8th IAS Conference
on HIV Pathogenesis,
Treatment and Prevention

CONFERENCE SUMMARY REPORT

IAS 2015
vancouver, canada
8th IAS Conference on HIV Pathogenesis,
Treatment & Prevention 19 - 22 July 2015

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IAS 2015 - 8th IAS Conference on HIV Pathogenesis. Treatment and Prevention.

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INTRODUCTION

Vancouver, Canada hosted the 8th IAS Conference on HIV Pathogenesis, Treatment and Prevention (IAS 2015) from 18 - 22 July 2015. IAS 2015 marked the first time the IAS returned to Vancouver since the historic HIV treatment breakthroughs announced in Vancouver at the International AIDS Conference in 1996. IAS 2015 marked nearly 20 years of Vancouver's history of leadership in HIV and AIDS, pioneering groundbreaking HIV treatment research and implementation strategies, including early advocacy of treatment as prevention interventions.

The conference was attended by almost 6,000 HIV professionals from 117 countries to discuss exciting findings as well as challenges in latest advancement in HIV research. A significant focus was the compelling evidence that initiating antiretroviral therapy (ART) as early as possible results in improved health outcomes for people living with HIV (PLHIV). The conference also focused on the feasibility of implementing pre-exposure prophylaxis (PrEP) among key populations and important developments in HIV cure research. With the growing burden of viral hepatitis disease among people living with HIV, the conference also highlights significant advances and challenges in addressing HIV and hepatitis co-infection.

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Around the conference

This report highlights research presented in the four conference tracks, beginning with the ground-breaking study on HIV cure in basic sciences (Track A), clinical sciences (Track B), prevention science (Track C) and operation and implementation research (Track D). In addition to summarizing the highlights of the IAS 2015 programme, the report analyses their implications for future research, policy and programming.

IAS 2015 AT A GLANCE :

- 5,479 participants from 113 countries
- 2,786 abstracts submitted; 1,285 abstracts accepted
- 12 plenary keynotes
- 78 sessions: 30 non-abstract driven sessions, 12 workshops, 36 abstract-driven sessions
- 7 award winners including 4 scientific abstract prizes
- 27 satellite meetings
- 250 volunteers

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Rapporteur summary

Vancouver Consensus Statement

After many years of disappointing clinical trial results, the 1996 International AIDS Conference in Vancouver (AIDS 1996) was host to the HIV treatment revolution and the advent of combination antiretroviral therapy (ART). In keeping with that landmark conference, conference delegates, clinicians, scientists, advocates, community workers and many other participants gathered again in Vancouver for IAS 2015 to endorse the Vancouver Consensus Statement. The Vancouver Statement calls on governments and funders worldwide to implement the many scientific discoveries and advances that followed in the wake of AIDS 1996 in order to reach the 90-90-90 targets for testing, treatment and virological suppression by 2020 established by UNAIDS [see Track D Sidebar]. The statement recognizes that IAS 2015 was, like the conference in 1996, a “transformative moment” in the drive to end the AIDS pandemic: Science has delivered solutions. The question for the world is: When will we put it into practice?

Read the full statement and add your name or the name of your organization to the list of signatories at: http://vancouverconsensus.org.

EXECUTIVE SUMMARY

The major focus for IAS 2015 was the compelling evidence for early treatment. In one case, an 18 year old who was perinatally infected remains in virological remission more than twelve years after discontinuing ART. The individual was put on an ART regimen immediately after birth and remained on ART until she was six years old. After 12 years off therapy, her HIV-RNA remains below 4 copies/ml. This case was presented as the first evidence that long-term HIV remission is possible and that early diagnosis and treatment with ART is the key to reducing the size of viral reservoir and increasing the likelihood of remission when ART is stopped.

The Strategic Timing of Antiretroviral Treatment (START) cohort is another significant study highlighting the important benefits of early treatment. The study recruited 4,685 participants from 215 sites in 35 countries, with two well-balanced treatment arms. Participants who received immediate ART showed a 57% reduction in AIDS and non-AIDS events, compared to those in the deferred ART arm. START demonstrated the clinical advantage of early ART initiation at higher CD4 counts.

Pre-exposure prophylaxis (PrEP) implementation is feasible based on the recent studies among key populations but will need approaches tailored to local needs. The ADAPT study involved more than 500 participants from three study sites in Capet Town, New York and Bangkok demonstrated that daily PrEP dosing was associated with higher complete coverage of sexual risk exposures compared to time-based or event-based dosing. In all sites, pre-sex doses were more likely to be missed than post-sex doses and importantly, there appeared to be no increase in sexual risks related to being on PrEP.

Financial incentives appear to optimize retention and uptake of services which may serve as a backbone for the delivery of efficacious interventions including PrEP and ART for those living with HIV. However, it is only effective if thses are combined with other treatment and care modalities and are targeted to those most in need.

With some data indicating as many as 69% of people living with HIV have evidence of tuberculosis (TB) infection at the time of death, there is a need to identify opportunities to strengthen service delivery in the

TB/HIV cascade of care. Several identified gaps include low TB symptom screening among HIV patients and poor reporting. There were also large variations reported in the proportion of HIV positive TB patients on ART (between 37% and 100%). For hepatitis C (HCV)/HIV co-infections, the outlook appeared more promising. A number of studies, including the phase 3 C-EDGE study, on hard-to-treat patients living with HIV and HCV co-infections show significant advances.

Access to ART and treatment for PLHIV co-infected with HCV or TB is partivualrly critical in Eastern Europe and Central Asia. Epidemiological data from this region continues to raise concerns about the growing HIV epidemic, particularly in Russia and the Ukraine, which continue to report increases in both HIV incidence and prevalence. Access to evidence-based interventions is desperately needed to halt the spread of the epidemic in the region and facilitate access to HIV testing, treatment and care among key populations.

The new data reported at IAS 2015 has already informed updated World Health Organization *Consolidated Guidelines on the Use of Antiretroviral Drugs for Treating and Preventing HIV Infection*, released in November 2015. IAS 2015 organizers are optimistic that the new data will also inspire governments, funders and national HIV programme managers to accelerate the scale up HIV interventions to save millions more lives.

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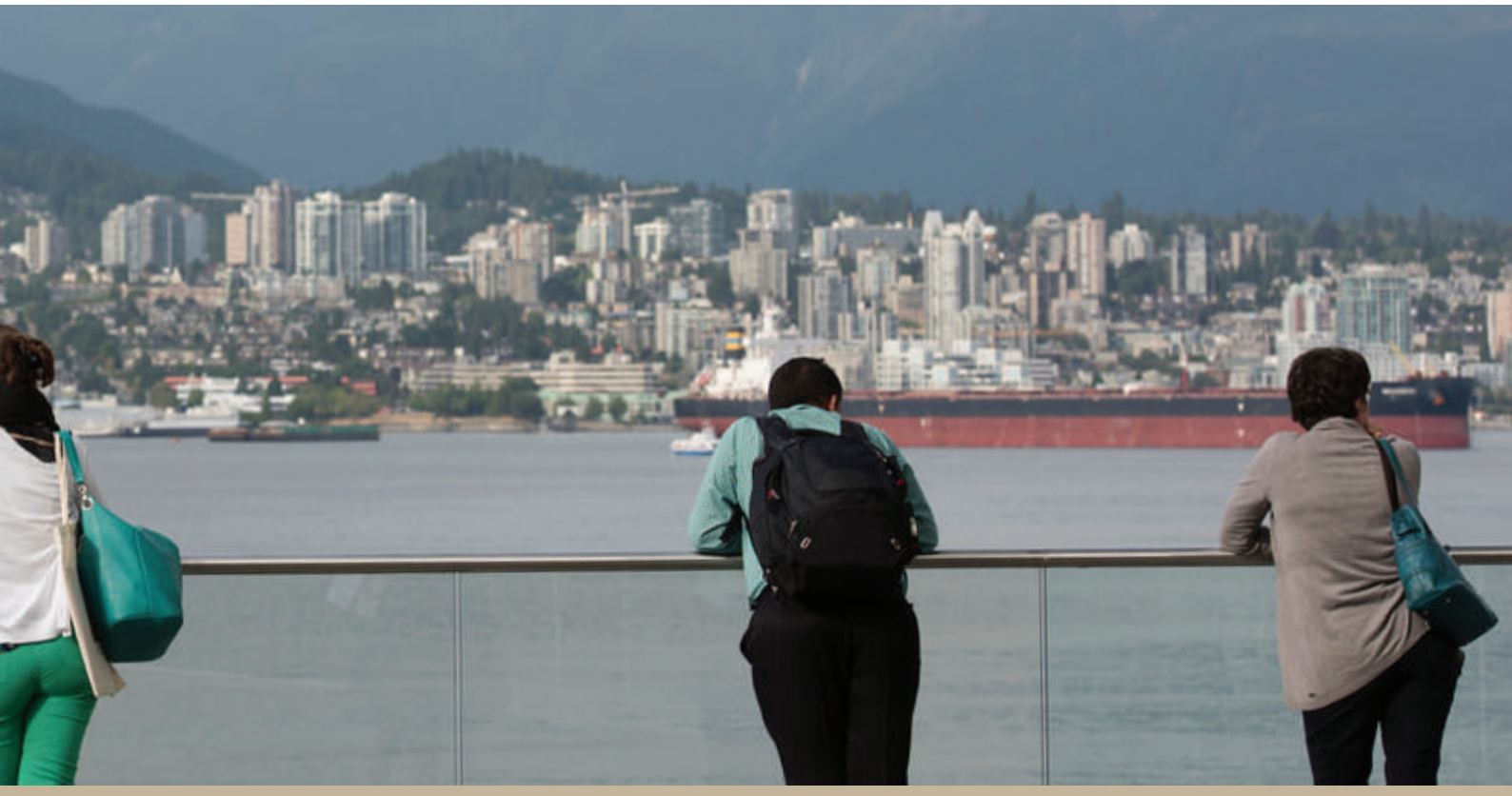
Owen Ryan, IAS Executive Director and Chair of the Rapporteur Session



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Around the conference

TRACK A
BASIC SCIENCES

THE CASE FOR EARLY TREATMENT

The tone for the basic sciences track was set by a thoughtful summary of the state of HIV cure research, presented by Nicolas Chomont from the Department of Microbiology, Infectious Diseases and Immunology, University of Montreal.[1] HIV cure research aims to develop therapeutics that can either completely eliminate HIV from patients, or bring about long-term control of viremia without ART. The latter, also known as 'post treatment control', is where a subset of individuals who are placed on ART early after infection go on to control viremia even after therapy is stopped. The importance of starting ART as early as possible was a major focus across all tracks at IAS 2015.

