ADVANCING EVIDENCE AND EQUITY: REPORT ON THE XVIII INTERNATIONAL AIDS CONFERENCE (AIDS 2010)

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Global Village Opening Ceremony

INTRODUCTION

The XVIII International AIDS Conference (AIDS 2010) took place during a pivotal year for the global health and development field, coinciding with the 2010 deadline world leaders set for achieving universal access to HIV prevention, care and treatment to all in need. Occurring just after the Group of Eight (G8) and Group of 20 (G20) summits in Canada[1], and in advance of the United Nations (UN) Millennium Development Goals (MDG) Summit and Global Fund to Fight AIDS, Tuberculosis and Malaria's Third Replenishment, AIDS 2010 was an ideal opportunity to examine scientific and programmatic evidence demonstrating how HIV investments are reaping significant dividends while also contributing to a number of related global health and development goals. The biennial event (see sidebar: AIDS 2010 statistics), which garnered significant media attention, was also an opportunity to remind world leaders and the general public of the need for continued attention to AIDS as other global priorities continue to emerge.

AIDS 2010 Statistics

- 19,300 participants, including:
- 16,012 delegates
- 1,218 participants from Eastern Europe and Central Asia
- 848 scholarship recipients
- 1,276 media
- 770 volunteers
- 197 countries represented

Speakers used the conference theme, *Rights Here, Right Now*, to illustrate the gap between rhetoric and reality on human rights in the global response to AIDS and to document the extent to which unfulfilled human rights commitments contribute to HIV transmission and inhibit access to evidence-based HIV interventions.

With 248 sessions to choose from, AIDS 2010 participants examined the impact of the epidemic globally and regionally. The location of the conference in Vienna, Austria, also allowed for an expanded focus on Eastern Europe and Central Asia (EECA), the region where the epidemic is expanding most rapidly. This in turn helped spotlight a call for a more scientific approach to international drug policy. By the close of AIDS 2010, over 12,725 scientists and other supporters had signed the Vienna Declaration www.viennadeclaration.com and support continues to grow, with over 17,000 signatures collected as of 1 October 2010.

[1] The G8 includes Canada, France, Germany, Italy, Japan, Russia, United Kingdom and the United States, with a European Union representative participating as an observer. The G20 includes all G8 countries, in addition to Argentina, Australia, Brazil, China, India, Indonesia, Mexico, Saudi Arabia, South Africa, South Korea, Turkey and a European Union observer.

Human Rights March and Rally, Vienna, Tuesday July 20 2010

The purpose of this report is to provide a concise summary of key findings and lessons learned from AIDS 2010 for those working in HIV and related fields. Focus is on new advances that are likely to have a significant impact on the global response to AIDS in the months and years to come. Highlights within each of the three conference programme areas – Science, Leadership and Accountability, and Community – and for the key topic of universal access and global HIV financing are presented, along with an analysis of the implications of conference outcomes on HIV practice, policy and research. A formal evaluation of AIDS 2010 based on delegate feedback is underway. Findings will be available in the AIDS 2010 Evaluation Report, slated for release in December 2010, and available on the International AIDS Society (IAS) and conference websites (www.iasociety.org and www.aids2010.org, respectively).

This report is purposely short, and focuses almost exclusively on the most important themes and stories from AIDS 2010. We encourage readers to broaden their understanding of the conference by using the many hyperlinks provided in the report, particularly the links to session pages on the AIDS 2010 Programme-at-a-Glance http://pag.aids2010.org, which provides full audio and presentation slides for all plenary and oral sessions and many smaller workshops and sessions. The AIDS 2010 website www.aids2010.org is a rich source of research, policy and programmatic information.

The report is structured as follows:

Executive Summary

Science
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Track E – F: Social and Behavioural Science, Economics, Operations Research, Care and Health Systems, and Policy, Law, Human Rights and Political Science

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Leadership on Legal and Policy Reform: Illicit Drug Use, Homosexuality and Sex Work
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EXECUTIVE SUMMARY

Science

Tracks A- C: Basic, Clinical and Prevention Science and Epidemiology
Work reported just before AIDS 2010, reinforced by additional research at the conference, shows that broadly neutralizing antibodies can be identified and perhaps elicited by vaccine candidates. These findings have reinvigorated the vaccine field and bolstered the rationale for continued vaccine research funding.

The volume and quality of basic science data at AIDS 2010 and a pre-conference workshop on viral latency (*Towards a Cure: HIV Reservoirs and How to Control Them*) reflected renewed interest in a cure. Rather than trying to achieve "a sterilizing cure, where all functionally important HIV-positive cells are eliminated from an infected individual," Françoise Barré-Sinoussi and colleagues proposed that more work should focus on "efforts aimed at achieving a functional cure" by combining already feasible strategies.

Immediately prior to AIDS 2010, UNAIDS launched Treatment 2.0*, which calls for a comprehensive revamping of global HIV diagnosis and care beginning with better pills and diagnostics. Salient clinical studies included the non-inferiority of switching patients to a lopinavir/ritonavir regimen, the importance of new once-daily combination pills in simplifying antiretroviral (ARV) drug regimens, and a rigorous method of evaluating diagnostic assays for their suitability in resource-limited settings. Additional clinical studies presented at the conference reinforced the benefits of treatment initiation for individuals with CD4+ counts below 350 cells/mm^3, and of treatment initiation for all infants under two years of age, as recommended in updated WHO treatment guidance.

The groundbreaking South African CAPRISA 004 study is the first to demonstrate efficacy of a 1% tenofovir gel microbicide in a Phase III clinical trial. The microbicide lowered HIV incidence by 39% in the treatment group, with efficacy even higher among women with greater than 80% adherence. Additional modelling and ecological studies from Switzerland, Canada and elsewhere added to growing evidence that universal access to antiretroviral therapy (ART) can help stem the HIV epidemic by lowering viral loads in people infected with HIV, thus reducing HIV transmission. Treatment as prevention also gained backing from UNAIDS as a central pillar in its Treatment 2.0 strategy.

* Since the conference took place, the original Treatment 2.0 document has been retracted and the five pillars modified. For the purpose of this report, the Treatment 2.0 document referred to will be the original document presented during AIDS 2010.

In other good news, epidemiological data from a 30-country UNAIDS analysis of HIV rates in 15- to 24-year-olds in Africa and the Caribbean recorded greater than 25% drops in HIV prevalence in seven countries based on antenatal clinic data. Nine additional countries also recorded significant declines in HIV prevalence in young people.

Safety and Effectiveness of 1% Tenofir Vaginal Microbicide Gel, Special Session

Social, Behavioural, Economics, Operational and Health Systems Research, Policy, Law, Human Rights and Political Science

Family-centred approaches to delivering HIV services and the expanded need for structural interventions to address HIV risk and vulnerability were important themes in social science presentations at AIDS 2010. A multi-centre study of an MTCT-Plus programme (with sites in nine African countries and Thailand) that included comprehensive primary care for all family members (including ART), multidisciplinary care, and attention to psychosocial, behavioural and structural issues resulted in very high retention in care rates (82% for pregnant women, 86% for men and 87% for non-pregnant women) after 30 months.

New evidence demonstrating the benefits of integrating HIV programmes with TB, maternal and child health, and sexual and reproductive health services included a Kenyan study of a programme that integrated voluntary counselling and testing (VCT) with condom distribution, insecticide-treated bednets and water filters, as well as referrals for follow-up care and treatment. The study showed that multi-disease campaigns can achieve rapid, broad and equitable coverage for VCT, malaria and diarrhoea prevention with net savings.

Everjoice Win's plenary review of data and recent scientific literature illustrated how the HIV epidemic has flourished along the 'well-worn path of gender inequality'; Win and other presenters discussed data on the multiple ways in which gender inequality, violence against women and childhood sexual abuse contributes to increased HIV risk among women.

Based on an analysis of UNGASS reporting data, Sofia Gruskin emphasized two important strategies aimed at meeting commitments on human rights: ensuring that human rights are protected in the design of HIV programmes, and advancing human rights-based policies and laws to create an enabling environment critical to the success of HIV programmes. Data from a number of settings indicate that services for key affected populations, including men who have sex with men (MSM), people who use injection drugs (IDUs), sex workers (SWs) and migrant and prisoner populations remain under-resourced and that these groups are underserved in many settings.

Several presentations demonstrated how misguided drug control policies are fuelling multiple and overlapping epidemics of HIV, TB and hepatitis C among people who inject drugs. Louisa Degenhardt presented data showing that providing people who inject drugs with needle and syringe programmes (NSP), opioid substitution therapy (OST) and ART (for those with CD4 counts below 350 cells/mm^3) could reduce HIV incidence in that population by up to 63%.

The urgent need for a fundamental shift in drug control policies and laws was highlighted in the Vienna Declaration, which documents the ineffectiveness of the current 'War on Drugs' and the extent to which such policies undermine progress in halting the epidemic.

Winner of the Women, Girls and Young Investigator Award, AIDS 2010

Leadership and Accountability

AIDS 2010's examination of the impact of the epidemic in Eastern Europe and Central Asia provided an important opportunity to learn from political leaders and policymakers who have implemented evidence-based strategies to reduce drug-related health and social harms. Portugal and Spain provided best-practice examples of how comprehensive, multi-sectoral legal, policy and programmatic changes can reduce drug use and improve health outcomes, including in prisons.

A number of sessions addressed the negative impact that criminalizing homosexuality, drug use and sex work has on both HIV prevalence and access to health interventions for MSM, IDU and SW populations. In particular, a number of analyses pointed to the lack of political leadership or accountability for the human rights-related commitments outlined in the United Nations General Assembly's 2001 Declaration of Commitment on HIV/AIDS and the 2006 Political Declaration on HIV/AIDS.

Important advances in improving treatment access by lowering the cost of first-line drugs and diagnostics through innovative mechanisms such as UNITAID were reported, along with concerns that a variety of bilateral and multilateral trade negotiations currently underway may privilege patent protection over the public health good, thereby compromising efforts to reduce the high cost of second line drug regimens.

Community

Non-governmental and community-based organizations reported on a variety of effective strategies for reaching key affected populations and advocating for legal and social change in settings where vulnerable groups with a high prevalence of HIV, such as MSM, IDUs and prisoners, face social exclusion and criminalization. The continued characterization of homosexuality as a pathology by some in the medical profession was noted as a further obstacle to effectively serving MSM.

Community leaders emphasized the need for ongoing investments in community-based responses to HIV (including the important role that the Global Fund's community systems strengthening funding envelope is providing), illustrating how such investments have strengthened the capacity of the community sector to both advocate for key affected populations and reach these populations with HIV education, treatment and support services.

A number of speakers cited regional and country-level data indicating that Eastern Europe and Central Asia is the region where the epidemic is expanding most rapidly, particularly among people who use injection drugs. Speakers also demonstrated that within the region, the HIV response is underfinanced and often not aligned with epidemiological realities. For example, only one in 100 IDUs has access to ART in this region and many countries (such as the Russian Federation) oppose harm reduction interventions such as OST. Ukraine was cited as an example of a more effective national response, including its multi-sectoral collaboration to strengthen HIV surveillance and expand access to NSPs, OST and ART for people who use injection drugs.

Universal Access and Global Financing for AIDS

Because 2010 includes several important global health and development milestones – most significantly the goal of universal access – AIDS 2010 was a critical platform to assess recent progress, highlight continued challenges and map the way forward beyond the 2010 deadline.

At the conference, speakers and activists advocated forcefully for full replenishment of the Global Fund at its October 2010 replenishment meeting; commitments of US$20 billion would allow the Fund to scale up programming to meet anticipated demand and bring the AIDS sector significantly closer to attaining universal access targets. Several speakers challenged the notion that the uncertain global economic climate precluded significant increases in AIDS financing, with Conference Chair Julio Montaner, Michel Kazatchkine, Cate Hankins and others pointing out that – particularly in light of the trillions of dollars recently provided to the banking sector – the issue is clearly one of political priorities rather than resource constraints.

A UNAIDS/Kaiser Family Foundation report revealed that – after a decade of steady increases – global AIDS funding had flatlined between 2008 and 2009, confirming fears that both political interest and financial support for AIDS appear to be waning. This trend underscores the important decision facing world leaders over the next few years: whether they will maintain momentum on universal access, or retreat just as evidence indicates that investments are showing substantial and accelerating progress.

SCIENCE

Track A: Basic Science

Salient reports in Track A and in a pre-AIDS 2010 workshop focused on viral eradication and cure, advances in vaccine research, and an evolving understanding of HIV pathogenesis that will inform vaccine planning and therapy for people with HIV infection.

