Welcome to the 2nd issue of HIV this month! In this issue, we cover the following topics:

1. **Reduce sexual transmission**
   - High HIV prevalence among men who have sex with men
   - HIV prevention is successful among refugees and displaced persons
   - HIV infection remains high among young men of color who have sex with men in the United States
   - Increasing the impact of male circumcision campaigns
   - HIV testing techniques can identify incident infections
   - The contribution of antiretroviral treatment to combination HIV prevention

2. **Prevent HIV among drug users**
   - Harm reduction among drug users dramatically reduces new HIV and Hepatitis C virus infections

3. **Eliminate new HIV infections among children**
   - Adverse events associated with nevirapine use in pregnancy
   - Increasing HIV testing among male partners in PMTCT settings

4. **15 million accessing treatment**
   - Mortality and morbidity among people living with HIV on long-term ART
   - Comparing adverse effects of nevirapine and efavirenz
   - Challenges in retention in long term care and treatment

5. **Avoid TB deaths**
   - Preventing nosocomial tuberculosis in health facilities
   - Reviewing the treatment and diagnostic challenges of TB/HIV
   - TB among children living with HIV

6. **Eliminate gender inequalities**
   - Hormonal contraception and the risk for HIV acquisition
   - Comprehensive care and HIV prevention for survivors of sexual violence

7. **Strengthening HIV integration**
   - Keeping health care workers well
   - Integrating HIV care and treatment into primary health care centers
• Decentralizing pediatric HIV care and treatment into primary care centers
• Task shifting from doctors to nurses results in comparable outcomes

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Peter Godfrey-Faussett and Celeste Sandoval
UNAIDS
1. Reduce sexual transmission

HIV among MSM in a large middle-income country.


To conduct the first national biological and behavioral surveillance survey for HIV among MSM in Brazil, a cross-sectional surveillance study utilized respondent driven sampling (RDS) in 10 cities, following formative research. MSM reporting sex with another man in the last 12 months, at least 18 years of age, and residing in the city of the study were recruited. Results were calculated for each city using RDSAT 5.6. For the national estimate, a new individual weight using a novel method was calculated. The 10 cities were aggregated, treated as strata and analyzed using STATA11.0. Self-reported HIV status and logistic regression was used to impute missing values for serostatus, an important issue for RDSAT. A total of 3859 MSM were interviewed. Sample was diverse, most self-identified as mulatto or black, were social class C or below, and had relatively low levels of education. More than 80% reported more than one partner in the last 6 months. Only 49% had ever tested for HIV. HIV prevalence among MSM ranged from 5.2 to 23.7% in the 10 cities (3.7-16.5% without imputation) and was 14.2% for all cities combined with imputation. The overall prevalence was two and three times higher than that estimated for female sex workers and drug users, respectively, in Brazil. Half of those who tested HIV positive were not aware of their infection. The AIDS epidemic in Brazil is disproportionately concentrated among MSM, as has been found in other countries. Renewed efforts to encourage testing, prevention and treatment are required.

Abstract access

Editor’s notes: Key populations at particular risk of HIV infection need to be understood in a country-specific context. Terminology such as ‘generalized epidemic’ and ‘concentrated epidemic’ may have some utility, but are insufficient for understanding risks for specific populations, and for decision making for resource allocation and tailoring of prevention messaging. In addition, even in concentrated epidemics, HIV prevalence in specific key populations can approach or surpass epidemic proportions.

Men who have sex with men have HIV prevalence rates in many countries that are extraordinarily high: in Brazil this study finds HIV prevalence rates up to 27%, significantly higher than in a number of other key populations. Despite focused HIV prevention and testing campaigns almost half of men who have sex with men in Brazil do not know their infection status. This study was conducted before HIV testing was available outside of government facilities, and concern about stigma and confidentiality was raised by those who hadn’t tested. This study supports the value of NGO-based testing among key populations.

Changes in HIV-related behaviours, knowledge and testing among refugees and surrounding national populations: A multicountry study.

Dahab M, Spiegel PB, Njogu PM, Schilperoord M. AIDS Care. 2013 Jan 10 [Epub ahead of print]

To the authors’ knowledge, there is currently no published data on the prevalence of risky sex over time as displaced populations settle into long-term post-emergency refugee camps. To measure trends in HIV-related behaviours, the authors conducted a series of cross-sectional HIV behavioural surveillance surveys among refugees and surrounding community residents living in Kenya, Tanzania and Uganda, at baseline in 2004/2005 and at follow-up in 2010/2011. Participants were selected using two-stage cluster sampling, except in the Tanzanian refugee camp where systematic random sampling was employed. Participants had to reside in a selected household for more than weeks and aged between 15 and 49 years. 11,582 participants (6448 at baseline and 5134 at follow-up) were interviewed in three camps and their surrounding communities. The prevalence of multiple sexual partnerships ranged between 10.1 and 32.6% at baseline and 4.2 and 20.1% at follow-up, casual partnerships ranged between 8.0 and 33.2% at baseline and 3.5 and 17.4% at follow-up, and transactional partnerships between 1.1 and 14.0% at baseline and 0.8 and 12.0% at follow-up. The prevalence of multiple partnerships and casual sex in the Kenyan and Ugandan camps was not higher than among nationals. To the authors’ knowledge these data are the first to describe and compare
trends in the prevalence of risky sex among conflict-affected populations and nationals living nearby. The large reductions in risky sexual partnerships are promising and possibly indicative of the success of HIV prevention programs. However, evaluation of specific prevention programmes remains necessary to assess which, and to what extent, specific activities contributed to behavioural change. Notably, refugees had lower levels of multiple and casual sexual partnerships than nationals in Kenya and Uganda and thus should not automatically be assumed to have higher levels of risky sexual behaviours than neighbouring nationals elsewhere.

