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

1. **Reduce sexual transmission**
   - Weighing up the risks and benefits of trial participation: understanding non-adherence in a PrEP trial
   - Condoms are highly effective at preventing HSV-2 acquisition, especially for women
   - Benefits of targeting prevention at attendees of HIV testing services, Brazil
   - You’re not a man until you’re a father. Young men’s desire for fatherhood and HIV-associated risk

2. **Eliminate new HIV infections among children**
   - HIV tests at church-based baby showers raise odds of testing 11-fold for pregnant women
   - Contraception for women on ART – a balancing act

3. **15 million accessing treatment**
   - Can nevirapine-exposed children switch to efavirenz?
   - Benefits of available ART greater for women than men in South Africa, with many men not engaging with care
   - Living with HIV on the move: migrant workers in north India

4. **Avoid TB deaths**
   - ART for people living with TB and HIV: practice still lags behind policy
   - Can cryptococcal antigen screening and treatment improve outcomes?

5. **Close the resource gap**
   - Expanding ART access: increasing costs
   - More savings, more hope, and more HIV-preventive attitudes among vulnerable adolescent youth

6. **Eliminate gender inequalities**
   - Client violence against female sex workers in Mexico
• Justification of PrEP use as protection from rape

7. **Strengthening HIV integration**

• Vulnerabilities of children living with HIV positive adults

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UNAIDS
1. Reduce sexual transmission

Participants’ explanations for non-adherence in the FEM-PrEP clinical trial.


Background: FEM-PrEP - a clinical trial of daily, oral emtricitabine/tenofovir disoproxil fumarate for HIV prevention among women in sub-Saharan Africa - did not show a reduction in HIV acquisition because of low adherence to the study pill. We conducted a follow-up study to identify reasons for non-adherence.

Methods: Qualitative, semi-structured interviews (n=88) and quantitative, audio computer-assisted self-interviews (n=224) were conducted with former FEM-PrEP participants in Bondo, Kenya, and Pretoria, South Africa. Thematic analysis was used to analyze the qualitative data, and descriptive statistics were used to describe ACASI responses. Data are presented within the five categories of Ickovics' and Meisler's conceptual framework on adherence: 1) the individual, 2) trial characteristics and study pill regimen, 3) patient-provider relationship, 4) clinical setting, and 5) the disease.

Results: Participants' explanations for non-adherence were primarily situated within three of the framework's five categories: 1) the individual, 2) trial characteristics and study pill regimen, and 3) the disease. Concerns about the investigational nature of the drug being tested and side effects were the prominent reasons reported for non-adherence. Participants also described being discouraged from taking the study pill by members of the community, their sexual partners, and other participants, primarily because of these same concerns. Limited acceptability of the pill's attributes influenced non-adherence for some participants as did concerns about HIV-related stigma. Additionally, many participants reported that others continued in FEM-PrEP while not taking the study pill because of the trial's ancillary benefits and visit reimbursement - factors related to the clinical setting. Negative patient-provider relationships were infrequently reported as a factor that influenced non-adherence.

Conclusion: Despite substantial study staff engagement with participants and communities, concerns about the study pill and discouragement from others appeared to have influenced non-adherence considerably. Alternative study designs or procedures and enhanced community engagement paradigms may be needed in future studies.

Abstract access

Editor's notes: The authors of this important paper on a PrEP trial, end with a note of caution. They note that when interpreting the findings we should remember that the women in this study were taking a 'study product'. The women were not taking a product of proven efficacy. Therefore, as the authors state, it would be wrong to assume that ‘African women cannot and will not be adherent if provided with PrEP outside of a clinical trial setting’. If they had been told that the product was efficacious, they may have behaved differently. This is important because a key message of the paper is that trial participants managed their participation so they felt comfortable in the trial. Many wanted to ensure they received benefits from their participation, including good health care, but they also wanted to manage risk. Risk associated with fears about the trial drug and risk from the disapproval of sexual partners about their participation. It is also very clear in these findings that the participants could manage the expectations of the trial team, by telling them what they wanted to hear during the trial. This suggests the limited value of ‘adherence questionnaires’ in some settings. The authors provide a
powerful illustration of the value of mixed methods in trials of this sort. Drug concentration data told the researchers that many women were not adhering to the drug. Qualitative semi-structured interviews using this drug concentration data with the individual women helped the team to understand why. The authors also discuss the influence of community and family members in undermining participant faith in the trial. They explain the lengths that the trial team went to, to inform community members about the trial. Considerable time was given to sharing information. Doubts remained; concerns that were enough to discourage participation. This too is an important finding underlining the value of investing in community engagement in research. But it also highlights the need to find ways to enhance not just engagement, but also understanding and trust.

Effect of condom use on per-act HSV-2 transmission risk in HIV-1, HSV-2-discordant couples.


Background: The efficacy of condoms for protection against transmission of herpes simplex virus type 2 (HSV-2) has been examined in a variety of populations with different effect measures. Often the efficacy has been assessed as change in hazard of transmission with consistent vs inconsistent use, independent of the number of acts. Condom efficacy has not been previously measured on a per-act basis.

Methods: We examined the per-act HSV-2 transmission rates with and without condom use among 911 African HSV-2 and human immunodeficiency virus type 1 (HIV-1) serodiscordant couples followed for an average of 18 months in an HIV prevention study. Infectivity models were used to associate the log10 probability of HSV-2 transmission over monthly risk periods with reported numbers of protected and unprotected sex acts. Condom efficacy was computed as the proportionate reduction in transmission risk for protected relative to unprotected sex acts.

Results: Transmission of HSV-2 occurred in 68 couples, including 17 with susceptible women and 51 with susceptible men. The highest rate of transmission was from men to women: 28.5 transmissions per 1000 unprotected sex acts. We found that condoms were differentially protective against HSV-2 transmission by sex; condom use reduced per-act risk of transmission from men to women by 96% (P < .001) and marginally from women to men by 65% (P = .060).

Conclusions: Condoms are recommended as an effective preventive method for heterosexual transmission of HSV-2.

