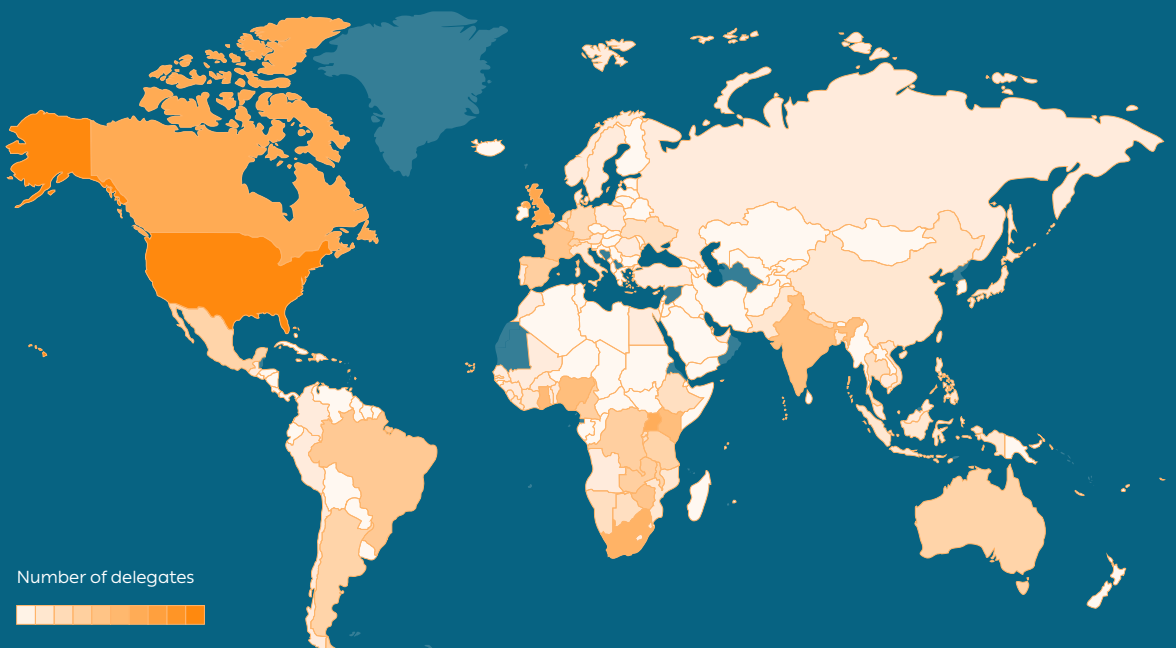


Country and region

Africa was the region with the largest representation at AIDS 2022. Thirty-five percent of delegates were from Africa, 32% from North America, 12% from western and central Europe and 7% from South and Southeast Asia. African representation at AIDS 2022 was almost 50% higher than at AIDS 2018 (24%).

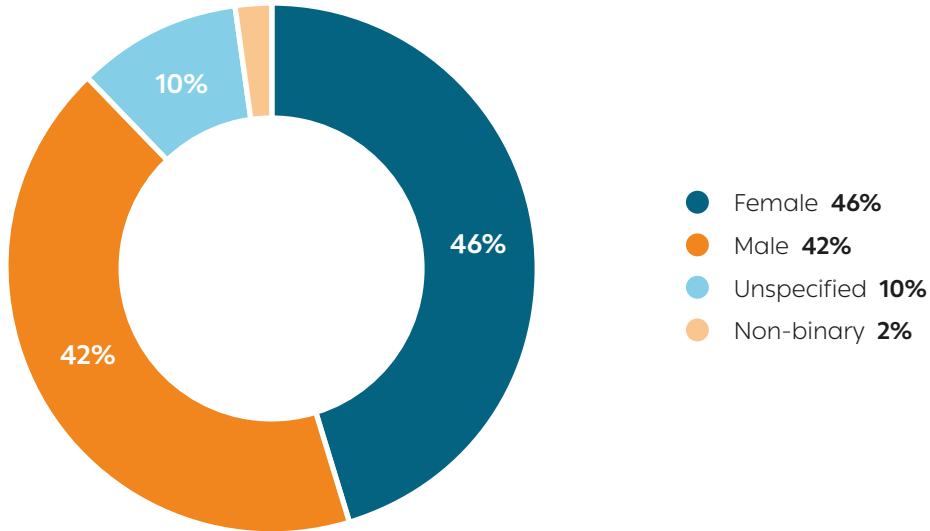


A total of 173 countries were represented at AIDS 2022. The United States (2,764 delegates), Canada (1,261 delegates), Uganda (687 delegates) and South Africa (607 delegates) had the largest representation at the conference. African countries were more likely to feature in the top 20 countries attending AIDS 2022 than the two preceding conferences, making up nine of the top 20 countries at AIDS 2022 compared with four in both 2018 and 2020.



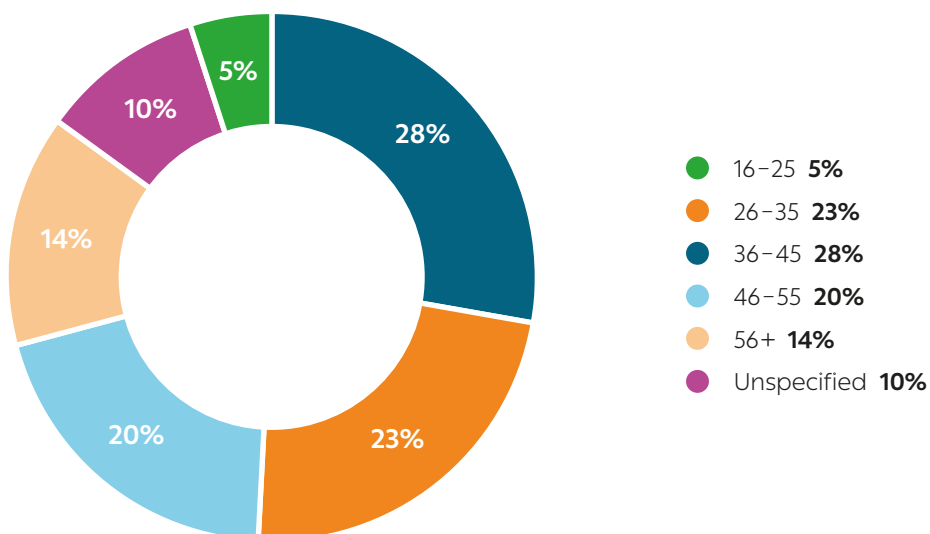
Gender

Forty-six percent of delegates were female, 42% were male and 2% were non-binary or gender non-conforming. Three percent of delegates reported that their gender differed from their sex at birth. Ten percent of delegates did not specify their gender.



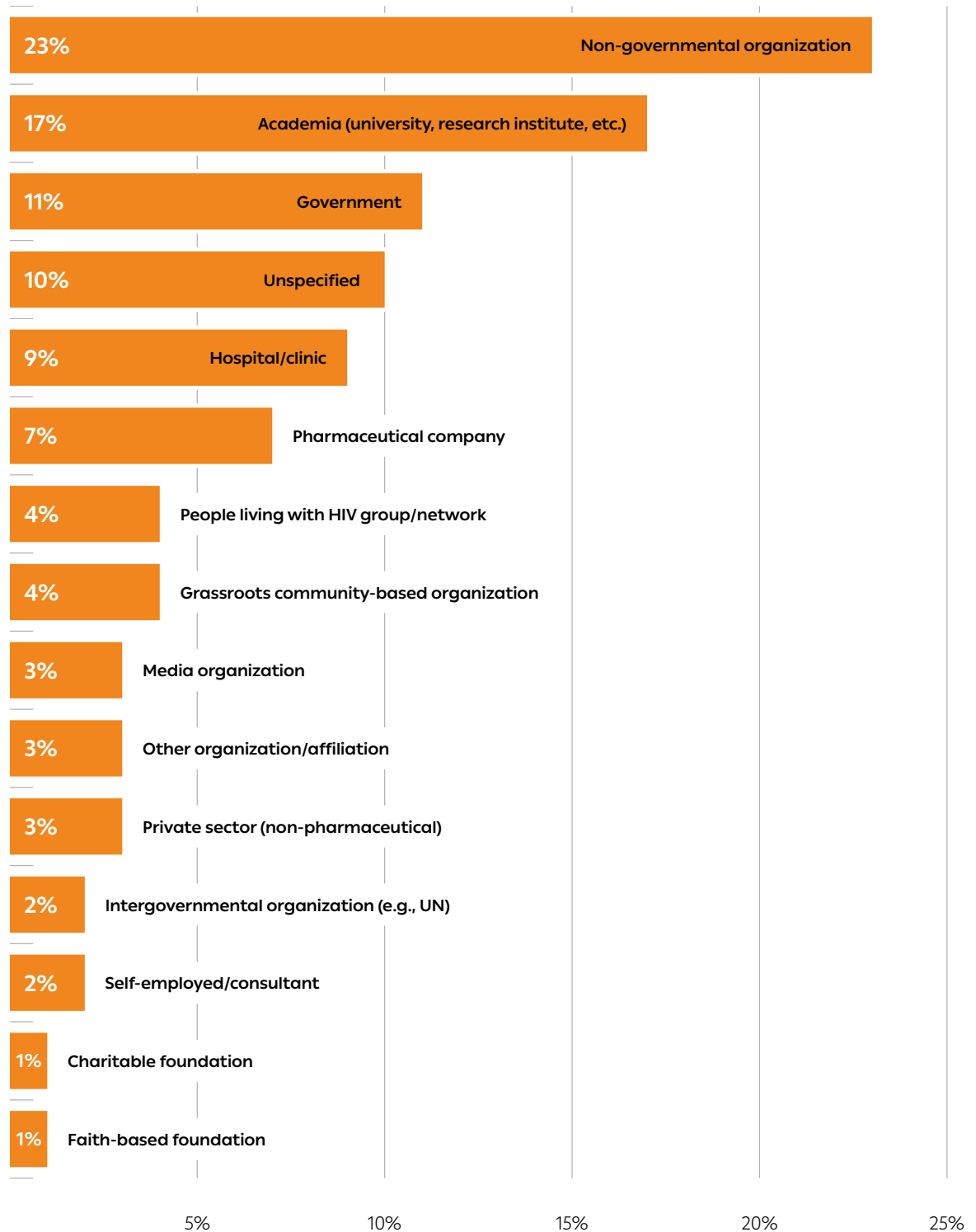
Delegates by age range

Fifty-six percent of delegates at AIDS 2022 were under 46 years and 28% were younger than 26 years. The proportion of delegates younger than 46 years was similar to that in 2018 and 2020.



Affiliations and institutions

People from non-governmental organizations (23%, 2,880 delegates) and those working in academia (17%, 2,213 delegates) made up the largest share of delegates at AIDS 2022. Representation of both groups was lower than at AIDS 2018 but similar to AIDS 2020. The proportion of delegates working in hospitals and clinics (9%, 1,200 delegates) or government (11%, 1,434 delegates) was similar to AIDS 2018 and AIDS 2020.