A report by Asier Sáez-Cirión of the Pasteur Institute of the unprecedented case of a child who remains in HIV remission (with undetectable viral load) more than twelve years after discontinuing ART generated much interest and excitement.[2] The child, who was infected perinatally, had high levels of HIV replication at birth. An important aspect of this study is that she was treated within days of birth, with a four-drug ART regimen, and her infection was well controlled until approximately age six, when her family took her off therapy. Her HIV-RNA has remained <50 copies/ml through 18 years of age except for one increase (515 copies/ml) and her CD4+ count has remained stable throughout. After 12 years off therapy, this individual's HIV-RNA remains below 4 copies/ml. This case was presented as the first evidence that long-term HIV remission is possible in a perinatally-infected child who received early treatment.

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Chris Beyrer, IAS President and International Chair

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Official IAS press conference: Towards An HIV Cure. From left to right: Sharon Lewin, Lynda Dee, Christopher Peterson, Asier Saez-cirion, Steven Deeks, John Mascola and Françoise Barre-Sinoussi

One of the clinicians also involved in this case, Katherine Luzuriaga, summarized the latest updates in paediatric HIV research.[3] Very early ART in new paediatric infections can alter HIV persistence in children, with markers for low-level proviral reservoirs including plasma RNA below the detection limits of single copy assays, a lack of detectable 2-LTR circles, an absence of T-cell activation and lack of HIV-specific antibodies and CD4/CD8 T-cell responses. Early diagnosis and early introduction of ART is key to reducing the size of the viral reservoir. As a result, children with persistent suppression of HIV on ART are excellent candidates for additional strategies aimed at remission. However the question of the best predictors of HIV remission remains an open question and efforts to understand the mechanisms underlying this control are underway.

In another study, Fletcher and colleagues studied the antibody response to HIV infection in a cohort of subjects receiving very early ART (in the first days of infection).[4] At week 24 following ART initiation they observed that a subset of individuals treated very early in infection do not develop antibodies against HIV (do not seroconvert). Such individuals could represent good candidates for HIV curative strategies as very early ART blunted the natural development of their HIV infection, and therefore these people have an extremely low frequency of HIV infected cells. Although it is critical to develop curative therapeutics that can benefit all PLWHA, it may make sense to perform proof of concept studies in these early-treated individuals, where it may be less difficult to eradicate the reservoir.

UNDETECTABLE HIV UNDER ART: RESERVOIRS, LATENCY AND PERSISTENCE

Antiretroviral therapy stops HIV replication and thus evolution, but does not eradicate HIV. The diversification of virus that occurs before therapy and persistence within infected CD4+ T-cells has ongoing implications. This is a major obstacle to eradication, and the assessment of strategies to reduce HIV reservoirs is one of the major challenges.

Presentations in the sessions 'Persistently Seeking Virus' and 'From Pathogenesis to Persistence' (posters) explored some of the tools to measure markers of latency in order to improve our understanding of fluctuations in the reservoir and assess the strategies. These included the development of a murine viral outgrowth assay of potentially greater sensitivity that in vitro outgrowth assays, a next-generation assay to measure HIV persistence under treatment using an innovative sequencing approach, and the use of a novel luciferase immunoprecipitation system (LIPS) to show that Anti-gp120, -gp41, and –RT were correlated with the size of the reservoir in treated individuals.[5,6,7] A novel screening platform was also developed to identify molecules that induce a viral transcription factor from latently infected cells in order to reverse HIV latency. Capoferri and colleagues identified resting CD4+ T-cells of the peripheral blood as the source of viral rebound during an interruption in treatment in a bone marrow transplant patient.[8]

A study by Chang and colleagues found that fluctuations in CA-US HIV RNA in treated individuals was a consequence of differences in the time of day tested.[9] This has implications for analysing data in clinical trials assessing latency reversing agents. Other tools available to measure the viral reservoir include new ways to measure induction of RNA, replication -competent virus, new markers of infection and visualization of viral anatomical locations. Each assay will address different questions and further our understanding of the latent reservoir. The pros and cons of ways to measure the reservoir were discussed, comparing the gold-standard QVOA to newer inducible RNA assays including Doug Richman's latest mQVOA as well as the TILDA assay which both consider cell-associated multiply-spliced HIV RNA.[10] The newer assays highlight that cells can transcribe US and MS HIV RNA in the absence of virus production.

In the symposium 'Achieving Remission: reconciling disparate strategies', Bob Siliciano reviewed the physiology of latent infection, suggesting that combinations of latency reversing agents will be needed.[11] New findings at Johns Hopkins University suggested that latency is best founded, not when cells are infected during full activation or when they are fully resting, but through infection of memory precursor cells.

A critical issue in harnessing T cells to contribute to HIV eradication strategies is that in many individuals, virus has mutated to escape the responses that are present. Angela Ciuffi posed a challenge to researchers to consider the role of heterogeneity amongst infected cells in HIV persistence, and to think of HIV 'latencies' as opposed to latency due to the multitude of mechanisms involved.[12] A relatively large arsenal of assays is currently available to quantify the distinct forms of viral persistence. Increased feasibility and sensitivity of these assays, or even alternative markers such as the level of circulating antibodies recognizing HIV, may help

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researchers and clinicians to better identify the best candidates for safe treatment interruption. Timothy Schacker and Lars Ostergaard reported several of these treatment interruption clinical trials.[13,14] Even if all the participants eventually experience viral relapses, it is of primary importance to identify markers that are associated with prolonged remission.

VACCINE AND CURE

Robert Eisinger chaired the 'Keystone Vaccine and Cure Special Summary Session' where Sharon Lewin and Nelson Michael reported on two important Keystone symposia that occurred earlier this year in Boston.

There were four major themes: i) measuring replication competent virus, the "virus that matters" in vivo; ii) HIV persistence in tissue and the importance of T follicular helper cells; iii) Non T cell reservoirs in the brain and elsewhere; and iv) the impact of ART and other interventions and gene therapy.[15]

The findings focused on broadly neutralizing antibodies and correlates of vaccine protection. Both empirical or inductive approaches such as RV144 and theoretical or deductive approaches that could generate broadly neutralizing antibodies are important. Host genetics, systems biology (even in infants), systems serology, and computational immunology including a combinatorial polyfunctionality analysis of single-cell subsets (COMPASS) are showing great promise to identify prognostic markers in and to interpret HIV vaccine development.[16]

In a different session, Keith Jerome spoke about the efforts to eradicate or control HIV infection via cellular or gene therapy, including initial efforts to inhibit HIV using the expression of a mutated HIV Rev protein, and the well-known impact of bone marrow transplantation to eradicate HIV. This has proven ineffective in all but one patient: Timothy Ray Brown, also known as the Berlin patient, who was in attendance at the session.[17] Gene therapy approaches are attractive but face daunting technical obstacles.

IMPROVING HEALTH: THERAPEUTIC STRATEGIES

Although antiretroviral therapy dramatically improves the lives of people living with HIV/AIDS, additional therapeutic strategies are being sought to close the gap in restoring health and improving quality of life.

One such strategy is through the understanding of the human-virus genetic co-evolution. HIV is in a genetic arms race with us, its human hosts. Our cells contain 'restriction factors' with the ability to block viruses, including HIV, from replicating. HIV has evolved countermeasures capable of evading these defences, and has an uncanny ability to mutate to escape from these natural pressures as well as artificial pressures, such as antiretroviral drugs.

There is, therefore, a genetic ancestry background of disease progression in terms of CD4+ T-cell counts and HIV viral loads. Host gene evolution occurs over very long time scales. Two talks proposed therapeutic short-cuts to this process, to tip the scales against the virus. Kamel Khalili and colleagues have made strides towards introducing a type of artificial restriction factor into human cells, comprising a CRISPR/Cas9 gene editing system, capable of removing HIV DNA from the human genome.[18] In a different gene therapy approach, Christopher Peterson presented advances in testing the therapeutic deletion of CCR5 – a gene required for HIV replication – in the SIV rhesus macaque model, achieving up to 60% gene disruption in CD34+ cells ex vivo, translating to approximately 5% steady state bulk disruption *in vivo*.[19]

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Conference Delegate

Other strategies looked at the critical role of the microbiota, the microorganisms that populate the human gut, on human health. It has been found that changes in these populations and the translocation of gut microbial products into the blood have been linked to the pathogenesis of HIV. Therapeutic strategies aimed at altering the make-up of the microorganisms in the gut have the potential to improve the health of people living with HIV/AIDS.[20,21] This includes the potential to reverse immunological defects that persist even in antiretroviral-treated patients, an outcome that has proven elusive with other approaches.

The reduction of the risk for severe adverse events associated with ART is also particularly important. Persistent inflammation in virally suppressed individuals increases their risk for severe adverse clinical events and co-morbidity. Several studies clearly identified the association between systemic immune activation and co-infections with other persistent viral infections such as Hepatitis C virus (HCV), herpes viruses, partial replication control by ARTs, gastrointestinal tract damages and increased fibrosis of immune tissues.[22,23] There is a need to identify biomarkers to better characterise the immunological mechanisms of persistent inflammation, and analytic tools to better manage inflammation-related adverse events in HIV-infected individuals.