Abstract access

Editor’s notes: HSV-2 is extremely prevalent in sub-Saharan Africa, and an important co-factor in HIV transmission. Although condoms are recommended for preventing HSV-2 infection, there have been no previous studies of their effectiveness on a per-sex act basis. This study in HIV and HSV-2 discordant couples participating in an HIV prevention trial examined the risk of HSV-2 transmission for each sex act with and without male condoms. At enrolment, index partners were living with both HIV and HSV-2 infections; susceptible partners were negative for both infections. The authors found that condoms provided greater protection against HSV-2 acquisition for women than for men, reducing the risk of transmission by 96% from men to women, and by 65% from women to men. However, the overall risk of HSV-2 infection was much higher for women – for each
condomless sex act, women were nearly 20 times more likely than men to become infected. As a result, even when using condoms, susceptible women had only a slightly lower risk of infection than men did without condoms. Interestingly, HSV-2 suppressive therapy with acyclovir did not have any effect on HSV-2 transmission, for either sex. Although the authors were not able to confirm that the HSV-2 transmissions occurred within the partnership (e.g. by sequencing the HSV2 DNA), an analysis restricted to couples who never reported sex outside the partnership illustrated very similar results.

The difference in the protection provided by condoms between the sexes may be explained by the fact that, in men, HSV-2 viral shedding is primarily from the penile shaft whereas in women the virus is shed from the wider area of the perineum, and hence condoms are less effective for female-male transmission. These findings indicate that, in individuals who are both HIV and HSV-2 positive, male condoms are extremely effective in preventing male-to-female transmission of HSV-2, and also provide some protection against female-to-male transmission. Although condoms may not provide the same level of protection in populations who are HIV negative, their promotion remains an important public health activity for preventing HSV-2 infection.

Efficient identification of HIV serodiscordant couples by existing HIV testing programs in South Brazil.


Objective: To examine the feasibility of identifying HIV negative at risk individuals in HIV serodiscordant couples, during voluntary HIV testing in South Brazil.

Methods: We surveyed HIV testers at 4 public testing sites in Rio Grande do Sul. We obtained information on risk behaviors and sexual partnerships. HIV testing and testing for recent infection were performed; HIV prevalence and risk behaviors were assessed among subjects who reported having a steady partner who was HIV positive (serodiscordant group) and compared with the general testing population.

Results: Among 3100 patients, 490 (15.8%) reported being in a steady relationship with an HIV positive partner. New HIV infections were diagnosed in 23% of the serodiscordant group (vs. 13% in the general population, p = 0.01); among newly positive subjects, recent HIV infections were more frequent (23/86, 26.7%) among testers with positive partners than among the general testing group (52/334; 15.6%; p = 0.016). Less than half of the serodiscordant testers reported having used a condom during the last sexual intercourse with their HIV-positive partner. Participants with inconsistent condom use with steady partner were four times more likely to test positive for HIV compared to those who reported always using condoms with the steady partner (OR: 4.2; 95% CI: 2.3 to 7.5).

Conclusion: It is highly feasible to identify large numbers of HIV susceptible individuals who are in HIV serodiscordant relationships in South Brazil testing sites. Condom use within HIV serodiscordant couples is low in this setting, suggesting urgent need for biomedical prevention strategies to reduce HIV transmission.

Abstract Full-text [free] access

Editor's notes: This study from Brazil highlights the fact that asking individuals attending HIV testing services whether they had a steady partner living with HIV can identify a large number of key populations who should be an important focus for HIV prevention services. In this study, a striking
proportion (15%) of testers reported that they were in a serodiscordant relationship with an individual living with HIV. This provides an important opportunity to link these key populations to proven prevention services, including medical male circumcision and pre-exposure prophylaxis. There was also clear evidence that these individuals are at high risk of HIV, for example, they were almost twice as likely to have an acute HIV infection compared with testers with “general population” partners. This suggests that individuals in serodiscordant relationships sought HIV testing services when they thought they had been exposed to a high risk sexual event. The paper does not report the treatment status of the partners with HIV and it is not clear if participants were asked about this. The authors conclude that it is feasible to identify HIV susceptible individuals at testing sites. It is also important to remember that this is not only to focus on people with a partner living with HIV, but also all people testing HIV-positive. People in the latter group are a key population for prevention too, as they are at risk for transmitting HIV within their steady partnership which was previously concordant HIV-negative.

Fatherhood, marriage and HIV risk among young men in rural Uganda.


Compared to a large body of work on how gender may affect young women’s vulnerability to HIV, we know little about how masculine ideals and practices relating to marriage and fertility desires shape young men’s HIV risk. Using life-history interview data with 30 HIV-positive and HIV-negative young men aged 15–24 years, this analysis offers an in-depth perspective on young men’s transition through adolescence, the desire for fatherhood and experience of sexual partnerships in rural Uganda. Young men consistently reported the desire for fatherhood as a cornerstone of masculinity and transition to adulthood. Ideally young men wanted children within socially sanctioned unions. Yet, most young men were unable to realise their marital intentions. Gendered expectations to be economic providers combined with structural constraints, such as limited access to educational and income-generating opportunities, led some young men to engage in a variety of HIV-risk behaviours. Multiple partnerships and limited condom use were at times an attempt by some young men to attain some part of their aspirations related to fatherhood and marriage. Our findings suggest that young men possess relationship and parenthood aspirations that – in an environment of economic scarcity – may influence HIV-related risk.

Abstract access

Editor’s notes: Gender-specific HIV risks are influenced by biological, social and structural factors. In comparison to factors that affect women’s HIV risk, relatively little is known about how constructions on masculinity affect men’s HIV risk, particularly with relation to young men’s desire for marriage and biological children. In the context meeting fertility ideals, men’s demonstration of masculinity within structural contexts of social change and economic instability, may be associated with certain risk behaviours, including multiple partnerships and inconsistent condom use.

This study utilised data from in-depth life history interviews with 30 HIV-positive and HIV-negative young men aged 15-24 years in southern Uganda. Young men who had acquired bio-medically confirmed HIV over the course of the year between June 2010 and June 2011 and their HIV-negative counterparts were pair-matched by gender, marital status, age and village of residence. The sample included married (n=10), never married (n=16) and previously married men (n=4). Respondents participated in two interviews, approximately two to three weeks apart. Interviews were audio recorded.
Three major themes emerged from the interviews. First, respondents mentioned fatherhood and formal marriage as milestones in the transition to adulthood for young men and a crucial part of the masculine ideal in rural Uganda. Second, truncated educational options and limited economic opportunities made it difficult for young men to acquire formal marriages and fulfill their desires for fatherhood. Third, young men who faced obstacles in trying to achieve these masculine ideals often engaged in alternative strategies, such as condomless sex or having multiple partners, to fulfill their desires for marriage and children; these strategies in turn increased young men's vulnerability to HIV infection. Regardless of their HIV status young men consistently expressed their desire for marriage and children; described similar economic challenges, and pursued alternative strategies for achieving their masculine ideals. The findings of this study illustrate how the confluence of idealised male masculinities and structural inequalities may play a key role in young men’s vulnerability to HIV.