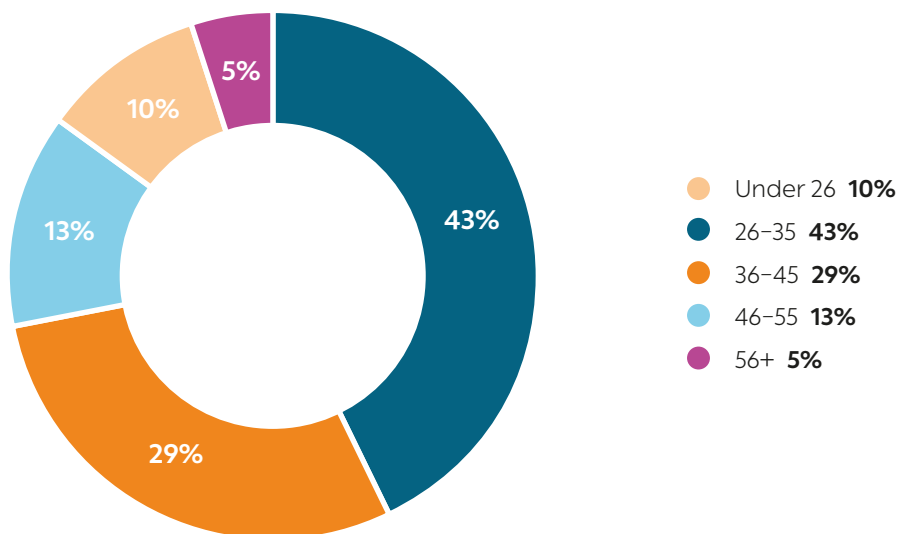
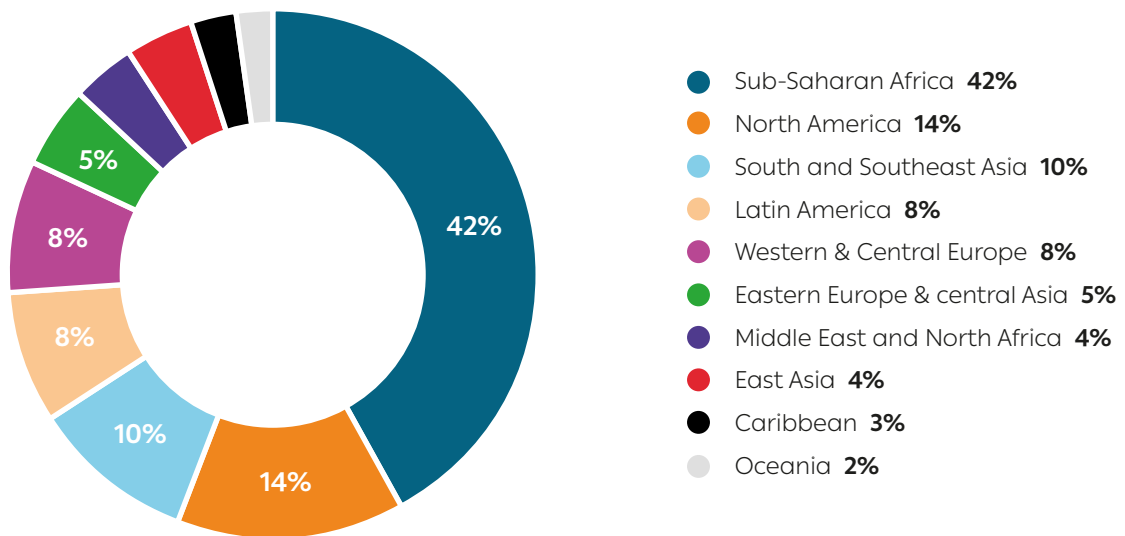


Scholarship awards

AIDS 2022 awarded 600 in-person scholarships and 1,002 virtual scholarships to delegates from 141 countries (891 submission-based scholarship awards, 467 non-submission-based scholarship awards and 244 IAS Educational Fund awards). Scholarship recipients were most commonly from sub-Saharan Africa (42%), North America (14%) and South and Southeast Asia (10%).

Overall, 49% of scholarship recipients were female, 46% were male, 3.5% were non-binary or gender non-conforming, and 1% defined their gender as "other not listed".

Just over half of scholarship recipients (53%) were younger than 36 years.



What was shared?

AIDS 2022 offered participants in the global HIV response the opportunity to engage in a dialogue about the current status of the HIV response and future directions. The conference theme – re-engage and follow the science – was reflected in numerous sessions that provided updates on global progress towards ending the HIV and AIDS pandemic by 2030, as well as cutting-edge research on HIV cure strategies, treatment and prevention.



Global targets, financing and sustainability

Global targets

In its 2022 Global AIDS Update, "In Danger"^[3], released to coincide with AIDS 2022, the Joint United Nations Programme on HIV/AIDS (UNAIDS) highlighted 1.5 million new HIV acquisitions in 2021 – over one million more than the 2025 global targets. The report revealed that, in 2021, an adolescent girl or young woman acquired HIV every two minutes. It also showed that the number of people on HIV treatment increased more slowly in 2021 than it has in over a decade.



"There were 650,000 AIDS-related deaths last year, a life lost every minute despite effective HIV treatment and tools to prevent, detect and treat opportunistic infections. Leaders must not mistake the huge red warning light for a stop sign."

Winnie Byanyima, UNAIDS ^[4]



AIDS 2022 also heard of progress and renewed ambition in the global HIV response. Botswana's national HIV programme reported that its 2021 HIV/AIDS Impact Survey showed that the country has reached the UNAIDS 95-95-95 targets for awareness of HIV status, treatment and viral suppression^[5]. The household survey tested 14,763 participants and found that 95% of people with HIV were aware of their HIV status, 98% of those aware of their HIV status were on antiretroviral treatment, and 98% of those on antiretroviral treatment had a viral load suppressed below 1,000 copies/ml. Although gaps remain in awareness of HIV status among men aged 25-44 and younger women, Botswana has made tremendous progress in the 20 years since it became the first African country to offer free HIV treatment to citizens in 2002 and is well positioned to end its AIDS epidemic by 2030.

A comparison of population-based HIV impact assessments conducted in 2015-16 and 2020-21 in Malawi also shows substantial progress towards achieving the 95-95-95 targets^[6]. Awareness of HIV status among adults increased from 77% to 88%, antiretroviral use among adults aware of their HIV status increased from 91% to 97%, and viral suppression among those on treatment increased from 91% to 97%. Viral suppression was lowest in urban centres and among young people aged 15-24 years.

AIDS 2022 was the venue for the launch of the Global Alliance to End AIDS in Children by 2030, which brings together UN agencies, international partners, donors, civil society and national governments in 12 countries in Africa to close the treatment gap between children and adults^[8]. Globally, only 52% of children living with HIV are on antiretroviral treatment (ART) compared with 76% of adults living with HIV, and the gap in coverage between children and adults is increasing rather than narrowing, UNAIDS reported. As well as seeking to intensify testing and treatment initiation in children and adolescents, the coalition will work to prevent new HIV acquisitions in pregnant and breastfeeding women and adolescents, improve HIV treatment uptake during pregnancy, and address rights, gender equality and the social and structural barriers that hinder access to services.

“The results from this large-scale survey of Botswana’s progress are truly breathtaking. This important milestone demonstrates exactly what evidence-based policies can deliver.”

Sharon Lewin, IAS President-Elect ^[7]



During AIDS 2022, US Global AIDS Coordinator John Nkengasong disclosed that a total of 5.5 million babies have been born HIV-free as a result of the prevention and treatment programmes since 2004 in countries supported by the US President’s Emergency Plan for AIDS Relief (PEPFAR). Two million babies were born HIV-free due to PEPFAR’s emphasis on prevention of vertical transmission and another 3.5 million were born HIV-free as an outcome of prevention of vertical transmission coupled with aggressively expanding prevention and treatment services among target populations, including adolescent girls, young women and men.



Research presented at AIDS 2022 demonstrated the potential high economic returns on investment to achieve the 2021-2030 targets for ending the AIDS pandemic by 2030, as well as the costs of inaction^[9]. The study compared the economic costs and benefits of achieving the targets compared with maintaining services at 2020 levels for 114 low- and middle-income countries between 2021 and 2050. Each additional dollar invested between 2021 and 2030 would generate USD 7.68 in economic returns and the benefits were highly correlated with the total number of adults living with HIV in each country. Failing to reach the targets by 2030 would result in 4.48 million AIDS-related deaths by 2050, representing an average loss of USD 731 in economic returns per capita in low- and middle-income countries.

New research also emphasized the extent to which the sustainability of treatment programmes depends on the affordability of antiretroviral drugs, determined by the availability of generic products and prices negotiated during procurement.

Modelling of the health and economic impact of voluntary licensing of four antiretrovirals by the Medicines Patent Pool (atazanavir, dolutegravir, lopinavir/ritonavir and tenofovir disoproxil fumarate, TDF) showed an average uptake of 1 million patient-years treated, USD 830 million saved, 7,500 deaths averted, 63,000 disability-adjusted life-years averted and 79,000 virological failures averted^[10]. The greatest economic impact was observed for the voluntary licence for dolutegravir formulation for adults, saving USD 280 million by 2020 and a projected USD 2.8 billion by 2030.

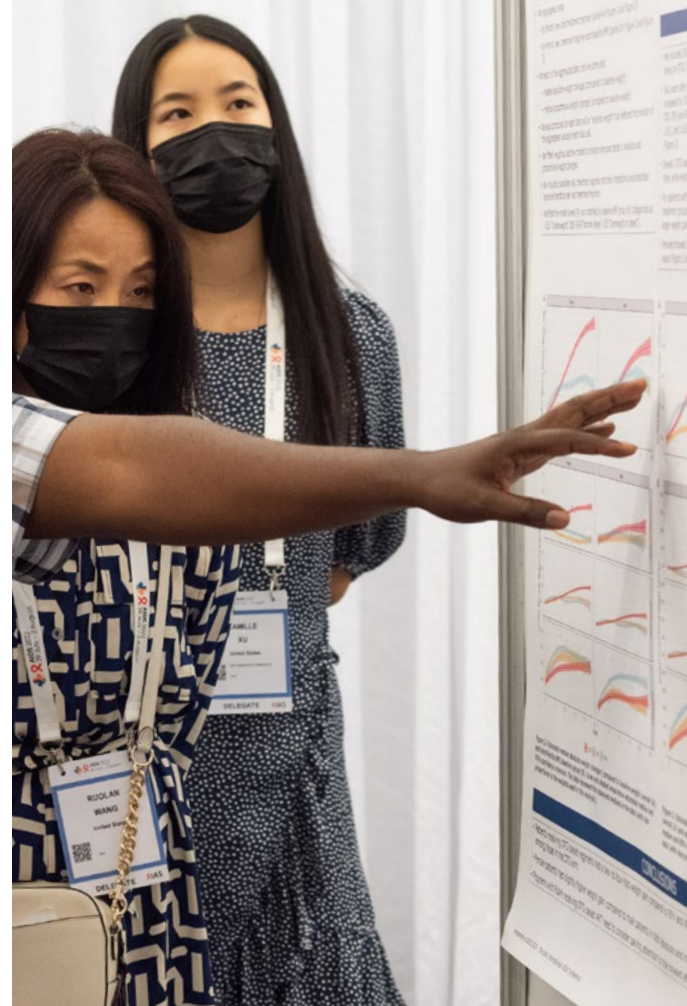
An analysis of average unit prices paid by governments for antiretroviral drugs in 2020 showed substantial variations between regions and products in the cost of generic antiretrovirals, especially comparing first-line and later-line drugs^[11]. The study also found substantial price differences between second-line antiretroviral regimens, emphasizing the need to limit the number of regimens procured, as well as reinforcing adherence to first-line treatment.