Abstract access

Editor’s notes: Whatever assumptions are made, there has been limited knowledge regarding HIV risk among long term displaced people compared to non-displaced people in surrounding communities. This study notes that frequency of multiple partnerships and ‘risky’ sex did not differ between these two groups. It is important that HIV prevention service providers understand their specific community rather than make assumptions about behavior. However, additional data beyond behavior must be examined to estimate risk of acquisition of HIV infection, such as community level HIV prevalence.


In 2009, 6.7% of the estimated 1.1 million persons living with HIV infection in the United States were youths (defined in this report as persons aged 13-24 years); more than half of youths with HIV (59.5%) were unaware of their infection. CDC used National HIV Surveillance System data to estimate, among youths, prevalence rates of diagnosed HIV infection in 2009 and the number of new infections (incidence) in 2010. To assess the prevalence of risk factors and HIV testing among youths, CDC used the 2009 and 2011 Youth Risk - Behavior Surveillance -System for 9th-12th grade students and the 2010 National Health Interview Survey (NHIS) for persons 18-24 years. The prevalence of diagnosed HIV was 69.5 per 100,000 youths at the end of 2009. Youths accounted for 12,200 (25.7%) new HIV infections in 2010. Of these, 7,000 (57.4%) were among blacks/African Americans, 2,390 (19.6%) among Hispanics/Latinos, and 2,380 (19.5%) among whites; 8,800 (72.1%) were attributed to male-to-male sexual contact. The percentage of youths tested for HIV overall was 12.9% among high school students and 34.5% among those aged 18-24 years; it was lower among males than females, and lower among whites and Hispanics/Latinos than blacks/African Americans. A disproportionate number of new HIV-infections occurs among youths, especially blacks/African Americans, Hispanics/Latinos, and men who have sex with men (MSM). The percentage of youths tested for HIV, however, was low, particularly among males. More effort is needed to provide effective school- and community-based interventions to ensure all youths, particularly MSM, have the knowledge, skills, resources, and support necessary to avoid HIV infection. Health-care providers and public health agencies should ensure that youths are tested for HIV and have -access to sexual health services, and that HIV-positive youths receive ongoing health-care and prevention services.

Abstract access

Editor’s notes: Strikingly similar to the abovementioned study from Brazil, the study from the United States demonstrates the extraordinarily high HIV prevalence among African American and Hispanic/Latino young men who have sex with men- with relatively few having a history of HIV testing. This key population in the United States would benefit from specific testing outreach and care linkage efforts.

Efficient and equitable HIV prevention: A case study of male circumcision in South Africa.


The authors determine efficient, equitable and mixed efficient-equitable allocations of a male circumcision (MC) intervention reducing female to male HIV transmission in South Africa (SA), as a case study of an efficiency-equity framework for resource allocation in HIV prevention. A mathematical model was
developed with epidemiological and cost data from the nine provinces of SA. The hypothetical one-year-long MC intervention with a budget of US$ 10 million targeted adult men 15–49 years of age in SA. The intervention was evaluated according to two criteria: an efficiency criterion, which focused on maximizing the number of HIV infections averted by the intervention, and an equity criterion (defined geographically), which focused on maximizing the chance that each male adult individual had access to the intervention regardless of his province.

**A purely efficient intervention would prevent 4,008 HIV infections over a year.** In the meantime, a purely equitable intervention would avert 3,198 infections, which represents a 20% reduction in infection outcome as compared to the purely efficient scenario. A half efficient-half equitable scenario would prevent 3,749 infections, that is, a 6% reduction in infection outcome as compared to the purely efficient scenario. This paper provides a framework for resource allocation in the health sector which incorporates a simple equity metric in addition to efficiency. In the specific context of SA with a MC intervention for the prevention of HIV, incorporation of geographical equity only slightly reduces the overall efficiency of the intervention.

**Abstract access**

**Editor’s notes:** Health planners always have to balance equity (ensuring equal access) and efficiency (the relative impact of a health intervention in different locations or population groups). Economic analyses and other efficiency analyses are important tools for health planning decision making, but are not sufficient, as other issues such as human rights and equal access must be considered. Even when geographic location is included as a criterion, populations are mobile, and widespread campaigns may also have positive consequences beyond the most immediate measure of success (in this case, more broad-based HIV prevention can be part of male circumcision campaigns). The analysis provided in this modeling study is useful for public health practitioners and community advocates.

**Development of a Novel Rapid HIV Test for Simultaneous Detection of Recent or Long-Term HIV Type 1 Infection Using a Single Testing Device.**


Laboratory assays for the detection of recent HIV infection for HIV incidence surveillance are essential to HIV prevention efforts worldwide because they can identify populations with a high incidence and allow targeting of resources and monitoring of incidence trends over time. This study describes the development of a novel rapid HIV-1 incidence-prevalence (I-P) test that can be used for the simultaneous detection and discrimination of prevalent (long-term) or incident (recent) HIV infections using a single device. A lateral flow assay was developed that uses a multisubtype recombinant gp41 protein applied at two concentrations of antigen (high and low). Prevalent and incident HIV-1 infections can be distinguished based on differential antibody binding at the two antigen concentrations. High level/high avidity antibodies present in prevalent infections bind to and are detected at both antigen concentrations while low level/low avidity antibodies present in recent HIV infections are detected only at the higher antigen concentration line. A total of 205 HIV-positive specimens with known status (recent=105, long-term=100), including 57 specimens from seroconversion panels, were tested by the rapid I-P assay and the results were compared to the HIV-1 BED capture enzyme immunoassay (CEIA). There was a 95.1% agreement of final classification (recent or long-term) with the BED assay (kappa=0.910) (mean recency period=162 days) and a high correlation between the intensity score of the low antigen line with the BED OD-n (Pearson correlation=0.89). The new rapid I-P test has great potential to simplify HIV surveillance efforts by simultaneously providing information on both HIV prevalence and incidence using a single, rapid test device.