2. Eliminate new HIV infections among children

Effect of a congregation-based intervention on uptake of HIV testing and linkage to care in pregnant women in Nigeria (baby shower): a cluster randomised trial.


Background: Few effective community-based interventions exist to increase HIV testing and uptake of antiretroviral therapy (ART) in pregnant women in hard-to-reach resource-limited settings. We assessed whether delivery of an intervention through churches, the Healthy Beginning Initiative, would increase uptake of HIV testing in pregnant women compared with standard health facility referral.

Methods: In this cluster randomised trial, we enrolled self-identified pregnant women aged 18 years and older who attended churches in southeast Nigeria. We randomised churches (clusters) to intervention or control groups, stratified by mean annual number of infant baptisms (<80 vs ≥80). The Healthy Beginning Initiative intervention included health education and on-site laboratory testing implemented during baby showers in intervention group churches, whereas participants in control group churches were referred to health facilities as standard. Participants and investigators were aware of church allocation. The primary outcome was confirmed HIV testing. This trial is registered with ClinicalTrials.gov, identifier number NCT 01795261.

Findings: Between Jan 20, 2013, and Aug 31, 2014, we enrolled 3002 participants at 40 churches (20 per group). 1309 (79%) of 1647 women attended antenatal care in the intervention group compared with 1080 (80%) in the control group. 1514 women (92%) in the intervention group had an HIV test compared with 740 (55%) controls (adjusted odds ratio 11.2, 95% CI 8.77-14.25; p<0.0001).

Interpretation: Culturally adapted, community-based programmes such as the Healthy Beginning Initiative can be effective in increasing HIV screening in pregnant women in resource-limited settings.

Abstract Full-text [free] access
**Editor’s notes:** HIV testing is a key entry point for prevention of mother-to-child transmission. Community-based, decentralised HIV testing outside health facilities can increase uptake of testing among pregnant women, but this does not always follow through into good linkage to care.

In Nigeria faith-based organisations have a strong social network and a wider presence than health facilities. This trial co-ordinated churches in predominantly Christian southeast Nigeria to identify pregnant women early and organise a baby shower where on-site laboratory tests were provided. To avoid stigma the programme offered testing for five other conditions alongside HIV. Women who tested positive for HIV infection were linked to care and followed up at a post-delivery baby reception at the church. Women in the programme arm were more likely to have an HIV test and if positive they were more likely to access care before delivery and to start ART during pregnancy.

The results illustrate the benefits of engagement with faith-based organisations to reach communities that are poorly served by health facilities. The fact male partners played a role in the baby shower may have increased uptake, as pregnant women are more likely to accept HIV testing when male partners are also involved. The main costs were Mama Packs (a gift of essentials for a safe delivery, presented at the baby shower) and integrated lab tests. The activity was so popular that communities continued with it after the trial ended. The programme is now being adapted for mosques in northern Nigeria and Hindu temples in India.


Background: Concerns have been raised about efavirenz reducing the effectiveness of contraceptive implants. We aimed to establish whether pregnancy rates differ between HIV-positive women who use various contraceptive methods and either efavirenz-based or nevirapine-based antiretroviral therapy (ART) regimens.

Methods: We did this retrospective cohort study of HIV-positive women aged 15-45 years enrolled in 19 HIV care facilities supported by Family AIDS Care and Education Services in western Kenya between Jan 1, 2011, and Dec 31, 2013. Our primary outcome was incident pregnancy diagnosed clinically. The primary exposure was a combination of contraceptive method and efavirenz-based or nevirapine-based ART regimen. We used Poisson models, adjusting for repeated measures, and demographic, behavioural, and clinical factors, to compare pregnancy rates among women receiving different contraceptive and ART combinations.

Findings: 24 560 women contributed 37 635 years of follow-up with 3337 incident pregnancies. In women using implants, adjusted pregnancy incidence was 1.1 per 100 person-years (95% CI 0.72-1.5) for nevirapine-based ART users and 3.3 per 100 person-years (1.8-4.8) for efavirenz-based ART users (adjusted incidence rate ratio [IRR] 3.0, 95% CI 1.3-4.6). In women using depot medroxyprogesterone acetate, adjusted pregnancy incidence was 4.5 per 100 person-years (95% CI 3.7-5.2) for nevirapine-based ART users and 5.4 per 100 person-years (4.0-6.8) for efavirenz-based ART users (adjusted IRR 1.2, 95% CI 0.91-1.5). Women using other contraceptive methods, except for intrauterine devices and permanent methods, had 3.1-4.1 higher rates of pregnancy than did those using implants, with 1.6-2.8 higher rates in women using efavirenz-based ART.

Interpretation: Although HIV-positive women using implants and efavirenz-based ART had a three-times higher risk of contraceptive failure than did those using nevirapine-based ART,
these women still had lower contraceptive failure rates than did those receiving all other contraceptive methods except for intrauterine devices and permanent methods. Guidelines for contraceptive and ART combinations should balance the failure rates for each contraceptive method and ART regimen combination against the high effectiveness of implants.

Abstract access

**Editor’s notes:** Contraceptive use by women living with HIV who wish to prevent pregnancy remains a key component of the strategy to eliminate new HIV infections among children. Progesterone-based implants are the most effective reversible contraceptive method, but there is some evidence to suggest that their efficacy may be reduced in women receiving efavirenz (EFV)-based antiretroviral therapy (ART).

Overall contraceptive use in these women of childbearing age was low – 70% of the time women were using no contraception or less effective methods only (condoms or natural methods). Overall pregnancy rates were low with the hormonal implant, broadly equivalent to women with intrauterine devices and much lower than with depot injectable and oral contraceptive methods. There was some evidence that the rate of pregnancy in women using the implant was higher for women on EFV-based ART compared to women on nevirapine-based ART. However, the rate of pregnancy remained lower than with injectable or oral contraceptives.