COVID-19 and the impact on HIV

Findings from the World Health Organization (WHO) Global Clinical Platform on COVID-19 highlighted the need to improve access to SARS-CoV-2 vaccination, promote vaccination for people with HIV, and ensure access to COVID-19 antiviral medication for people living with HIV to reduce the risk of severe outcomes. WHO reported on the outcomes of 362,941 people hospitalized with COVID-19 since January 2020. About 8% (29,530) were living with HIV^[12]. People with HIV had an elevated risk of death after hospital admission with COVID-19 (aHR 1.51, 95% CI 1.46, 1.56) after adjusting for age, gender, CD4 count, viral load and underlying health conditions. Among people living with HIV, multivariable analysis adjusted for age, gender and co-morbidities showed that people with viral loads above 1,000 copies/ml and CD4 counts below 200 had the highest mortality risk (aHR 1.96, 95% CI 1.81, 2.12).

The COVID-19 pandemic affected the rates and incidence of other infectious diseases, including HIV, tuberculosis and sexually transmitted infections. Surveillance data from Canada compared the vertical transmission rates in the five years before the COVID-19 pandemic with the rates in the first nine months of the pandemic (May-December 2020). It showed that the limited care available to women living with HIV in the first nine months of the pandemic resulted in suboptimal treatment rates and a substantial increase in the vertical transmission rate (3.2% in 2020 versus 1.3% in 2015-19), with women who acquired HIV through injectable substance use being most affected. Therefore, there is a continued need to improve HIV, maternal and addiction services for women using injectable drugs^[13].

Despite these challenges, the HIV response has demonstrated resilience and adaptability in numerous settings, as well as in addressing access gaps through the development of new services. In Malawi, GAIA successfully adapted outreach mobile health clinics to protect staff and users from COVID-19, maintained service levels and improved HIV testing rates^[14]. Compared with the preceding 21-month period, HIV testing increased by 22% between April 2020 and December 2021.



In Ireland, the MPOWER project developed a free online HIV self-test ordering service to bridge the gap created by COVID-19 restrictions and increase HIV testing among men who have sex with men^[15]. Between April and December 2021, 3,572 people received a self-test; 23% had not tested for HIV previously, and 32% reported condomless anal sex in the three months before testing. The service reached people unable to access sexual health clinics due to COVID-19 restrictions, as well as those experiencing other barriers to care.

Similarly, in Nigeria, female sex workers were trained as social media mobilizers to raise awareness of HIV prevention strategies, HIV testing and COVID-19 prevention among female sex workers^[16]. Among 320 women reached through social media who had not been tested for HIV over the past six months, 300 were tested for both HIV and COVID-19; 56 of them (18%) tested positive for HIV. Linking female sex workers to services through social media was successful in delivering higher HIV prevention results.



HIV cure and treatment



HIV cure and remission

Two cases of HIV remission were reported at AIDS 2022.

The first case report is of a 66-year-old man living with HIV who was diagnosed with acute myelogenous leukaemia in 2018. He received an allogeneic hematopoietic stem cell transplant from an unrelated donor with a double CCR5-delta-32 mutation in 2019 after reduced-intensity conditioning chemotherapy^[17]. He continued ART for 25 months after the stem cell transplant and his HIV levels remained undetectable 12 months post-analytic treatment interruption. As of 14 months after stopping treatment and 39 months post-transplantation, there is no evidence of HIV RNA rebound and no detectable HIV DNA.

Declining HIV-1-specific humoral responses and no detectable HIV-specific cellular immune response were observed. The man's CD8-depleted peripheral blood mononuclear cells remained uninfected after an ex vivo challenge with HIV R5 strains. Immunological studies 37 months after the stem cell transplant and 12 months post-analytic treatment interruption showed a robust response to cytomegalovirus stimulation and no

response to HIV CD4 and CD8 T cells. This case may open up the opportunity for older people living with HIV and blood cancer to receive a stem cell transplant and go into remission for both diseases.

The second case concerned a woman in Barcelona who was diagnosed with HIV during acute infection at the age of 59. She joined a trial of immune-mediated treatments in primary HIV infection, initiated antiretroviral treatment and underwent a sequence of treatments with cyclosporin, granulocyte macrophage colony-stimulating factor (GM-CSF), interleukin-2 (IL-2) and pegylated alpha-interferon, followed by analytical treatment interruptions. She maintained an undetectable plasma viral load for 15 years and experienced a progressive decline in HIV DNA and proviral DNA levels. In vitro HIV replication was strongly inhibited in co-cultures with autologous natural killer (NK) cells or CD8+ T-cells. She had higher levels of NKG2C+-memory-like NK-cells and gamma-delta CD8+T-cells than usually seen in untreated people^[18].

Conference symposia highlighted new insights into the HIV reservoir and mechanisms of viral persistence. Recent research reviewed at the conference shows that early treatment limits the genetic diversity and complexity of the HIV reservoir by slowing the rate of reservoir turnover^[19] while viral suppression eventually promotes proviral integration in sites within the genome less prone to transcriptional activity, akin to the integration profile observed in elite HIV controllers^[20]. FIND-Seq, a novel microfluidic single-cell assay that enables the identification of genes involved in the maintenance of HIV latency, will allow researchers to measure the HIV reservoir more accurately, as well as explore gene therapy approaches that can promote the death of HIV-infected cells^[21]. This, along with other new assays reviewed at the conference^[22], will also permit further research into the types of cells that support HIV latency.

Animal and human studies of new latency-reversing agents presented at the conference showed their potential to exploit a variety of pathways to reactivate HIV, as well as improve the characterization of the HIV reservoir^[23,24,25]. Taken together, research on the HIV reservoir and viral latency presented at AIDS 2022 demonstrated strong progress towards an improved understanding of the HIV reservoir and strategies necessary to achieve an HIV cure.



Antiretroviral treatment

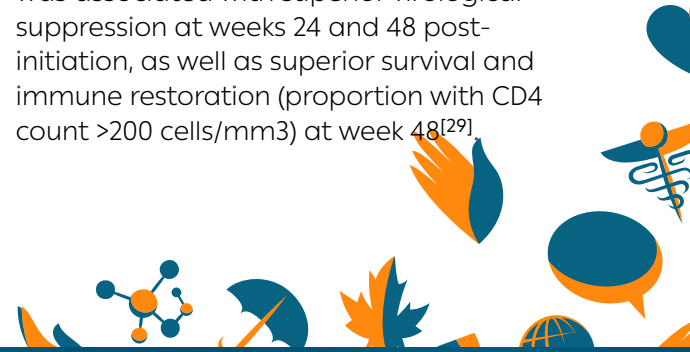
Studies presented at AIDS 2022 added to the growing body of evidence affirming the safety and efficacy of two-drug antiretroviral regimens. The SIMPL'HIV study randomized participants with fully suppressed HIV to either continue three-drug therapy or switch to dolutegravir and emtricitabine. Two-drug therapy proved to be virologically non-inferior to the standard of care at week 144, and no significant difference in adverse events was observed^[26].

In the ANDES study, previously untreated participants were randomized to receive either darunavir/ritonavir plus TDF and lamivudine or darunavir/ritonavir plus lamivudine. At week 48, there was no significant difference in the primary outcome (HIV RNA <50 copies/ml) in those with baseline viral load above or below 100,000 copies/ml^[27].

Research presented at AIDS 2022 also affirmed the efficacy and durability of dolutegravir-containing antiretroviral regimens in various populations.

A six-country study of 11,799 children and adolescents who initiated dolutegravir-containing treatment between 2016 and 2021 (20% previously untreated) reported that six months after initiating dolutegravir, 92% had HIV RNA <1,000 copies/ml. Of 2,074 participants who underwent viral load testing after 24 months of treatment, 91% had a viral load below 1,000 copies/ml^[28].

A multicentre observational study of people with HIV with CD4 counts below 50 cells/mm³ at ART initiation, carried out in Brazil, compared outcomes in 92 people who initiated dolutegravir-containing treatment between 2018 and 2020 with a historical control group of 92 people treated with an efavirenz-containing regimen between 2013 and 2016. A dolutegravir-containing regimen was associated with superior virological suppression at weeks 24 and 48 post-initiation, as well as superior survival and immune restoration (proportion with CD4 count >200 cells/mm³) at week 48^[29].



Two large, randomized comparisons of dolutegravir- and efavirenz-containing regimens reported 192-week results. The NAMSAL study compared TDF, lamivudine and dolutegravir (TLD) to TDF, lamivudine and efavirenz (400mg) in 613 adults in Cameroon. Final study results showed inferior virological suppression (<50 copies/ml) in the efavirenz (400mg) arm compared with the TLD arm in per-protocol analysis at week 192 (66% versus 75%, $p=0.027$)^[30]. Median weight gain was significantly greater in those assigned to TLD and greatest in women.

The ADVANCE study compared TLD to TDF, lamivudine and efavirenz or tenofovir alafenamide (TAF), emtricitabine and dolutegravir in adults in South Africa. Study follow up was extended beyond week 144 to monitor weight gain^[31]. Final 192-week results showed that the TAF-containing regimen was associated with a significantly higher risk of treatment-emergent clinical obesity ($p < 0.001$), so that by week 192, 29% of clients on TAF/FTC/DTG, 21% on TDF/FTC/DTG and 15% on TDF/FTC/EFV had developed clinical obesity. The risk was heightened in women. Among women enrolled in ADVANCE, 43% on TAF/FTC+DTG developed clinical obesity by week 192 versus 27% on TDF/FTC/DTG and 20% taking TDF/FTC/EFV ($p < 0.001$).



“The [weight gain] results of ADVANCE show the need for alternatives to dolutegravir-based regimens in low- and middle-income countries.”