Advances in HIV Vaccine Research

A week before AIDS 2010, US researchers announced the discovery of two antibodies that prevented 91% of the HIV-1 strains they tested from entering cells in lab studies [1, 2], findings confirming earlier work by other investigators [3]. In a plenary lecture at AIDS 2010, Anthony Fauci described these findings as "very exciting data looking at targeted development of vaccines" [4].

Work presented at AIDS 2010 extended these important findings on broadly neutralizing antibodies. Indian researchers reported finding robust neutralizing responses against multiple HIV-1 subtypes in five HIV-positive nonprogressors [5]. US investigators detailed their work on a novel vaccine that mimics parts of the CD4 binding site on HIV-1 and is the first experimental vaccine that induces anti-CD4 binding site antibodies capable of neutralizing HIV-1 subtypes A, B, C, and D in animals [6]. The mechanism exploited does raise concern that this peptide may bind to and activate CD4 T cells in humans.

Progress in Understanding HIV Pathogenesis

In his plenary lecture, Anthony Fauci stressed that basic research in this field can yield practical advances in HIV prevention and care [4]. He detailed work in his own lab on α4β7, a CD4-cell receptor for HIV (Figure 1). Newly transmitted HIV binds more efficiently to α4β7 than do HIV variants that emerge during chronic infection. Fauci proposed that "an HIV envelope conformation that allows initial binding to α4β7 on mucosal CD4 T cells should be seriously considered as a target for vaccine development."

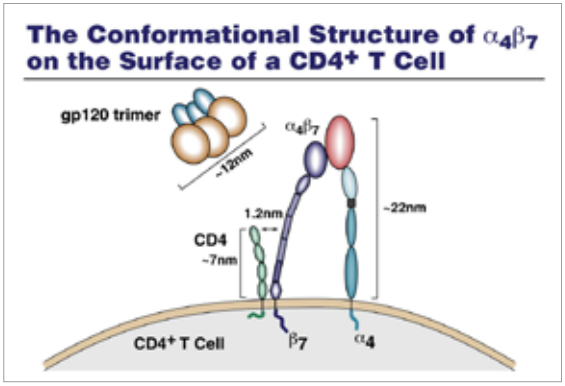


Figure 1. Fauci, A: **Characterization of α4β7, a CD4-cell receptor for HIV, suggests a potentially fruitful new direction for HIV vaccine development**. XVIII International AIDS Conference. Vienna, Austria. *TUPL0102* [4].

Track A Lead Rapporteur Guido Poli also stressed clinical progress resulting directly from basic research [7]. As one example, Poli cited the "Copernican revolution" in HIV care made possible by discovery of the primary coreceptors of HIV on CD4 cells, CCR5 and CXCR4. Agents developed to block those receptors are unique among antiretrovirals in targeting a host factor rather than a viral factor. HIV rarely uses another coreceptor, CCR2, which recruits inflammatory cells that can amplify HIV replication. TBR-652 is a CCR5/CCR2 antagonist that lowered plasma viremia 10-fold in a placebo-controlled monotherapy trial that enrolled ART-experienced people [8]. Cell-culture studies confirmed the antiviral activity of a small-molecule class that inhibits LEDGF/p74, a cellular cofactor essential for HIV integration with the host-cell genome [9]. Because of their unique mechanism, these agents can control virus resistant to two current integrase inhibitors.

Viral Reservoirs, Eradication, and Cure

Towards a Cure -- a two-day workshop organized by the International AIDS Society (IAS) and chaired by its President-Elect, Nobel Laureate Françoise Barré-Sinoussi [10, 11] -- detailed provocative new findings on viral eradication obstacles and strategies, including: (1) lower CD4-cell levels in the small intestine of HIV-positive individuals taking antiretroviral therapy (ART) than in healthy controls; (2) a 50% reduction in proviral HIV DNA in 14 antiretroviral-treated patients compared with HIV-positive persons naive to ART, but little improvement in microbial translocation or T-cell activation with ART; and (3) data indicating that most HIV-infected peripheral blood mononuclear cells are not initially infected in the gut [12]. New research on therapeutic interventions indicated that (1) switching to a raltegravir regimen confers additional immunologic benefits, (2) intensification with maraviroc decreases numbers of replication-competent HIV in peripheral blood and decreases CD4- and CD8-cell activation, (3) the gold-based compound

auranofin plus ART induces a significant decay in proviral DNA in simian immunodeficiency virus (SIV) mac251-infected macaques, and (4) development of histone deacetylase inhibitors as antilatency agents continues [13].

Addressing strategies for a cure in the Opening Session of AIDS 2010, Sharon Lewin listed four prime goals for continuing research: (1) better in vitro and animal models; (2) sensitive noninvasive ways to quantify HIV reservoirs in vivo; (3) drug development to increase specificity for latently infected cells; and (4) determination of the role the immune system plays in clearing or establishing latency and reservoirs [14].

Implications for Practice, Policy, and Research

No item on the HIV research agenda has inspired more controversy because of costly dead ends than vaccine development. Some leaders in vaccinology have long insisted that the prime goal of any effective HIV vaccine must be antibody stimulation. Work reported just before AIDS 2010 [1-3], reinforced by additional data at the conference [5, 6], shows that broadly neutralizing antibodies can be identified and perhaps elicited by vaccine candidates [6]. This work has reinvigorated the field and bolstered the rationale for continued vaccine research funding. At the same time, unsuccessful phase 2 and 3 vaccine trials [15-18] remain cautionary reminders that discoveries in the laboratory do not necessarily translate into new therapeutic or preventive advances.

Anthony Fauci, AIDS 2010 Plenary Session

One theme sounded jointly at AIDS 2010 by Poli [7] and Fauci [4] is that seemingly rarefied basic research is often a prerequisite for HIV prevention and care strategies. Benchwork-based development of novel antiretroviral classes including fusion, entry, and integrase inhibitors is only one example. Governments, private-sector funders, and academic institutions should continue to encourage programmes that attract and sustain young investigators interested in basic research relevant to HIV infection.

Many in the HIV field scoffed at the concept of viral eradication when David Ho and others first proposed it in 1996. The decision of eminent scientists to convene a 2-day symposium on this topic in conjunction with AIDS 2010–and the volume and quality of data presented–suggest that the resolve to cure a disease should never be abandoned by researchers, policy makers, or advocates. Instead of trying to achieve "a sterilizing cure, where all functionally important HIV-positive cells are eliminated from an infected individual", Barré-Sinoussi and colleagues proposed that more work should focus "on efforts aimed at achieving a functional cure" by combining already feasible strategies [11].

Track B: Clinical Sciences

Track B offered a torrent of well-conducted studies on simplified ART and HIV diagnostics that could prove valuable everywhere, but perhaps especially in low-income countries. Important new data addressed more aggressive World Health Organization (WHO) guidelines on antiretroviral intervention. And a large randomized trial could show the value of starting ART within two weeks of tuberculosis (TB) therapy for people co-infected with HIV and TB.

Treatment 2.0 Pillar 1: New ART and Diagnostic Strategies

Immediately before AIDS 2010, UNAIDS introduced Treatment 2.0, which calls for a comprehensive revamping of global HIV diagnosis and care [19, 20]. This approach rests on five pillars: (1) better pills and better diagnostics; (2) treatment as prevention; (3) removing cost obstacles; (4) improving uptake of HIV testing and linkage to care; and (5) strengthening community mobilization. Track B included an array of reports addressing pillar 1. Data on pillar 2 will be discussed under Track C.

Many European HIV clinicians have embraced ritonavir-boosted protease inhibitor (PI) monotherapy as a convenient and potent maintenance regimen in people who control HIV with a standard three-drug combination [21]. Participants in the African DART trial [22] already receiving second-line therapy took an induction course of lopinavir/ritonavir plus two or three nucleosides for 24 weeks [23]. Researchers randomized 192 participants to continue standard therapy or to switch to lopinavir/ritonavir alone. After a median 60 weeks of follow-up, CD4 count increases averaged 48 cells/mm^3 in the PI monotherapy group and 42 cells/mm^3 in the control arm. These primary endpoint data indicated that PI

monotherapy is noninferior to standard triple therapy, at least as determined by immune reconstitution. The investigators are analyzing critical viral load results.

The once-daily one-pill combination of efavirenz, tenofovir, and lamivudine has proved effective and popular in high-income countries. A second once-daily, one-pill fixed-dose combination of the investigational nonnucleoside rilpivirine plus tenofovir and emtricitabine proved bioequivalent to the individual components and will probably enter clinical development if rilpivirine is licensed [24]. Low-cost formulations of such pills would be essential in low-income countries.

Important findings were reported from a thoughtful, systematic study aimed at selecting assays suitable for evaluating CD4 levels, clinical chemical parameters, and hematology in resource-poor HIV clinics [25]. Among 50 devices screened for feasibility, local availability, and price, evaluators selected 18 for further assessment. Of these, the three that scored highest on 30 criteria such as mobility and size were compared with conventional CD4, chemistry, and hematology assays in two antiretroviral clinics. The three assays yielded results equivalent to the standard tests. This careful approach could help those responsible for equipping resource-poor clinics decide among the many available assay contenders with limited track records.

Paula Akugizibwe, Special Session, ART for Prevention

Routine viral load monitoring is the standard of care in high-income countries, but cost and logistical constraints prevent routine monitoring in most resource-poor clinics. Measuring viral load in dried blood spots has emerged as one convenient and cost-efficient way to check viral loads in patients on ART because samples can be easily collected and sent to labs for analysis. A study in Argentina compared viral load results in dried blood spots (stored at room temperature) and plasma (stored at -70° C) in 82 patients with HIV [26]. Median viral load determined by dried blood spots was 4.28 $\log_{10}$ copies/mL, compared with 4.30 $\log_{10}$ copies/mL with plasma, a clinically meaningless difference. Dried blood spots produced no false-positive results and only four false negatives, all in patients with a viral load below 3,000 copies/mL. The investigators concluded that viral load assessment in dried blood spots can be used to identify patients who need to switch to second-line ART.

TB Demonstration, AIDS 2010 Plenary Session

Lower Mortality With ART Starting 2 Weeks After TB Therapy

Starting ART within 2 weeks of starting anti-TB therapy reduced the death risk over the next 2 years by 34%, compared with starting after 8 weeks, in a large randomized trial in Cambodia (Figure 2) [27]. When to begin ART in such patients has remained unresolved because of multiple advantages and disadvantages with early versus late ART. The CAMELIA trial randomized 661 people with active TB and untreated HIV infection to start ART 2 weeks or 8 weeks after starting anti-TB therapy. Median pretreatment CD4 count was only 25 cells/mm^3 in both treatment groups. After a median of 27 months of follow-up, late ART independently raised the death risk 1.54 times (P = 0.007). Starting ART early cut the death risk by 34%.

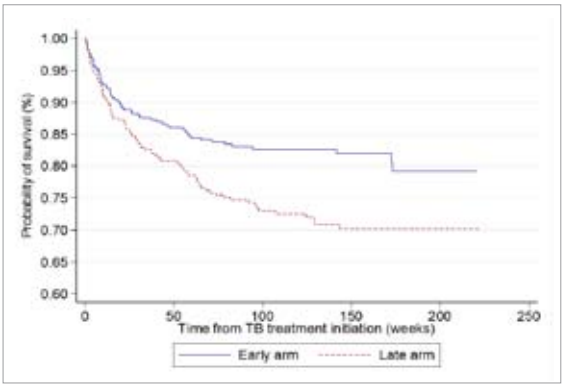


Figure 2. Blanc, FX: **Antiretroviral therapy begun 2 weeks after anti-TB therapy (solid line) yielded significantly longer survival than antiretrovirals begun 8 weeks after anti-TB therapy in the randomized CAMELIA trial**. *XVIII International AIDS Conference. Vienna, Austria. THLBB106 [27].*

Impact of 2010 WHO ART Guidelines

In 2010 the WHO issued new ART guidelines for infants and children [28] and for adolescents and adults [29]. Among the many AIDS 2010 studies addressing these guidelines, two stand out.

Because the CHER trial found dramatically lower mortality and HIV disease progression rates in infants who begin ART immediately upon diagnosis rather than waiting until CD4 percent falls below 20% [30], WHO now recommends immediate ART for all children diagnosed with HIV before the age of 2 years, regardless of CD4 count or WHO clinical stage [28]. A cost analysis of CHER participants in South Africa determined that immediate ART is less expensive than delayed ART, largely because it keeps infants out of the hospital [31]. Total cost per child during the first year of life came to US$1,349 in the immediate ART group, US$2,432 in the deferred ART group, and US$2908 in a routine care group of infants not enrolled in CHER.