THE VIRUS AND THE IMMUNE SYSTEMS

The sequence diversity of HIV, and its ability to mutate to escape otherwise effective immune responses has plagued vaccine development. The session “Restricting the Virus Inside Out” examined strategies to subvert or block the deleterious activities of HIV proteins in order to restore the activities of immune cells, including host encoded proteins involved in restricting HIV replication, a further characterization of their mechanism of action, and strategies to rescue immune cells from the deleterious effects of the virus. A study by Dorfman and colleagues showed the mapping of sites of vulnerability targeted by antibodies in the blood of people living with HIV, highlighting the ‘V3 loop’ and the ‘membrane proximal external region (MPER)’.[24] In another study, Okala and colleagues examined the potential for different types of antibodies to synergize with each other, and noted the importance of targeting these antibodies against different viral sites.[25] Gijsbers and colleagues demonstrated that natural mutations, related to adaptation of the virus to its host, in the viral protein that allows the virus to integrate the host cell genome, can dramatically impact the localization of such integration.[26] These variations are associated with disease progression. Johnson and colleagues discovered expression of a HIV subtype panel of the HIV accessory protein, nef, correlated with downregulation of cell surface molecules. The study results have profound implications on the design of HIV vaccines and/or strategies to treat the viral infection.[27]

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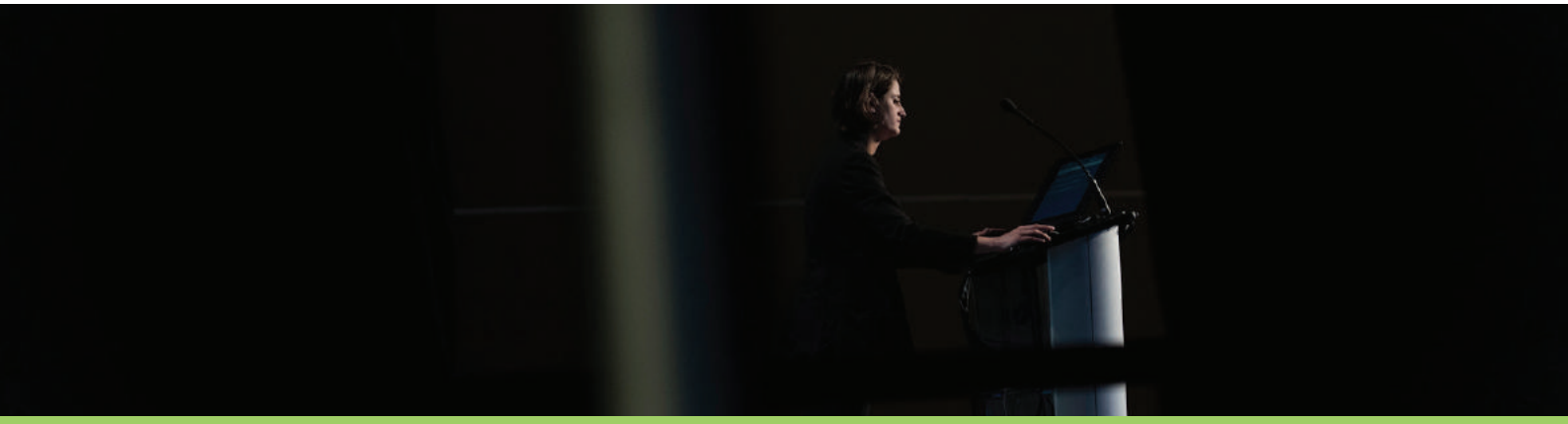
Praphan Phanuphak, Thai Red Cross AIDS Research Centre Thailand, giving the inaugural Joep Lange Memorial Lecture



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Plenary Session

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Julio Montaner, BC Centre for Excellence in HIV/AIDS, University of British Columbia, Canada

BROADLY NEUTRALIZING ANTIBODIES

A bridging workshop for HIV basic and clinical sciences, on 'New Approaches to Using Broadly Neutralising Antibodies for HIV Prevention' was conducted to provide a better understanding of broadly neutralising antibodies (NAbs) and their promising application in restricting HIV pathogenesis as both prevention and therapeutic strategies.

The reassessment of potentially autoreactive HIV-specific NAbs as promising candidate therapeutics and/or vaccine immunogens were also highlighted. The discovery of NAbs has predominantly been carried out in clade B populations. Ndlovu and colleagues characterized the development of the NAbs response in a cohort of HIV+ clade C population.[28] The authors detailed the development of the response, elicited 1-3 years post-infection, and found it targeted multiple neutralizing sites within the HIV envelope protein. Other studies further advance the development of these NAbs and their targets for vaccine design.

A NAb, VRC01, produced in plants (VRC01-Ns) showed promise as a microbicide in preventing infection. It is currently being advanced in both preventative and therapeutic trials in children and adults, and has demonstrated efficacy in a clinical trial. Anderson and colleagues found that VRC01-Ns was retained in the vaginal tissues for long periods, and protected macaques against infection, and that neutralisation activity was not affected by the vaginal environment. These results showed promising applications in the development of an intra-vaginal ring. Graham and colleagues demonstrated that VRC01 infusion resulted in the accumulation of VRC01 over time, and did not induce anti-VRC01 Abs or lose its neutralising activity.[30]

While NAbs have showed great promise in restricting viral pathogenesis, and in microbicide and clinical uses, there is need to continue to establish thresholds of NAb efficacy and measures to lower development costs.

TRACK B
CLINICAL SCIENCES

START EARLY TREATMENT

One of the highlights of the discussion on clinical trials was the presentation of the results from the START (Strategic Timing of AntiRetroviral Treatment) study, a randomised controlled trial of immediate vs. deferred ART. For the first time, Jens Lundgren of the University of Copenhagen presented full results of the study, which was halted in May 2015 after preliminary data showed significant health benefits of earlier initiation of HIV treatment, regardless of the state of an individual's immune health. The study included 4,685 participants recruited from 215 sites in 35 countries, with two well-balanced treatment arms – those who received immediate ART vs those who deferred ART.[31] START is the first large-scale randomized clinical trial to establish that all individuals with HIV have a considerably lower risk of developing AIDS or other serious illnesses when they begin treatment immediately after diagnosis. There was an approximately 200 cells/mm^3 difference in CD4 counts between the immediate vs. deferred arm over the course of the study (mean three years of follow-up).

They also showed a 57% reduction in AIDS events (such as TB or lymphoma) and non-AIDS events (such as cardiac or liver disease) in participants initiating ART immediately, compared to those deferring ART. The large majority of the events seen occurred in participants with CD4 counts >500 cells/mm^3. The difference between the treatment arms was sustained across several demographic and clinical variables. Given the occurrence of events at high CD4 values, there may be other indicators of immune dysfunction, beyond CD4, that need to be considered. There is also a need to assess whether the results can be extrapolated to different patient populations and settings, and what the real-life implications are of the study findings.

START has showed clear evidence of the need to initiate ART at higher CD4 counts and not deferring ART for people living with HIV. These results have important implications for the way ART is used worldwide. The investigators called for treatment for all and the need to assure that disparities in ART treatment do not widen as certain populations continue to have more limited access to ART.

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A demand for an end to institutional violence in health care settings

ART AND TREATMENT STRATEGIES

Presentations included studies on new agents in the armamentarium against HIV, doravirine (potency against NNRTI resistant strains) and BMS-955176 (second-generation maturation inhibitor with potent *in vitro* activity against HIV-1 despite PI, NRTI, NNRTI, and INSTI resistance).

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Asier Saez-Cirion, Pasteur Institute, Paris

A comparison was made of longitudinal changes in BMD in HIV-infected participants who had prior dexa scans in an ACTG study vs. uninfected controls in the BACH/Bone and WIHS cohorts.[32] The largely male (86%) study demonstrated early declines in lumbar spine (LS) and total hip (TH) improved. Subsequently (two years and beyond), there was more rapid adjusted BMD loss at the LS, but not TH. While HIV-related factors and LBM were associated with early bone loss, only LBM was associated with late losses in BMD. Strategies that increase LBM (e.g. exercise) may impact late BMD losses in persons living with HIV.

TAF is a prodrug of TDF with 91% lower plasma levels that minimize renal and bone effects. Two new studies showed reassuring data about efficacy and safety. In the GS-US-292-0109 study more than 1,400 individuals were randomized to switch to E/C/F/TAF or to continue in a TDF based regimen.[33] After 96 weeks E/C/F/TAF arm showed higher virologic suppression, reduction of osteopenia/osteoporosis and significant improvement in proteinuria and renal function markers. In the GS-US-292-0112 trial, 242 participants with mild-moderate renal impairment (eGFRCG 30-69 mL/min) were switched to E/C/F/TAF (from TDF-containing or a non-TDF containing regimen).[34] After 48 weeks, those who switched from a TDF regimen had significantly improved urinary and renal markers, improved BMD and had increases lipid levels. Among those switched from non-TDF containing regimens, GFR, urinary and renal markers and BMD remained stable.

Doravirine (DOR) is a novel once daily NNRTI that shows high in vitro potency againagain NNRTI resistant strains. Dr Gatell presented 24 weeks result of a randomized study comparing DOR 100 mg vs EFV (both with TDF/FTC) among ART-naïve patients.[35] The EFV arm had more discontinuations due to adverse effects (11.9% vs 4.6%). Rate of viral suppression and CD4 recovery at 24 weeks were adequate and not different between arms but patients on DOR had fewer and less severe treatment-emergent CNS adverse events than EFV.

TREATING CHILDREN AND YOUTH

Perinatally HIV-infected children and youth have co-morbidities including non-alcoholic fatty liver disease (NAFLD), renal dysfunction and mental health disorders. A Thai study looked at 60 perinatally HIV-infected 10-25 year olds with history of transaminitis in the absence of HCV/HBV co-infection or excessive ETOH consumption.[36] The prevalence of NAFLD was reported at 20% prevalence, and AST to platelet ratio index (APRI) moderately correlated with liver fibrosis. There was no correlation with prior ART or other demographic or clinical variables.

Understanding long-term sequelae of HIV and ART in this population is important in order to minimize and manage long term outcomes, particularly as they navigate from paediatric to adult care settings.

MANAGING COMPLICATIONS AND COMORBIDITIES

With the expected increases in the numbers of individuals being initiated on lifelong ART given the findings of the START study, diligence in averting, identifying and managing complications and co-morbidities is increasingly vital.