Yazdan Yazdanpanah, ANRS, France

The ALLIANCE study was a randomized comparison of bicitegravir plus TAF and emtricitabine (co-formulated as Biktarvy) with dolutegravir plus TDF and emtricitabine (co-formulated as Truvada or generic equivalents) in 243 adults with HIV and chronic hepatitis B infection. The study was carried out in Thailand, China and Malaysia. The 48-week primary outcome analysis presented at AIDS 2022 showed that HIV suppression below 50 copies/ml did not differ significantly between study arms (95% versus 91%, $p=0.21$), but the bicitegravir-containing regimen proved superior to the dolutegravir-containing regimen in hepatitis B virus (HBV) DNA suppression below 29 IU/ml (63% versus 43%, $p=0.0023$)^[33]. The bicitegravir-containing arm also showed a trend towards superior loss of hepatitis B surface antigen, hepatitis B “e” antigen and alanine transaminase (ALT) normalization.

Prevention: PrEP, STIs and testing

Long-acting PrEP

Results from the open-label phase of the HPTN 084 study of long-acting injectable cabotegravir (CAB-LA) PrEP in cisgender women confirmed that the superiority of cabotegravir over oral tenofovir and emtricitabine was sustained during the 12-month unblinded period^[34]. The HPTN 084 study was halted after an interim review in 2020 showed that CAB-LA PrEP was superior to oral tenofovir and emtricitabine. Participants continued to receive their assigned regimen on an open-label basis pending a protocol amendment to offer open-label CAB-LA PrEP to all. In the 12 months following trial unblinding, HIV incidence was 88% lower in the cabotegravir arm (0.20 per 100 person-years versus 1.85 per 100 person-years, HR 0.12, 95% CI 0.05-0.24). Pregnancy incidence was higher in the unblinded period, highlighting the importance of ongoing evaluations of cabotegravir safety in pregnancy.

In HPTN 083, a randomized comparison of CAB-LA to oral tenofovir and emtricitabine PrEP in men who have sex with men and trans women, an analysis of HIV incidence in trans women showed that CAB-LA PrEP had the same efficacy in trans women participants (n=570) as in the study population as a whole (n=4,566), a 66% risk reduction. Cabotegravir concentrations in trans women taking gender-affirming hormonal therapy (n=30) or not (n=23) were comparable, suggesting no effect of gender-affirming hormonal therapy on cabotegravir pharmacokinetics^[35].

The PrIMA-X observational cohort study reported on infant growth and neurodevelopment after exposure to maternal oral PrEP in 664 mother-infant pairs. The study measured outcomes 24 months after birth. Seventeen percent of mothers took PrEP during pregnancy, for a median of 2.4 months. Infants exposed to PrEP showed no significant difference in mean weight or height or the frequency of stunting or underweight



compared with unexposed infants, nor in neurodevelopmental scores^[36].

At AIDS 2022, data were also presented on equity of access to PrEP. A study using US commercial pharmacy data on PrEP prescriptions calculated the ratio of PrEP prescriptions to HIV diagnoses (the PrEP-to-need ratio) by census region, and by ethnicity within the census region, from 2012 to 2021. The study demonstrated disparities by ethnicity and region. Although the PrEP-to-need ratio increased for all ethnic groups in each of the four US regions between 2012 and 2021, the ratio increased less for Black or Hispanic people indicating increasing inequity in use relative to epidemic impact in the United States^[37].



New WHO recommendations on the use of long-acting injectable cabotegravir PrEP were presented at AIDS 2022^[38], encouraging countries to integrate CAB-LA into their HIV prevention programmes. At AIDS 2022, WHO, Unitaid, UNAIDS and the Global Fund launched a coalition to accelerate global access to long-acting cabotegravir. The Medicines Patent Pool announced a voluntary licence agreement with ViiV Healthcare that will enable access to generic versions of long-acting cabotegravir for HIV prevention in 90 low- and middle-income countries. Financing of long-acting cabotegravir used as PrEP is likely to depend on cost effectiveness in comparison with oral PrEP. Modelling of the cost effectiveness of long-acting cabotegravir in South Africa using current prices for oral TDF/FTC PrEP showed that the price of one long-acting cabotegravir injection needed to be less than the cost of a two-month supply of oral TDF/FTC to achieve cost effectiveness^[39].

"Availability is key as long-acting PrEP will be unlikely to become a true 'choice' without generic products – at a price that is similar to oral PrEP in that context."

Nittaya Phanuphak, Institute of HIV Research and Innovation, Thailand^[40]



Differentiated PrEP delivery

The uptake of PrEP can be improved by client-centred services that simplify, decentralize and demedicalize PrEP delivery. WHO launched a technical brief on simplified and differentiated PrEP delivery at AIDS 2022^[41], and the IAS released a policy brief to support countries in including differentiated PrEP service delivery in their national HIV operational guidance^[42].

Research on client-centred PrEP delivery at AIDS 2022 highlighted several aspects of service differentiation. In Kenya, a randomized study compared the impact on testing, adherence and retention of six-monthly PrEP refills and HIV self-testing with

three-monthly PrEP refills with clinic-based HIV testing in 495 adults^[43]. The study found that six-monthly refills and HIV self-testing were non-inferior to the standard of care.

In Thailand, replacing risk-based counselling with gain-framed counselling, which focuses on health, empowerment and protection, improved PrEP uptake among trans women attending Tangerine Clinic, a trans-specific health clinic providing care for HIV and STIs, as well as gender-affirming hormone therapy^[44]. PrEP uptake increased from 13.5% of clients in the year before the introduction of gain-based counselling to 34.6% in the year after its introduction.

STIs

The Doxy-PEP study randomized men who have sex with men and trans women with a history of gonorrhoea, chlamydia or early syphilis in the previous year to doxycycline (200mg) within 72 hours after condomless sex or no doxycycline with STI testing at enrolment, quarterly and when symptomatic. The study recruited 174 people with HIV and 327 people taking PrEP^[45]. It was halted in May 2022 after an interim review showed that doxycycline post-exposure prophylaxis (PEP) reduced the quarterly incidence of gonorrhoea, chlamydia or early syphilis by 66% in people taking PrEP (risk reduction 0.34, 95% CI 0.24-0.46) and by 62% in people living with HIV (risk reduction 0.38, 95% CI 0.24-0.60).

The quarterly incidence of STIs was approximately 30% in the standard-of-care cohort while the quarterly incidence for the

doxycycline-treated arm was approximately 10%; the incidence of each STI was significantly reduced in both cohorts. No grade 3 or higher adverse events were reported, the discontinuation rate was low (1.5%), and 88% of users reported that the intervention was acceptable or very acceptable. Adherence was high (87% of sex acts were covered by doxycycline by self-report).



"The results of Doxy-PEP are exciting, but we will need to consider reimbursement and cost issues in planning implementation. Whereas antiretrovirals for treatment and prevention are free in our setting, antibiotics are not."

Brenda Crabtree-Ramirez, Universidad Nacional Autónoma de Mexico
(Track B Chair, AIDS 2022) ^[46]

Mpox

The outbreak of the mpox virus (MPXV) outside endemic countries, which began in May 2022, was a major topic of discussion at AIDS 2022. A conference symposium reviewed the latest data on the outbreak, as well as responses in Nigeria, Montreal, London and the United States^[47]. A total of 21,256 laboratory-confirmed cases had been diagnosed in 78 countries by the end of July 2022, resulting in 10 deaths^[48]. Of these, 98 had been reported in men and, where information on sexual orientation has been recorded, 3,434 (98%) cases have been reported in men who have sex with men. Common exposure settings have included sex parties, bars and large gatherings.

The clinical presentation of MPXV infection in the current outbreak differs from previously reported patterns, including anogenital lesions, severe proctitis, urinary retention and severe pain. Approximately 38-40% of cases have been reported in people living with HIV.

In Nigeria, an increase in MPXV cases was reported in 2017, with a resurgence in 2022^[49]. The majority of cases in Nigeria have been reported in men aged 20-40 years, some with atypical clinical presentations and many occurring in regions outside the rainforest belt historically associated with human MPXV cases. The reasons for the increase in cases in Nigeria are unclear and may reflect declining smallpox vaccine-related immunity, increased human contact with animals, and changes in human-to-human transmission, as well as enhanced surveillance and greater awareness of the symptoms of MPXV infection.

Analysis of the first 101 cases of mpox diagnosed at a London hospital revealed a mean incubation period of 8.5 days with a mild prodromal illness most often characterized by fever (60%), weakness (64%) and muscle pain (36%)^[50]. In 64% of clients with symptoms, prodromal illness coincided with the appearance of lesions. In 93%, anogenital lesions were present and mirrored reported sexual practices, suggesting direct inoculation, but a wide array of skin and mucosal presentations was observed; 33% showed lesions at more than three anatomical sites. Inguinal lymphadenopathy was detected frequently

(62%). Proctitis with severe rectal pain was present in 17%, and 25% required antibiotic treatment for cellulitis or abscesses leading to bacterial superinfection. Mpox can mimic other STIs: 35% had a concomitant STI, most commonly *N. gonorrhoea*. Fever, pharyngitis and lesions on the limbs were less common compared with cases reported in outbreaks in Nigeria and the United States, as was hospitalization, but anogenital lesions were more frequent.

Treatment consists of analgesia during the prodromal phase and for anogenital lesions, as well as surgical incision and drainage for abscesses. Antiviral treatment for severe cases requiring hospitalization consists of tecovirimat, cidofovir or brincidofovir, and post-exposure immunization should be considered (within four days of exposure to prevent disease and within four to 14 days to reduce symptoms).



In Montreal, the evolving outbreak led city health authorities to offer immunization to vulnerable conference delegates and tourists. The city's immunization strategy was designed to rapidly control the outbreak to prevent further spread and maximize public health gains in the context of limited vaccine availability^[51].

But conference delegates drew attention to global inequities in vaccine access and treatment for MPXV, and a protest during a conference symposium on mpox highlighted the need for actions by governments and global health bodies to scale up access to MPXV vaccine.



Testing

Expanding access to HIV self-testing is a critical means of enabling more people to know their HIV status and start antiretroviral treatment or prevention interventions, such as PrEP. Self-testing can also play an important role in the delivery of differentiated prevention services, such as multi-month dispensing of oral PrEP^[52]. Immediately preceding the conference, the Clinton Health Access Initiative and test manufacturer Wondfo announced an agreement to make Wondfo's HIV self-test available for USD 1 per test for public sector purchasers in 140 low- and middle-income countries^[53].

Several sessions at AIDS 2022 explored how self-testing and self-sampling for HIV and other conditions are being integrated into community screening. Sessions underlined the need to invest in self-care and self-testing, as well as ensure broad access to self-testing^[54]. In Indonesia, national testing guidelines were revised in 2019 to permit community-based HIV screening or self-testing using oral fluid rapid tests. Implementation began in 2021, and 36,616 screening tests had been performed by May 2022; 83% of these people were tested for HIV for the first time^[55]. The HIV positivity rate was 3% (5% among trans females). Sixty percent with reactive confirmatory tests subsequently initiated ART, but ART initiation rates were low among female sex workers and males who inject drugs.