WHO now recommends ART for all HIV-positive adolescents and adults, including pregnant women, with a CD4 count of 350 cells/mm^3 or less [29]. A 1,177-person study in Lesotho produced strong evidence of the clinical benefits of following this guideline in a resource-poor country with high HIV prevalence [32]. After a median ART duration of 506 days, multivariate analysis determined that patients starting ART with a CD4 count above 200 cells/mm^3 had a 68% lower risk of death, a 39% lower rate of loss to follow-up, a 63% lower hospital admission rate, and a 27% lower morbidity incidence.

Implications for Practice, Policy, and Research

Simplifying ART through pharmacologic innovation and better treatment planning has been a driving force in improved response rates throughout the world, and this goal is the primary pillar of the UNAIDS Treatment 2.0 strategy [19, 20]. Despite the allure of simpler antiretroviral combinations, however, such strategies should not be deployed in practice until randomized trials establish their value and safety. At this point many clinicians would not consider boosted PI monotherapy standard of care. The most successful monotherapy regimen so far, once-daily darunavir/ritonavir, did not meet noninferiority criteria in the MONET trial primary analysis at week 96 [33].

CAMELIA trial investigators estimated that if early ART were widely adopted for people receiving anti-TB therapy and their results held true in larger populations, the strategy would prevent 150,000 of 450,000 annual HIV/TB deaths [27]. Whether the results can be widely applied remains in question because of the extremely low initial CD4 counts of study participants. However, another recent randomized trial in South African TB patients with higher CD4 counts (median approximately 145 cells/mm^3) found that starting ART during anti-TB (rather than waiting until treatment for TB ended) lowered the risk of death regardless of whether the initial CD4 count stood above or below 200 cells/mm^3 [34].

Results of the CHER cost analysis [31] and the Lesotho cohort study [32] support WHO advice on immediate ART for infants diagnosed with HIV and for all adults with a CD4 count below 350 cells/mm^3 [28, 29]. The CHER investigators figured that immediate ART for 90% of eligible children in South Africa would account for only 6% of the national antiretroviral programme budget in 2010/2011, 6% in 2011/2012, and 7% in 2012/2013. The Lesotho researchers cited their findings on the feasibility and clinical benefits of ART for adults with fewer than 350 CD4 cells/mm^3 to argue that donors and governments should support this strategy in resource-poor settings [32].

Track C: Epidemiology and Prevention Sciences

CAPRISA, the first trial demonstrating that a vaginal microbicide can lower the risk of HIV acquisition [35, 36], will be remembered as the research highlight of Track C and perhaps of the entire conference. Other important Track C studies demonstrated the effectiveness of a human papillomavirus (HPV) vaccine in men and explored the potential of ART as prevention.

Tenofovir-Based Microbicide Effective in Placebo-Controlled Trial

For the first time, a vaginal gel microbicide proved effective in protecting sexually active women from HIV infection in the placebo-controlled CAPRISA 004 trial [35-37]. The microbicide tested is the first to use an antiretroviral, tenofovir. The study involved 889 sexually active women in South Africa. After 30 months of follow-up, an HIV incidence rate ratio of 0.61 indicated that 1% tenofovir gel lowered the rate of HIV acquisition 39% ($P = 0.017$) (Table 1). In women with better than 80% adherence, the HIV rate was 54% lower in women using the tenofovir gel ($P = 0.025$).

Table 1. Effectiveness of 1% Tenofovir Vaginal Gel in Preventing HIV Infection

	Tenofovir	***Placebo***
Number of HIV infections	38	60
Women-years (number of women)	680.6 (445)	660.7 (444)
HIV incidence (per 100 women-years)	5.6	9.1
Incidence rate ratio: 0.61 (95% confidence interval 0.4 to 0.94), $P = 0.017$		
HIV incidence 39% lower in tenofovir gel group		

Abdool Karim Q: **Effectiveness of 1% tenofovir vaginal microbicide gel in South African women: results of the CAPRISA 004 trial**. *XVIII International AIDS Conference; Vienna, Austria. TUSS0502 [36].*

HPV Vaccine Prevents HPV Lesions and Infection in Men

A human papillomavirus (HPV) vaccine designed to protect against four strains of HPV prevented external HPV lesions and new HPV infection in a placebo-controlled trial that enrolled 3,463 heterosexual men and 602 men who have sex with men (MSM) in 18 countries [38]. In a per-protocol analysis, HPV-related external genital lesions arose in 3 men receiving the vaccine and 31 receiving placebo to yield an observed vaccine efficacy of 90.4%. Anal intraepithelial neoplasia (an anal cancer precursor) developed in five vaccinated men and 24 men receiving placebo for an efficacy of 77.5%. No serious adverse events occurred in the vaccine group or the placebo group.

Feasibility and Impact of ART as Prevention

Accumulating results of modelling and cohort studies suggest that universal access to ART can help stem the HIV epidemic by lowering viral loads–and thus HIV transmission–in people already infected with HIV. Treatment as prevention was the focus of an AIDS 2010 plenary and several non-abstract-driven sessions and gained backing from UNAIDS as pillar 2 in that group's Treatment 2.0 strategy [19, 20].

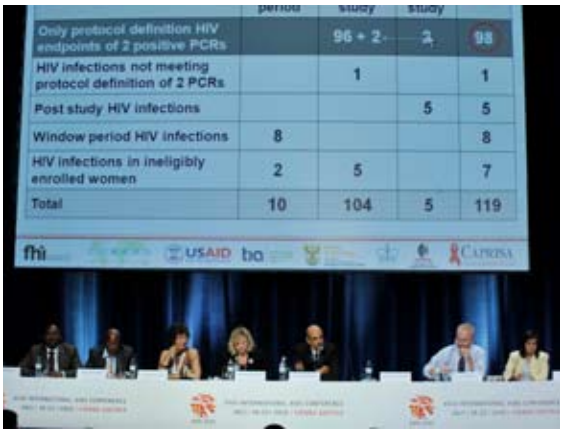
In his plenary lecture, Bernard Hirschel cited studies indicating that ART lowers rates of heterosexual transmission and appears to be more efficacious than condoms–or to have a marked additional effect when combined with condoms–in preventing HIV transmission in serodiscordant couples [39]. Data Hirschel cited from the Swiss HIV Cohort Study indicate that, after a lag time of three years, HIV incidence began to decline in parallel with the falling proportion of people with a viral load above 500 copies/mL. Modelling studies disagree on how wider antiretroviral use may affect the new infection rate. Hirschel proposed that if the most widely cited modelling study on this question is right [40], the epidemic will never be fully controlled by treating only infected people with a CD4 count below 350 cells/mm^3. The entire HIV-positive population would have to be tested frequently, and those infected would have to be treated.

IAS President and Conference Chair Julio Montaner presented data addressing these issues from a population-based study of ART coverage and HIV transmission in British Columbia [41, 42]. The analysis involved approximately 5,000 HIV-positive people seen from 1996 through 2009. There was a highly significant inverse correlation between the number of patients taking combination ART and the number of new HIV infections per year ($r = -0.89$, $P < 0.0001$). For every additional 100 people on ART, the number of new HIV infections declined 3% yearly. For every 10-fold lower viral load, the number of new HIV cases dropped 14% yearly. In the same session, Myron Cohen's presentation sounded a supportive but cautionary note, referencing scientific studies indicating ongoing viral shedding in genital and vaginal secretions, the high level of infectiousness during acute infection (when few individuals have been tested or are on treatment) and the potential for drug resistance (depending on levels of adherence) as important considerations in considering the population level impact of ART as prevention [43].

HIV Prevalence Among Young People Falling in 16 Countries

A 30-country UNAIDS analysis of HIV rates in 15- to 24-year-olds in Africa and the Caribbean recorded greater than 25% drops in HIV prevalence in seven countries based on antenatal clinic data, and three countries recorded significant declines in prevalence in young men or women based on

national surveys [44]. Another six countries showed progress in lowering HIV prevalence among young people. Eight countries with significant declines in HIV prevalence also had significant changes in sexual behavior among young men or women, a finding suggesting that HIV prevention interventions may at least partly explain the falling HIV rates.



Special Session, Safety and Effectiveness of 1% Tenofir Vaginal Microbicide

Implications for Practice, Policy, and Research

In demonstrating that a vaginal microbicide can protect women from HIV infection, CAPRISA [35-37] is an essential first step to adding microbicides to the growing repertoire of effective prevention strategies. An effective licensed microbicide would give women a discreet means of protecting themselves from HIV. Still, even in women with the best adherence to microbicide use in CAPRISA, the protective effect of 1% tenofovir versus placebo was only 54%. And yearly HIV incidence was still high, above 5%, in women using the microbicide. Those outcomes raise several questions for researchers, including whether a gel containing a higher percentage of tenofovir or tenofovir plus a second antiretroviral would be more effective. On the other hand, one could ask whether a single dose of tenofovir gel would work as well as the presex and postsex doses tested in CAPRISA. Another large placebo-controlled trial of tenofovir gel, VOICE, is also testing a 1% formulation. Among the many other questions raised by CAPRISA are how much more testing will be needed before regulators approve a tenofovir-based microbicide and whether such a gel can be made cheaply enough for low-income countries [45].

HPV infection can cause cervical cancer in women, anal cancer in men and women, and other cancers [38]. An HPV vaccine is licensed and recommended for girls before they become sexually active and exposed to HPV [46]. A vaccine that prevents HPV infection or emergence of HPV-induced genital lesions in men would be a boon for all sexually active men. An AIDS 2010 study of 410 MSM and 97 heterosexual men in four US cities found high HPV prevalence in both groups, but significantly higher prevalence among MSM (95% versus 60%, $P < 0.001$) [47].

There is now significant scientific evidence that scaling up ARV access could have a significant impact on the epidemic, although differing models of treatment as prevention (e.g., universal testing and treating of everyone who is diagnosed HIV-positive versus treatment for those eligible based on updated WHO treatment guidelines) need to be more carefully elucidated and explored through additional study [39-42]. If modelling studies and cohort data presented to date are correct in concluding that a significant expansion in treatment access will slow the epidemic, the need to safeguard human rights against overly aggressive testing campaigns will be an important consideration. A trial enrolling 1,750 HIV-discordant couples and randomizing them to begin ART at higher or lower CD4 counts, HPTN 052, could supplant model-based speculation on this approach with data.

The good news that HIV prevalence has fallen dramatically among young adults in some African countries–and related evidence of declining rates of risky sex among young adults [44]–indicate that current behavioral interventions can help stem the epidemic. Adding other prevention tools, including circumcision, treatment, microbicides, and pre- and postexposure prophylaxis, could ultimately combine to yield an effective prevention strategy, even without an HIV vaccine. Rigorous and adequately funded research of these strategies must continue. As it does, governments and nongovernmental organizations must plan for the implementation of efficacious interventions.

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Track D: Social and Behavioural Sciences

Track D presentations underscored how social science research can inform the design of more effective interventions by improving our understanding of how people manage the various roles in their lives, the impact of social structures, and the motivators of behaviours that reduce the risk of HIV infection. HIV-related stigma and discrimination, together with other forms of structural inequality, were discussed widely, as was how best to implement and evaluate combination prevention as the new standard practice in the global response to AIDS.

The Influence of Social Norms and Structures on HIV Risk and Care

Lead Rapporteur Lorraine Sherr identified family-based approaches and structural interventions as key themes in Track D [1]. Elaine Abrams presented findings from a mother to child transmission (MTCT)-Plus programme utilizing family-based approaches to services delivered to 16,457 adults and children in nine African countries and Thailand. The programme included comprehensive primary care and ART for all family members, multidisciplinary care, and attention to psychosocial, behavioural and structural issues [2]. Retention in care at 30 months was high; 82% for pregnant women, 86% for men and 87% for non-pregnant women. In the same session Maurice Tomlinson highlighted the need to reach beyond traditional cultural constructs of family, arguing that the criminalization of MSM and related legal and social barriers in Jamaica undermine a family-based approach to HIV care by encouraging non-disclosure and non-recognition of same-sex unions and families [3].

In a session entitled Local Strategies for Prevention, presenters emphasized that an understanding of the multiple roles people fill in their lives must inform HIV programme design. One study of 226 women and men in eight urban and eight rural communities in South Africa examined approaches to discussing HIV and HIV risk in relationships [4]. In-depth qualitative interviews covering attitudes, norms, and behaviours found that trust was a critically important issue of negotiation within relationships, with marked differences in partner expectations based on gender. Of particular note were women's expectation and often acceptance of the fact that men would have multiple partners and both men and women's expectation that women would initiate discussions about HIV and HIV risk. Discussions about HIV and condom use were often approached cautiously and sometimes circuitously so as to balance disease risk with risk to a relationship, and raising the issue of HIV in the context of pregnancy or the desire to have children was often deemed more acceptable.