Prevention and management of tuberculosis (TB) continues to be a major problem in settings with high burden of TB and HIV, especially in Africa and Eastern Europe, where the prevalence of multi-drug resistant (MDR)-TB is high and TB-associated mortality and morbidity within ART programs remains a significant problem. An analysis from the WHO in 14 high-burden TB/HIV African countries in 2012 demonstrated the gaps in TB management cascade.[37] Most patients who entered HIV care were not screened for TB and substantial numbers of patients with HIV/TB infection did not receive ART. The success rate of TB treatment in HIV patients in South Africa was low at 35.7/100 person-years and the mortality rate also remained high at 20.9/100 person-year, especially for the elderly and cases with smear positive TB.[38] Despite the high efficacy of short-term isoniazid preventive therapy (IPT) in reducing the risk of TB during the first year of initiation, the implementation and completion of IPT remains low (50%).[39] In Eastern Europe, the very high mortality in HIV/TB also requires attention to improve TB care including drug sensitivity testing (DST) and access to TB medication. Only 41% of HIV/TB patients in Eastern Europe had baseline DST and 31% of cases with DST prior to treatment received suboptimal TB regimen due to very limited number of active TB drugs.[40]

The outlook is more promising for individuals co-infected with HIV and hepatitis C virus (HCV), given recent findings that co-infected patients are no longer a difficult to treat population. Several phase III, open-label clinical trials, and cohort studies showed HCV cure rates of >95% with modern direct antiviral agents (DAA)-based therapy for co-infected patients. Three phase 3, multicenter, open-label studies in HIV/HCV co-infected patients all demonstrated high rates of sustained virologic response (SVR >95%), regardless of baseline characteristics.[41,42,43] A late-breaker abstract reported results from the Phase III C-EDGE study of fixed-dose combination of grazoprevir/elbasvir (GZR/GBR) among HIV/HCV co-infected patients with HCV genotype 1, 4 and 6.[44] At 12 weeks 95% of patients (n=218) had achieved SVR, including 100% (35/35) of patients with cirrhosis. Phylogenetic analysis of the 7 failures demonstrated 5 were relapses and 2 were reinfections. In a subset of the ION-4 Phase III study assessing the safety and efficacy of ledipasvir/sofosbuvir (LDV/SOF) in HCV genotype 1 or 4 patients, 96% achieved sustained virologic response, with 2 patients relapsing due to non-adherence and 10 patients relapsing after discontinuing treatment.[45]

A Canadian co-infection cohort study of liver fibrosis using aspartate aminotransferase to platelet ratio (APRI) reported that abacavir/lamivudine was associated with changes in APRI score over time, particularly in combination with a boosted protease inhibitor.[46]

Given the significantly higher cure rates possible with the newer regimens, HCV screening and treatment with DAA regimens should be scaled up, especially in HIV-infected patients where liver disease progression is faster. Importantly, the HCV treatment cascade should also be implemented in low-middle income countries.

Hepatitis B virus (HBV) infection rates remain higher in HIV-infected patients compared to their HIV-negative counterparts and persons with HIV/HBV co-infection remain at significantly higher risks for all-cause and liver-related mortality than those without co-infection.[47] Launay provided an overview of current issues in HBV/HIV co-infection, including promising studies determining the safety and immunogenicity of novel vaccines.[48] Several targets of HBV therapy are being studied for HBV, including combinations of anti-HBV nucleoside/nucleotide inhibitor, immune activator, cccDNA inhibitor and HBsAg inhibitor.[49] Prevention of HBV vertical transmission remains important through both active and passive immunization.[50]

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Towards an HIV Cure Symposium

WOMEN, FAMILY PLANNING AND PREGNANCY

Several presentations focused on the reproductive health practices that specifically relate to women living with HIV, such as intravaginal practices (IVP), hormonal contraceptive therapy (HCT), use of intrauterine devices (IUD), and how they may impact women's risk of HIV acquisition or transmission in the setting of ART.[51,52,53] A study in Canada noted a lack of major adverse effects in women living with HIV who had IUD placements, while in another study, no differences were found in pregnancy rates in women using HCT between ART and non-ART treated participants. HCT remains effective in the setting of ART, though real world data will be needed to assess and optimize the effectiveness.

The association between congenital anomalies, HIV and ART use during pregnancy is a significant concern given the growing number of HIV-exposed infants in resource constrained settings. One study did not find any association between maternal TDF and foetal bone length, providing some data on the safety of TDF use in pregnancy.[54]

CHILDREN AND YOUNG ADULTS

The progress towards elimination of infant HIV infections and optimization of safe, effective treatment in children has been dramatic, but many obstacles remain. Point-of-care (POC) infant HIV diagnostic testing with ALere qHIV-1/2 Detect performed well in two South African centres (92-100% sensitivity and 99-100% specificity) and with generally high user acceptability in a field evaluation, but more work is needed to optimize sensitivity, reduce 'no result' errors and for it to be run by non-physicians.[55] Real impact will depend on linkage to prompt ART. In a study in Kenya, for example, greater baseline immune activation (CD8+ T-cell activation) predicted better outcomes in infants starting ART. Meanwhile, other studies of tenofovir alafenamide (TAF) and rilpivirine in treatment-naive adolescents demonstrated safety and virologic efficacy outcomes similar to those in adults.[56] While TAF and rilpivirine may be good options for adolescents, the need to study additional drug options for infants and younger children remains.

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Evan Wood , University of British Columbia, Urban Health Research Initiative, Canada

Many children born with perinatal HIV infection are now surviving into adulthood. Of concern is data indicating that adolescents are the only group of people living with HIV with increasing mortality rates; HIV has become the second-leading cause of death among adolescents worldwide. The workshop 'Young Adults with Perinatal HIV Infection: What is the Best Practice for Their HIV Care?' used case studies of adolescents and young adults with perinatal HIV infection to explore the special medical and psychological challenges they face. Annette Sohn kicked off this session by playing a powerful and moving video about growing up with HIV.[57] A major psychosocial challenge is the transition to adult medical care which entails adapting to a new model of care, usually with new providers and in new surroundings.[58] HIV disclosure to children and transition to adult care are both processes that require planning and developmentally appropriate, effective communication to be successful.

In another session, presentations looked at strategies to improve diagnosis in older children with HIV and identified gaps in the continuum of care for children. Two studies using targeted testing strategies in children were presented. The CATCH study, which used a targeted testing strategy by seeking out PLHIV who had children <12 years old with unknown status, through either in-home or clinic-based testing, saw a 4-fold increased testing.[59] The seroprevalence was 7% in the children tested. Another study used an algorithm approach to predict risk of HIV infection with target testing.[60] Elanya and colleagues provided data on a study demonstrating a 10% increase in ART coverage among adolescents following a test and treat strategy implementation.[61]

In order to optimize care in children and realize goals to increase the numbers of children on ART, interventions that help to identify at risk children are critical, as are mechanisms to enhance ART initiation and sustainability. Pregnant adolescents may be a particularly vulnerable group to manage, underscoring the need to develop interventions to improve cascade in this population.

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IAS Member's Meeting

HIV IN THE POPULATION – A MULTIDISCIPLINARY APPROACH

Examples of concentrated epidemics among aboriginals in Canada, those involving prescription drug use in the U.S., and among the heterosexual population in Ukraine signal the challenge faced by existing infrastructure in high-income countries to control the epidemic. In Saskatchewan, Canada the HIV incidence is three times higher than the national average. While aboriginals represent 15% of the provincial population, they accounted for 80% of diagnoses in 2011. Aboriginal communities are affected mostly by factors such as high levels of injection drug use, limited prevention initiatives, poor access to health services, lack of funding and stigma.[62,63]

The January 2015 HIV outbreak in Austin, Indiana involved 170 HIV cases, more than 95% of which were co-infected with HCV. The affected were disproportionately non-Hispanic white, young and male, with higher rates of poverty, unemployment, low education and without health insurance. The outbreak was linked to intravenous use of oxymorphone.[64] It or if remains unclear whether the Austin epidemic is isolated or if more outbreaks will follow. Some recommendations to detect outbreaks include increase testing of HIV-HCV, including 'sentinel' testing venues and increased primary prevention. Syringe exchange and substitution therapy programs, and reduction of opioid prescription are critical until socio-economic disparities and health access barriers improve.

In Ukraine, there has been a shift since 2008 from an epidemic predominantly driven by sharing contaminated needles to one that is increasingly driven by unprotected sexual transmission among heterosexuals.[65] The current prevalence among Ukraine's adult population is stable at 1.04%. Initiatives include rapid scale-up of treatment, and comprehensive programs that involve local NGOs and intervention by peers, local pharmacies, and even the provision of community-initiated treatment. Annual reductions of Global Fund financing between 2013 - 2016 is challenging the sustainability of this comprehensive package in a place where growing conflicts, migration, and economic stability have threatened the AIDS response including access to opioid substitution therapy (OST).

TRACK C
PREVENTION SCIENCE

HIV TESTING

Sessions on HIV testing focused on innovations in how to deliver HIV testing to maximize the yield of HIV diagnoses. Testing should be seen as part of a prevention continuum analogous to the care continuum. Uptake of HIV testing can be increased through community mobilization (CM), stigma reduction with information provision, self-testing, and partner notification through prevention of mother to child transmission (PMTCT) services. CM is often viewed as bottom-up, but where grassroots initiatives are lacking it is possible to use a top-down approach if domains are culturally adapted and mobilizers are local. A study in South Africa showed that HIV testing increased in both intervention (CM) and control villages, but more in the CM villages.[66] By providing information on the preventive benefit of ART in addition to information on the therapeutic benefit, a study in Malawi found participants in intervention villages had improved knowledge, reduced stigma, and higher HIV testing uptake compared to control villages.[67]

HIV self-testing holds great opportunity for making HIV testing available in a way that is user-controlled, and can increase privacy. Some people choose to test with sex partners or with testing buddies. However, there are concerns about how to best educate users about the proper use of kits, and needs for ongoing evaluations of the performance of kits. Linkage to care is also a critical concern when kits are provided for unsupervised use.

PRE-EXPOSURE PROPHYLAXIS (PREP)

PrEP sessions shed light on alternative dosing strategies, as one size will not likely fit all. Further evidence was presented that multiple approaches to PrEP dosing hold promise for implementation. Data and findings were presented from two main studies of PrEP – the HPTN 067 (ADAPT) study and the ongoing IPERGAY study.