The impact of investments in testing on knowledge of HIV status can be maximized by targeted strategies, such as index case testing, modelling of testing strategies suggests^[56]. In Zambia, index case testing has been integrated into community-based testing in four provinces. Evaluation of 2020-21 testing activity in Lusaka Province compared the yield of index case testing and "hot spot" or work-based testing, finding higher uptake of testing and a higher positivity rate (31% versus 25%) for index case testing^[57]. The researchers emphasized the importance of skilled psychosocial counsellors for the elicitation of contacts when implementing this testing strategy, as well as the involvement of community members who provide disclosure and treatment adherence support.

Differentiated service delivery and person-centred care

Differentiated service delivery (DSD) models for HIV treatment were the subject of an IAS-organized pre-conference and several conference oral abstract sessions[58.59]. A study of the impact of multi-month dispensing on viral load suppression rates in 18 PEPFAR-supported countries showed that the scale up of multi-month dispensing between October 2018 and September 2021 was moderately positively correlated ($r=0.275$) with improved viral load suppression^[60].

A retrospective study of treatment initiations in 2019 in Zambia found that for clients newly initiated on ART, early enrolment (<6 months after treatment initiation) into DSD models was associated with better retention outcomes than delayed enrolment^[61]. A retrospective study of one-year retention and viral suppression found that enrolment in DSD conferred a minor benefit to retention and equivalent viral suppression over one year of follow up compared with conventional care for clients eligible for but not enrolled in DSD^[62].

Integration of HIV care with other services to provide client-centred care has the potential to address goals for the control of other diseases. In Vietnam, the HepLink initiative integrated testing and linkage to care for hepatitis B and C into HIV services provided by key population-led community organizations and clinics that offered community-based and facility-based testing^[63]. Community-based testing achieved higher yields of positive hepatitis B and C results in key populations and diagnosed high rates of viral hepatitis and HIV co-infection. Further work is needed to improve access to and affordability of HBV/HCV confirmatory testing and treatment in this setting.

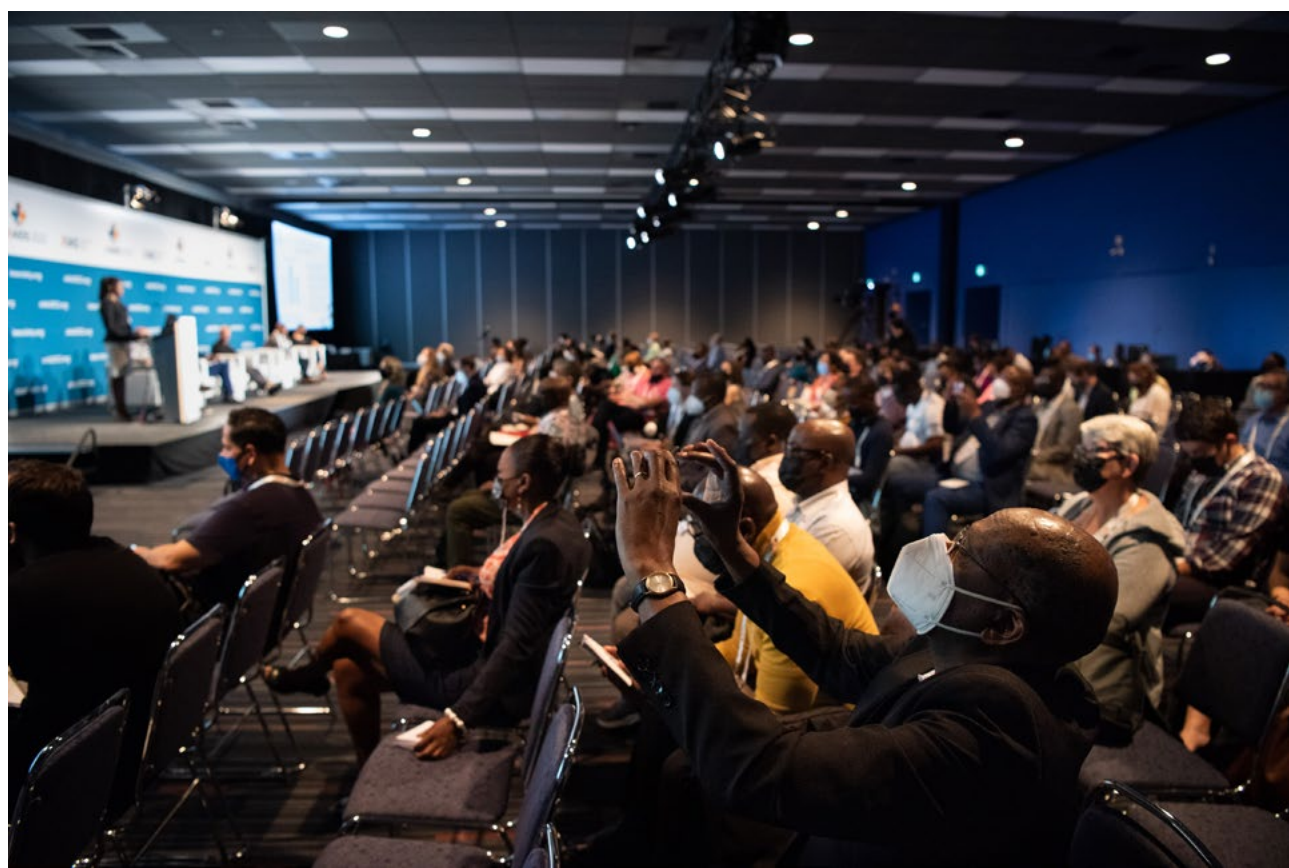
Preliminary results of the INTE-AFRICA study, which compared the outcomes of integrated primary care for HIV, diabetes or hypertension with vertical primary care for each condition in separate clinics, were presented at the conference^[64]. The study, conducted at 32 sites in Tanzania and Uganda, followed 7,034 participants



(49% living with HIV) for 12 months and observed no difference in retention in care or viral suppression, but noted better blood pressure and glucose control in the intervention group. The service cost of managing multi-morbidity in the integrated care model was 35-50% lower than managing multi-morbidity in vertical care. Integrated care was popular with clients and healthcare providers and was associated with reduced HIV-related stigma.

The conference also highlighted the importance of community-led monitoring of services and the need for communities to be involved from the outset to identify needs and gaps, as well as in the generation of solutions^[65]. The Citizen Science community-led monitoring programme in Malawi

investigated the scale up of multi-month dispensing, identifying that duration of ART stock-outs predicted the proportion of people on six-monthly medication dispensing^[66]. The Citizen Science research programme also revealed that the proportion of viral load test results returned within three months declined during the COVID-19 pandemic due to a lack of laboratory capacity and reduced contact between health facilities and clients.



Conflict, equity and meaningful inclusion



Conflict

The war in Ukraine has highlighted the need for holistic health and human rights responses in conflict settings. Russian occupation of eastern Ukraine since 2014 resulted in the displacement of people with HIV and wider dissemination of HIV in Ukraine^[67], and the 2022 invasion of a larger portion of Ukraine has led to enormous population displacement within the country and to neighbouring countries.

The Russian invasion has severely disrupted HIV and harm reduction services in Ukraine and forced a shift to mobile services in some areas. Since the outbreak of the war, the Alliance for Public Health has maintained the continuity of HIV services for over 200,000 Ukrainians by implementing mobile healthcare services and delivering ART, opioid substitution treatment and gender-affirming care in conflict zones^[68]. 100% Life, the largest organization of people living with HIV in Ukraine, highlighted the ability of community organizations to respond rapidly to reconfigure services and assist refugees living with HIV due to a lack of bureaucracy, their embeddedness in the community, and recent experience of service adaptation due to COVID-19^[69].

A conference prime session discussion explored the need for long-acting ART and long-acting PrEP in conflict situations to ensure continuity of treatment and reduce supply chain and dispensing vulnerability, as well as ensure continuity of mental health services for refugees and displaced people^[70]. The European Centre for Disease Prevention and Control has estimated that between 10,000 and 30,000 people living with HIV have been displaced from Ukraine and are currently in need of care in neighbouring countries^[71].

A survey of HIV care providers in 14 countries in eastern and central Europe found that most (86%) could provide antiretrovirals for refugees with HIV from Ukraine on the day

of presentation, but common challenges in providing care included a lack of medical documentation confirming HIV status, shortages of translators and psychological trauma^[72]. The European Centre for Disease Prevention and Control has developed operational guidance for public health officials and care providers on care for people living with HIV displaced from Ukraine^[73].



Equity, meaningful inclusion and resourcing

Addressing socioeconomic inequalities can mitigate HIV-related harms. A longitudinal study of Brazil's conditional cash transfer programme analysed the relationship between conditional cash transfer coverage in 5,507 municipalities between 2004 and 2018 and AIDS incidence, hospitalization and mortality^[74]. High (>70%) conditional cash transfer coverage among those eligible in a municipality was associated with a 5.1% reduction in AIDS incidence, a 14.9% reduction in AIDS-related hospitalizations and a 12% reduction in AIDS-related mortality compared with municipalities with the lowest coverage (<30%).

A second study, comparing AIDS incidence and AIDS-related mortality in the poorest recipients of conditional cash transfers in Brazil between 2007 and 2015^[75], found that after adjusting for sociodemographic variables, receipt of the conditional cash transfer was associated with lower incidence of AIDS, mortality and case-fatality rates when compared with non-beneficiaries. The effect was significantly stronger among individuals living in extreme poverty when compared with those experiencing poverty and was also stronger among females and adolescents.

Inequalities in the HIV response and the global architecture of resourcing were prominent topics of discussion at AIDS 2022. The conference heard calls for the meaningful involvement of Indigenous peoples in the HIV response as a priority population, critically affected by the opioid epidemic, as well as lack of access to health services and harm reduction. Sessions highlighted challenges to achieving 95-95-95 for Indigenous peoples, including the need for community leaders to prioritize HIV and discuss the opioid epidemic^[76]. Speakers emphasized the need for active decolonization strategies in healthcare and the development of culturally appropriate care^[77], the strengthening of community engagement and legislative reform, including the decriminalization of drug use^[78].

Key populations face inequalities in three main domains, the conference heard: access to HIV services (exacerbated by the COVID-19 pandemic); justice and human rights (such as criminalization, stigma and discrimination); and lack of investments in

key populations-led organizations, as well as key populations programming^[79].

Research presented at AIDS 2022 highlighted inequalities and community responses. An analysis of national HIV strategic plans in 16 high-prevalence countries in East and southern Africa reported that only three had set indicators or targets relating to trans people and none had allocated budgets for trans-specific programming^[80]. Trans-specific epidemiological data were lacking in all plans, and there is an urgent need for funding of epidemiological studies that can provide data to support the case for programming, the study investigators concluded.