Another study examined the life histories of people who inject drugs in New York to develop hypotheses about strategies for successful long-term avoidance of HIV and hepatitis C (HCV) [5]. The 35 informants were long term injectors; 11 who were positive for HCV only, 3 who were double-positive and 21 who were double-negative. The researchers found that most double-negative informants 'took care of themselves' (both of their 'physical bodies' and their 'social selves') by integrating drug using and non-drug using roles. These informants took pride in maintaining their worker and family roles, with stable income strategies being pivotal. Strong commitment to maintaining their non-drug using roles appeared to have a stabilizing influence in their lives and sometimes directly influenced drug intake as well as risk behaviour.

Robert Carr argued that social science research provides a more complete understanding of the intersection of HIV and social structures such as gender, stigma and social exclusion, and also leads to a deeper understanding of the roles such structures play as drivers of the epidemic [6]. As an example, Deanna Kerrigan presented a multi-level longitudinal study of 420 female, male and transvestite sex workers in Brazil [7]. Programme components included individual clinical and psychological services, community level workshops, and peer education combined with structural interventions addressing stigma related to both HIV and sex work. Improvements were observed in social cohesion (using the Likert scale to measure perceptions of mutual aid, trust, support, solidarity and connectedness experienced among sex workers) and social network indicators (using reported participation in social and group activities such as church, clubs, neighbourhood groups or cultural associations). Among participants rates of consistent condom use with regular clients in the last 30 days improved significantly. Consistent condom use with new clients (already 73% at baseline) and with non-paying sexual partners also increased, though to a lesser extent.

Stigma & Discrimination: Implications for Social and Behavioural Interventions

The session Framing Positive Perceptions and Practice: Analysing and Addressing Stigma examined the multi-dimensional nature of stigma and included a presentation by Liviana Calzavara of the results from a randomised controlled

trial to assess the impact of interventions on stigmatizing attitudes among 1,871 migrant construction workers in Shanghai [8]. Three educational interventions focused on correcting misperceptions about HIV transmission were randomly administered (pamphlet only; pamphlet, posters and videos; or pamphlet, posters, videos, group counselling and one-on-one counselling). Levels of stigma were significantly reduced from an overall mean stigma score at baseline of 5.16 to an average six months post-intervention of 3.9. Even low-levels of intervention, requiring minimal resources, were found to be effective (see Figure 1).

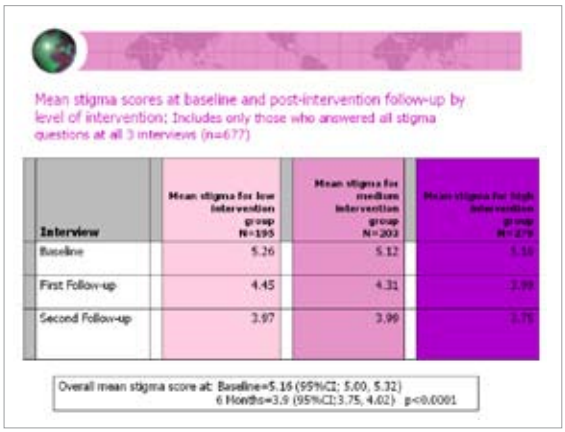

Figure 1. Calzavara L, Kang L, Fang H, Wang H, Xu L, Yang M, Ren J, Light L, Myers T, Pan Q C, Remis R S, Canada-China Team: **Significant changes in HIV stigma resulting from randomized interventions among male and female migrant construction workers in Shanghai, China**. *XVIII International AIDS Conference: Vienna, Austria.* WEAD0104.

Gender Inequality, Violence and HIV Transmission

In a plenary address, Everjoice Win described the link between HIV and gender inequality, presenting sobering statistics on the high rate of violence and violent death experienced by women and discussing the intersection of gender-based violence and HIV transmission [9]. Win underscored that violence against women is "endemic, systemic, and systematic" and also noted that culturally-mandated gender norms can result in violence against men who do not meet societal expectations of masculinity.

Charlotte Watts presented estimates of the prevalence of intimate partner violence (IPV) and childhood sexual abuse (CSA), work undertaken as part of a larger, global burden of disease analysis [10]. The researchers assumed that both factors increase risk of HIV infection, either directly via viral transmission and/or indirectly, through increased likelihood of subsequent risky sexual behaviour. The study, based on a systematic review of over 30,000 abstracts, population data and modelling, identified rates of IPV and CSA as high as 70% among women in some countries. Rates of IPV and CSA among men were found to be lower, but still high (up to 30% and 52%, respectively). It is important to note that the prevalence of IPV and CSA varies widely by sex, age and region, and that interventions to address these issues must be informed by local realities.

Combination Prevention: Integration and Evaluation

Carlos Cáceres argued that while combination prevention is increasingly taken into account in policy debates, it is not yet accepted as a guiding principle of HIV prevention due to confusion about the concept and mistaken beliefs that it is unfeasible, expensive and too difficult to evaluate [11]. Cáceres pointed to modelling exercises showing the potential impact of combination prevention, including an assessment of the significant number of new HIV cases to be averted among people who use drugs in Odessa by introducing biomedical interventions (needle and syringe programmes (NSP), opioid substitution therapy (OST) and ART) in conjunction with a structural intervention to reduce police brutality discouraging service access [12]. The structural intervention itself was estimated to reduce HIV incidence by 4-19% [13], while the combination of OST, NSP and ART had the potential to reduce infections by 41% (see Figure 2).

Impact of Scaling up Combination HIV Interventions: Example from Odessa

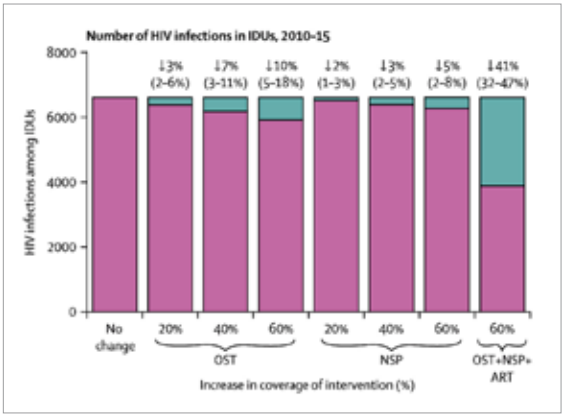

Figure 2. Strathdee S, Hallett T, Bobrova N, Rhodes T, Booth R, Abdool R, Hankins C: **HIV and the risk environment among people who inject drugs: past, present, and projections for the future**. *XVIII International AIDS Conference: Vienna, Austria.* TUSY0702.

Cáceres suggested adopting a definition of combination prevention as "the strategic, evidence-informed combination of biomedical, structural and behavioural interventions in a human rights framework" and making it the hallmark of the 'prevention revolution' proposed by UNAIDS Executive Director Michel Sidibé [14].

Combination prevention does pose evaluation challenges. Marie Laga noted that randomized control trials (RCTs) may be considered the gold standard for biomedical evaluation, but quality RCTs require clearly defined interventions, within a relatively short time frame [15]. Combination prevention includes a range of interventions such as legal reform, education campaigns and ART, which are impractical to evaluate with RCTs because they are less well defined and have longer, more complex impact pathways. It is therefore more likely that a diverse range of data obtained with both quantitative and qualitative methods will provide more relevant evidence related to combination prevention interventions, rather than a single definitive study.

Carlos Cáceres, AIDS 2010 Plenary Session

Implications for Practice, Policy and Research

There is mounting evidence regarding the benefits of family-based approaches to HIV prevention, care and treatment programmes, particularly those involving children. However, the concept of family has at times been used as an exclusionary term to imply a sole focus on biological family, and many of the people most at risk for HIV may have mixed experiences of family based on social rejection by biological family. It will be important for the evolution of family-based HIV programming to accommodate the many different social constructs of family.

Robert Carr argued that social structures are themselves drivers of the HIV epidemic and that social research can help in understanding the role they play. Deanna Kerrigan and Liviana Calzavara in very different research showed that structural interventions addressing stigma can be effective and in the latter case cost-effective while Strathdee demonstrated through modelling that structural interventions can be both vital to the effective implementation of biological interventions and multiply the effective results. All of this adds weight to the arguments for structural interventions to become a standard part of a combination approach to HIV prevention and other service delivery.

Sessions at AIDS 2010 provided an important opportunity to discuss other issues related to combination prevention, including concerns about the difficulties of evaluating the approach. Still, no clear consensus on solutions was reached. If combination prevention is to be a cornerstone of the prevention revolution as suggested by Cáceres and others, then a process for developing an internationally agreed definition, as well as evaluation guidelines, are two important next steps.

Given the AIDS 2010 theme of *Rights Here, Right Now*, gender inequality was a major theme at the conference, referenced by many speakers. Many presentations were based on the premise that the experience of intimate partner violence or childhood sexual assault will increase the risk of HIV transmission for both men and men, and that it will impact on access to HIV programmes and services. Yet little research was presented that confirms this to be the case or that points the way to the design of appropriate programmes in response. If the premise is correct and the numbers affected are as high as Charlotte Watts' estimates then it will be important to develop a standard approach to integrating gender-based violence aspects into HIV programmes with some urgency.

Track E: Economics, Operations Research, Care & Health Systems

Major themes developed in Track E were global financing of the HIV response, operations research to improve cost-effectiveness, and strengthening health systems to provide increased ART and integrated packages of care, especially in relation to sexual and reproductive health, TB and prevention of vertical transmission.

Cost-effectiveness Analyses: ART and the Use of Antiretrovirals to Prevent Vertical Transmission

In his summary report, Track E Lead Rapporteur Pierre Barker emphasized that, given current funding strains and the fact that coverage rates for ART and the use of antiretroviral drugs (ARVs) to prevent vertical transmission are still under 50% in low- and middle-income countries, the need to identify cost savings or demonstrate cost-effectiveness has become an imperative. Barker identified four areas for particular attention: implementation of updated WHO treatment guidelines; operations research on costing of methodologies; the provision of more effective care at lower or the same cost; and reducing drug costs [16].

Using financial modelling, Lori Bollinger demonstrated that implementing the updated WHO guidelines for adults and adolescents [17] (which recommend changing eligibility criterion to begin treatment at CD4<350 rather than CD4<200 and gradually phasing out d4T) will increase the cost of ART

in resource-limited settings from US$3.5 billion in 2010 to US$9 billion 2015 [18]. Cost increases were calculated for ARVs, laboratories, service delivery and a substantial increase in demand for outreach and testing. Under the new guidelines, the cost benefit analysis showed a cost per person year on ART of US$800, while the cost per death averted is about US$10,000.

In November 2009, WHO issued updated its guidelines for the use of ARVs to prevent vertical transmission (last published in 2006) to reflect evidence from three trials showing ARVs to be effective in reducing HIV transmission during breastfeeding [19]. The new "Rapid Advice" guidelines provide two options to ensure ARV prophylaxis during breastfeeding among ART-ineligible women: dual therapy during pregnancy and delivery, combined with extended daily nevirapine for the infant during breastfeeding (Option A); and triple ARV for the mother during pregnancy, delivery and breastfeeding, and 6 weeks of nevirapine for the exposed infant (Option B).

On the assumption that both options are considered equally effective, Andrew Auld presented cost and cost-effectiveness estimates based on a model of 15 resource-limited countries [20]. The researchers found that, compared with the previous guidelines, implementation of the new WHO guidelines could nearly triple the number of infant infections averted. Option A was found to be highly cost-effective and possibly cost-averting in nine of the 15 countries examined, and was also found to be significantly less expensive than Option B (See Figure 3).

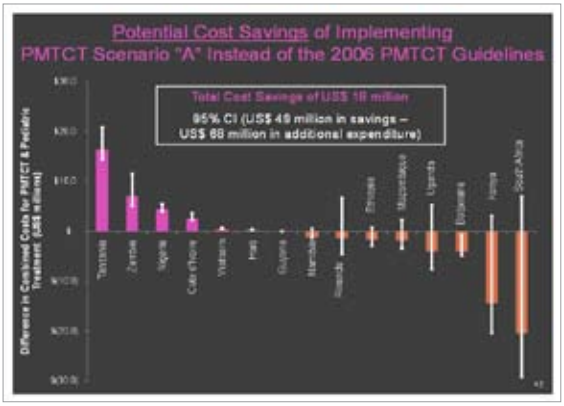

Figure 3. Auld A F, Bolu O, Creek T, Lindegren M L, Rivadeneira E, Dale H, Sangrugee N, Ellerbrock T: **Potential impact and cost-effectiveness of the 2009 "rapid advice" PMTCT guidelines - 15 resource-limited countries, 2010**. *XVIII International AIDS Conference: Vienna, Austria.* WEAE0205.