Although this may provide some support to the evidence of reduced implant efficacy with EFV-based ART, it is clear that this can still be an effective contraceptive method. This evidence seems unlikely to change existing WHO recommendations that all forms of contraception should be available to women living with HIV. The low rate of contraceptive use highlights the need to improve access for women living with HIV to quality integrated sexual and reproductive health services. The data from this study suggest that for women wishing to avoid pregnancy, the choice of contraceptive method may be more important than the choice of ART regimen.

3. 15 million accessing treatment

**Efavirenz-based antiretroviral therapy among nevirapine-exposed HIV-infected children in South Africa: a randomized clinical trial.**


Importance: **Advantages of using efavirenz** as part of treatment for children infected with human immunodeficiency virus (HIV) include once-daily dosing, simplification of co-treatment for tuberculosis, preservation of ritonavir-boosted lopinavir for second-line treatment, and harmonization of adult and pediatric treatment regimens. However, there have been concerns about possible reduced viral efficacy of efavirenz in children exposed to nevirapine for prevention of mother-to-child transmission.

Objective: **To evaluate whether nevirapine-exposed children achieving initial viral suppression with ritonavir-boosted lopinavir-based therapy can transition to efavirenz-based therapy without risk of viral failure.**

Design, setting, and participants: Randomized, open-label noninferiority trial conducted at Rahima Moosa Mother and Child Hospital, Johannesburg, South Africa, from June 2010 to December 2013, enrolling **300 HIV-infected children exposed to nevirapine** for prevention of mother-to-child
transmission who were aged 3 years or older and had plasma HIV RNA of less than 50 copies/mL during ritonavir-boosted lopinavir-based therapy; 298 were randomized and 292 (98%) were followed up to 48 weeks after randomization.

**Interventions:** Participants were randomly assigned to switch to efavirenz-based therapy (n = 150) or continue ritonavir-boosted lopinavir-based therapy (n = 148).

**Main outcomes and measures:** Risk difference between groups in (1) viral rebound (ie, ≥1 HIV RNA measurement of >50 copies/mL) and (2) viral failure (ie, confirmed HIV RNA >1000 copies/mL) with a noninferiority bound of -0.10. Immunologic and clinical responses were secondary end points.

**Results:** The Kaplan-Meier probability of viral rebound by 48 weeks was 0.176 (n = 26) in the efavirenz group and 0.284 (n = 42) in the ritonavir-boosted lopinavir group. Probabilities of viral failure were 0.027 (n = 4) in the efavirenz group and 0.020 (n = 3) in the ritonavir-boosted lopinavir group. The risk difference for viral rebound was 0.107 (1-sided 95% CI, 0.028 to infinity) and for viral failure was -0.007 (1-sided 95% CI, -0.036 to infinity). We rejected the null hypothesis that efavirenz is inferior to ritonavir-boosted lopinavir (P < .001) for both end points. By 48 weeks, CD4 cell percentage was 2.88% (95% CI, 1.26%-4.49%) higher in the efavirenz group than in the ritonavir-boosted lopinavir group.

**Conclusions and relevance:** Among HIV-infected children exposed to nevirapine for prevention of mother-to-child transmission and with initial viral suppression with ritonavir-boosted lopinavir-based therapy, switching to efavirenz-based therapy compared with continuing ritonavir-boosted lopinavir-based therapy did not result in significantly higher rates of viral rebound or viral failure. This therapeutic approach may offer advantages in children such as these.
The findings of this study strongly support the switch to efavirenz in children who have achieved virologic suppression. Some caveats of this study are that the findings cannot be generalised to children who are aged under three years or to children failing boosted lopinavir therapy. In addition, it is not clear how long children can be maintained on lopinavir-based therapy before a switch to efavirenz can be made.

There is currently no guidance on managing children aged over three years taking lopinavir therapy. This study provides strong evidence to support the switch to efavirenz among virally-suppressed children aged over three years. This is important given the considerable advantages of efavirenz, including preservation of protease inhibitor-based regimens for second line treatment, harmonising paediatric with adult guidelines that recommend efavirenz as first-line therapy, once-daily dosing, better palatability and lower cost.

Mass HIV treatment and sex disparities in life expectancy: demographic surveillance in rural South Africa.


Background: Women have better patient outcomes in HIV care and treatment than men in sub-Saharan Africa. We assessed - at the population level - whether and to what extent mass HIV treatment is associated with changes in sex disparities in adult life expectancy, a summary metric of survival capturing mortality across the full cascade of HIV care. We also determined sex-specific trends in HIV mortality and the distribution of HIV-related deaths in men and women prior to and at each stage of the clinical cascade.

Methods and findings: Data were collected on all deaths occurring from 2001 to 2011 in a large population-based surveillance cohort (52 964 women and 45 688 men, ages 15 y and older) in rural KwaZulu-Natal, South Africa. Cause of death was ascertained by verbal autopsy (93% response rate). Demographic data were linked at the individual level to clinical records from the public sector HIV treatment and care program that serves the region. Annual rates of HIV-related mortality were assessed for men and women separately, and female-to-male rate ratios were estimated in exponential hazard models. Sex-specific trends in adult life expectancy and HIV-cause-deleted adult life expectancy were calculated. The proportions of HIV deaths that accrued to men and women at different stages in the HIV cascade of care were estimated annually. Following the beginning of HIV treatment scale-up in 2004, HIV mortality declined among both men and women. Female adult life expectancy increased from 51.3 y (95% CI 49.7, 52.8) in 2003 to 64.5 y (95% CI 62.7, 66.4) in 2011, a gain of 13.2 y. Male adult life expectancy increased from 46.9 y (95% CI 45.6, 48.2) in 2003 to 55.9 y (95% CI 54.3, 57.5) in 2011, a gain of 9.0 y. The gap between female and male adult life expectancy doubled, from 4.4 y in 2003 to 8.6 y in 2011, a difference of 4.3 y (95% CI 0.9, 7.6). For women, HIV mortality declined from 1.60 deaths per 100 person-years (95% CI 1.46, 1.75) in 2003 to 0.56 per 100 person-years (95% CI 0.48, 0.65) in 2011. For men, HIV-related mortality declined from 1.71 per 100 person-years (95% CI 1.55, 1.88) to 0.76 per 100 person-years (95% CI 0.67, 0.87) in the same period. The female-to-male rate ratio for HIV mortality declined from 0.93 (95% CI 0.82-1.07) in 2003 to 0.73 (95% CI 0.60-0.89) in 2011, a statistically significant decline (p = 0.046). In 2011, 57% and 41% of HIV-related deaths occurred among men and women, respectively, who had never sought care for HIV in spite of the widespread availability of free HIV treatment. The results presented here come from a poor rural setting in southern Africa with high HIV prevalence and high HIV treatment coverage; broader generalizability is unknown.
Additionally, factors other than HIV treatment scale-up may have influenced population mortality trends.