**Abstract access**

**Editor’s notes:** It is challenging to evaluate the population-level impact of various HIV prevention interventions by relying on HIV prevalence (percentage of a population group that is HIV-positive), especially in the era of effective HIV treatment. HIV incidence (rate of new infections in one year) is a more accurate measure of the impact of HIV prevention efforts, but has been particularly challenging to measure outside of expensive research studies. Various HIV antibody testing methodologies (such as ‘detuned antibody assays) that can be utilized...
outside of research settings have been assessed in order to distinguish recent HIV infection but have not been scientifically validated. The specific testing technique described in this article will need further investigation, but there is optimism that eventually routine HIV testing kits will be able to make this distinction.


Antiretroviral drugs can reduce HIV acquisition among uninfected individuals (as pre-exposure prophylaxis: PrEP) and reduce onward transmission among infected individuals (as antiretroviral treatment: ART). The authors estimate the potential impact and cost-effectiveness of antiretroviral-based HIV prevention strategies. They developed and analysed a mathematical model of a hyperendemic setting with relatively low levels of condom use. The prevention impact and cost of various PrEP interventions was estimated, assuming a fixed amount of spending on PrEP; investigated the optimal role of PrEP and earlier ART in terms of epidemiological impact and cost; and systematically explored the impact of earlier ART and PrEP, in combination with medical male circumcision services; on HIV transmission. A PrEP intervention is unlikely to generate a large reduction in HIV incidence, unless the cost is substantially reduced. In terms of infections averted and quality adjusted life years gained, at a population-level maximal cost-effectiveness is achieved by providing ART to more infected individuals earlier rather than providing PrEP to uninfected individuals. However, early ART alone cannot reduce HIV incidence to very low levels and PrEP can be used cost-effectively in addition to earlier ART to reduce incidence further. If implemented in combination and at ambitious coverage levels, medical male circumcision, earlier ART and PrEP could produce dramatic declines in HIV incidence, but not stop transmission completely. A combination prevention approach based on proven-efficacy interventions provides the best opportunity for achieving the much hoped for prevention advance and curbing the spread of HIV.

Abstract access

Editor’s notes: Increasingly combination prevention strategies are being implemented to attempt to significantly reduce HIV incidence (the rate of new HIV infection) at a population level. These strategies include biomedical interventions such as voluntary medical male circumcision, and pre and post exposure prophylaxis – PrEP and PEP- incorporated into behavior change strategies and condom campaigns. The impact of PrEP can be examined through cost efficiency analysis and through programmatic and behavioral analyses. Widespread use of PrEP will be expensive, as identification of those at particularly high risk of HIV acquisition is challenging and antiretroviral medications for prevention remain costly. Long term adherence to prophylactic medication remains a challenge as well. Others have suggested that rather than focusing on PrEP, initiation of antiretroviral therapy early in HIV infection would be more effective in reducing HIV transmission than PrEP strategies with the HIV-negative person at risk of infection. However, most HIV-positive persons do not know their HIV status sufficiently early to prevent all HIV transmission. Based upon the current strategies for HIV prevention, it is unlikely that all new HIV infection can be prevented. A judicious application of all the abovementioned prevention modalities, tailored to specific cultural and social contexts, remain the strategy of choice.

2. Prevent HIV among drug users

Decline in incidence of HIV and Hepatitis C virus infection among injecting drug users in Amsterdam; evidence for harm reduction?


In Amsterdam HIV prevalence has nearly halved among injecting drug users since 1990. Hepatitis C Virus (HCV) prevalence also declined, HIV and HCV incidence dropped to nearly zero. The authors examined possible explanations for these time trends, among which the implementation of harm reduction measures aimed
at reducing risk behavior of IDU. Individual-based modeling of the spread of HIV and HCV was used. Information about demographic parameters was obtained from the Amsterdam Cohort Study (ACS) among drug users. The model included changes in inflow of new IDU and death-rates over time, the latter dependent on age and time since HIV-seroconversion. Different scenarios of risk behavior were considered. Simulated HIV and HCV incidence and prevalence were compared with ACS data. Assuming harm reduction measures had led to strong decrease in risk-behavior over time improved the model fit (squared residuals decreased by 30%). Substantial incidence and HIV prevalence decline were reproduced by incorporating demographic changes in the model. In particular, lowered disease spread might be a result of depletion of high-risk IDU among those at risk for disease, and a decrease in the number of high-risk individuals in the population due to HIV-related mortality. Marked decreases in HIV and HCV in Amsterdam since 1990 could be partly due to harm reduction measures; however, they may also be largely attributable to changes in the IDU population. Future research aimed at quantifying the benefits of interventions should not neglect the impact of natural epidemic progression and demographic changes.

Abstract access

**Editor's notes**: This article from Amsterdam highlights the impressive information that HIV and HCV incidence has dropped nearly to zero among drug users. Modeling exercises indicate that it is a challenge to attribute the cause of these results, however clearly harm reduction measures have been widely implemented, beyond the level seen in many other countries where drug users are a key population at risk for HIV acquisition.