Several Track E presentations focussed on health system improvements aimed at increasing cost-effectiveness. Eric Lugada's presentation from Western Kenya reported on a seven-day, multi-disease prevention campaign, where 31 temporary sites offered voluntary counselling and testing (VCT), condoms, insecticide-treated bednets, water filters and referrals for follow-up care and treatment [21]. Participants with HIV also received a three-month supply of cotrimoxazole and CD4 tests. The integrated programme reached 80% of the target population (51,000 individuals), with 99.7% receiving VCT, and was highly cost-effective based on estimates of deaths averted, disability-adjusted life years (DALYs), and baseline mortality and morbidity. These data show that multi-disease campaigns can achieve rapid, broad and equitable coverage for VCT, malaria and diarrhoea prevention with net savings.

Sexual and Reproductive Health and HIV Programme Linkages and Integration

With regard to linking sexual and reproductive health (SRH) and HIV services, Michel Sidibé best summarized the current challenge: "The international community agrees that the MDGs will not be achieved without also ensuring universal access to sexual and reproductive health and rights. So, why has it been so difficult to put an integrated approach into practice?" [22].

In her overview, Alejandra Trossero defined integration to be when different kinds of SRH and HIV services or operational programmes are joined together to maximize collective outcomes [23]. Integration, she emphasized, is one part of a much broader goal; that of creating and sustaining linkages between the two fields, which ideally lead to bi-directional synergies in the policy, service and advocacy arenas.

The benefits of linkage and service integration for people living with HIV include: continuity of care without need for external referrals; expanded range of clinical services; reduced frequency and cost of medical appointments; access to SRH services better tailored to needs; a reduction in HIV-related stigma and discrimination; and an increased culture of rights-based health. Challenges include increased client load due to scale up of integrated services and a commensurate reluctance from healthcare providers to take up that increased workload or scope of care. Trossero emphasized that stigma and discrimination continue to be a barrier to accessing health services, and that current service models based on women's health should be expanded to include men, particularly MSM.

Saiqa Mullick suggested that, historically, one of the barriers to the scale-up of SRH and HIV integration has been political resistance. However, there is now the sense that a new policy environment prevails, with US President Obama's Global Health Initiative and 10 other international statements related to family planning and HIV linkages [24].

Lynn Collins referenced the many logistical and operational

barriers that exist within countries, beginning at the policy and strategic level with, among other issues, weak coordination mechanisms, weak links between strategies, separate funding streams and few links to community structures [25].

Highlights: Interdisciplinary Partnerships on HIV and Health Systems

At a session to report back on the IAS-convened pre-conference on HIV and health systems, speakers discussed the many benefits that the HIV response has brought to health systems including that HIV programs represent the first successful large-scale chronic disease program in resource-limited settings in history. As a result, lessons learned from scaling up effective systems for HIV are critical to informing investments for improving overall health systems performance and advancing other health-related Millennium Development Goals, especially maternal and child health. Wafaa El-Sadr explained that when the HIV response began to roll out large-scale programs it was confronted by health systems in crisis in many countries in terms of infrastructure, human resources, laboratories and financing. HIV brought many innovations including multidisciplinary teams (task-shifting, linkages, mentoring), family-focused services (co-location, integration, couples counseling), better administration (transparent target setting, record keeping, data use), improved laboratories (specimen transport, supplies and patient monitoring), and community participation (mapping of resources, organizing PLWA, supporting community groups).

All speakers agreed that the HIV versus health systems dichotomy is indeed false, but nonetheless expressed concern that it continues to present challenges for the AIDS response [26]. Karl Dehne suggested that this tension in part stems from unintended, negative consequences of AIDS funding on health systems, such as when healthcare workers have left general health services to work exclusively in HIV because external funding enabled payment of higher salaries, or when supplies of general medicines lag behind those for HIV drugs [27]. Dehne argued that many of the actions that have led to tensions were necessary in the face of a health crisis but that the next phase of health system strengthening needs to redress some of these issues.

Multiple presenters agreed that health systems must be further strengthened to expand rollout of ART and programmes to prevent vertical transmission, and to achieve MDG targets. The benefits of integrating HIV programmes and TB, maternal and child health, and sexual and reproductive health services are widely recognized, but Dehne also pointed to possible new synergies with chronic conditions such as diabetes and hypertension. Mary Ann Lansang described future opportunities to work with other parts of the health sector to reduce transaction costs in the health system generally, and also pointed to the need to support community system strengthening hand in hand with health systems strengthening [28].

Alluding to important reforms that have emerged as the result of the HIV response, Dehne proposed that health systems be required to pass an 'HIV test' if they are to receive HIV funding. Adherence to GIPA and the empowerment of all patients, engaging civil society in planning and ensuring that the private sector also plays its part, equitable access for vulnerable groups, and joint planning with other sectors, such as education and police, are all models that should be applied to health systems overall.

Preventing Vertical Transmission

In a plenary presentation summarising current issues with the prevention of vertical transmission, Elaine Abrams highlighted recent advances in ARV coverage, but also noted the challenges remaining, with just 21% of pregnant women in low- and middle-income countries testing for HIV and only 45% of those who test positive receiving ARVs for their own health or to prevent transmission to their infants (see Figure 4) [29].

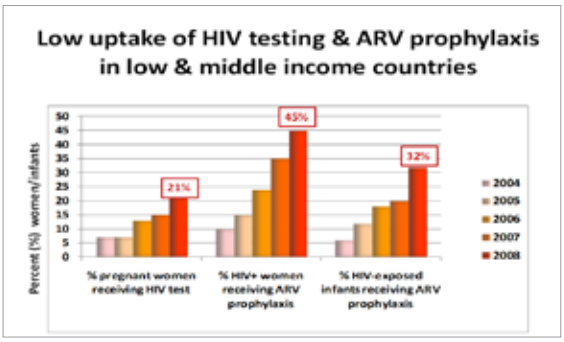

Figure 4. From Abrams E: **Eliminating Vertical Transmission**. *XVIII International AIDS Conference: Vienna, Austria*. THPL0103.

The United Nations strategy to prevent mother-to-child transmission (PMTCT) involves four components: (1) prevention of HIV in women, (2) prevention of unwanted pregnancies, (3) prevention of HIV transmission from a woman to her infant, (4) care and treatment for an HIV infected woman and her family. However, Abrams pointed to failings in implementing all four pillars in many countries. For example, the unmet need for family planning services has resulted in high rates of unintended pregnancies among women living with HIV (50% to 90% in high prevalence countries).

According to Abrams, key determinants influencing uptake of vertical transmission prevention services include: utilization

of maternal and child health services such as antenatal care and maternity services; the extent of national scale-up of services to prevent vertical transmission, including decentralization of such services to the primary health level; and the depth of vertical transmission prevention services (i.e., implementation of more comprehensive care including CD4 testing, more efficacious regimens, early infant diagnosis and infant follow-up).

Implications for Research, Policy and Practice

Changes in WHO treatment guidelines will undoubtedly save many lives assuming they are adequately financed and scaled-up. Bollinger's model predicting an increase in ART costs of 50% in resources limited settings by 2015 mirrors other estimates and raises important policy and programmatic questions coming at a time when donor funding for HIV is levelling off. The growing funding gap makes even more urgent the need to identify innovative sources of financing and invest in operations research to identify the most cost-effective strategies and proven interventions suitable for widespread scale-up. On the savings side, Auld demonstrated that implementation of Option A of WHO's 2009 PMTCT guidelines would save money and avert a substantial number of new infections. This supports rapid implementation of the guidelines. Equally, Lugada's presentation from Western Kenya shows the significant cost and health advantages to be achieved through integrate service delivery, suggesting that this approach should be favoured for scale-up particularly in resource-limited settings.

As Michel Sidibé said effective linkages between and where appropriate integration of sexual and reproductive health services with HIV programmes will be vital to achievement of the Millennium Development Goals. Further integration will require policy and structural interventions at the national level in many countries together with local actions. At the national level more attention needs to be paid to linkages between the SRH plans and AIDS plans, between the health sector and other sectors, and to the barriers created by SRH and HIV having separate funding streams. Separate monitoring and evaluation systems combined with different ways of involving community in programme design and delivery needs to be resolved at all structural levels. While at the local service delivery interface stigma and discrimination are still very real issues, there is a potential to over-burden weak health systems with little room for expansion and poor capacity for multi-tasking and task-shifting (need for new knowledge, skills, and non-judgemental attitudes), and service access for key affected population groups must be urgently addressed.

Prevention of vertical transmission is a key area within the mix of integrated service delivery. Research in recent years has meant that we now have the knowledge to prevent

Rights March and Rally, Tuesday July 20

transmission, WHO's 2009 PMTCT guidelines have provided the most effective means to achieve that and Auld's modelling demonstrates Option A is the most cost-effective. Yet that is not the end of the story. Abrams argues that the success of vertical transmission prevention programmes lies in decentralizing them and embedding them at the primary health level while increasing the take-up of a whole package of maternal and child-health services. Integration now needs to move beyond simply integrating a very basic package of antenatal care and maternity services with ART for a relatively small number, to integration of comprehensive HIV (including greatly increased access to ART and HAART) and maternal and child-health services delivered within an expanded family-based response.

As the AIDS response moves from one driven by the imperatives of a crisis to re-inventing itself for long-term sustainability responding to a chronic condition, health system strengthening must by necessity also move into a new phase. This new phase will need to continue its focus on data management and information systems but taking them to the next level so they can inform new effectiveness and efficiency measures that will be necessary to optimise programming in an environment of restricted funding if already achieved gains are not to be put at risk. Human resources must be an increased area of focus to train and retain needed staff but new partnerships with the private sector, community and areas of government outside of health will be equally important.

Integration of HIV programmes with other health services must remain a core component of health system strengthening but those programs that were built or integrated in a different

era of HIV must now be reviewed to ensure they are still relevant, cost-effective and sustainable. As more people with HIV life longer, chronic HIV care will need to embrace a range of other chronic illnesses, the impacts of long-term treatment and the problems of ageing. This will all necessitate health system strengthening and integration with parts of the health system not yet contemplated in many countries.

Track F: Policy, Law, Human Rights and Political Science

Major themes developed in Track F were human rights and HIV, criminalization of HIV exposure and populations most at risk for HIV, and the impact of drug control policies on HIV transmission and access to services.

Human Rights and HIV

At the Opening Session Michael Sidibé called for zero new infections, zero AIDS-related deaths and zero discrimination, making clear the importance of human rights in the HIV response [14]

Based on her analysis of UNGASS data submitted to UNAIDS in 2008, Sofia Gruskin summarized the extent to which human rights are being promoted and protected in national AIDS policies and strategies. She emphasized two important strategies: ensuring that human rights are protected in the design of HIV programmes; and advancing human rights-based policies and laws to create an enabling environment critical to the success of HIV programmes [30]. In another session, several presenters identified key obstacles to adopting a human rights response to HIV, including that: measures to advance human rights for key affected populations are few and poorly funded; public health and human rights are often seen as oppositional; governments sometimes adopt policies oppositional to both human rights and public health for reasons of political expediency; fear of political or religious backlash; and lack of leadership [31].
Other Track F and non-abstract presentations pointed to the way that human rights mechanisms, such as the right to health, could and should be used to further rights overall [32, 33], although Paula Akugizibwe warned that a guaranteed right to health at the international level must be translated into practical laws at the national level to be effective [34].

Nora Volkow, AIDS 2010 Plenary Session

Drug Control Policies, Harm Reduction and HIV among People Who Inject Drugs

The significant and growing HIV, hepatitis C and TB epidemics amongst people who inject drugs in Eastern Europe and Central Asia provided important context for the broader discussion of human rights at AIDS 2010. Several presentations demonstrated how misguided drug control policies fuel such epidemics. Louisa Degenhardt presented data show that providing people who inject drugs with NSP, OST and ART (for those with CD4 counts below 350 cells/mm^3) could reduce HIV incidence in that population by up to 63% [35]. However, for the estimated 15.9 million people in the world who inject drugs, only 22 needles/syringes are distributed per person per year, only half of the countries where injecting occurs have OST (only 8% people who inject drugs worldwide have access to OST), and only 4% of people living with HIV who inject drugs receive ART. Degenhardt concluded that it is only policy and environmental factors preventing greater coverage and access.

In a plenary presentation, Anya Sarang graphically described human rights abuses linked to drug control policies and the impact this has on HIV infection rates and the lives of people who inject drugs [36]. This includes police torture, extrajudicial executions, arbitrary arrest and detention, and denial of information about and access to evidence-based drug and HIV treatment. Such policies fuel the epidemic in Eastern Europe and Central Asia, in particular, but also in other countries, and they continue in the face of widespread evidence indicating that they impede access to HIV services [13]. Sarang specifically pointed to the Russian government's refusal to provide harm reduction services, including NSP and OST, even while infection rates soar.