Conclusions: **Mass HIV treatment has been accompanied by faster declines in HIV mortality among women than men and a growing female-male disparity in adult life expectancy at the population level. In 2011, over half of male HIV deaths occurred in men who had never sought clinical HIV care. Interventions to increase HIV testing and linkage to care among men are urgently needed.**

Abstract  Full-text [free] access

**Editor’s notes:** In South Africa and many other sub-Saharan African countries, mass treatment with anti-retroviral therapy (ART) has led to dramatic decreases in mortality and increases in life expectancy. South Africa has provided ART free-of-charge since 2004, but HIV-associated diseases remain the leading cause of death in adults. This paper uses clinical and demographic data from a longitudinal cohort in a rural area of KwaZulu-Natal in South Africa to assess how gender differences in adult life expectancy and HIV-associated mortality changed between 2001 and 2011.

Overall life expectancy increased for both genders since 2004 with the effect significantly greater for females than males. The gender differential in life expectancy over the period 2004-2011 increased from 4.4 to 8.6 years. The analysis illustrates that this decrease was due to decreases in HIV-associated mortality rates, as HIV-cause-deleted life expectancy (i.e. life expectancy that would have occurred in the absence of HIV) remained constant over this period.

This study emphasizes the HIV treatment gap for men, with approximately half of all HIV-associated deaths in this population occurred among men who had never sought care. Mortality for men was significantly higher than that for women at each stage of the treatment cascade.

Although this study draws on data from one rural setting, many of the underlying characteristics reflect those seen in many other rural areas of the country. Further work is necessary to understand the underlying social and cultural factors that underlie these findings which could then lead to the development of programmes designed to address them. Such cross-disciplinary research which engages with people designing and implementing HIV programmes will need to be significantly enhanced over the coming decade in order to meet the UNAIDS 90:90:90 targets.

Complex routes into HIV care for migrant workers: a qualitative study from north India.


Migrant workers are designated a bridge population in the spread of HIV and therefore if infected, should be diagnosed and treated early. **This study examined pathways to HIV diagnosis and access to care for rural-to-urban circular migrant workers and partners of migrants in northern India, identifying structural, social and individual level factors that shaped their journeys into care.** We conducted a qualitative study using in-depth interviews with HIV-positive men (n = 20) and women (n = 13) with a history of circular migration, recruited from an antiretroviral therapy centre in one district of Uttar Pradesh, north India. Migrants and partners of migrants faced a complex series of obstacles to accessing HIV testing and care. **Employment insecurity, lack of entitlement to sick pay or subsidised healthcare at destination and the household’s economic reliance on their migration-based livelihood led many men to continue working until they became incapacitated by HIV-related morbidity.** During periods of deteriorating health they often exhausted their savings on private treatments focused on symptom management, and sought HIV testing and treatment at a public hospital only following a medical or financial emergency. **Wives**
of migrants had generally been diagnosed following their husbands’ diagnosis or death, with access to testing and treatment mediated via family members. For some, a delay in disclosure of husband’s HIV status led to delays in their own testing. Diagnosing and treating HIV infection early is important in slowing down the spread of the epidemic and targeting those at greatest risk should be a priority. However, despite targeted campaigns, circumstances associated with migration may prevent migrant workers and their partners from accessing testing and treatment until they become sick. The insecurity of migrant work, the dominance of private healthcare and gender differences in health-seeking behaviour delay early diagnosis and treatment initiation.

Abstract access

Editor’s notes: Migrant workers who move for work in their own country face challenges in accessing health care and social support. In a country as large and diverse as India internal migration can be particularly taxing. For people living with HIV, or who acquire HIV while migrating for work, the challenges can be immense. This paper sets out concisely the issues these migrants face, trying to access information, treatment and support both in the place they move to and at home. The authors explain how migrant men might delay treatment because of their need to work, and perhaps also to keep their HIV-status secret. For the wives of migrants, this delay can severely affect their own access to health care. Free antiretroviral therapy is available, but as the authors suggest, many migrant workers do not know that. This lack of knowledge highlights the importance of providing better support for migrant workers. Support for access to free, or at least affordable, health care is something many migrant workers require; for migrant workers living with HIV that support is essential.

4. Avoid TB deaths

The impact of HIV status and antiretroviral treatment on TB treatment outcomes of new tuberculosis patients attending co-located TB and ART services in South Africa: a retrospective cohort study.


Background: The implementation of collaborative TB-HIV services is challenging. We, therefore, assessed TB treatment outcomes in relation to HIV infection and antiretroviral therapy (ART) among TB patients attending a primary care service with co-located ART and TB clinics in Cape Town, South Africa.

Methods: In this retrospective cohort study, all new TB patients aged ≥ 15 years who registered and initiated TB treatment between 1 October 2009 and 30 June 2011 were identified from an electronic database. The effects of HIV-infection and ART on TB treatment outcomes were analysed using a multinomial logistic regression model, in which treatment success was the reference outcome.

Results: The 797 new TB patients included in the analysis were categorized as follows: HIV- negative, in 325 patients (40.8 %); HIV-positive on ART, in 339 patients (42.5 %) and HIV-positive not on ART, in 133 patients (16.7 %). Overall, bivariate analyses showed no significant difference in death and default rates between HIV-positive TB patients on ART and HIV-negative patients. Statistically significant higher mortality rates were found among HIV-positive patients not on ART compared to HIV-negative patients (unadjusted odds ratio (OR) 3.25; 95 % confidence interval (CI) 1.53-6.91).