HPTN 067 Protocol Chair Robert Grant of the Gladstone Institutes presented study results from the ADAPT study, which evaluated the feasibility of PrEP using daily, time-driven and event-driven dosing. The study involved more than 500 participants from three study sites: Cape Town (women who have sex with men), New York (men who have sex with men and transgender women) and Bangkok (men who have sex with men and transgender women).[68,69,70] Data from Cape Town and New Yrok demonstrated that daily PrEP dosing was associated with higher complete coverage of sexual risk exposures compared to time-based or event-based dosing; in the Bangkok study site, daily dosing and time-based dosing showed similar coverage. In all sites, pre-sex doses were more likely to be missed than post-sex doses and importantly, there appeared to be no increase in sexual risks related to being on PrEP. Overall, there were significant implications for PrEP rollout among heavily affected populations, highlighting the importance of context and specific populations. There is a need to better understand determinants of success of different PrEP regimens.

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Glenda Gray, South African Medical Research Council

Findings from qualitative methods showed that the determinants of whether and how PrEP is used varied across sites. Deep and local knowledge of barriers and concerns is needed for successful implementation. For example, South African women described scepticism about PrEP efficacy and how their personal decisions impacted the broader community, while gay men and transgender women in Harlem described stigma as a major barrier to utilizing PrEP.[71,72]

An update from the IPERGAY assessed the necessity of double dosing and of post-exposure dosing of tenovofir/enfuvirtide (TDF/FTC) among MSM with a high frequency of sex partners.[73] Molina and colleagues from the Agence Nationale de la Recherche sur le Sida (ANRS) found that double dosing pre-coitus was resulted in substantially higher plasma concentrations of FTC and TFV compared to standard dosing, and that both pre and post-coital doses were necessary to provide full protection against HIV infection.

Several model-based studies, despite undertaking different approaches, showed largely consistent results in showing that PrEP can have a population level impact if targeted at young women with high background incidence.[74] Geospatial targeting of small areas with high HIV incidence among young women was one proposed strategy for rolling out PrEP. This approach may also be useful as it assists in estimating the number of young women eligible for the intervention, which is critical information for policymakers.[75]

Others noted that PrEP cannot be evaluated alone and the benefits and costs should be contextualized within combination prevention packages.[76,77] Furthermore, PrEP may be particularly important during the next 10 years, after which time the prevention impact may result in lower overall prevalence and less need for PrEP at a population level. In terms of costs, PrEP for key populations – including female sex workers (FSW) and their clients, modelled in Kwa-Zulu Natal, South Africa, was found to be cost-saving, while PreP for women 20-29 years was highly cost-effective (though not cost saving). Experts agreed that expanded prevention options may be warranted even if an intervention is not cost saving, particularly as the health of young women will have long-term impacts on the health of their families.

Disparities in PrEP uptake and adherence was also a key theme. In the ATN110 study of 200 young (18-22) MSM in 12 United States cities, likely protective levels of PrEP (equivalent to 4 doses/week) based on intracellular TFV-DP were modest (25%-55% across the 1-year study), but protective levels (and, by implication, adherence) were lowest among young black men.[78] In a multi-city PrEP demonstration project for MSM and TGW in San Francisco, Washington, DC and Miami, levels of PrEP were higher (65% had drug levels consistent with taking ≥4 doses/week across the 1-year study), but TFV-DP levels were lower among black men and in men with more condomless anal sex partners.[79] In these studies, there was no evidence of increased self-reported risk behaviours while participants were prescribed PrEP, although STI diagnoses were high among participants in both studies. In Brazil, it was found that among MSM and TGW, the predictors of PreP uptake were having a steady partner, having an HIV test in last 12 months, a recent STI diagnosis, prior PreP awareness, and having two or more condomless anal sex partners in last 12 months.[80]

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Media Room

Treatment as prevention (TasP)

TasP results remain robust, and where it has been widely implemented and viral suppression achieved, incidence has fallen in both high and low income settings.[81] However, Francois Venter noted that significant implementation challenges remain, including weak health systems, supply chain management for active pharmaceutical ingredients and ensuring virologic suppression is maintained over time. Key contextual factors that affect individual uptake of treatment include cost, inconvenience, side effects, and stigma. In order for treatment to be a successful strategy for prevention, PLHIV must achieve sustained virologic suppression - the last step in the HIV care cascade. The many challenges to this 'end game' are the 'Achilles heel' of the Test and Treat strategy. These challenges include lack of retention and loss to follow-up, dependence on pharmaceutical supply chains and frail health systems, the need for life-long treatment, and ongoing stigma.

Ten years after the landmark HPTN 052 Treatment as Prevention study began enrolling participants, final results were presented by Protocol Chair Myron Cohen of the University of North Carolina at Chapel Hill.[82] HPTN 052 included 1,171 HIV serodiscordant couples in Malawi, Zimbabwe, South Africa, Botswana, Kenya, Thailand, Brazil and the U.S. The risk of sexual transmission of HIV was dramatically reduced for the duration of the study among individuals whose infections were well suppressed by therapy. By the end of follow-up in 2015, there was a 93% reduction in HIV transmission in the intention to treat (ITT) analysis, and when also considering unlinked infections, the reduction is risk was 69%.

Despite these findings, scale-up of treatment as prevention will pose other challenges as substantial progress is necessary to get those living with HIV on to treatment and virally suppressed.

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Conference Delegate

PREGNANCY AND PMTCT

Experts reviewed the evolution of the science around safer conception approaches for couples affected by HIV attempting pregnancy. This was complemented by perspectives from community members and clinicians regarding experiences receiving or providing safer conception counselling. Data from PrEP trials suggest that pregnancy incidence rates are not affected by PrEP and safety data to date have posed little concern about the health of mothers or babies.[83] PrEP pregnancy data, however, are limited because participation in trials has been restricted to women who are not planning to conceive during the study period. In addition to the need for more data around the safety of conceiving on PrEP, questions remain about the safest ARVs for pregnant women in general. More information is required on the effect of Tenofovir on bone mineral content on infants exposed to PrEP, and the impact of newer antiretroviral drugs on other birth outcomes, including congenital abnormalities, premature birth, gestational weight, and long-term mitochondrial effects.[84] Healthcare providers noted that key challenges to implementing safer conception services include little time for routine fertility intentions screening, costs of viral load monitoring, poor communication or links between HIV and fertility doctors, and lack of reproductive health knowledge among HIV doctors.

With 60% reductions in mother-to-child transmission (MTCT) since 1994, the end of MTCT is believed to be in sight. Data from Zimbabwe reinforce the important PMTCT gains that can be made when treatment is scaled up to pregnant women living with HIV.[85] Evaluation of the option A program revealed promising results of near elimination of mother to child transmission and improved HIV-free survival of infants born to HIV positive women. These data are set to significantly improve with the ongoing implementation of the Option B+ program. Option A cost data will provide a baseline for cost effectiveness analysis of the option B+ program in

Zimbabwe. The costing data shows benefits of scale which provides further impetus to scale up PMTCT interventions more widely.[86]

However, despite substantial reductions in mother-to-child HIV transmission, data from Malawi also demonstrate substantial loss to follow-up among women initiating treatment as part of Malawi's Option B+ program.[87] 20% of women did not return for subsequent follow-up after the initial visit. Among those who attended at least one repeat visit, loss to follow up of women who were initiated on ART during pregnancy was 74% and 42% higher than that of women who were initiated on ART for their own care at the end of the first and second years, respectively. In the coming years more approaches to retain mothers will be necessary, as will improved efficiencies in the delivery of PMTCT.

PEOPLE WHO INJECT DRUGS

How prevention modalities work together for specific risk populations in specific contexts were also explored at IAS2015. Discussions included how to improve access for people who inject drugs (PWID), and retention in the continuum of care. Data ranged from population size estimates to assessments of the impact of prevention and engagement in care interventions with PWID. Two studies demonstrated the potential HIV prevention effect of PWID-focused interventions. An RCT in the Ukraine with 1200 HIV negative PWID found that HIV counselling and testing (HCT) plus peer leader interventions based on social learning, social identity, social norms and social diffusion, reduced HIV incidence by 42% compared to HCT and education alone.[88] Even so, HIV incidence in both study arms was alarmingly high: 24.8/100 PY overall. Involvement in needle exchange programs among participants in the peer leader arm appeared to drive this effect. Further data from PWID in Vietnam suggest that periodic testing for HIV complemented by immediate initiation of ART independent of CD4 count could result in high uptake of treatment, retention and >85% viral suppression at 6 months.[89] Findings were stable in both those starting at higher (>350) and lower (≤350) CD4 cell counts.

A historical perspective of the HIV epidemic in Vancouver spoke of early detrimental policies relating to drug use and the efforts in the last fifteen years to overcome the harmful effects of these policies through progressive harm reduction approaches such as safe injection facilities, broad access to methadone maintenance, and needle and syringe exchange.

Data from Vancouver assessing initiation of ART among PWID found high overall initiation (74%) among 133 PWID living with HIV.[90] Incarceration and engagement in informal income generation were associated with lower uptake of ART over time, while methadone treatment was associated with increased ART uptake. Data from this same group in Vancouver illustrated that ART adherence is associated with transitioning out of homelessness and ceasing participation in illicit income generation activities, but the causal nature of these relationships could not be determined. ART adherence was not found to be associated with employment, relationship or addiction treatment initiation. Additionally, modelling data of engagement in the HCV care continuum among PWID in Montreal showed that treatment as prevention – more than testing, linkage to care or adherence interventions was necessary to have a large impact on the HCV disease burden.[91] Together these findings suggest successes can be made in linking and retaining PWID into care, but that attention to structural facilitators and barriers such as income insecurity is important.