Criminalization of Non-Disclosure, HIV Exposure and HIV Transmission

Use of criminal laws to prosecute people living with HIV

for non-disclosure, HIV exposure or HIV transmission is increasing and is a major issue confronting the global AIDS response. Edwin Bernard reports that 63 countries have HIV-specific criminal laws and new laws are proposed in another 16 countries [37]. Prosecutions have taken place in 41 countries with 17 countries using general laws even when they had HIV-specific laws available and four countries using both (See Figure 5). The largest number of prosecutions has occurred in the USA, Canada, Sweden and Switzerland.

Figure 5. Bernard E J: **Where HIV is a crime, not just a virus: a global ranking of prosecutions for HIV non-disclosure, exposure and transmission**. *XVIII International AIDS Conference: Vienna, Austria*. THAF0201.

Some opponents of HIV-specific laws have suggested that general criminal laws should be sufficient. In the Track F late breaker session, Eric Mykhalovskiy presented findings from a multidisciplinary study involving 28 people with HIV and 25 service providers in Ontario, Canada [38]. The study examined the impact of a general criminal code requiring disclosure of one's HIV positive status before engaging in activities that pose a 'significant risk' of serious bodily harm (HIV transmission). The study found that the vagueness of the concept produced fear and anxiety among people with HIV and confusion among service providers. Study participants were unsure about the standard of disclosure required and felt that the law directly impacted on HIV counselling, as individuals were less willing to seek support for disclosure and may be given conflicting advice.

Criminalization of Key Affected Populations: Human Rights Challenges to an Effective Response

In a Sunday plenary on the state of the epidemic with respect to human rights, Paula Akugizibwe referenced with alarm the large number of countries that submitted UNGASS progress reports in 2008 that indicated they had punitive laws in place that were obstacles to effective HIV services (see Figure 6) [34].

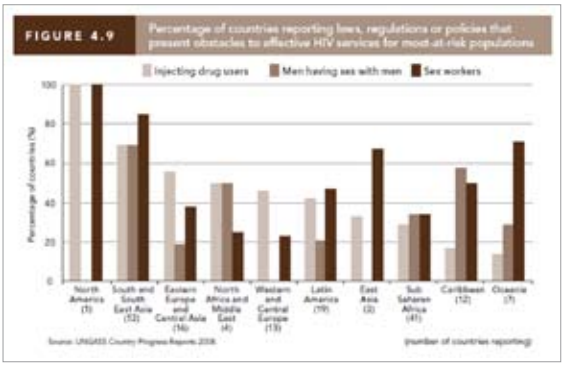

Figure 6. Akugizibwe P: **State of the Epidemic: Human Rights and the Response**. *XVIII International AIDS Conference: Vienna, Austria*. SUPL0110.

Jeffrey O'Malley also used the UNGASS data to demonstrate that MSM benefit from less than 2% of prevention resources in 38 of the reporting countries while they are almost 19 times more likely than the general population to become infected with HIV [39]. O'Malley argued that the median percentage of MSM reached with HIV prevention services directly relates to the existence of discriminatory laws; in environments where human rights violations occur more frequently, a significantly smaller proportion of men are reached. He then pointed out that 86 countries criminalize consensual same-sex acts, with 21 of those providing for penalties of more than 10 years and seven applying the death penalty.

John Godwin reported on the results of a United Nations Development Programme commissioned study of laws affecting MSM and transgender people in Asia and the Pacific [40]. The study documented punitive laws and law enforcement practices that hinder the HIV response in the majority of countries, including the criminalization of male to male sex and cross-dressing in 19 and four countries, respectively, and the selective enforcement in many countries of laws concerning public order, sex work and obscenity offences.

Criminalization of Sex Workers

Laws that criminalize sex work, the workers themselves or their clients undermine HIV programmes in many parts of the world. At AIDS 2010, presentations highlighted the impact of such laws, as well as policing activities, on access to health programmes and underscored the need for law reform in many regions of the world, including Africa [41] and South America [42]. Other presentations focussed on strategies for achieving change by building collaborative relationships with the police in the absence of law reform [43, 44].

Implications for Practice, Policy and Research

The adoption of human rights as a major, cross-cutting theme of the International AIDS Conference was a powerful

statement, bringing together science, advocacy and academia to examine the fundamental role human rights play in the continued scale-up of the HIV response. The Vienna Declaration's call for a more scientifically-based approach to illicit drug policy embodied this convergence of science, community and leadership, with over 12,725 signatures collected by the end of the conference. Looking ahead, the International Centre for Science in Drug Policy www.icsdp.org plans to monitor implementation of the Vienna Declaration and advocate for a more scientific approach to drug policy with policymakers, health care providers and public health administrators, in the hope of reform and lasting change to occur.

Human rights also served as an important lens through which conference participants learned more about the HIV epidemic in the neighbouring region of Eastern Europe and Central Asia. The strong and determined advocacy by civil society leaders from the region will be remembered, in particular. Several presenters including O'Malley evidenced how much progress has been made in recent years to build a legal environment that affirms the rights of LGBT and MSM populations in some countries through a succession of regional commissions, increased research, support for community organizing and a strong focus by the United Nations Development Programme and the Global Fund for AIDS, Tuberculosis and Malaria. This also highlighted, however, the challenge that remains. A clear link has been established between the existence of discriminatory laws and poor access to HIV services including prevention which in turn leads to an increase in HIV in marginalised populations. The challenge now is how to scale up this work to reach all of the key affected populations in more countries.

Programmes to reform legal environments will need to include decriminalization of homosexuality, sex work and drug use; improve the practices of police and the judiciary; and increase access to justice. Law reform to assist HIV programming needs to be addressed within law and justice programs but also within national HIV programs. International agencies will need to prioritize legal environments in terms of decisions around programme development, funding and research. Finally, new partnerships will need to be established between the AIDS response, the human rights sector and the LGBT, sex worker and drug user movements.

Criminalization of HIV exposure or transmission remains a major concern. While the new USA National HIV/AIDS Strategy calls for a re-think of criminal transmission laws it is too soon to tell if and when this will translate into legislative reform and a concomitant decrease in prosecutions. The recently-launched Global Commission on HIV and the Law will provide another avenue for important attention to facilitate reform laws criminalizing HIV transmission but also others impacting on the HIV response more generally. The Commission is comprised of eminent leaders from public life and was launched on 24 June 2010 by the United Nations Development Programme to provide global leadership on HIV-related legal and human rights issues by: synthesizing knowledge on the interactions between the legal environments, human rights issues and HIV; and fostering evidence-informed public dialogue on the need for rights-based law and policy reform in the context of HIV. The Commission will be taking submissions and holding regional hearings. It will be important to ensure that the voices of people from all sectors of the HIV response are heard in this process.

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Media Representative, Plenary Press Conference

LEADERSHIP AND ACCOUNTABILITY

Given the confluence of several important global health and development-related benchmarks in 2010, the AIDS 2010 programme included a significant focus on accountability for international commitments on HIV and related MDGs, with particular emphasis on unfulfilled human rights commitments related to vulnerable populations in both international law and the 2001 and 2006 UNGASS declarations[2]. Paula Akugizibwe's Opening Session plenary provided an overview of continuing human rights gaps in many settings, ranging from the systematic violation of human rights violations of MARPs and gender inequality, to socioeconomic disparities that violate the right to health enshrined in UN covenants [1].

The Right to Health

"The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition."

WHO Constitution

AIDS 2010 was an opportunity to assess recent progress in the global response to HIV. The impact of political leadership and increased AIDS funding, particularly over the last five years, has led to significant reductions in HIV incidence and increased ART coverage, ARV prophylaxis to prevent vertical transmission and other interventions in sub-Saharan Africa and other regions[3]. Revised WHO treatment guidelines and innovative approaches to the purchase, licensure and delivery of ARVs and other medical commodities is also improving equity and access to ART and new prevention technologies. Despite this progress, many speakers raised concerns regarding waning political leadership and global financing of the AIDS response, concerns which were amplified by the uncertain global economic climate and a recent UNAIDS/Kaiser Family Foundation report indicating that, for the first time in a decade, AIDS financing did not increase between 2008 and 2009 (see Section 8 of this report for highlights and analysis of AIDS 2010 universal access and global financing sessions).

Leadership on Legal and Policy Reform: Illicit Drug Use, Homosexuality and Sex Work[4]

AIDS 2010 sessions and other activities emphasized that the global 'War on Drugs' and related laws are failing people who use drugs and contributing to HIV transmission. These assertions were reinforced through a series of scientific papers published in the Lancet in conjunction with the conference [2-4]. The Vienna Declaration also presented an evidence-based argument for reform, demonstrating that the current approach to illicit drugs has not only failed to reduce drug trafficking and consumption, it has also benefited organized crime, fuelled drug market-related violence and incarcerated non-violent drug offenders in record numbers [5]. Offering an example of an alternative approach, João Goulão described Portugal's shift to a public health approach to drug policy after recognizing the country had one of the highest rates of problematic drug use in Europe. Decriminalizing drug use in 2001 (along with related legal reforms), in conjunction with developing a national drug strategy, a new institutional framework and an integrated approach to drugs and drug use has resulted in a decrease in the use of injection drugs, reductions in overall drug use by teenagers, and a steady downward trend in the number of HIV notifications among drug users (2002 to 2008) [6].

Signing of Vienna Declaration by First Lady of Georgia, AIDS 2010

New Zealand was cited as a best-practice example of how a strategic alliance among sex worker advocates, political leaders and human rights organizations was successful in removing sex work from the criminal code despite opposition from religious leaders and conservative politicians. The rights-based campaign focused on equity, evidence and ethics in its key messages. Since the change in the criminal code, sex workers report increased confidence that their concerns regarding human rights violations will be addressed and improved access to HIV and health interventions [7].

Felicita Hikuam also presented a review of the alarming trend towards expanding anti-homosexuality legislation in Africa [11]. Media coverage regarding the conviction and sentencing of two Malawi men who married each other and legislation in Uganda that proposed the death penalty for HIV-positive men convicted of homosexual acts provided the backdrop for

[2] Although not explicitly referenced in the 2001 Declaration of Commitment on HIV/AIDS or the 2006 Political Declaration on HIV/AIDS, 'vulnerable groups' are interpreted to include, inter alia, people who use drugs, MSM, sex workers, prisoners and migrant populations.

[3] A comprehensive overview of progress in improving access to health sector interventions is available in Towards Universal Access: Scaling Up Priority HIV Interventions in the Health Sector – Progress Report 2010.

[4] A UNAIDS country by country overview of laws that support or present obstacles to an effective AIDS response is available at http://data.unaids.org/pub/BaseDocument/2010/20100728_HR_Poster_en.pdf.

several sessions that explored the impact of criminalization of homosexuality on HIV transmission and service coverage among MSM. Despite evidence of significant epidemics among MSM in low- and middle-income countries, progress on 2010 national coverage targets for MSM lags behind all other vulnerable populations [8, 9]. David Scamell presented compelling data indicating that four out of the five countries with the highest HIV prevalence among MSM had laws criminalizing same-sex behaviour. In Asia, a region where approximately 50% of countries criminalize homosexuality, prevention coverage among MSM is on average more than three times higher in countries where homosexuality is legal [10].

In a session on human rights, HIV and MSM, Chris Beyrer noted that social exclusion and the absence of human rights protections for MSM also have important epidemiological implications for women and girls given the prevalence of concurrent heterosexual relationships among MSM. Stefan Baral presented modelling data that indicated scaling up prevention for MSM could have a significant impact on overall epidemiology in Kenya and other low- and middle-income countries [12, 13]. On a more positive note, Kenyan Pastor Michael Nzuki Kimindu provided an example of religious leadership on the issue. Despite excommunication from the Anglican church as a result of his public stance on homosexuality, he continues to advocate with religious leaders and faith communities in Kenya (where homosexuality is illegal) and other African countries, challenging popular misconceptions that homosexuality is an 'import' from the West, arguing that same sex relationships occur among many communities in Africa with little exposure to the West [14].