3. Eliminate new HIV infections among children

**Adverse events associated with nevirapine use in pregnancy: a systematic review and meta-analysis.**


The risk of adverse drug events associated with nevirapine is suggested to be greater in pregnant women. The authors conducted a systematic review and meta-analysis of severe adverse events in HIV-positive women who initiated NVP while pregnant. Six databases were searched for studies reporting adverse events among HIV-positive pregnant women who had received nevirapine-based antiretroviral therapy for at least seven days. Data were pooled by the fixed-effects method. Twenty studies (3582 pregnant women) from 14 countries were included in the final review. The pooled proportion of patients experiencing a severe hepatotoxic event was 3.6% (95%CI 2.4-4.8%), severe rash was experienced by 3.3% of patients (95%CI 2.1-4.5%), and 6.2% (95%CI 4.0-8.4%) of patients discontinued nevirapine due to an adverse event. These results were comparable to frequencies observed in the general adult patient population, and to frequencies reported in non-pregnant women within the same cohort. For pregnant women with a CD4 cell count >250 cells/mm there was a non-significant tendency towards an increased likelihood of cutaneous events overall (OR 1.1, 95%CI 0.8-1.6) and severe cutaneous adverse events (OR 1.4, 95%CI 0.8-2.4) and consequently an increased risk of toxicity-driven regimen substitution (OR 1.7, 95%CI 1.1-2.6). These results suggest that the frequency of adverse events associated with nevirapine use in pregnant women, while high, is no higher than reported for nevirapine in the general adult population. Pregnant women with a high CD4 count may be at increased risk of adverse events, but evidence supporting this association is weak.

Abstract access

**Editor's notes**: The selection of antiretroviral drug regimens has been particularly challenging for HIV-positive pregnant women. Adverse events are less frequent for men and women with efavirenz use compared to nevirapine, and increasingly efavirenz is a preferred choice. However, due to concerns about the safety of efavirenz in pregnancy, nevirapine continues to be widely used as a component of antiretroviral treatment for pregnant women. However, there have been suggestions that HIV-positive pregnant women have higher rates of nevirapine-associated adverse events, especially for those women with high CD4, compared to non-pregnant women on nevirapine. This meta-analysis of 20 studies did demonstrate a relatively high frequency of adverse
events in women who use nevirapine, but not at rates higher than among non-pregnant women on HIV treatment with nevirapine. The data about efavirenz safety for the fetus is being carefully reviewed to elucidate if widespread use of efavirenz is preferable to nevirapine during pregnancy.

Increasing HIV testing among male partners. The Prenahtest ANRS 12127 multi-country randomised trial.


Couple-oriented post-test HIV counselling (COC) provides pregnant women with tools and strategies to invite her partner to HIV counselling and testing. A randomised trial of the efficacy of COC on partner HIV testing in low/medium HIV prevalence settings (Cameroon, Dominican Republic, Georgia, India) was conducted. Pregnant women were randomised to receive standard post-test HIV counselling (SC) or COC and followed until six months postpartum. Partner HIV testing events were notified by site laboratories, self-reported by women or both combined. Impact of COC on partner HIV testing was measured in intention-to-treat analysis. Socio-behavioural factors associated with partner HIV testing were evaluated using multivariable logistic regression. Among 1943 pregnant women enrolled, partner HIV testing rates (combined indicator) were 24.7% among women from COC group vs 14.3% in SC group in Cameroon (Odds Ratio [OR]=2.0 95%CI [1.2-3.1]), 23.1% vs 20.3% in Dominican Republic (OR=1.2 [0.8-1.8]), 26.8% vs 1.2% in Georgia (OR=29.6 [9.1-95.6]) and 35.4% vs 26.6% in India (OR=1.5 [1.0-2.2]). Women having received COC did not report more conjugal violence or union break-ups than in the SC group. The main factors associated with partner HIV testing were a history of HIV testing among men in Cameroon, Dominican Republic and Georgia and the existence of couple communication around HIV testing in Georgia and India. A simple prenatal intervention taking into account the couple relationship increases the uptake of HIV testing among men in different socio-cultural settings. COC could contribute to the efforts towards eliminating mother-to-child transmission of HIV.

Abstract access

Editor’s notes: Programmes geared towards the elimination of new HIV infections in children and keeping their mothers alive worldwide have grappled with the challenge to increase partner testing. Partner HIV discordancy is common, and interventions can be tailored to the couple status categories. Antenatal care settings have not necessarily oriented their programming to be male-friendly. It is notable that generally couples-oriented counseling and testing (COC) did increase uptake of HIV testing by male partners, though there was wide variation between countries. In addition, male testing rates remained relatively low in the intervention couples. It is clear that additional strategies to augment partner testing will need to be implemented and evaluated. This study did provide some reassuring information that conjugal violence and union break-ups were not more common in the COC group. The study sites were in low and medium HIV prevalence settings and these results need to be compared to similar interventions in high prevalence settings.

4. 15 million accessing treatment

Cause-Specific Life Expectancies After 35 Years of Age for Human Immunodeficiency Syndrome-Infected and Human Immunodeficiency Syndrome-Negative Individuals Followed Simultaneously in Long-term Cohort Studies, 1984-2008.


Parametric and semiparametric competing risks methods were used to estimate proportions, timing, and predictors of acquired immune deficiency syndrome (AIDS)-related and non-AIDS-related mortality among individuals both positive and negative for the human immunodeficiency syndrome (HIV) in the Multicenter AIDS Cohort Study (MACS) and Women's Interagency HIV Study (WIHS) from 1984 to 2008 and 1996 to 2008, respectively. Among HIV-positive MACS participants, the proportion of deaths unrelated to AIDS
increased from 6% before the introduction of highly active antiretroviral therapy (HAART) (before 1996) to 53% in the HAART era (P < 0.01); the median age of persons who died from non-AIDS-related causes after age 35 years increased from 49.0 to 66.0 years (P < 0.01). In both cohorts during the HAART era, median ages at time of non-AIDS-related death were younger for HIV-positive individuals than for comparable HIV-negative individuals (8.7 years younger in MACS (P < 0.01) and 7.6 years younger in WIHS (P < 0.01)). In a multivariate proportional cause-specific hazards model, unemployment (for non-AIDS death, hazard ratio (HR) = 1.8; for AIDS death, HR = 2.3), depression (for non-AIDS death, HR = 1.4; for AIDS death, HR = 1.4), and hepatitis B or C infection (for non-AIDS death, HR = 1.8, for AIDS death; HR = 1.4) were significantly (P < 0.05) associated with higher hazards of both non-AIDS and AIDS mortality among HIV-positive individuals in the HAART era, independent of study cohort. The results illuminate the changing face of mortality among the growing population infected with HIV.