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Julie Lewis and Ryan Lewis, The 30/30 Project

MEN WHO HAVE SEX WITH MEN

Continued incidence among MSM highlights the need to improve treatment among those living with HIV, but also to better understand the functional preventive interventions for youth. In both Australia and Seattle, studies demonstrated that perceived viral load was an important determinant in why MSM chose to wear condoms with their sexual partners. Specifically, in Seattle, two-thirds of HIV-negative MSM from clinic-based cohorts made decisions about whether to have sex with partners living with HIV based on information about their ART usage or viral load, and these men who had sex with partners living with HIV based on such information were less likely to use condoms.[92] In Australia, a study of people living in serodiscordant partnerships, stratified by time in that partnership, showed that while there was more condomless sex in these partnerships than in casual partnerships, as would be expected in regular vs casual partnerships, again perceived viral load among partners was an extremely important determinant of condom use.[93] The same protocol was also implemented in Brazil and Thailand though viral load there was not significantly associated with condom use in those countries. The authors speculated that this difference might be due to lower coverage of viral load monitoring and health or research literacy among men in Thailand and Brazil. In Thailand, a cohort of MSM have demonstrated that repeat VCT testing with increased frequency has occurred over the last few years though the rate is far short of the goals established by the government, highlighting the need to better understand ongoing barriers to testing in this high incidence cohort.[94] Dr. Ashley Grosso presented data on the unmet needs of young MSM from several sub-Saharan African countries by using retrospective assessments among adult MSM.[95] These data highlight that many MSM are having sex before 18, as expected, but there is limited disclosure and no programmatic uptake before the age of 18.

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Towards an HIV Cure Symposium

FEMALE SEX WORKERS

The sessions on HIV and female sex workers provided an overview of studies focused on prevention measures, access to HIV testing, determinants of engagement in ART and novel interventions among sex workers in different contexts including South Africa, Canada, and Cote D'Ivoire.

The data from the AESHA cohort demonstrated HIV prevalence was 12% in female sex workers in Vancouver which is high given the extremely low prevalence among other women in Vancouver.[96] The study showed that single point increases in a social cohesion scale were associated with 3% decreases in condom use refusal by clients, suggesting social cohesion and reducing legal barriers to collective organizing could be important in reducing the risk of HIV exposure and transmission.

Studies continue to demonstrate the very high prevalence of HIV among FSW in South Africa and Malawi. It was found that the majority of HIV positive FSW had already been diagnosed, demonstrating that they do access health care services, and pointing to the effectiveness of community engagement exercises, particularly in Johannesburg and Port Elizabeth. Across all studies, however, there was poor linkage from testing to ART (in Port Elizabeth and Malawi 63% and 30% respectively of women who were eligible for ART were not on treatment).[97,98] In Cote-D'Ivoire, an interesting qualitative study evaluated financial needs and expenditure among sex workers in Abidjan.[99] Compound risk also play a role. Data from Iran highlighted that FSW who inject drugs are at high risk for HIV infection many times higher than that of other FSW.[100]

HIV among sex workers in the context of generalized HIV epidemics continues to be woefully understudied and under-addressed, resulting in sustained and expanding epidemics. While treatment is crucial, implementing approaches that leverage social capital among FSW are going to be important in achieving better treatment outcomes.

ADOLESCENTS AND CONSENT

Adolescents are rarely represented on Institutional Review Boards and there is a lot of variability in how different IRBs will see the same study as it relates to adolescent participants. The risk/benefit ratio may be

viewed differently and there are also many inconsistencies in laws.[101] Nbele and colleagues reviewed a number of approaches deployed in sub-Saharan Africa to address issues of informed consent of adolescents in trials.[102] In Kenya the Guidelines for Conducting Adolescent Reproductive Health Research in May 2015 allow for the waiver of parental consent for orphans, adolescent-headed households, pregnant /parent adolescents, mature/ emancipated minors, key populations, and where parents are unavailable (due to migration or informal guardianship) or inappropriate to give consent (such as for sexual health research). Proxy consent has been used in South Africa when no parent is present. A girl aged 12 can request an abortion without parental consent. In Zimbabwe the age of consent to medical treatment is 14, for family planning services is 10, for sex from 14-16, and to participate in research at 18 or 21.

There was little representation of adolescents at IAS 2015, and Linda-Gail Bekker described ongoing strategies to increase the participation of this population for the 2016 International AIDS Conference in Durban (AIDS 2016).[103]

VACCINE PREVENTION

Vaccine prevention is also showing promising results along multiple pathways, although there remain significant implementation gaps. Dr. Glenda Gray provided an overview of the status of vaccines;, there have only been 4 candidates and 6 efficacy studies in the past 30 years including Vax001, Vax003, HVTN 502, HVTN 503, RV144, and HVTN 505.[104] While most have been stopped for futility or had negative responses, RV144 had strong initial success of 50% efficacy at one year that weaned to 31% at 42 months. There were interesting correlates of protection that continue to be investigated in future studies. A separate ongoing agenda has focused on a universal multiclade approach to HIV vaccines using an Ad26 vector with a mosaic insert including a trimeric env protein.

MODELLING POPULATION DYNAMICS AND HIV TRANSMISSION

A workshop was conducted to discuss important considerations of the methods and data needed to understand how key populations impact HIV epidemics. It has only been recently that science has understood the significance of key populations in generalized epidemics in addition to concentrated ones. While there are numerous metrics available to understand 'real epidemic drivers,' Marie-Claude Boily explained the usefulness and shortcomings of classic models such as classic population attributable fraction (cPAF) and mode of transmission models (MOT).[105] Her preferred model, transmission population attributable fraction (tPAF), requires more data and more subtle interpretation, but provides a more accurate picture of transmission dynamics in different epidemic stages. Sharmistha Mishra discussed some of the data needs of tPAF, such as population size; the links between groups (such as clients); information about sexual networks beyond sex work (e.g. casual/multiple partnerships); HIV prevalence or incidence; and information about past and current interventions, including condom use and ART use.[106] Mishra noted that much of this data is unavailable and impaired by non-standard definitions of concepts such as sex work, and called for more systematic measures among all key populations. Building on those presentations, Peter Vickerman demonstrated findings from mathematical models, indicating different intervention needs in concentrated versus generalized epidemics.[107] Considering TasP, more impact and efficiencies can be achieved by targeting full-time FSW living with HIV as opposed to the general population or other FSW at less risk.

CLUSTERS OF TRANSMISSION

Characterizing social and sexual networks and clusters of HIV transmission is at the heart of really understanding the current epidemiology of HIV and thus crucial to tailoring prevention interventions aimed at reducing acquisition and secondary transmission of HIV.

In Pakistan, there are clearly established clusters of HIV transmission most clearly among people who inject drugs.[108] Among MSM in Asia, there are growing clusters of HIV transmission with distinctive subtypes, indicating that current levels of ART and prevention approaches are not sufficient.[109] In Greece phylogenetic analysis indicated there was limited clustering of viruses before 2010 but a recent study found over 86% of sequences fell within four IDU transmission networks. Further phylogentic analysis within sub-groups indicated cross-combination subtypes were derived from both Eastern Europe as well as Greece.[110] In Pakistan, there has been varying levels of phylogenetic clusters in some cities compared to others.[111] Thus, there may be more ongoing transmission in some cities compared to frequent reintroduction in cities with more scaled up prevention and treatment services.

DEMOGRAPHIC DIVERSITY AND COMBINATION PREVENTION STRATEGIES

Geographic and demographic variations can be masked by overall HIV prevalence data. Various scenarios were present to illustrate these variations: the comparison of domestic-born and foreign-born Canadian mothers living with HIV and their children,[112] HIV acquisition among sub-Saharan African immigrants in Paris,[113] the disparities in HIV prevalence, service uptake and risk in Rakai, Uganda,[114] and an ongoing HIV outbreak among people who inject drugs in Greece that may be potentiated by the ongoing economic recession.[115]

Epidemiological data from Eastern Europe and Central Asia highlight growing HIV epidemics of HIV among people living in Eastern Europe and Central Asia with Russia and Ukraine accounting for approximately 90% of new infections in the region.[116] Specifically, there has been a 51% increase in new infections and a 21% increase in AIDS-related deaths in the region. Epidemics among PWID dominate though there are HIV transmission among MSM, prisoners and their sexual networks are also increasing significantly throughout the region. Adequate resources, civil instability and access to evidence-based interventions, including opioid substitution therapy, NSP and ART, coupled with poor health infrastructure and stigma are significant barriers. Further, coercive law enforcement rather than public health approaches to at-risk populations are significant barriers to brining the epidemic under control in this region.

Combination HIV prevention approaches focusing of different populations, although still a vague concept that needs to integrate old and new approaches, is the way forward. Initially, these prevention packages were delineated by populations, though more recently packages are being conceptualized across populations. Efficacy studies must continue to increase the toolbox, but there is also a need for appropriate designs to evaluate the scalability and potential uptake of already proven HIV prevention interventions.

ECONOMIC INCENTIVES AS A PREVENTION STRATEGY

The symposium 'Economic Strengthening and Social Protection Interventions for HIV Prevention' reviewed new and old data on economic incentives such as conditional cash transfers for achieving HIV prevention and engagement in care. Results from several recent studies showed mixed results.

Studies on the implementation of conditional cash transfer in rural South Africa (HPT 068 and CAPRISA 007) did not show an association with a reduction in HIV incidence, noting that the HIV incidence in both of these studies was low.[117,118] There was however, protection against self-reported behavioural outcomes. In a study aimed to improve uptake of voluntary medical male circumcision (VMMC) in Kenya, cash transfers resulted in a significant increase in uptake of VMMC as compared to a lottery-based incentive arm.[119] In a different study, an analysis of South Africa's disability grant program for individuals living with HIV demonstrated that tying grants to a CD4 threshold <200 actually resulted in a modest but statistically significant manipulation of CD4 counts in order to stay below the CD4 <200 threshold to receive the disability grant. Investigators postulated that subsequent policy changes to the program likely reduced the severity of this effect.[120]

Financial incentives appear to optimize retention and uptake of services which may serve as a backbone for the delivery of efficacious interventions including PrEP and ART for those living with HIV. However, with these results and those presented at CROI, it is becoming increasingly clear that they do not work to directly affect the incidence of HIV. Overall, much remains to be learned around the motivations and mechanisms of action behind cash transfers and financial incentives in HIV prevention, though context as well as combination with other treatment and care modalities and being appropriately targeted will also drive much of the prevention effect. Indeed, financial incentives will not change the trajectory of the epidemic, but may be important as part of a package of services.