In Canada, a coalition of organizations was established in 2017 to counteract the problematic use of criminal sexual assault charges in cases of alleged HIV transmission, exposure or nondisclosure. After a parliamentary committee acknowledged that law reform is needed, the coalition developed a consensus statement with four principles to guide reform. Parliamentary consultations began in October 2022^[81].



Global Village and Youth Programme

The AIDS 2022 Global Village provided a diverse and vibrant space where communities demonstrated the application of science and quality leadership and conference delegates and the general public witnessed how science translates into community action and intervention. A blend of speaker sessions and cultural activities, the Global Village was also a hub for watching live performances, broadening networks and touring the marketplace booths and art exhibits.



Global Village discussions included “Making the fourth 90 a priority” – ensuring that 90% of people living with HIV who are virally suppressed have a good health-related quality of life. A discussion on HIV cure gene therapy highlighted the importance of community engagement in cure research. And a skills-building session on HIV vaccine research in Latin America emphasized the need to develop capacity for community engagement among Spanish-speaking advocates.

Global Village sessions also addressed: the sexual and reproductive health needs and rights of adolescent girls and young women with disabilities in South Africa; financing of community systems for pandemic prevention, preparedness and response; and how communities can help speed up the study of HIV drugs in pregnancy.

Twenty-five networking zones allowed groups to meet and discuss in various thematic areas. Among these were the Silver Zone for older people living with HIV, TRANSPORT, the trans and gender-diverse hub, the interfaith networking zone and the Indigenous peoples networking zone.

NGO booths allowed visitors to learn about the work and resources of a broad range of civil society-led organizations, such as the International Community of Women Living with HIV, Y+ Global, Modern ART for South Africa, the Positive Leadership Development Institute and organizations from Argentina, India and Pakistan.

Marketplace booths provided an opportunity for organizations from Ghana, India, Kenya, Nigeria, South Sudan and Uganda, which promote health and economic empowerment for people living with HIV, to sell their products. Organizations supporting economic empowerment for men who have sex with men in Africa, women in prison and people with disabilities were also represented.

Art exhibits included sculptures, installations, photography and paintings about HIV issues by professional and amateur artists.

Twenty-two live performances and more than 20 film screenings covering HIV-related issues, including sexual and reproductive health, HIV and co-infections, stigma and discrimination, and human rights, were available for both in-person and virtual participants.



Youth Programme

The dedicated Youth Programme provided a space for young people to participate in activities that highlight the achievements of young people, facilitate networking opportunities and engage participants in dialogue.

Positive Lounge

Designed to facilitate dialogue and discussion for people living with HIV, the Positive Lounge provides a balance between quiet relaxation and daily activities informed by people living with HIV. Walk-in activities and services, such as massages, yoga, active listening and group discussions (pop-up cafés), were available to participants throughout each day. The lounge included spaces for online conference participation, catering, relaxation and networking and information services.

The Positive Lounge proved popular with delegates: the space had 2,625 visits during AIDS 2022, and an average of 547 people visited the lounge each full day of the conference. This was far above the organizers' projections.

Educational tours

In collaboration with civil society partners and 13 local community-based organizations in Montreal, seven educational tours were held for conference delegates. The goal was to exchange knowledge, best practices, successes, challenges and innovative solutions through dialogue and hands-on activities. Hosts included a mobile harm reduction service, spaces and organizations created and run by and for communities of sex workers, trans people and people who use drugs, and La Maison d'Hérelle, a provider of housing and support services adapted to the needs of people living with HIV.

Volunteers

AIDS 2022 benefitted from strong support from 243 volunteers, who assisted delegates throughout the conference centre. The majority of volunteers (192) were from the host nation, Canada. A total of 58% were under 36 and 29% were under 26.

Volunteers at AIDS 2022 helped coordinate programme activities, greeted delegates, assisted with registration, acted as guides during the conference, staffed various offices and activities, and performed other crucial tasks.



How was it covered?

AIDS 2022 achieved similar coverage to AIDS 2020 and generated 80% more news coverage than AIDS 2018, with 629 news articles reporting on the conference. Top-tier media outlets, including *The New York Times*, *The Globe and Mail*, *Science*, *The Guardian*, *The Washington Post*, *Reuters* and *the Press Association*, published 95 stories on AIDS 2022.



Scientific presentations at the conference provided opportunities for reporters to tell larger stories about HIV science and the challenges posed by the pandemic, especially progress towards an HIV cure.

The topics that attracted the greatest media attention were HIV remission in the City of Hope and Barcelona patients (95 stories), long-acting injectable cabotegravir for HIV prevention (76 stories), the UNAIDS "In Danger" report (65 stories) and visa denials for conference delegates (62 stories). The conference also provided a focus for reporting on the mpox outbreak (35 stories).

HIV-specific media, including AIDSmap.com, TheBody.com and POZ.com, provided extensive coverage of the conference.

AIDS 2022 digital highlights

Across all platforms, digital engagement with AIDS 2022 grew substantially compared with AIDS 2020.



46 million

people reached through 91,479 social media posts



17,933 mentions

of AIDS 2022 across social media, an 84% increase on AIDS 2020: Virtual mentions



71,367 unique visits

to the AIDS 2022 website throughout the conference, a 23% increase on AIDS 2018 website visits



31.6% average open rate

of AIDS 2022 Daily Delegate emails, up from 6.4% compared to AIDS 2020: Virtual



4,816 interactions

with 97 AIDS Conference Instagram posts, twice the interactions received from AIDS 2020: Virtual Instagram posts



900,000+ people reached

through the #AIDS2022Engage social campaign, with over 320 people submitting content using #AIDS2022Engage



Some headlines from AIDS 2022:

“Longtime HIV patient is effectively cured after stem cell transplant”

Washington Post

“Health minister brushes off outrage over visa denials for AIDS conference in Montreal”

The Globe and Mail

“The HIV prevention drug that could save millions of people – if they can afford it”

The Guardian

“Doctors awed at ‘unique’ patient who has been living HIV-free for over 15 years without medication”

El Pais

“Global monkeypox vaccine race sparks fears that poorer nations will lose out”

BBC

“Canada gets called out on HIV leadership”

Devex

“How Russian war battered Ukraine’s health system and HIV services overnight”

Sunday Times

How did it go?

Twenty stakeholders (including the conference co-chairs, track chairs, sponsors, partners, community members and other civil society representatives) provided in-depth feedback on the scientific content of the conference, organization, expected outcomes and recommendations for maximizing impact.



Key informant interviews

Twenty stakeholders (including the conference co-chairs, track chairs, sponsors, partners, community members and other civil society representatives) provided in-depth feedback on the scientific content of the conference, organization, expected outcomes and recommendations for maximizing impact.

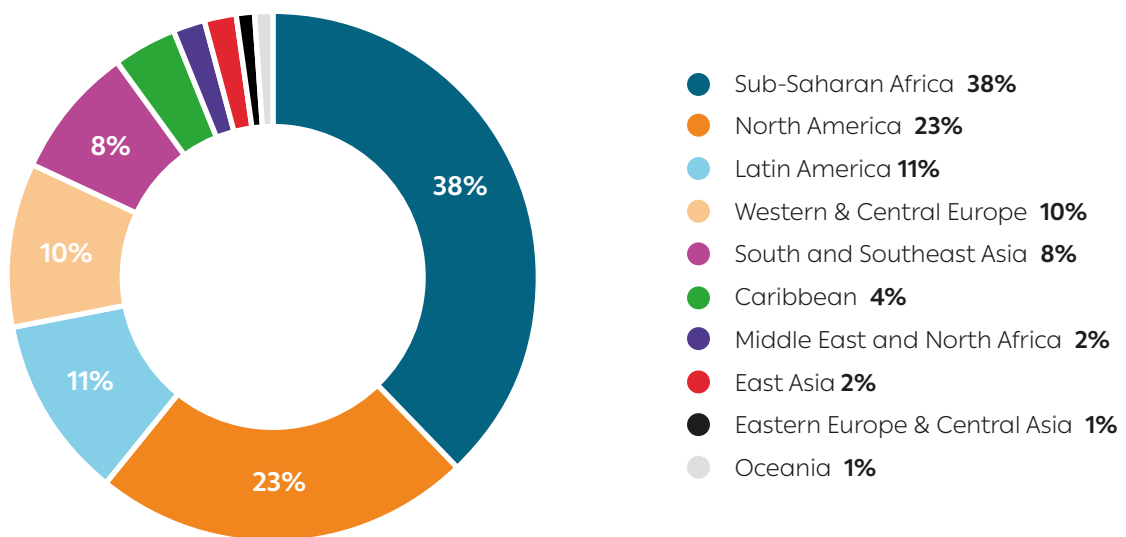
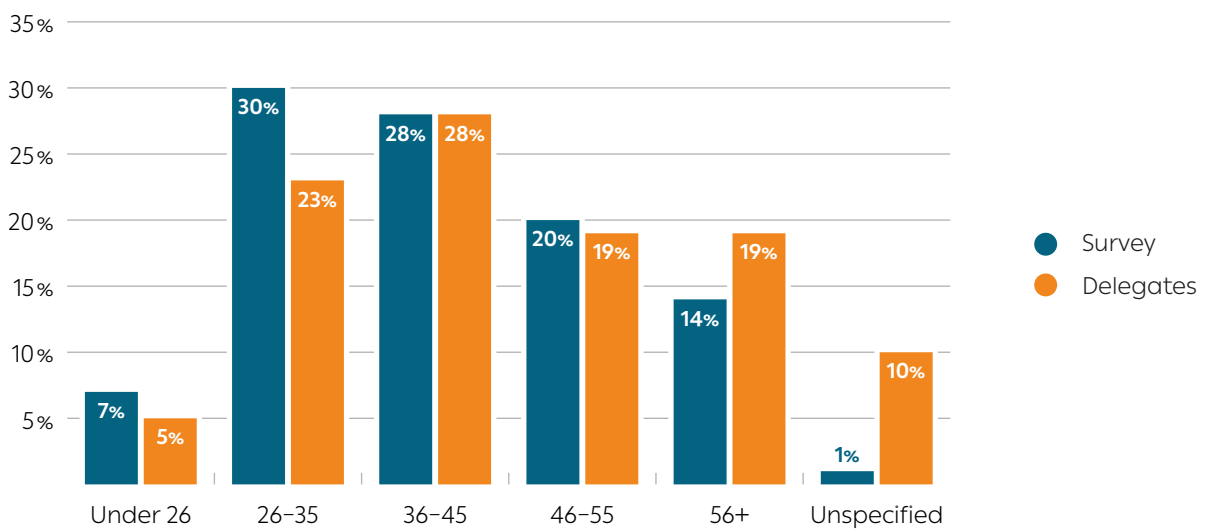
Online delegate survey

Of the 12,803 delegates, 2,087 (16%) responded to an online survey on 19 topics. In-person attendees and virtual attendees were invited to answer separate surveys tailored to their experience of the conference. The in-person delegate survey received 1288 responses; the virtual delegate survey received 799 responses. Survey response data are reported in aggregated form with any substantial divergence (>5%) between in-person and virtual survey responses noted. The quotations presented here are all drawn from the survey and key informant interviews. The quotations used have been minimally edited for clarity and brevity where needed.