Abstract access

**Editor’s notes:** Despite programmatic and funding challenges, there has been impressive progress towards universal access to HIV treatment targets in low and middle income countries. As HIV-related morbidity and mortality declines in these countries, an understanding of non-HIV-related morbidity and mortality patterns in upper income countries is important. Age-specific non-HIV-related death rates are higher for people living with HIV than those who are HIV negative. A deeper understanding of the conditions more common in people living with HIV is important in order to continue to provide comprehensive primary health services and respond to conditions that impact on the lives of people living with HIV. In the study cited above, morbidity from clinical entities such as hepatitis, and depression were more common than in HIV negative persons, as was the impact of unemployment.

Adverse events associated with nevirapine and efavirenz-based first-line antiretroviral therapy: a systematic review and meta-analysis.


Since 2002, the World Health Organization has recommended either nevirapine (NVP) or efavirenz (EFV) as part of first-line antiretroviral therapy. These two drugs are known to have differing toxicity profiles, but the clinical importance of these toxicities overall is not well established. The authors systematically reviewed adverse events among treatment-naïve HIV-positive adults and children receiving either NVP or EFV as part of first-line antiretroviral therapy. The primary outcome was drug discontinuation as a result of any adverse event; specific toxicities were evaluated as secondary outcomes. Point estimates and 95% confidence intervals (95% CI) were calculated and proportions and odds ratios (OR) pooled using fixed-effects meta-analysis. Data was reviewed on 26446 adult and 3975 children from 8 randomized trials and 26 prospective cohorts. Overall, adults on NVP were more than two times more likely to discontinue treatment due to any adverse event compared to patients on EFV (OR 2.2, 95%CI 1.9-2.6). Severe hepatotoxicity (OR 3.3, 95%CI 2.5-4.2), severe skin toxicity (OR 3.9, 95%CI 2.5-5.4), and severe hypersensitivity reactions (OR 2.4, 95%CI 1.9-2.9) were more likely to occur among patients on NVP. Patients receiving EFV were more likely to experience severe CNS-events (OR 3.4, 95%CI 2.1-5.4). Similar associations were seen in children. Compared to NVP, EFV is associated with a lower frequency of severe adverse events, in particular treatment discontinuations. This finding supports a move towards efavirenz-based therapy as the preferred first-line treatment regimen for HIV treatment within a public health approach.

Abstract access

**Editor’s notes:** As increased progress is being made towards universal access to treatment, increased attention is being addressed towards retention in care and on treatment. Simpler, less toxic regimens have been a cornerstone of the Treatment 2.0 initiative of UNAIDS and WHO. Nevirapine has been widely utilized as an essential component of three drug antiretroviral therapy, in part due to low cost and safety at a population level. While efavirenz does have a greater incidence of central nervous system side effects (many of them manageable with supportive treatment), the overall discontinuation rate is significantly lower than with nevirapine. This data in
combination with the continued reduction in efavirenz price, and incorporation into combination pill form, supports the move towards increased use of efavirenz for first line antiretroviral therapy.

Toward an understanding of disengagement from HIV treatment and care in sub-Saharan Africa: a qualitative study.


The rollout of antiretroviral therapy in sub-Saharan Africa has brought lifesaving treatment to millions of HIV-infected individuals. Treatment is lifelong, however, and to continue to benefit, patients must remain in care. Despite this, **systematic investigations of retention have repeatedly documented high rates of loss to follow-up from HIV treatment programs**. This paper introduces an explanation for missed clinic visits and subsequent disengagement among patients enrolled in HIV treatment and care programs in Africa. Eight-hundred-ninety patients enrolled in HIV treatment programs in Jos, Nigeria; Dar es Salaam, Tanzania; and Mbarara, Uganda who had extended absences from care were tracked for qualitative research interviews. Two-hundred-eighty-seven were located, and 91 took part in the study. **Interview data were inductively analyzed to identify reasons for missed visits** and to assemble them into a broader explanation of how missed visits may develop into disengagement. **Findings reveal unintentional and intentional reasons for missing visits, along with reluctance to return to care following an absence.** Disengagement is interpreted as a process through which missed visits and ensuing reluctance to return over time erode patients’ subjective sense of connectedness to care. Missed visits are inevitable over a lifelong course of HIV care. **Efforts to prevent missed clinic visits combined with moves to minimize barriers to re-entry into care are more likely than either approach alone to keep missed visits from turning into long-term disengagement.**

Abstract access

**Editor’s notes:** The focus on universal access to HIV treatment has, at times, lead to a unitary focus on numbers of new patients started on antiretroviral therapy. The rates of non-adherence and lost-to-care can reach sobering proportions the longer treatment is continued. Programmatic responses to these challenges are not always developed with a clear understanding of the patient’s perspective and the patient’s view of the obstacles to long term retention. The voices of people living with HIV need to be heard, and their description of the barriers they face will lead to structural responses that truly serve the need of the ‘client’.

5. Avoid TB deaths

Assessment of organizational measures to prevent nosocomial tuberculosis in health facilities of 4 sub-Saharan countries in 2010.