When multivariate analyses were conducted, the only significant difference between the
patient categories on TB treatment outcomes was that HIV-positive TB patients not on ART had significantly higher mortality rates than HIV-negative patients (adjusted OR 4.12; 95 % CI 1.76-9.66). Among HIV-positive TB patients (n = 472), 28.2 % deemed eligible did not initiate ART in spite of the co-location of TB and ART services. When multivariate analyses were restricted to HIV-positive patients in the cohort, we found that being HIV-positive not on ART was associated with higher mortality (adjusted OR 7.12; 95 % CI 2.95-18.47) and higher default rates (adjusted OR 2.27; 95 % CI 1.15-4.47).

Conclusions: There was no significant difference in death and default rates between HIV-positive TB patients on ART and HIV negative TB patients. Despite the co-location of services 28.2% of 472 HIV-positive TB patients deemed eligible did not initiate ART. These patients had a significantly higher death and default rates.

Abstract Full-text [free] access

Editor’s notes: There is clear evidence that for people with TB and HIV, particularly individuals with low CD4+ cell counts (<350 cells/µL), being on antiretroviral therapy (ART) during TB treatment reduces the risk of mortality. However, practice still lags far behind policy in this area, as in 2013, globally, only around a third of known HIV-positive people with TB were treated with ART. This paper from a single health centre in South Africa highlights the impact of this treatment gap, and emphasizes the fact that co-location of TB and HIV services does not always translate to integrated patient-centred care.

The people included in this analysis were treated for TB between 2009 and 2011, which was before South Africa adopted guidelines recommending ART for all people with TB testing positive for HIV. Nevertheless, the majority of the people living with HIV had CD4+ cell counts that would have made them eligible for ART at the time of the study. Although overall outcomes were relatively good, one in six people starting TB treatment died or were lost to follow-up. Mortality among HIV-positive people not on ART was substantially higher than individuals on ART and people who were HIV-negative. One in four people who were ART-eligible did not start ART. It was not clear whether some did not start ART because they had already died or had been lost to follow-up. In this analysis, there was no differentiation between people already on ART at the time of starting TB treatment and people who started ART during TB treatment.

This study illustrates that co-location of HIV and TB services does not necessarily meet peoples’ needs if care remains fragmented. Care was provided by different people, and the HIV and TB programmes had separate organizational structures, as is still common. Workable models of integrated, patient-centred care for HIV and TB are necessary. Furthermore, to achieve targets of ending TB deaths, we still need a deeper understanding of why people die after starting TB treatment.


Background: Retrospective data suggest that cryptococcal antigen (CrAg) screening in patients with late-stage HIV initiating antiretrovirals may reduce cryptococcal disease and deaths. Prospective data are limited.

Methods: CrAg was measured using lateral flow assays (LFA) and latex agglutination (LA) tests in 645 HIV-positive, ART-naive patients with CD4 counts ≤100 cells/µL in Cape Town, South
Africa. CrAg-positive patients were offered lumbar puncture (LP) and treated with antifungals. Patients were started on ART between 2-4 weeks and followed up for 1 year.

Results: 4.3% (28/645) of patients were CrAg-positive in serum and plasma with LFA. These included 16 also positive by urine LFA (2.5% of total screened) and 7 by serum LA (1.1% of total). In 4 of 10 LFA-positive cases agreeing to LP, the cerebrospinal fluid (CSF) CrAg-LFA was positive. A positive CSF CrAg was associated with higher screening plasma/serum LFA titres. Among the 28 CrAg-positive patients, mortality was 14.3% at 10 weeks and 25% at 12 months. Only one CrAg-positive patient, who defaulted from care, died from cryptococcal meningitis (CM). Mortality in CrAg-negative patients was 11.5% at 1 year. Only 2 possible CM cases were identified in CrAg-negative patients.

Conclusions: Cryptococcal antigen screening of individuals initiating ART and pre-emptive fluconazole treatment of CrAg-positive patients resulted in markedly fewer cases of cryptococcal meningitis compared to historic unscreened cohorts. Studies are needed to refine management of CrAg positive patients, who have high mortality that does not appear to be wholly attributable to cryptococcal disease.

Abstract Full-text [free] access

Editor’s notes: In sub-Saharan Africa, cryptococcal meningitis is the leading cause of adult meningitis. Even with current antifungal therapies, mortality remains high. Asymptomatic cryptococcal antigenemia precedes cryptococcal meningitis and independently predicts mortality in people initiating antiretroviral therapy (ART). Therefore, preventing disease in people found to be cryptococcal antigen (CrAg) positive at ART initiation has potential to reduce morbidity and mortality.

In this prospective study in Cape Town, South Africa, people initiating ART with low CD4 counts (≤100 cells/μL) underwent CrAg screening. People without proven cryptococcal meningitis but with a positive cryptococcal antigen test were pre-emptively treated with oral fluconazole, and were started on ART within two to four weeks. They were followed up for a year. This approach did not lead to delays in ART initiation, and resulted in fewer cryptococcal meningitis cases. However, despite pre-emptive antifungal therapy, mortality remained twice as high among people who were CrAg positive, even after adjustment for CD4 cell count. This high mortality appears not completely attributable to cryptococcal disease, and the authors hypothesize that cryptococcal antigen positivity in itself is a marker for severe immunosuppression.

Interestingly, the authors found a lower prevalence of asymptomatic antigenaemia than expected: about 4% in this study (2011-2014) compared to 6% in a similar population in 2002 to 2005. The authors suggest that earlier HIV diagnosis and improved access to care may be the main reasons for this, proposing that reducing the duration of severe immunosuppression may reduce the risk of cryptococcal disease, either due to reactivation or rapid progression of new infection.

The authors conclude that the optimal strategies for implementing screening and the optimal pre-emptive antifungal regimen remain to be defined. Screening may best be delivered as part of a combined opportunistic infection screening and treatment package for people presenting with low CD4 counts.

5. Close the resource gap

The HIV treatment gap: estimates of the financial resources needed versus available for scale-up of antiretroviral therapy in 97 countries from 2015 to 2020.
Background: The World Health Organization (WHO) released revised guidelines in 2015 recommending that all people living with HIV, regardless of CD4 count, initiate antiretroviral therapy (ART) upon diagnosis. However, few studies have projected the global resources needed for rapid scale-up of ART. Under the Health Policy Project, we conducted modeling analyses for 97 countries to estimate eligibility for and numbers on ART from 2015 to 2020, along with the facility-level financial resources required. We compared the estimated financial requirements to estimated funding available.