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Tony Fauci, Director of the National Institute of Allergy and Infectious Diseases at the National Institutes of Health, United States

TRACK D
OPERATIONS AND IMPLEMENTATION RESEARCH

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Julio Montaner, British Columbia Centre for Excellence in HIV/AIDS at the Opening Session

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The three major targets for 2020, launched by the Joint United Nations Programme on HIV/AIDS (UNAIDS) in 2014 as part of the post-2015 agenda include:

- 90% of people knowing their HIV status
- 90% of people diagnosed with HIV are on sustainable ART
- 90% of people on ART will have viral suppression[121]

More detailed information is available at:
http://www.unaids.org/en/resources/publications/2014

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The Operations and Implementation Research track saw the presentation of updates and guidelines to help countries strengthen their responses to provide HIV services to PLHIV. These included highlights from the HIV testing services guidelines, guidance on ART, service delivery and strategic information with emphasis on national and programmatic indicators for monitoring and evaluation.[122] WHO HIV Director Gottfried Hirnschall previewed the new WHO ART guidelines currently in development, and their implications for individuals, health systems and the future of the epidemic.[123]

The positive findings of the START study, confirming the individual clinical benefits of early treatment, combined with release of supporting WHO guidelines on HIV testing, refocused attention to the care and treatment cascade and the obvious gaps in delivery strategies to meet all three 90-90-90 targets. Novel implementation strategies are required to optimize HIV care along several points along the care cascade: testing, linkage, and retention/adherence on ART.

HIV testing remains the gateway to all other HIV services for the population and is critical to achieve universal testing rates to significantly reduce the incidence of new HIV infections. This guidance builds on the 2007 recommendations that promoted the role of laypersons in task shifting to maximize health systems capacity. Lay providers will play a critical part as health services are further decentralized to communities to meet the needs of an increasing population of PLHIV. The recommendation from WHO is based on evidence from various studies that show increased uptake of HIV testing services when provided by lay-providers, with no loss in accuracy or quality of testing.

National programs have guidance on the new indicators and the indicator definition to comprehensively monitor and evaluate HIV programs' progress to meeting the UNAIDS targets. Implementation experience from the Zimbabwe Ministry of Health, using the Critical Path framework, allowed stakeholders to monitor and evaluate progress in the roll out of the 2010 WHO guidelines.[124] Program performance management tools such as these are important to monitor the progress of meeting the 90-90-90 targets as it allows programs to identify critical indicators and targets to track during the implementation of HIV programs across the continuum of care.

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Marama Pala, International Indigenous Working Group on HIV and AIDS, New Zealand, presenting the Community Statement

TESTING AND DIAGNOSTICS

Although targets along the entire cascade are critical, consistent and overwhelming data point to gaps in testing and diagnosing HIV as the greatest stumbling block to ending the epidemic.

Democratizing testing translates into making testing accessible to all, with virtually universal uptake. Challenges and opportunities to achieve widespread testing include the need for advocacy and public information campaigns to promote testing, the need for policies and legislation that addresses stigma and discrimination as well as technological advances in diagnostic methods.

Stover reviewed the cost of various testing strategies and emphasized the importance of increasing the efficiency of testing by prioritizing key populations and high risk groups while simultaneously examining new implementation strategies to increase testing rates in under-represented sub populations, especially men.[125]

Partner testing was also explored as a way to increase testing and diagnosis. Thirumurthy and colleagues in Kenya distributed self-tests to HIV-uninfected female sex workers, pregnant women and post-partum women to address gaps in HIV testing.[126] A large majority gave a self-test to their primary sexual partner (77% FSWs, 91.8% antenatal, 86% postpartum). Similarly in Malawi, where, because of the belief that non-disclosure of HIV results to the partner was associated with early loss to follow-up among women in PMTCT programs, increased rates of couples testing and counseling was accomplished through written partner invitation and tracing.[127] These intervention strategies show that women can be a successful means of promoting HIV testing among sexual partners to address the existing HIV testing gap.

Presenters reviewed the role of community mobilization approaches to increasing testing rates. Chamie reported on the SEARCH Trial Hybrid Mobile Testing Approach in Kenya and Uganda, which was able to test about 90% of the population through HIV testing campaigns supplemented by home testing.[128] General involvement of communities through engagement and dialogue also improved uptake PMTCT care cascade in three other African countries.[129] Community mobilization and adaption to local contexts ensured high participation in the campaigns including a community-driven, multi-disease testing approach that normalizes HIV testing as part of more general health care.

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Around the conference

Perhaps the most innovative use of community mobilization was one that used crowdsourcing to generate demand for HIV testing among MSMs in China, which was found to be comparable with respect to HIV testing uptake and less expensive when compared with the health marketing arm of the study.[130]

Implementation of routine viral load (VL) testing was also addressed. A routine viral load testing project in Zimbabwe was able to establish routine VL testing of over 90% of patients in 26 clinical sites in Buhera District, assisted by a mobile mentorship team.[131] Essential components of implementation include patient education, clinician training on the VL algorithm, task-shifting of sample preparation, provision of enhanced adherence counselling, and decentralisation of access to second-line ART. Further data on the implementation challenges of community-based viral load testing is needed as viral load testing is being expanded globally.

LINKAGE TO TREATMENT AND ADHERENCE

Two innovative implementation strategies were presented to increase linkage to treatment or adherence through service delivery models of integration and decentralization. Rawat examined the integration of HIV-care into primary health care (PHC) clinics as a strategy to expand access to ART in South Africa.[132] Over a four-year period, the number of PHC patients on ART increased by 77%. Wilkinson reported on the scale up of community-based adherence clubs (as opposed to individual clinic visits) for stable ART patients in the Cape Metro, South Africa 2011- 2015.[133] A critical component of the package is flexibility for local community adaptation of the model while adhering to its basic components. Although fewer health care resources are required with this model compared to a clinic-based retention program, the program was still limited by the number of available health care workers and the ability to find and fund administrative staff to manage this model of care.

COMORBIDITIES AND COINFECTIONS

In a session dedicated to HIV-TB co-infections, presentations ranged from randomized clinical trials evaluating isoniazid preventive therapy (IPT) to observational studies analyzing clinical outcomes of multi-drug resistant TB and HIV-TB epidemiology in Eastern Europe.[134,135,136,137] WHO presented a focus on implementation science titled 'Missed opportunities in the TB/HIV cascade of care in 14 high burden TB/HIV African countries, 2012'.[138] There are several gaps along the HIV-TB cascade. TB accounts for an estimated 25% of deaths among PLHIV and autopsy studies of this population indicate that 50 to 69% have evidence of tuberculosis at the time of death. The new WHO 2015 monitoring and evaluation guide for collaborative TB/HIV activities will facilitate data collection for all parts of the HIV-TB combined cascade.

With regards to HCV, there are huge gaps in both diagnosis and treatment of HCV. Andrew Ball spoke about WHO's approach to HCV and presented information on standards that have been set: 90% and 65% reductions in incidence and mortality, respectively, by 2030.[139] Currently, 95% of infected people are not on treatment.[140] Drugs are very expensive, despite evidence that production costs are lower. The high costs of these drugs necessitate prioritising who should get treated. Most guidelines prioritise those with the most advanced disease, but modelling shows additional benefit of also prioritising people who inject drugs with the potential for treatment as prevention. Obstacles to production of cheaper generic drugs need to be addressed.

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Nicolas Chomont, University of Montreal

PMTCT

The gaps identified in PMTCT programs can be mitigated by community strategies such as education and psychosocial support provided by mentor mothers' models.[141] This strategy uses peer supporters who have previously undergone PMTCT services to help HIV-positive pregnant women, new mothers and their families cope more effectively with HIV. Involvement of communities through engagement and dialogue has improved all aspects of the PMTCT care cascade, as was shown by data from three African countries.[142] This approach improved early ANC attendance significantly, with greater than one-third increase in ANC ≤20 weeks gestation.

CHILDREN AND ADOLESCENTS

A large proportion of children particularly older children remain undiagnosed despite the availability of HIV testing services. In Kenya, Wagner and colleagues identified adults enrolled in care with children whose HIV status was unknown. Through systematic offer and referral for HIV testing to care givers, paediatric HIV testing was increased four-fold.[143] Bandason and colleagues validated an algorithm, based on clinical symptoms, to better target HIV testing among children based on clinical symptoms in a setting of erratic HIV test kits supply.[144]

Uganda has implemented TasP for all children <15 years in an effort to remove programmatic barriers to ART initiation.[145] The national HIV program trained personnel in over 84% of all facilities. This has resulted in increased paediatric initiation particularly for 5-15 years, a cohort of patients who had previously not met guidelines to initiate ART.

PEOPLE WHO INJECT DRUGS

In her keynote address, Norah Volkow highlighted that despite evidence that Medication Assisted Treatment (MAT) improves HIV outcomes among PWID, there is sub-optimal uptake/implementation of MAT programs in various countries. In Tanzania, interventions that removed barriers for women's enrolment into a methadone assisted therapy program resulted in improved uptake.[146] However the positive results were not sustained because of a break in the supply of methadone, highlighting the importance of setting up reliable supply and distribution systems for health products.

Plenary speaker Evan Wood spoke about how HIV epidemics in PWID have their origins in harmful policies that focused on enforcement of drug laws and limited access to NSP and other evidence-based interventions[147]

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Community empowerment and mobilization is important for ensuring the adoption of interventions for PWID. An example of this was seen in Vancouver where communities challenged policy makers to do something about increased HIV prevalence and deaths due to overdose among PWID.[148] This resulted in the introduction of a syringe provision program downtown Vancouver and in clinics. Fears that provision of syringes might increase drug use were allayed as there is evidence of a culture shift in Vancouver, where people seem to be moving away from injecting despite the availability of needles. Vancouver has since opened the first medically supervised safer injecting facilities in North America at two locations. They are highly utilised by PWID and have resulted in a decrease in injections that happen in alleys, contributing to a 35% reduction in fatal overdoses among PWID.