Advocacy Successes: HIV-related Restrictions on Entry, Stay and Residence

In the past two years the United States, China, Bulgaria, Georgia, South Korea and Namibia have removed or alleviated HIV-related travel restrictions, representing important victories for the HIV field [15]. A workshop on successful advocacy strategies highlighted the need for careful, culturally-sensitive planning, broad and strategic coalition-building, and clear and consistent advocacy messages that are grounded in human rights, but also use economic and public health arguments for removing bans [15]. In commenting on the strategy used in Namibia, Michaela Clayton stressed the need to ensure key politicians are onside and use of a mix of 'carrot and stick' approaches, including diplomatic and civil society interventions, at politically strategic moments. In Namibia, the approach of AIDS 2010 and its expected spotlight on human rights proved to be pivotal [16].[5]

Improving Treatment Equity and Access

While the majority of treatment-eligible PLHIV do not have access to ART, the gains documented in the above referenced 2010 WHO progress report were fuelled in part by significant reductions in drug costs, innovative mechanisms to address intellectual property issues, and licensure and the growth of local generic drug manufacturing capacity in low- and middle-income countries. Demonstrations directed at the European Commission as a result of concerns it privileges intellectual property rights over public health benefits in its international trade negotiations provided the backdrop for AIDS 2010 sessions addressing strategies for improving drug access. Joachim Rüppel presented evidence from six countries in Central America and the Caribbean indicating that domestic laws are effectively limiting implementation of the flexibilities provided for in the World Trade Organization's Trade-Related Aspects of Intellectual Property Agreement (TRIPS) (such as compulsory licensing) [17]. Mandeep Dahliwal presented on WHO and UNDP-led efforts to train patent officers in regulatory agencies to distinguish between truly novel ("inventive") compounds and existing (approved) compounds resubmitted for regulatory approval with only minor changes (a practice known as 'evergreening'); if regulators approve changes to an existing compound as an "inventive" or innovative change, it effectively extends patent protection and ensures innovator drug companies retain full control of the pricing and licensure of the compound [18].

Special Session, Leaders Against Criminalization of Sex Work, Sodomy, Drug Use

A combination of strategies to improve access to first-line drug regimens and address prohibitively expensive second- and third-line regimens was the subject of Ellen 't Hoen's plenary and other presentations by speakers in a session focusing on the Patent Pool for AIDS Medicines. Collaboration between civil society and national governments to address the globalization of patent protection in bilateral trade agreements (and the public health impacts if national governments relinquish TRIPS flexibilities as part of those agreements), and international activism aimed at articulating

[5] Information on the International Task Team, a global overview of HIV-related restriction on entry, stay and residence (country by country) and other resources are available at: www.hivtravel.org.

the links between the expansion of intellectual property protections, drug prices, and access to medicines were identified as important strategies [19, 20]. Brazil, India and Thailand were cited as examples of the successful use of TRIPS flexibilities to encourage domestic generic production capacity and the adoption of other measures (such as compulsory licensing) to reduce drug costs and improve access. Speakers referenced the important role that UNITAID and the Clinton HIV Access Initiative have played in financing and negotiating ARV price reductions and also warned that new threats, such as anti-counterfeiting legislation, were emerging and will require sustained collaboration and advocacy.

Incoming IAS President Elly Katabira raised the politically sensitive issue of corruption and health system inefficiencies as factors in limiting access to ARVs and other health commodities, noting that these long-standing issues have yet to be fully addressed in many low- and middle-income countries [21]. In a separate session, Michel Kazatchkine emphasized that while efficiency gains have been made and continue to be important objectives, they will not solve the current financing deficit: "Decisions on funding are political and political decisions are about choices". This point was underscored by data from Cate Hankins' presentation comparing the USD$26.8 billion needed to meet universal access targets – which would save millions of lives in the developing world – with the USD$8 billion in bonuses for London's financial sector in 2008, the estimated USD$12 billion spent annually on Valentine's Day, and the almost USD$200 billion spent on the war in Iraq in 2008 [22, 23].

Implications for Policy and Practice

The extent to which the discussions, workshops and evidence presented at AIDS 2010 will have an impact on leadership and accountability will depend to a significant extent on their uptake by political leaders, and whether the international community will prioritize evidence over political expediency and ideology. To date, rhetoric has far exceeded reality with respect to implementation of the UNGASS 2001 and 2006 commitments on HIV/AIDS, particularly the provisions aimed at protecting the human rights of vulnerable groups. The disappointing level of donor commitments made at the recent Global Fund replenishment meeting certainly raises additional concerns about the future of universal access.

One of the fundamental challenges of the Leadership and Accountability Programme is the limited engagement of current (rather than former) political leaders who have their hands on the levers of power and finance. Despite the choice of Vienna to help focus attention on the expanding HIV epidemic in Eastern Europe and Central Asia, there was little senior government representation from this region. The UN system itself came under fire for the lack of transparency and accountability, with Stephen Lewis (former UN Special Envoy for Africa) denouncing the cloak of secrecy surrounding appointments of Yuri Fedorov, a senior Russian diplomat, as the new Executive Director for the United Nations Office on Drugs and Crime (UNODC) [24]. Given Russia's anaemic AIDS response, its poor human rights record with respect to people who use drugs and other MARPs, and official opposition to OST and NSPs, many speakers noted that the choice of a senior Russian official to head UNODC does not bode well for the adoption of a public health approach to international drug policy.

Accountability, of course, is not limited to political leaders. Leadership and Accountability Programme Lead Rapporteur Nathan Ford highlighted the accountability framework developed recently for civil society representatives working on global health issues, using indicators such as communications, team-building, collaboration, decision-making processes and values [9]. In light of multiple reports of intransient policy and legal barriers presented at AIDS 2010, tools such as this will hopefully contribute to even stronger AIDS advocacy efforts in the future.

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COMMUNITY

A number of AIDS 2010 sessions focused on community mobilization and advocacy on human rights issues, with particular attention to legal and policy barriers to universal access at the country level. Civil society has played a particularly critical role in the HIV response in countries in Eastern Europe and Central Asia (EECA), given the low political profile, limited domestic financing and challenging social and statutory context in the region. The need to scale up AIDS financing – including what Kate Thomson described as the unique "value for money" proposition of community-based services – was a prominent theme in the Community Programme. A number of speakers highlighted civil society organizations' ability to access key affected populations often ignored or poorly served by public health care systems [2]. The daunting situation of prisoners, who face widespread human rights abuses and concurrent epidemics of HIV, TB and HCV, was also a salient issue in Vienna.

Advocacy in a Context of Stigma, Discrimination and Human Rights Violations

Carlos Cáceres argued that it is not only the limited amount of overall resources available, but how such resources are allocated that is presenting significant obstacles to the AIDS response, with only 7% of AIDS funding allocated to MARPs in areas with low-level and concentrated epidemics despite the fact that such groups comprise the majority of PLHIV in most of these settings.[3] The legal and societal proscriptions against drug use, sex work and homosexuality are also reflected in the absence of national service targets for people who use drugs, MSM and sex workers in many low- and middle-income countries, resulting in poor coverage of HIV prevention, care and treatment interventions.[4-8] In a satellite on HIV prevention among people who use drugs in Russia, Olga Blinova noted that despite ongoing expansion of the HIV epidemic within this population, harm reduction programmes face significant political opposition and declining domestic financial support. Blinova, Jason Sigurdson, plenary speaker Anya Sarang and others noted that these challenges are further complicated by police violence and other human rights abuses directed against this population, often directed towards sites where critical health services, such as NSPs, are offered.[9-11] Some 32 countries retain the death penalty for drug possession and, in South Asia, law enforcement practices such as forced confinement, and 'detoxification' of people who use drugs in extrajudicial drug detention facilities further exacerbate existing human rights violations and access to health care in many settings.

Stigma, Surveillance and the AIDS Response

According to Zoryan Kis, coordinator of Fulcrum, an organization delivering community-based MSM education and prevention services in Kiev, Ukraine, , most clinicians and psychiatrists in Ukraine (as in other countries in this region) pathologize homosexuality as a mental disorder linked to criminal behaviour, thereby contributing to stigma and underreporting of HIV among MSM. The situation is exacerbated by HIV surveillance and reporting practices; MSM are not part of routine surveillance and public health officials often do not explicitly inquire about sex between men as a transmission category, allocating many 'unknown' individual case reports to other categories. There is little reporting on MSM from the national AIDS centre, though Kis estimates HIV prevalence among Ukrainian MSM to be as high as 15%, compared to an estimated adult prevalence between 1% and 1.6%.[1]

The intense stigma and social exclusion faced by these populations also compromises the ability of researchers and public health officials to establish accurate, robust HIV surveillance data. Ani Shiriksivilli noted that the proportion of new infections attributable to MSM in Eastern Europe and Central Asia is likely significantly underreported (see sidebar).[12, 13] Yves Souteyrand presented evidence of similar patterns in sub-Saharan Africa, emphasizing that the UNAIDS mantra to 'know your epidemic' is difficult given national statutory frameworks that criminalize MARPs, effectively compromising the accuracy of epidemiological data.[14]

In this year's Jonathan Mann Memorial Lecture Meena Seshu described how SANGRAM, a collective of Indian sex workers, has mobilized an effective community-based response to AIDS based on a Bill of Rights that promotes individual and community empowerment. [15] Within the context of a broader advocacy framework aimed at transforming underlying social inequities, the programme assumes that its members know best how to deliver effective HIV interventions to the sex worker community and challenges the notion that they need to be 'rescued' from their professional lives.

Eastern Europe and Central Asia

The HIV epidemic in EECA is expanding more rapidly than any other region, with injecting drug use and heterosexual transmission the primary modes of transmission.[16, 17] In her plenary presentation, Anya Sarang contrasted national drug control policies in Russia and Australia. Australia introduced harm reduction interventions early in its epidemic (including

NSPs, OST, safe injection sites and peer counselling), and has kept HIV prevalence among people who inject drugs below 1%. In Russia, where OST is illegal and NSPs and other services for drug users are inadequate, under-resourced and face intense political opposition, national HIV prevalence among people who use injection drugs is estimated to be 37.5%.[10] While Ukraine has the highest adult HIV prevalence of any country in the region (at 1.33%), it also has seen HIV incidence in this population drop steadily as a result of community mobilization, advocacy and donor investments in OST, NSPs and ART.[17] Data from eight Ukrainian cities indicate a significant decline in HIV prevalence among people who use drugs, from 34.8% in 2004 to 14.8% in 2008. Michel Kazatchkine noted serious problems with supply and procurement systems, which have resulted in ARV stock-outs and treatment interruptions in Russia and Romania.[18] In the same session, Jeffrey Lazarus noted that in this region only one in 100 HIV-positive people who injects drugs has access to ART, and only 23% of people in need of treatment have access, compared with approximately 44% in sub-Saharan Africa.[6] [19]

Community-based responses to AIDS in EECA are hampered not only by the legal and societal context, but also by significant discrepancies between epidemiological data and domestic resource allocation. According to Shona Schonning, only 11% of AIDS funds in this region are allocated to services for key affected populations (8% to people who inject drugs, 2% to female sex workers, and 1% to MSM) and the region relies heavily on the Global Fund and other international donors to finance the local AIDS response.[20]

Dmytro Sherembey, AIDS 2010 Plenary Session

Investing in Community-based Responses

The Global Fund has played a leadership role in financing the community-sector response to AIDS, particularly through its community systems strengthening funding envelope. Ntombekhaya Matsha noted that, while this component of Global Fund financing continues to evolve, its fundamental premise is to develop "informed, capable and coordinated communities and community-based organizations and structures that can respond to the need of communities facing health challenges". [21] Case studies presented by the Eastern Europe and Central Asia Union of of PLHIV Organizations demonstrated that investments in community system strengthening by UNAIDS and the Global Fund are building capacity to improve services, strengthening management and accountability of community organizations, and reinforcing advocacy on behalf of marginalized communities.[22] Ian McKnight reminded delegates that the Global Fund approach is one model, and he encouraged the development of diverse models that would also support political and legal reform efforts to "help communities move from where they are to where they want to be".[23]

Prisoners and HIV, TB and HCV

In the first-ever plenary on HIV and the related epidemics of TB and HCV in prisons, UN Special Rapporteur on Torture Manfred Nowak painted a grim picture of the challenges facing 10 million prisoners worldwide. After six years of research he found evidence of torture in almost every prison setting, overcrowding in approximately 60% of countries, substantial use of extended periods of pre-trial detention (over 60% of prisoners in some countries were in pre-trial detention), and data suggesting significant and overlapping epidemics of HIV, TB and HCV.[24] Modes of transmission were diverse and include unprotected consensual and non-consensual sex, sharing non-sterile injecting equipment and tattooing/scarification. Nowak emphasized that – although many view the prison population as isolated – most prisoners will move back and forth between prisons and the community; this makes the delivery of prevention, care and treatment interventions important for prisoners, but also for the broader community. Drug control policies in many countries have led to a high proportion of the prison population being incarcerated for drug-related offences, yet few countries make NSP or OST available in prisons. Mercedes Gallizo Llamas presented on the comprehensive harm reduction programme now available in Spanish prisons, which has resulted in a decrease of HIV infection rates from 22.7% in 1996 to 7.0% in 2009 and a decrease in HCV infection rates from 48.6% in 1998 to 25.3% in 2009.