The **prevention of tuberculosis (TB) transmission in healthcare settings is a major issue**, particularly because of the interaction between human immunodeficiency virus and TB and the emergence of multidrug-resistant TB. **A questionnaire was developed by representatives of Benin, Cameroon, Cote d’Ivoire, and Togo to evaluate the organizational measures implemented in facilities involved in TB management in healthcare facilities.** On-site visits were performed between July 2010 and July 2011. A total of 115 facilities, including 10 university hospitals and 92 basic management units, were visited. **None had a TB infection control plan, and only 5.2% provided education for staff about nosocomial TB.** Overall, 48.3% of the facilities performed triage of suspected TB cases on hospital arrival or admission, 89.6% provided education for TB cases on cough etiquette, 20.0% segregated smear-positive TB cases, and 15.7% segregated previously treated cases. A total of 15.5% of the facilities registered TB among staff, for a global prevalence rate of 348 cases per 100,000 staff members. **This survey identified simple and mostly costless administrative measures to be urgently implemented at the local level to prevent nosocomial TB, such as**
staff education, triage on admission, and segregation of previously treated patients.

Abstract access

Editor’s notes: WHO promotes the TB strategy of the “Three Is” – isoniazid prophylaxis, intensified case finding and infection control. Intensified case finding has been promoted by provider and patient education as well as focused screening of patient symptoms suggestive of active tuberculosis. Isoniazid prophylaxis is recommended by WHO, but has not been widely adopted in high TB and TB/HIV settings in many resource challenged settings due to a number of management and diagnostic concerns. Infection control is widely recognized as important to prevent TB transmission in health care settings, but the environmental and administrative interventions have not been widely implemented despite their relatively low cost. The recommendations associated with the Three Is have been disseminated widely – a clearer understanding of the obstacles associated with their adoption may need to be understood and assessed to facilitate better TB control measures.

The Twin Epidemics of Tuberculosis and HIV.


The deadly combination of tuberculosis (TB) and human immunodeficiency virus (HIV) currently ravaging the world, taking a toll of about 0.35 million people every year, is one of the major public health crises of the decade. Throughout the course of HIV infection, the risk of acquisition, reactivation, and reinfection of TB keeps increasing substantially as the immune deficiency progresses. TB coinfected patients inadvertently facilitate HIV infection by release of the proinflammatory cytokines and overexpression of coreceptors CXCR4 and CCR5; thereby, the progression of each is facilitated. The difficulties in diagnosing active tuberculosis in HIV-infected individuals poses a great challenge that is further complicated by the challenges in identification of latent TB infection, creating a setback to preventive therapy. Furthermore, prescribing antituberculous therapy and antiretroviral therapy together poses several management challenges, including drug interactions, added toxicities, and TB immune reconstitution inflammatory syndrome. The current approach to diagnosis, prevention, and treatment strategies in TB and HIV coinfected individuals, along with epidemiology and overview of pathogenetic interplay of both microbes, is reviewed here.

Abstract access

Editor’s notes: The risk of active TB among people with HIV infection is high, and occurs even without severe immunosuppression. Relatively early initiation of ART, as well as anti-TB prophylaxis can reduce the risk of active TB, while early diagnosis and treatment of active TB can minimize morbidity and mortality from TB. The real world challenges should not be minimized – including diagnosis of TB in people living with HIV, and co-administration of antiretroviral and anti-tuberculosis drugs. Clinicians and health systems require significant technical support – while these challenges are significant, successful strategies can be implemented.

Incident tuberculosis and risk factors among HIV-infected children in Dar es Salaam, Tanzania.


This article describes the burden of pediatric tuberculosis (TB) in a HIV-infected population and explores the demographic and clinical factors associated with the occurrence of pediatric TB through a longitudinal analysis of a cohort of HIV-infected children. The endpoint of the study was clinically diagnosed TB. Cox proportional hazard regression was used to explore the predictors of incident TB among HIV-infected children under age 15 years after enrollment into the HIV program. The cohort comprised of 5040 children [median age: 5 years, interquartile range (IQR): 1-9 years]. During a median follow-up of 0.8 (IQR: 0.1-2.5) years, 376 out of 5040 children met the case definition for TB. The overall incidence of TB was 5.2/100 person-years. In multivariate analyses, older age at enrollment [relative risk (RR): 1.7, 95% confidence interval (CI): 1.5-1.8], severe wasting (RR: 1.8, 95% CI: 1.3-2.5), severe immune-suppression (RR: 2.6, 95% CI: 1.8-3.8), anemia (RR: 1.4, 95% CI: 1.0-1.9) and World Health Organization (WHO) stage IV (RR: 4.5, 95% CI: 2.4-8.5) were all
independently associated with a higher risk of TB. In addition, the use of antiretroviral drugs for more than 180 days reduced the risk of TB by 70% (RR: 0.3, 95% CI: 0.2-0.4). ART use is strongly associated with a reduced risk of tuberculosis among HIV-infected children, and should therefore be included in HIV care and treatment programs. Trials of interventions designed to improve the nutritional and hematologic status of these children should also be performed.

Abstract access

Editor’s notes: Antiretroviral therapy reduces the incidence of tuberculosis for children, as well as for adults, living with HIV. While diagnosis of tuberculosis can be particularly challenging in children, the quite high incidence of active TB (10% in one year) in this study highlights the importance of proactive clinical screening and laboratory diagnosis, and provides additional evidence to the importance ART initiation as a measure that reduces the risk of TB.

6. Eliminate gender inequalities

Hormonal contraception and HIV acquisition - What is the evidence? What are the policy and operational implications?