Methods and findings: Current coverage levels and future need for treatment were based on country-specific epidemiological and demographic data. Simulated annual numbers of individuals on treatment were derived from three scenarios: (1) continuation of countries' current policies of eligibility for ART, (2) universal adoption of aspects of the WHO 2013 eligibility guidelines, and (3) expanded eligibility as per the WHO 2015 guidelines and meeting the Joint United Nations Programme on HIV/AIDS "90-90-90" ART targets. We modeled uncertainty in the annual resource requirements for antiretroviral drugs, laboratory tests, and facility-level personnel and overhead.

We estimate that 25.7 (95% CI 25.5, 26.0) million adults and 1.57 (95% CI 1.55, 1.60) million children could receive ART by 2020 if countries maintain current eligibility plans and increase coverage based on historical rates, which may be ambitious. If countries uniformly adopt aspects of the WHO 2013 guidelines, 26.5 (95% CI 26.0 27.0) million adults and 1.53 (95% CI 1.52, 1.55) million children could be on ART by 2020. Under the 90-90-90 scenario, 30.4 (95% CI 30.1, 30.7) million adults and 1.68 (95% CI 1.63, 1.73) million children could receive treatment by 2020. The facility-level financial resources needed for scaling up ART in these countries from 2015 to 2020 are estimated to be US$45.8 (95% CI 45.4, 46.2) billion under the current scenario, US$48.7 (95% CI 47.8, 49.6) billion under the WHO 2013 scenario, and US$52.5 (95% CI 51.4, 53.6) billion under the 90-90-90 scenario. After projecting recent external and domestic funding trends, the estimated 6-y financing gap ranges from US$19.8 billion to US$25.0 billion, depending on the costing scenario and the U.S. President's Emergency Plan for AIDS Relief contribution level, with the gap for ART commodities alone ranging from US$14.0 to US$16.8 billion. The study is limited by excluding above-facility and other costs essential to ART service delivery and by the availability and quality of country- and region-specific data.

Conclusions: The projected number of people receiving ART across three scenarios suggests that countries are unlikely to meet the 90-90-90 treatment target (81% of people living with HIV on ART by 2020) unless they adopt a test-and-offer approach and increase ART coverage. Our results suggest that future resource needs for ART scale-up are smaller than stated elsewhere but still significantly threaten the sustainability of the global HIV response without additional resource mobilization from domestic or innovative financing sources or efficiency gains. As the world moves towards adopting the WHO 2015 guidelines, advances in technology, including the introduction of lower-cost, highly effective antiretroviral regimens, whose value are assessed here, may prove to be "game changers" that allow more people to be on ART with the resources available.
universal adoption of certain aspects of WHO 2013 eligibility guidelines, and c) expand eligibility as per WHO 2015 guidelines and meeting the Joint United Nations Programme on HIV/AIDS ‘90-90-90’ targets.

The authors estimated the number of adults and children eligible for and receiving HIV treatment, as well as the cost of providing ART in 97 countries across six regions, covering different income levels. They estimated that 25.7 million adults and 1.57 million children could receive ART by 2020 if countries maintain the current eligibility strategies. If countries adopted WHO 2013 eligibility guidelines, 26.5 million adults and 1.53 million children would be on ART by 2020, and if they adopted the 90-90-90 scenario, 30.4 million adults and 1.68 million children could receive treatment by then. The financial resources necessary for this scale up are estimated to be US$ 45.8 billion under current eligibility, US$ 48.7 billion under WHO 2013 scenario and US$ 52.5 billion under the 90-90-90 scenario. The estimated funding gap for the six year period ranges between US$ 20 and US$ 25 billion. In this study, the costs of commodities were taken directly from data collated by other organisations. No empirical cost estimates of service delivery were made. Nor was there an attempt to understand the cost implications of the development synergies and social and programme enablers that may be needed to increase the number of people living with HIV knowing their status. The new WHO recommendations need to be actively pursued if we are to meet targets, rather than passively continuing with “business as usual”.

Nonetheless, the findings of this study highlight the gap between guidelines written by WHO and very real programmatic obstacles on the ground. There is evidence to suggest that universal test-and-treat strategies could lead to substantially improved health outcomes at the population level, as well as potentially being cost-saving in the long-term. However, as the authors have illustrated, it would require increased levels of funding. What needs to be explored further now is how to overcome the logistical hurdles of rolling out such an initiative. Changing systems and practices is costly and takes time. Health workers will have to be retrained, data collection strategies will have to be revised. Expanding treatment may also mean increasing the number of health staff working on this initiative, which has an opportunity cost that may reverberate in other parts of the health system. Substantially altering health service provision, particularly in weak health systems, may have knock-on effects with unexpected and unintended consequences.

WHO guidelines serve a vital purpose of giving us a goal to aim for. But studies like this one help us know if and how we can get there.

Effect of savings-led economic empowerment on HIV preventive practices among orphaned adolescents in rural Uganda: results from the Suubi-Maka randomized experiment.


Improving economic resources of impoverished youth may alter intentions to engage in sexual risk behaviors by motivating positive future planning to avoid HIV risk and by altering economic contexts contributing to HIV risk. Yet, few studies have examined the effect of economic-strengthening on economic and sexual behaviors of orphaned youth, despite high poverty and high HIV infection in this population. Hierarchal longitudinal regressions were used to examine the effect of a savings-led economic empowerment intervention, the Suubi-Maka Project, on changes in orphaned adolescents’ cash savings and attitudes toward savings and HIV-preventive practices over time. We randomized 346 Ugandan adolescents, aged 10-17 years, to either the control group receiving usual orphan care plus mentoring (n = 167) or the intervention group receiving usual orphan care plus mentoring, financial education, and matched savings accounts (n = 179). Assessments were conducted at baseline, 12, and 24 months. Results indicated that
intervention adolescents significantly increased their cash savings over time (b = $US12.32, +/- 1.12, p < .001) compared to adolescents in the control group. At 24 months post-baseline, 92% of intervention adolescents had accumulated savings compared to 43% in the control group (p < .001). The largest changes in savings goals were the proportion of intervention adolescents valuing saving for money to buy a home (DeltaT1-T0 = +14.9, p < .001), pursue vocational training (DeltaT1-T0 = +8.8, p < .01), and start a business (T1-T0 = +6.7, p < .01). Intervention adolescents also had a significant relative increase over time in HIV-preventive attitudinal scores (b = +0.19, +/-0.09, p < .05), most commonly toward perceived risk of HIV (95.8%, n = 159), sexual abstinence or postponement (91.6%, n = 152), and consistent condom use (93.4%, n = 144). In addition, intervention adolescents had 2.017 significantly greater odds of a maximum HIV-prevention score (OR = 2.017, 95%CI: 1.43-2.84). To minimize HIV risk throughout the adolescent and young adult periods, long-term strategies are needed to integrate youth economic development, including savings and income generation, with age-appropriate combination prevention interventions.