Survey respondents were broadly representative of all delegates regarding region, age, gender and organizational affiliation:

- Responses were received from 132 of the 175 countries represented at the conference.
- Of survey respondents who shared their gender, 51% identified as female, 45% identified as male, 2% identified as gender non-conforming or non-binary and 2% declined to answer the question. 3.5% of survey respondents reported that their gender differed from their sex at birth.
- Forty-five percent of respondents were healthcare workers, 16% were researchers, 12% worked in policy or administration, 10% were students and 6% were advocates or activists. Twenty-five percent of all respondents were physicians.
- Forty-five percent of respondents identified as members of at least one key or vulnerable population.
- Forty-four percent of the respondents have been working in their field for more than 10 years, 21% for 6-10 years, and 20% for 2-5 years. Ten percent were newcomers (0-2 years in their field).

- More than half of the survey respondents (57%) said that this was the first time they had attended an IAS International AIDS Conference. Virtual delegate survey respondents were more likely to be first-time attendees than in-person survey respondents (63% vs 53%)
- Young people aged 26-35 were over-represented among survey respondents when compared to conference delegates as a whole (30% vs 23%).



What did people get out of it?

Four themes emerged strongly in delegate survey responses and key informant interviews.



1. The opportunity to reconnect

Survey respondents, key informants and especially researchers greatly valued the opportunity to meet again in person for the first time in three years. Numerous survey respondents commented positively on the opportunity to reconnect face-to-face with colleagues. Opportunities to develop and deepen scientific and professional contacts are a major incentive to attend conferences in person, and just over half (52%) of survey respondents said they identified opportunities for new partnerships relevant and beneficial to their area of work or interest at AIDS 2022.



“It’s important that the conference is back after the COVID pandemic. HIV research and implementation have fallen behind to some extent mainly due to COVID, but people’s needs cannot wait.”

Survey respondent

“It was great to be back in a large in-person conference with a lot of activism and community engagement.”

Survey respondent

“AIDS 2022 was a great opportunity to reconnect with the scientific community and step back from my programme work in order to evaluate the next steps.”

Survey respondent

“Working outside the HIV field in global health, I really valued AIDS 2022 as a crossroads for global health. I got to meet so many people that wouldn’t be brought together elsewhere, and it was the first opportunity to connect like this in several years.”

Key informant

2. “U=U is the game changer”

Survey respondents were more likely to cite one takeaway message from AIDS 2022 than any other: the importance of the U=U (undetectable = untransmittable) message for dispelling stigma, improving mental health and motivating treatment uptake and adherence. A total of 82% of survey respondents said that they had gained new information on U=U at the conference, including 42% who said they learnt a lot on the topic at AIDS 2022. New research on undetectable viral load and HIV transmission did not feature in oral abstract sessions (key scientific studies that shaped the U=U message were presented at IAS 2011^[82], IAS 2017^[83] and AIDS 2018^[84]). However, U=U was the subject of a pre-conference meeting, several satellite events and two symposia at AIDS 2022.

Survey respondents were enthusiastic about the potential for the U=U message to bring about changes in their countries, and U=U was featured frequently in social media messaging from delegates who attended the conference. Key informants highlighted how the conference focus on U=U enabled policy makers to grasp the impact of the U=U message on people living with HIV and learn more about how incorporating the message into public health campaigns has the potential to reduce stigma and encourage engagement with testing and care.

“The level of energy around U=U messaging during the conference was exciting. It felt very empowering to be talking about U=U with others who really feel it is a transformational message for their own work, their lives.”

Key informant, Thailand

“U=U is the game changer. Ministries of Health should include U=U in their HIV treatment guidelines.”

Survey respondent

“‘U=U’ and ‘Can’t Pass It On’ are the game changer messages we need to promote regarding the HIV epidemic.”

Survey respondent

“The main message I am taking home is around the U=U campaign. This message is not used enough in my country and given the work that I do and the reach that I have, I will be able to help spread this message to improve the way [people living with HIV] view themselves and to help them improve their lives.”

Survey respondent



3. Community engagement and leadership

Survey respondents frequently cited community engagement and leadership as important takeaway messages from AIDS 2022. Approximately one in six respondents spontaneously cited community leadership or engagement as a key takeaway message from the conference in the qualitative element of the delegate survey. Survey respondents were more likely to say they had learnt a lot about community engagement and leadership than any other topic. Fifty-five percent said they learnt a lot about the topic and, overall, 91% said they gained new information or insights about community engagement and responses to HIV at AIDS 2022. Respondents identified several aspects of community engagement and leadership that were important to them.

Many survey respondents valued the activist voice during the conference as a vital challenge to “business as usual” in the HIV response. Respondents valued learning about community leadership in research and monitoring processes, and 42% said that attending the conference would improve their ability to engage communities living with or affected by HIV in their work.



“What I will take from 2022 [is] the strength of the community, including protest, which has long been a vital component and partner to scientific progress in the field of HIV. As per the Closing, I echo the call to let communities lead.”

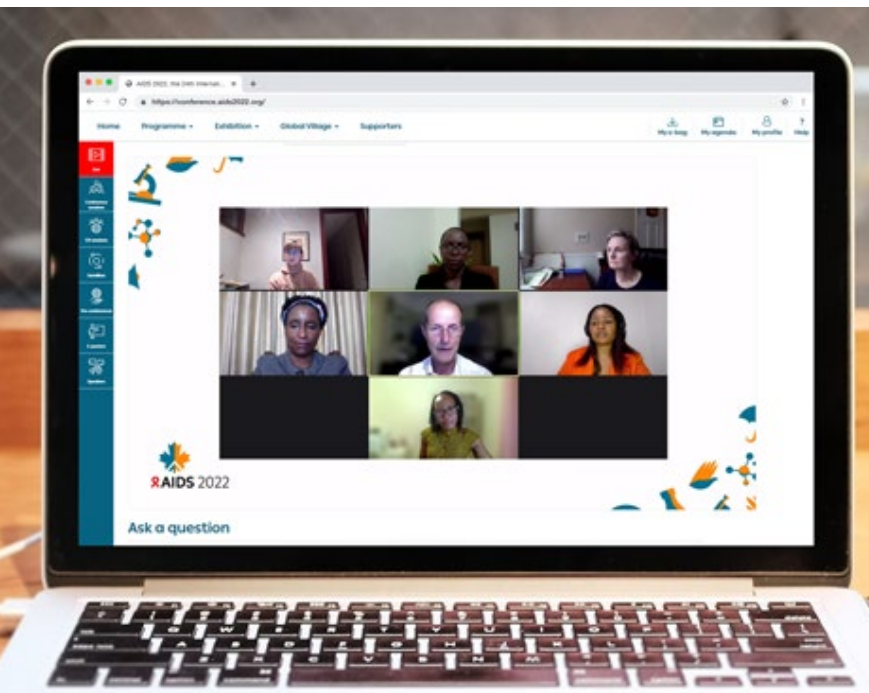
Survey respondent

“Community is vital and needs to be involved at highest levels of decision making and implementation.”

Survey respondent

4. The hybrid conference model is successful and highly acceptable to delegates

AIDS 2022 was the first fully hybrid IAS conference in which virtual speakers and delegates were integrated into most live sessions taking place at the conference venue. AIDS 2022 went further than any equivalent international conference to ensure online participation by delegates and make conference sessions available online. Although 56% of participants attended AIDS 2022 in person, the hybrid model expanded access to the conference and was technically successful.



Overall, 85% of virtual delegates who responded to the survey were satisfied with the online accessibility of the conference. Fewer than 10% of respondents expressed dissatisfaction with any aspect of the online conference platform, and virtual delegates were less likely to express dissatisfaction than in-person survey respondents. However, virtual delegate survey respondents were less likely to express satisfaction with networking opportunities (50%) than in-person respondents (76%), underscoring the need to focus on improving the networking experience for virtual delegates at future conferences. Virtual delegates commented frequently that they would prefer to attend future conferences in person, emphasizing the perceived value of in-person attendance for networking and activism.



Will it make a difference?

Overall, 97% of survey respondents agreed that attending AIDS 2022 would enable them to move evidence to action.



Impact on participants' work

Overall, 97% of survey respondents agreed that attending AIDS 2022 would enable them to move evidence to action, and 46% agreed to a great extent. Similarly, 58% agreed that AIDS 2022 would improve their ability to engage in the HIV response, and 51% expected to adjust their practices to the latest evidence.

Survey respondents anticipated that the conference would support their work in several ways. For example, 62% expected to share information gained at AIDS 2022 with colleagues, peers and networks, whether through presentations or the development of materials, while 36% would build capacity within their organizations, through training or the development or updating of guidelines or procedures.

Just over one in three (34%) anticipated developing new projects or research or scaling up existing projects or programmes as a result of taking part in the conference, and 40% anticipated that they would seek further training or education as a result of attending AIDS 2022.

Impact on policy and programming

Key informants pointed to the value of involving policy makers in the conference and deplored the visa refusals and delays in visa processing that prevented key decision makers from attending the conference. They also remarked on the need to highlight the value of the HIV response for achieving wider societal development goals in health, education and gender equality at a time when sectors are being pitted against each other by shortfalls in donor funding and domestic revenue.

"AIDS 2022 emphasized the danger due to policy shifts and priority setting that we now face with maintaining the significant global advances made towards ending the epidemic."

Survey respondent



But key informants were also encouraged by major policy commitments made during AIDS 2022, notably, the launch of the Global Alliance to End AIDS in Children by 2030 and the voluntary licensing agreement between ViiV Healthcare and the Medicines Patent Pool to enable access to long-acting injectable cabotegravir for HIV prevention in 90 low- and middle-income countries.

“It was wonderful for us to see that the financing entities were very much with us in trying to close the gaps in provision for children.”

Key informant

Key informants also stressed the importance of AIDS 2022 as a platform for presenting evidence and recommendations for the incorporation of long-acting PrEP into national HIV prevention programmes. It will be critical to follow through with progress reports on implementation at IAS conferences in 2023 and 2024, they noted, to hold national governments, donors and implementers to account for access to new prevention products.

A total of 36% of survey respondents expected that participation in AIDS 2022 would strengthen their advocacy or policy work. The same proportion expected that they would use what they learnt at the conference to raise awareness among communities, policy makers and scientific leaders.



Conclusions: Did we achieve our objectives?