TRANSGENDER

A multi-disciplinary symposia session focused on the challenges faced by the transgender community in accessing HIV prevention, care, and treatment services. During this session, WHO released a new WHO policy brief focused on transgender people living with HIV. As an extremely vulnerable and marginalized population, engagement in HIV care and treatment need to be improved by first addressing patients' healthcare priorities (gender affirming health care), reducing stigma and discrimination, and tackling structural barriers to receiving care (supportive legislation, policy, and financial commitment in individual countries). Experiences from Argentina, Brazil, and Mexico were shared: these are countries where recognition of (and healthcare provision for) transgender people has been legally mandated to varying extents and has resulted in improved access. In a clinic in Mexico that provides hormonal treatment and free HIV and STI testing, almost 40% of the transwomen in the clinic were living with HIV, 87% of whom were on ART.[149] Activist Rafaelly Weist from Brazil discussed multiple projects that have helped transgender people through building social support, encouraging behaviour change, and peer-to-peer HIV oral testing.[150] However, many gaps remain in the body of evidence for transgender health issues. Ayden Scheim of Canada discussed the particular needs of transmen, particularly how transmen who have sex with men are often not given the same health care as other MSM, and often not included in research studies.[151] Of particular importance is the need for the transmen (and other trans populations) to be included in epidemiological surveillance studies aimed at identifying incidence and prevalence patterns for this population.

Annette Verster of the WHO noted the newest documents from the organization, which has recently and justifiably differentiated between transgender women and MSM. The new documents include a tool for setting and monitoring targets and a policy brief on transgender people and HIV.[152]

The distinct needs of the transgender population were also discussed within the context of PrEP. It was noted that although the IPREX study included transwomen in their study, there was no intervention effect in this sub-group with intention to treat analysis. It was suspected that this was due to poor uptake and adherence to the intervention among transgender study participants. Focus groups among transgender women in San Francisco revealed that key barriers were medical mistrust, lack of knowledge or awareness about PrEP, concerns about safety/side effects/cost, and that hormones remained the medical priority for many transgender women.[153]

FINANCING THE GLOBAL HEALTH RESPONSE

Despite ambitious new policy targets, funding for the global HIV response has reached a plateau since 2008. This requires countries to explore opportunities within their own fiscal spaces including reprioritization of funds from other government sectors and adopting measures aimed at achieving efficiency gains in HIV service delivery (e.g.. task-shifting, point of care diagnostics and decentralization) that are applicable to numerous health outcomes. Three central questions were put forward: Are the 90-90-90 targets affordable? Who is going to pay for them? Where are the funding sources within countries?

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107. Vickerman, P. et al. Controlling HIV among people who inject drugs in Eastern Europe and Central Asia: insights from modelling. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Abstract TUPEC549.

108. Thompson, L.H. et al. Clusters of HIV transmission among high-risk populations in Pakistan. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Abstract TUPDC0102.

109. Tee, K. K. Transmission networks of HIV-1 among men who have sex with men in East and Southeast Asia. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015.

110. Paraskevis, D. et al. Molecular investigation for HIV-1 cross-group transmissions during the outbreak period (2011-2014) in Athens metropolitan area: introduction of subtype A from Eastern Europe. Poster Discussion TUPDC0101.

111. Thompson, L.H. et al. Clusters of HIV transmission among high-risk populations in Pakistan 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Poster Discussion TUPDC0102.

112. Brophy, J. et al. Geographic origin trends among HIV+ mothers and children in Canada and impact on vertical HIV transmission rates. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Poster Discussion WEPDC0101.

113. Desgrees du Lou, A. et al. HIV acquisition after arrival in France among sub-Saharan African migrants living with HIV in Paris area. Estimations from the ANRS PARCOURS study. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Poster Discussion WEPDC0103.

114. Chang L., et al. Heterogeneity of the HIV epidemic in rural Africa: findings from a geospatially informed study of HIV epidemiology in fishing, trading, and agrarian communities in Rakai, Uganda. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Poster Discussion WEPDC0105.

115. Paraskevis, D. et al. Molecular investigation for HIV-1 cross-group transmissions during the outbreak period (2011-2014) in Athens metropolitan area: introduction of subtype A from Eastern Europe. 8 International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Poster Discussion TUPDC0101.

116. Kazatchkine, M. The HIV/AIDS Crisis in Eastern Europe and Central Asia. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Plenary WEPL0102.

117. Pettifor, A. et al. HPTN 068 conditional cash transfer to prevent HIV infection among young women in South Africa: results of a randomized controlled trial. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Late Breaker Abstract TUAC0106LB.

118. Abdool Karim, Q. et al. Impact of conditional cash incentives on HSV-2 and HIV prevention in rural South African high school students: results of the CAPRISA 007 cluster randomized controlled trial. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Late Breaker Abstract TUAC0101LB.

119. Thirumurthy, H. et al. The effect of conditional economic compensation and lottery-based rewards on uptake of medical male circumcision in Kenya: a randomized trial. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Abstract TUAC0102.

120. Haber, N. Negative impact of South Africa's disability grants on HIV/AIDS recovery. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Abstract TUAC0105.

121. UNAIDS. 90-90-90: An ambitious treatment target to help end the AIDS epidemic. UNAIDS, Geneva, 2014.

122. Ncube, G. Launch of WHO consolidated guidelines on HIV testing services. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Symposium TUSY0402.

123. Hirnschall, G. Testing, New Direction in Treatment, and Measuring Impact: New WHO Guidelines. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Satellite Session SUSA06.

124. Musarandega, R. et al. Using the critical path for rapid expansion and optimization of a PMTCT program. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Abstract TUAD0203.

125. Stover, J. Scaling up HIV testing to 90% coverage: cost and financing perspectives. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Symposium MOSY0406.

126. Thirumurthy, H. et al. Acceptability and feasibility of a novel approach to promote HIV testing in sexual and social networks using HIV self-tests. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Late Breaker Abstract MOAC0302LB.

127. Rosenberg, N. et al. Recruiting male partners for couple HIV counselling and testing in Malawi's Option B+ program: a randomized controlled trial. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Abstract MOAC0202.

128. Chamie, G. Accelerating HIV testing to reach 90% testing coverage in countries. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Symposium MOSY0404.

129. Kieffer, M.P. et al. Improving early ANC attendance through community engagement and dialogue: project ACCLAIM in three African countries. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Late Breaker Abstract TUAD0206LB.

130. Han, L. et al. Crowdsourcing to spur first-time HIV testing among men who have sex with men and transgender individuals in China: a non-inferiority pragmatic randomized controlled trial. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Abstract TUAD0104.

131. Htung Naing, Y. et al. Introduction of a routine viral load algorithm in rural Zimbabwe: programmatic strategies for implementation and impact on second line needs. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Poster Exhibit MOPED705.

132. Rawat, A. et al. Integrating HIV-care into primary care clinics improved access to treatment and did not compromise primary health care: province-wide trend analysis over four years during implementation in Free State, South Africa. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Abstract MOAD0104.

133. Wilkinson, L. et al. Implementation scale up of the Adherence Club model of care to 30,000 stable antiretroviral therapy patients in the Cape Metro: 2011-2014. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Abstract MOAD0105LB.

134. Hanrahan, C. et al. The durability of isoniazid preventive therapy for tuberculosis: long-term follow-up from a prospective cohort of HIV-infected adults in South Africa. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Abstract MOAB0201.

135. Evans, D.H. et al. Treatment outcomes of drug-resistant TB patients in South Africa, disaggregated by HIV status, as reported in a national electronic drug-resistant TB register. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Abstract MOAB0202.

136. Schultze, A. et al. Excess TB mortality in HIV patients in Eastern Europe: restructured approach to care needed. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Abstract MOAB0203.

137. Hosseinipour, M. et al. Empiric TB therapy does not decrease early mortality compared to isoniazid preventive therapy in adults with advanced HIV initiating ART: results of ACTG A5274 (REMEMBER study). 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Abstract MOAB0205.

138. Baddeley, A. et al. Missed opportunities in the TB/HIV cascade of care in 14 high burden TB/HIV African countries, 2012. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Abstract MOAB0204.

139. Ball, A. Developing a global action plan to improve access to HCV treatment. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Bridging Session TUBS0105.

140. Martin, N. HCV: Where we are today and the unmet treatment. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Bridging session TUBS0101.

141. Schmitz, K. et al. Retaining mother-baby pairs in care and treatment: the mothers2mothers Mentor Mother Model. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Abstract TUAD0201.

142. Kieffer, M.P. et al. Improving early ANC attendance through community engagement and dialogue: project ACCLAIM in three African countries. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Late Breaker Abstract TUAD0206LB.

143. Wagner, A. et al. Targeted HIV testing in home or clinic for older children of HIV-infected adults in care increases pediatric HIV testing rates and reveals high prevalence of previously undiagnosed HIV infection. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Abstract WEAD0201.

144. Bandason, T. et al. Moving towards targeted HIV testing in older children at risk of vertically transmitted HIV 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Abstract WEAD0202.

145. Elyanu, P. et al. Impact of implementing "Test and Treat" policy on paediatric enrolments and coverage in Uganda. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Abstract WEAD0203.

146. Lambdin, B.H. et al. Low threshold services for females who inject drugs: reducing gender inequities in methadone enrolment. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Poster Discussion MOPDD0104.

147. Wood, E. How Drug Policy Should Respond to the HIV Epidemic. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Plenary TUPL0103.

148. Nosyk, B. et al. The effects of opioid substitution treatment and highly active antiretroviral therapy on the cause-specific risk of mortality among injection drug using people living with HIV/AIDS. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Poster Discussion MOPDD0102.

149. Román-Mar, E. Main gaps and challenges in LAC and suggestions to address them with a case example of La Clinica Condesa, Mexico. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Symposium MOSY0502.

150. Weist, R. Main gaps and challenges in Brazil and suggestions to address them with good practice examples. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Symposium MOSY0503.

151. Scheim, A. Main gaps and challenges for transgender men and suggestions to address them with good practice examples. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Symposium MOSY0504.

152. Verster, A. Updates from international organisations. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Symposium MOSY0506.

153. Keatley, J. PrEP for trans woman: what are the opportunities and challenges. 8th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Vancouver, 19 – 22 July, 2015. Symposium MOSY0505.

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