Family planning (FP) is essential in achieving the United Nations Millennium Development Goals. The authors review the evidence on HIV acquisition among women using hormonal contraception, and discuss the policy and operational implications. Longitudinal studies conducted in sub-Saharan Africa published between 2008 and 2012, as well as key policy documents related to contraception and HIV were reviewed. Findings on hormonal contraception and HIV acquisition conducted in sub-Saharan Africa are inconsistent. While in the large scale studies no statistically significant association between oral contraceptive use and HIV acquisition was found, results for injectables were mixed. Potential biases, such as those resulting from self-selection, related to the observational study design and main confounders such as condom use, sexual activity and contraceptive use are discussed in this article. It is currently not possible to conclude whether the use of hormonal contraceptives is associated with a greater risk of acquiring HIV, or not. The use of male or female condoms for dual protection should be promoted in FP programmes. While there is need for further research on a broader range of contraceptive methods and HIV transmission, studies documenting acceptability of currently less used/more recent contraceptive methods are also warranted.

Abstract access

Editor’s notes: Barrier methods such as female and male condoms, when used consistently and correctly reduce risk of both pregnancy and HIV transmission. Recent studies have raised concern that hormonal methods utilized for contraception may biologically specifically increase the risk for HIV acquisition, beyond the clear loss of the barrier to HIV transmission. The methodological challenges to ensure that confounders are not present in these studies, described in the abstract, remain. Dual protection (barrier plus hormonal contraception) are a challenge to implement, but their uptake should be promoted until more definitive results can be obtained.

Uptake to HIV Post-Exposure Prophylaxis in Haiti: Opportunities to Align Sexual Violence, HIV PEP and Mental Health.


Sexual violence is a public health problem in Haiti, potentially augmenting HIV transmission. Reports from L'Hôpital de l'Université d'État d'Haiti (HUEH) suggest severe underutilization of antiretroviral post-exposure prophylaxis (ARV-PEP) among rape survivors. With a cross-sectional design using mixed methods,
Informational interviews were conducted with HUEH personnel to learn about post-rape service offerings. HUEH surveillance data were used to estimate the sexual assault reporting rate/100,000 and to examine the proportion of survivors receiving ARV-PEP within 72 hr, stratified by age (<18 years, ≥18 years). Informational interviews revealed that survivors were navigated through two hospital algorithms to receive post-rape care; however, <5% of victims sought mental health services. Surveillance data show that 2193 sexual assault survivors (adult and pediatric) reported a rape to HUEH personnel between 2004 through first quarter of 2010. Annual estimates suggest a twofold increase comparing cases in 2004 versus 2009. Between 2008 and 2009, uptake to ARV-PEP within 72 hr was lower for pediatric (38.4%; N = 131/341) compared with adult survivors (60.1%; N = 83/138) (χ(2) = 18.8, P < 0.001). The prioritization of funding and comprehensive interventions that align sexual violence, HIV, and mental health is crucial to support the timely uptake to ARV-PEP.

Abstract access

Editor's notes: Survivors of sexual and gender based violence require biomedical interventions such as post-exposure prophylaxis of HIV (ARV-PEP) and other sexually transmitted infections. Sensitization and training of police and emergency room workers has increased the availability of ARV-PEP, though it is of concern that in a large urban hospital in Haiti PEP was not more widely utilized, and that the uptake was so low (38%) among children. Comprehensive services for survivors of sexual assault should include mental health services, both for immediate interventions as well as for long-term follow up. Hospital based surveys may be methodologically limited, but it is of concern that fewer than 5% of sexual assault survivors sought mental health services. The psychosocial service needs of such survivors should not be underestimated and planners need to take these needs seriously.

7. Strengthening HIV integration

Workplace wellness for HIV/AIDS-affected nurses in South Africa.


Registered nurses and midwives, enrolled staff nurses and auxiliary nurses (referred to as nurses) in the South African nursing workforce are confronted daily with HIV in the workplace due to the high HIV prevalence rate among sexually and economically active adult women between 15-49 years of age. Components for a framework of a workplace wellness programme for HIV infected and/or affected nurses in South Africa, who comprise registered nurses and midwives, enrolled staff nurses and auxiliary nurses, were identified and described. Health and wellness could be promoted by instituting a workplace wellness programme. The nurses emphasized the threat of HIV and considered a workplace wellness programme a priority.

Abstract access

Editor's notes: Health care worker shortages are pervasive in Africa. Nurses are the backbone of primary care provision in most countries, and increasingly are asked to initiate or maintain people living with HIV on antiretroviral treatment and other HIV primary care services. While the size of the available nursing workforce is impacted by enrollment rates in nursing schools, emigration to wealthier countries, and salary levels, there has been great concern about nursing ‘burn-out’. HIV treatment has reduced HIV-related in-patient occupancy, but the burden on understaffed out-patient departments has increased. As the authors note, HIV prevalence in nurses and other members of the health care work force mirror national HIV prevalence, and these nurses who are themselves living with and affected by HIV, have their own health care and psychosocial needs. Workplace wellness programs can be a meaningful response to caring for the caregiver.

Integration of HIV Care and Treatment in Primary Health Care Centers and Patient Retention in Central Mozambique: A Retrospective Cohort Study.
In 2004, the Mozambican Ministry of Health began a national scale-up of antiretroviral therapy (ART) using a vertical model of HIV clinics co-located within large, urban hospitals. In 2006, the ministry expanded access by integrating ART into primary health care clinics. The authors conducted a retrospective cohort study including adult, ART-naive patients initiating ART between January 2006 and June 2008 in public sector clinics in Manica and Sofala provinces. Cox proportional hazards models with robust variances were used to estimate the association between clinic model (vertical/integrated), clinic location (urban/rural) and clinic experience (1 to 6 months/post-16 to 6 months) and attrition occurring in early patient follow-up (≤6 months) and attrition occurring in late patient follow-up (>6 months), while controlling for age, sex, education, pre-ART CD4 count, WHO stage and pharmacy staff burden. A total of 11,775 patients from 17 clinics were studied. The overall attrition rate was 37 per 100 person-years. Patients attending integrated clinics had a higher risk of attrition in late follow-up (HR=1.75 (95%CI: 1.04-2.94)), and patients attending urban clinics (HR=0.57 (95%CI: 0.35-0.91)) had a lower risk of attrition in late follow-up. Though not statistically significant, clinics open for longer than 6 months (HR=0.72 (95%CI: 0.51 - 1.02)) had a lower risk of attrition in early follow-up. Patients attending vertical clinics had a lower risk of attrition. Utilizing primary health clinics to implement ART is necessary to reach higher levels of coverage; however, further implementation strategies should be developed to improve patient retention in these settings.