Objective 1: Presenting and critically discussing latest evidence, including in relation to research and development towards an HIV vaccine and cure, long-acting treatment and prevention technologies, integrated and differentiated models of care, findings from community-led research, monitoring and innovations in service delivery, and analyses of structural and economic determinants of health

Overall, 92% of survey respondents agreed that the conference had met this objective; 99% agreed that they had learnt about the latest research findings in HIV prevention, support, treatment and care, including progress towards a vaccine and a cure. Fifty-four percent of survey respondents strongly agreed that they had learnt about new research findings, and virtual delegate survey respondents were especially likely to agree strongly; 60% said they agreed “to a great extent” that they had learnt about new research findings compared with 51% of in-person delegates.

Key informants emphasized the importance of long-acting PrEP and long-acting treatment, as well as conference symposia providing overviews of the current state of research on the HIV reservoir and the use of immunotherapies to achieve a functional cure. Survey respondents were most likely to cite research on new prevention options – especially long-acting injectable PrEP – as a key scientific takeaway message, and 47% of survey respondents agreed that they had learnt a lot about PrEP at AIDS 2022. Overall, 85% agreed they had gained new information or insight on the subject of PrEP during the conference.

“HPTN 084 results have steered me to begin engaging [the Ministry of Health] to fast-track the development of PrEP guidelines.”

Survey respondent



Objective 2: Learnings from COVID-19 and HIV: Exploring the adaptation of innovations from the response to COVID-19 across science, policy and practice, including new partnerships between public and private stakeholders, industry and community actors, and scientists, learning from adaptations from the HIV response that accelerated the response to COVID-19 and consolidating good practice for pandemic preparedness

A total of 98% of survey respondents agreed that the conference met this objective. Overall, 42% of survey respondents strongly agreed that they had learnt about synergies between the HIV and COVID-19 responses across science, policy and practice, with virtual delegates more likely to strongly agree than in-person delegates (47% versus 38%).

Eighty-five percent of survey respondents said they obtained "some" or "a lot" of new information and insights about COVID-19 and HIV, including innovations in service delivery. However, key informants noted that COVID-19 had been a less prominent part of the programme at AIDS 2022 than at the conferences in 2020 and 2021. Some remarked that inequities in access to vaccines and treatments for COVID-19 had received little attention at the conference despite evidence that poorer outcomes for people with HIV persist in the third year of the pandemic. Qualitative responses to the delegate survey indicated a generalized desire to look to a future beyond COVID-19.

"The interface of HIV, TB, COVID-19 has taught researchers, communities, policymakers to develop new skills and approaches to emerging pandemics."

Survey respondent

"I was encouraged by the discussions about how we learn from inequities in COVID-19 vaccine access as we go forward with new prevention products – there's much more need for joined-up policy responses across donor governments, agencies, industry."

Key informant, United States



Objective 3: Evidence and implementation gaps: Drawing attention to new or enduring gaps in the HIV response, such as areas where greater investment is needed in research and person-centred service delivery, and those where the needs of communities remain neglected or ignored

Overall, 99% of survey respondents agreed that this objective had been met. Forty-seven percent of delegates strongly agreed that they had learnt about remaining evidence and implementation gaps in the HIV response. Fifty-two percent strongly agreed that their knowledge of gaps in the HIV response relating to the needs of key and vulnerable populations had increased.

Forty-five percent of survey respondents agreed that they had learnt a lot about key populations, including men who have sex with men, people who inject drugs, sex workers and trans people, at AIDS 2022, and 89% agreed that they had acquired new information or insight on the topic of key populations at the conference.

A total of 81% agreed that they had learnt about structural barriers that may impede access to services or increase vulnerability to HIV, including criminalization, legal barriers, and gender-based and sexual-based violence. Awareness of the needs of vulnerable populations, including adolescents, women and girls, and migrants, also increased among survey respondents: 84% said they acquired new information or insight on vulnerable populations, and 44% said they learnt a lot on this topic.

“Human rights violations underlie limited access, perpetuate socioeconomic inequities, and pose risk to financing, and are a key gap that must be addressed to achieve epidemic control. We do have tools to work on these issues within the health sector. It’s time we use them and do something.”

Survey respondent

“It is essential to make modern services accessible to all populations, as well as to eliminate unscientific ideas that generate deep gaps full of stigma and discrimination.”

Survey respondent



Objective 4: Moving evidence to implementation: Supporting evidence-informed action by all stakeholders across geographic and sectoral boundaries through further increased access to latest science, policy and community discussions in a combined in-person and virtual format

Overall, 97% of survey respondents agreed that this objective had been met. They confirmed that increased access to the latest science, policy and community discussions would enable them to move evidence to action, including 46% who agreed that access to the conference would enable them to move evidence to action to a great extent.

To ensure access to the conference for all stakeholders, the conference organizers implemented various mechanisms. As well as granting over 1,600 scholarships to attend the conference, the organizers offered discounts on registration fees for young people and all delegates from low- and middle-income countries. AIDS 2022 was accessible online for anyone unable to attend in person, and all conference content was made available to the public two months after the conference. The IAS also makes the latest science from AIDS 2022 and its other conferences available through up to six regional meetings for IAS Members each year.

Achievement of this objective can also be measured by assessing performance against targets for the involvement of key populations, policy makers, civil society and programme implementers. The conference met its target that at least half of delegates should be female (51%) and exceeded its target that 20% of delegates should be programme implementers (35%), but fell slightly short on other measures. Thirty-seven percent of delegates identified as members of key or vulnerable populations against a target of 40%, and 32% of delegates were affiliated to civil society against a target of 35%. Twelve percent of delegates were government officials or policymakers against a target of 15%.



"Sharing experiences across communities, different cultures and countries is crucial for strengthening knowledge, improving practices and consolidating gains."

Survey respondent

"AIDS 2022 provides a unique space for the HIV and NCD communities and partners to come together to discuss how to join in efforts and movements and identify catalytic and transformative solutions for achieving the best HIV and health outcomes for affected and vulnerable communities across the globe."

Survey respondent

"We have the demand, evidence and the examples of how to deliver better mental health and well-being for all. Now we need to action it."

Survey respondent



Objective 5: Supporting the next generation of HIV scientists, clinicians and other service providers, and advocates through tailored networking, mentorship and leadership opportunities

In total, 74% of survey respondents agreed that the conference met this objective. Just over half (52%) of delegates identified opportunities for new partnerships that were relevant and beneficial to their area of work or interest, and this did not differ between younger survey respondents (under 36) and older respondents. Among virtual delegates, 84% agreed that virtual networking tools enabled them to network with other delegates. Ninety-eight percent of in-person delegates agreed that the conference enabled them to network with other delegates, and almost half (48%) strongly agreed that the conference had allowed them to network with other delegates. Overall, 92% of survey respondents – in person and virtual – agreed that the conference allowed them to network with other delegates.

Achievement of this objective can also be measured by looking at scholarship support. AIDS 2022 provided 600 in-person and 1,002 virtual scholarships. Over half of these (57% of in-person and 51% of virtual scholarships) were granted to scholars aged 35 years and under, exceeding the conference target of 45% of all scholarships allocated to participants under 36 years.

"I felt really inspired by the encouragement, advice, and pointers shared by a few speakers at Education Fund event for scholarship recipients. Specifically, their advice encouraged me to continue pursuing meaningful work experiences in the field of health, irrespective of any potential challenges."

Survey respondent

"The [Young Leaders'] meet-and-greet with professionals was really useful for asking them their perspective on what skills to invest in and how they got started on their journey."

Key informant interview ^[85]

"The youth altogether can be a game changer and such networking and energetic gatherings help us to identify leaders, new ideas and a courage to implement more and more! I have learnt so much, shared so much that I came home with a full mind of working with enthusiasm!"

Survey respondent

How can we do better next time?



Visas:

Difficulties caused by visa refusals and delays in visa processing by the host country, Canada, ahead of AIDS 2022 provoked more critical comments in delegate survey responses than any other issue. Survey respondents were very critical of the Canadian government. Some called for future IAS conferences to be held in countries without visa restrictions on delegates from countries with a high burden of HIV.

But key informants drawn from both clinical science and civil society noted that the choice of conference venue depends on several factors, notably the safety of conference delegates who are from key and marginalized populations, as well as the freedom of conference organizers to develop a conference programme without restrictions on subjects and speakers. They noted that a potential venue for AIDS 2022 was rejected on these grounds and that the organizers will continue to consider these factors in the future. The IAS should strive for greater transparency regarding criteria for conference venue selection, as well as communicating a timetable for regional rotation of conferences, key informants agreed.



Broaden access through country or regional hubs:

Conference venue capacity and finance for scholarships cannot meet the demand from all who would like to take part in IAS conferences. The hybrid conference model proved highly acceptable in 2022 and, on several measures, virtual delegates were more likely to express strong satisfaction with aspects of their conference experience. Country hub meetings in five countries, organized by conference partner Y+, enabled conference access to young people, with the live discussion of lessons for local implementation. The IAS should consider how the conference hub model can be developed to enable broader access to the conference in all settings, key informants advised.

Raise the profile of TB and HIV:

The delegate survey responses and key informant interviews strongly emphasized a desire for a greater focus on TB and HIV in future conferences. Key informants expressed concern about a loss of focus on TB in the HIV response in recent years (due in part to the COVID-19 pandemic), even though TB remains the most common cause of death in people with HIV^[86]. Key informants drew attention to the dynamic developments in the shortening of curative and preventive treatment regimens and the emergence of all-oral regimens for drug-resistant TB. They urged greater attention to the programmatic implications of new developments in TB treatment and prevention, as well as the need for differentiated delivery of TB care.



Children and adolescents living with HIV:

Key informants stressed the need for greater attention to interventions and implementation research relevant to children and adolescents living with HIV in future conferences, as well as a renewed focus on closing gaps in the prevention of vertical transmission. Conference sessions should integrate paediatric and adolescent HIV issues wherever relevant and promote the meaningful participation of young people and adolescents living with HIV.



The needs of people with disabilities:

The delegate survey highlighted concerns about the lack of conference sessions that addressed the intersection between HIV and disability, as well as concerns that the conference venue proved challenging for people with disabilities. Delegates asked conference organizers to bear in mind the range of disabilities experienced by delegates and the increasing prevalence of age-related disabilities in people living with HIV when they make decisions about conference venues and the organization of space.

The conference focus on science:

Some key informants and delegate survey respondents expressed concerns regarding the strength of the scientific content at AIDS 2022. Some attributed this to the COVID-19 pandemic and the slowing of HIV drug development. But others asked whether the International AIDS Conference is losing its status as a primary platform for the presentation of clinical research. They urged future conference chairs and track chairs to reach out to study investigators as early as possible to encourage abstract submissions. Key informants and survey respondents also commented on the extent of duplication in topics between pre-conferences, satellite meetings and conference sessions, and urged organizers of all conference events to work together to minimize duplication and strengthen the core programme.



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