Dmitria Shermebey offered delegates a personal narrative to illustrate Nowak's disturbing report, having emerged from prison in the Ukraine with HIV, HCV and TB. He noted that he was fortunate to have escaped with his life; most of his friends died in prison from one of these three infectious diseases or from a drug overdose – a significant problem given the lack of drug rehabilitation treatment within prison systems and the high prevalence of drug use.[25]

[6] These coverage estimates do not incorporate revised estimates of need based on updated WHO treatment guidelines released in 2010.

Wish Tree with thoughts from the Eastern European and Central Asian community, Global Village

Implications for Practice, Policy and Research

In his summary report, Community Programme Lead Rapporteur Nycal Anthony-Townsend noted that the fundamental approach of linking the community sector with scientific evidence, investing in community systems strengthening and service delivery, and providing opportunities for networking and collaboration, is helping to advance the rights of PLHIV, key affected populations and other vulnerable groups in support of universal access and the 2001 and 2006 UNGASS commitments [26]. Such efforts will be increasingly important given that many national AIDS plans and their targets remain unambitious, and poorly aligned with current epidemiological realities. The conference provided civil society leaders from EECA with a rare international platform to raise the political and financial challenges hampering an effective AIDS response in this region with a global audience, and will hopefully help improve efforts to implement evidence-based HIV interventions for key affected populations.

Community-sector activists (along with many others) advocated strongly at AIDS 2010 for both developed and developing countries to meet their international commitments, with the mantra "No Retreat! Fund AIDS". However, community programme sessions and activities in the Global Village were also marked by growing concerns that the current plateau in AIDS financing and waning political interest may squander the impressive progress to date. Many questions remain about the best strategy for and expanding political and financial commitments to global public health challenges.

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Condomize Zone, AIDS 2010

UNIVERSAL ACCESS AND GLOBAL FINANCING FOR AIDS

In 2005 the international community made a historic commitment to achieve universal access to HIV prevention, treatment and care by 2010. The commitment was subsequently endorsed by all UN Member States and incorporated in the 2006 Political Declaration on AIDS. AIDS 2010 was therefore a critical platform to assess progress towards this goal, to highlight challenges that are impeding progress, and to map the way forward beyond the 2010 deadline. Dialogue on achieving universal access focused on two core issues: 1) securing the required resources from international donors and national governments; and 2) making more effective and efficient use of available resources.

Financing the AIDS Response

At a satellite session entitled, Political and Economic Challenges for Achieving the Universal Access Goal, speakers reported that between 2001 and 2009, funding for the AIDS sector increased fifteen-fold [1]. In 2001, AIDS funding totalled US$1 billion, growing to US$15.6 billion by the end of 2008 [1]. At the end of 2009 an estimated 5.2 million people had initiated treatment, up from 500,000 in 2003, representing a twelve-fold increase in just six years [2]. The increase in funding to the sector has allowed for country level programme scale up and contributed to a 17% decrease in infection rates since 2001 [3]. Despite the important progress, the political will and financial resources necessary to make universal access a reality appear to be waning. After years of consistent increases in the resource pool for AIDS, funding essentially flat lined for the period 2008-2009 [4]. The financial shortfall and donor retreat have occurred despite the mounting evidence of the broader health benefits that have been derived as a result of the scaled up response to AIDS A number of speakers highlighted the intrinsic links between HIV and maternal and child health, the links between HIV and TB, and the continuing role that a robust HIV response can play in more general health system strengthening, further advancing the evidence base summarized in a recent WHO review on the subject and a recently released IAS policy paper [5-7].

Several plenary speakers and other presenters emphasized the importance of maintaining political momentum for the achievement of universal access targets. In his Opening Session remarks, UN Secretary-General Ban Ki-moon stated: "We have made significant progress in the global AIDS response… We must ensure that our recent gains are not reversed… universal access must remain our beacon" [8].

The need for sustained political leadership on AIDS financing is underscored by the fact that for every two new people who are able to access treatment, five more become newly infected [2]. Furthermore, under the new WHO treatment guidelines, an additional 30-50% of HIV-positive people are eligible to start ART immediately, with another 5 million individuals in need of treatment globally. This equates to a nearly 10 million person treatment gap requiring significantly increased resources for ARV scale up [9].

Key events in 2010 will determine how the universal access pledge is taken forward in years to come. The G8's summit held in Canada in June was an important opportunity to review progress and for the G8 to hold itself accountable for past promises. While the G8 re-committed to the goal of universal access, it failed to set a new target date for reaching this goal [10]. The major outcome of the summit was the launch of the Muskoka Initiative, which focuses on accelerating progress towards both MDG 4 and 5 to significantly reduce the number of maternal, newborn and under five child deaths in developing countries [10]. Given the intersection between HIV and maternal and child health, the Muskoka Initiative was widely praised by those in the AIDS field. However, there is growing concern that the interrelatedness of the health MDGs is not guiding policy development or resource allocation, and instead that the MDGs are being pitted against each other. At AIDS 2010 a number of speakers, including Ban Ki-moon cautioned against this false dichotomy: "we must recognize the intrinsic links between AIDS and our work to achieve the millennium development goals, especially women's and children health. The MDGs are indivisible and should never be pitted against each other" [8].

The Future of Universal Access Part Two, Demonstration

During AIDS 2010, conference speakers and activists advocated for the full replenishment of the Global Fund at its upcoming replenishment meeting (subsequently held

in October). Commitments of US$20 billion on the part of donors and the international community would have allowed the Fund to scale up programming and bring the AIDS sector significantly closer to attaining the universal access targets [11].[7]

Vuyiseka Dubula, Satellite Session, Universal Access Beyond 2010

Effective and Efficient Use of Available Resources

A number of speakers at the conference highlighted the importance of seeking efficiency gains in the delivery of AIDS services. The discussion was focused on the diminishing resource pool for AIDS, as well as opportunities to streamline service delivery to improve results and reach a higher number of people. In a session entitled, *No Resources, No Results*, Cate Hankins argued that, "we need to improve how the money is spent, increasing the coverage of services will produce a reduction in unit costs and thus achieve economies of scale… efficiency is not a choice, it is a necessity… we need to choose our interventions strategically and to focus them where they will have maximum benefit" [12].

Implications for Practice, Policy and Research

At present, the international AIDS community is facing a critical juncture as it comes to recognize that it will have to increase efforts and may need to reconsider strategy in order to reach universal access targets by 2015. While there has been widespread acknowledgement that AIDS activists have played a critical role in getting AIDS onto the global health agenda, there was also an acknowledgement that AIDS activists need to adapt to the changing landscape of the AIDS response. As noted by Paula Akugizibwe: "there is not enough attention on the political side of AIDS, and how the response is driven by political factors. Activists need to get smarter; they need to work better and in a more efficient way and they need to respond to the changing dynamics in the sector. Activists need to know and understand the politics better so that they can respond more effectively" [13].

The 2010 universal access target will not be met this year and the flatlined funding for AIDS and an increased focus on other global health challenges may signal a shift in political priorities. Within the current landscape of diminishing resources and political will, an effective AIDS response focusing on both increasing available resources and improving efficiency will be critical. This includes more aggressive efforts to overcome stigma and discrimination and to remove legal barriers that interfere with targeting of interventions to key affected populations. Many national AIDS plans and the resources that support their delivery are often not aligned with current epidemiological evidence; for AIDS finances to achieve the greatest efficiencies and economies of scale, they will need to be more strategically targeted to populations most in need, even if such decisions are not always an 'easy sell' for political leaders in an unstable economic context which historically has often reified the populist prejudice and xenophobia faced by minority populations. Yet evidence from many settings suggest that the stigmatized and socially marginalized populations most vulnerable to HIV infection and other diseases continue to be underresourced, underserved and face a daunting range of social, political and legal barriers in accessing HIV and other health services. Changes in resource allocation are required to ensure hard-won AIDS financing is spend most effectively.

Notwithstanding improved efficiencies, the scale of current unmet need means that universal access will not be achieved without a substantial increase in resources for AIDS, as reflected comments by Michel Kazatchkine and others in Section 4 of this report. Mark Heywood pointed out that, "Funding universal access would not break the global bank. What we have done by pioneering and reviving the concept of universal access to treatment for HIV is to cut a path and re-establish a set of principles that should apply to all diseases. The bar should be raised in relation to all health conditions, not pulled back down again so that HIV can be as equally neglected as other diseases" [14].

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COMMUNICATING AIDS 2010 TO THE WORLD

Media coverage of International AIDS Conference plays a key role in promoting AIDS awareness and keeping AIDS at the forefront of global health and development discussions. AIDS 2010 had 1,276 registered media delegates, with many more journalists covering the event from afar. Overall, the spirit of media coverage from AIDS 2010 was both optimistic and pragmatic. A series of scientific advances, including the South African CAPRISA microbicide study, provided more "good news" than has been generated by recent international AIDS meetings. At the same time, a growing realization that the crisis has outstripped resources, and perhaps donor interest, led reporters to pose a series of difficult questions about the global commitment to reach agreed goals and to fully fund the AIDS response. Advocates presented a series of clear, well-reasoned, fact-driven arguments on funding and services that informed a more serious body of reporting on global commitment to HIV than has been seen at recent conferences.

United States media published the largest number of articles on AIDS 2010, with a significant focus in many of those stories being the new US National AIDS Strategy, which was released just before the conference. However, local and regional media outreach efforts also resulted in a large number of articles published in Austria and Germany [1]. The Austrian Press Agency prepared 370 articles before and during the conference, circulated to Austrian media, international news agencies and Vienna-based foreign correspondents [2]. Among the most covered issues at AIDS 2010 were the following:

CAPRISA 004 Results

While media reporting on global health in general and AIDS in particular has diminished in recent years, CAPRISA demonstrated that the world's media will still cover HIV en masse when there is breakthrough news. The overwhelmingly positive response to CAPRISA microbicide results indicated that the news media's appetite for HIV news is still strong – as long as the news is good and perhaps unexpected. The fact that microbicides are female-controlled also drove media interest, as the realities of the heterosexual epidemic in developing countries and the prevention challenges it poses gained broader understanding in Vienna. CAPRISA may be the first of a series of ARV-based prevention modalities to dominate the headlines in the coming years. CAPRISA was also part of a resurgent South African presence at the conference that led to hope that Africa would assume an increasingly visible role in HIV research moving forward.

In related areas of scientific progress, a growing understanding of the events that immediately follow HIV infection, along with the discovery of new neutralizing antibodies lent an air of optimism to coverage of progress in the search for potential prevention methodologies such as vaccines.

Annie Lennox, Human Right Responses to HIV Epidemic, Press Conference

Funding

Weakening funding commitments, combined with growing global need and new WHO treatment guidelines that prioritize more people for immediate treatment dominated coverage in the lead-up to and early days of AIDS 2010. Confusion over the commitment of the largest global funder, the United States, concern about the Global Fund replenishment, reports of flat funding overall and the failure to reach universal access targets for 2010 generated significant coverage and dominated outreach by advocacy groups worldwide. Bill Gates' theme of increased efficiency also generated significant and often thoughtful media coverage, as advocates generally acknowledged the need to improve how HIV funding is spent, in addition to increasing overall funding. Strategies such as the Financial Transactions Tax also received considerable coverage as part of a trend toward innovative strategies to finance the global AIDS response and other global health priorities.

Human Rights and Drug Policy Reform

The conference theme of *Rights Here, Right Now*, the Vienna Declaration and the strong participation of Eastern European delegates in the conference also influenced media coverage of AIDS 2010, throwing a strong spotlight on drug policy and human rights issues that mark the epidemic in the Eastern Europe and Central Asia region. Other prominent stories included the Human Rights March and Rally led by singer/songwriter Annie Lennox and a report by the UN Special Rapporteur on Torture that highlighted endemic problems in prisons, including overcrowding, frequent use of torture, and lack of access to health interventions, all of which are helping to fuel high rates of HIV, hepatitis C and TB.

Treatment as Prevention

AIDS 2010 was the conference at which delegates and media truly began to understand and trumpet the multiple benefits of widespread ARV access, including those related to HIV prevention. An increasing body of data demonstrating the impact of reduced community viral load and growing pressure to justify the cost of ARV access helped fuel coverage of this issue to a much greater degree than in the past.

Rachel Ong, Plenary Press Conference - Communicating AIDS 2010 to the World Section

Towards a Cure

AIDS 2010 was probably the first international conference since 1996 in which possible approaches to an AIDS cure were discussed seriously. A case in which an individual was able to clear his HIV infection through a bone marrow transplant has opened a new field of scientific inquiry that generated significant attention in Vienna and may continue to do so, if the science is shown to support more practical approaches to eliminating HIV infection. More detailed data and analysis of AIDS 2010 media coverage will be available in the AIDS 2010 Evaluation Report, due for release in December 2010.

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AIDS 2010

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