Abstract access

Editor’s notes: There is no single service delivery strategy that is most appropriate for HIV primary care and provision of antiretroviral treatment. The strategies chosen in generalized epidemics may be quite different from countries with highly concentrated epidemics. High prevalence countries are often choosing to integrate HIV treatment into other primary health care services. As countries move towards universal access, earlier approaches to the delivery of HIV treatment benefit from review – vertical structures for antiretroviral therapy services may not be sustainable as increasing numbers of people living with HIV come into care. The provision of HIV primary health care does need to respond to the comprehensive service needs of people living with HIV, and the impact of a changeover to a new system of care must be implemented and monitored carefully. Strategies to minimize loss to follow up and to support retention must be included when these changes occur.

Decentralization of pediatric HIV Care and Treatment in Five sub-Saharan African Countries.


In resource-limited settings, decentralization of HIV care and treatment is a cornerstone of universal care and rapid scale-up. We compared trends in pediatric enrollment and outcomes at primary (PHF) versus secondary/tertiary health facilities (SHFs). Using aggregate program data reported quarterly from 274 public facilities in Kenya, Lesotho, Mozambique, Rwanda and Tanzania from January 2008- March 2010 trends were examined in the number of children < 15 years of age initiating antiretroviral treatment (ART) by facility type. Clinic-level lost to follow-up (LTFU) and mortality per 100 person years (PYs) on ART during the period by facility type were compared. During the two year period, 17,155 children enrolled in HIV care and 8,475 initiated ART in 182 (66%) PHFs and 92 (34%) SHFs. PHFs increased from 56 to 182, while SHFs increased from 72 to 92 sites. SHFs accounted for 71% of children initiating ART; however, the proportion of children initiating ART each quarter at PHFs increased from 17% (129) to 44% (463) in conjunction with an increase in PHFs during observation period. The average LTFU and mortality rates for children on ART were 9.8/100PYs and 5.2/100PYs, respectively at PHFs and 20.2/100PYs and 6.0/100PYs at SHFs. Adjusted models show PHFs associated with lower LTFU (Adjusted Rate Ratio, ARR=0.55; p=0.022) and lower mortality (ARR=0.66; p=0.028). The expansion of pediatric services to PHFs has resulted in increased numbers of children on ART. Early findings suggest lower rates of LTFU and mortality at PHFs. Successful scale-up will require further expansion of pediatric services within PHFs.
**Editor’s notes**: Early during treatment scale up pediatric ART remained a referral clinic intervention, limiting the enrollment of children and disrupting efforts to provide ‘one-stop’ visits for families with adults and children living with HIV. Barriers such as provider discomfort with pediatric ART have been addressed by increased training efforts as well as a public health approach of algorithm-based treatment. Increasingly pediatric ART is being provided in the same sites and by the same providers as other primary health services.

Task shifting HIV care in rural district hospitals in Cameroon: evidence of comparable antiretroviral treatment related outcomes between nurses and physicians in the Stratall ANRS/ESTHER trial.


Task shifting to nurses for antiretroviral therapy (ART) is promoted by WHO to compensate for the severe shortage of physicians in Africa. The effectiveness of task shifting from physicians to nurses in rural district hospitals in Cameroon was assessed through a cohort study using data from the Stratall trial, designed to assess monitoring strategies in 2006-2010. ART-naive patients were followed-up for 24 months after treatment initiation. Clinical visits were performed by nurses or physicians. The associations between the consultant ratio (i.e., the ratio of the number of nurse-led visits to the number of physician-led visits) and HIV virological success, CD4 recovery, mortality, and disease progression to death or to WHO clinical stage 4 in multivariate analyses were assessed. Of the 4,141 clinical visits performed in 459 patients (70.6% female, median age 37 years), a quarter was task shifted to nurses. The consultant ratio was not significantly associated with virological success (odds ratio 1.00, 95%CI 0.59-1.72, p=0.990), CD4 recovery (coefficient -3.6, 95%CI -35.6; 28.5, p=0.827), mortality (time ratio 1.39, 95%CI 0.27-7.06, p=0.693) or disease progression (time ratio 1.60, 95%CI 0.35-7.37, p=0.543). This study brings important evidence about the comparability of ART-related outcomes between HIV models of care based on physicians or nurses in resource-limited settings. Investing in nursing resources for the management of non-complex patients should help reduce costs and patient waiting lists while freeing up physician time for the management of complex cases, for mentoring and supervision activities, as well as for other health interventions.

Abstract access

**Editor’s notes**: Most health services in primary health facilities are provided by nurses or clinical officers, with few PHC having physician cadre staffing. The evidence is strong that nurses can ably prescribe and refill ART for adults and children living with HIV, further supporting universal access to HIV treatment. The strategies described in the accompanying articles for decentralization to primary health clinics for adults and children require task shifting in many settings — decentralization and integration of HIV services into primary care will inevitably benefit from an increased reliance on nurses as providers of primary care.