Abstract access

Editor’s notes: This study contributes to the small but growing evidence on the effectiveness of economic strengthening activities for HIV prevention and treatment outcomes. It used a cluster randomised experimental design to evaluate the impact of a savings-led economic empowerment programme for orphaned adolescents on savings behaviour, as well as sexually protective attitudes. The authors report a significant and large impact on cash savings, as well as an increase in HIV-preventive attitudinal scores. This is particularly promising given the need to address the multiple needs of adolescent youth to promote their healthy transition to adulthood.

It is important to note that this study considered attitudinal outcomes, rather than biological or even reported behavioural ones. There are considerable limitations to such measures that often do not reflect actual sexual behaviours. Also, given the significant additional cost and economic benefits of the savings component in the programme arm, a key question remains, namely how incrementally cost-effective it is in achieving HIV and economic development goals.

6. Eliminate gender inequalities

Prevalence and correlates of client-perpetrated violence against female sex workers in 13 Mexican cities.


Background: Globally, client-perpetrated violence against female sex workers (FSWs) has been associated with multiple health-related harms, including high-risk sexual behavior and increased exposure to HIV/STIs. This study examined correlates of client-perpetrated sexual, physical, and economic violence (e.g., robbery) against FSWs in 13 cities throughout Mexico.

Methods: FSWs (N = 1089) who were enrolled in a brief, evidence-based, sexual risk reduction intervention for FSWs (Mujer Segura) were interviewed about their work context, including experiences of violence perpetrated by clients, sexual risk and substance use practices, financial need, and social supports. Three broad categories of factors (sociodemographic, work context, behavioral and social characteristics of FSWs) were examined as correlates of sexual, physical, and economic violence.
Results: The prevalence of different types of client-perpetrated violence against FSWs in the past 6 months was: sexual (11.7%), physical (11.8%), economic (16.9%), and any violence (22.6%). Greater financial need, self-identification as a street worker, and lower perceived emotional support were independently associated with all three types of violence. Alcohol use before or during sex with clients in the past month was associated with physical and sexual violence. Using drugs before or during sex with clients, injection drug use in the past month, and population size of city were associated with sexual violence only, and FSWs' alcohol use score (AUDIT-C) was associated with economic violence only.

Conclusions: Correlates of client-perpetrated violence encompassed sociodemographic, work context, and behavioral and social factors, suggesting that approaches to violence prevention for FSWs must be multi-dimensional. Prevention could involve teaching FSWs strategies for risk avoidance in the workplace (e.g., avoiding use of alcohol with clients), enhancement of FSWs' community-based supports, development of interventions that deliver an anti-violence curriculum to clients, and programs to address FSWs' financial need by increasing their economic opportunities outside of the sex trade.

Abstract Full-text [free] access

Editor's notes: Violence against women who sell sex is receiving increasing attention. Perpetrators include clients, police, strangers, local thugs and husbands or intimate (non-paying) partners. This study from Mexico examined physical, sexual and emotional violence by clients among female sex workers in 13 cities in Mexico. Violence by clients was common (22.6% any violence, past six months) and similar to rates reported in other countries. Violence exposure was associated with greater financial need, street sex work, and lower perceived emotional support. Sexual and physical violence were also associated with alcohol use. Alcohol use, street sex work and debt have been associated with violence exposure among female sex workers in other low and middle income settings. This research supports a growing body of evidence which suggests that violence prevention should be a key element in services designed for and with female sex workers. Successful violence and HIV prevention programming will need to address the broader structural determinants of vulnerability such as poverty, sex work structure (typology), stigma and discrimination, and associated alcohol and drug use.


Female-initiated methods of HIV prevention are needed to address barriers to HIV prevention rooted in gender inequalities. Understanding the sociocultural context of pre-exposure prophylaxis (PrEP) trials, including gender-based violence, is thus critical. MTN-003C (VOICE-C), a qualitative sub-study of the larger MTN-003 (VOICE) trial, examined sociocultural barriers and facilitators to PrEP amongst women in Johannesburg. We conducted focus-group discussions, in-depth interviews and ethnographic interviews with 102 trial participants, 22 male partners, 17 community advisory board members and 23 community stakeholders. We analysed how discussions of rape are emblematic of the gendered context in which HIV risk occurs. Rape emerged spontaneously in half of discussions with community advisory board members, two-thirds with stakeholders and among one-fifth of interviews/discussions with trial participants. Rape was used to reframe HIV risk as external to women's or partner's behaviour and to justify
the importance of PrEP. Our research illustrates how women, in contexts of high levels of sexual violence, may use existing gender inequalities to negotiate PrEP use. This suggests that future interventions should simultaneously address harmful gender attitudes, as well as equip women with alternative means to negotiate product use, in order to more effectively empower women to protect themselves from HIV.

Abstract access

Editor’s notes: This paper presents qualitative research which explored the broader context of gender-based violence surrounding PrEP use. The study was an ancillary study alongside the VOICE trial at the South Africa site, which evaluated daily oral and vaginal PrEP. Participants in the ancillary study included women participants, male partners and community stakeholders. The authors found that the issue of rape was spontaneously mentioned by the majority of participants, with the exception of male partners. From these discussions of rape, issues of gender norms emerged, which revealed a continuum from what was called gender exploitative and gender accommodating. The context of gender exploitative was expressed as rape as a reflection of women’s vulnerability. In this context women’s vulnerability to rape and HIV provides a rationale for the use of PrEP. This includes protecting them against sexual violence victimisation. The study highlights that rape provides justification for the use of PrEP but reveals that such justification is complex in that women are seen as both vulnerable to rape but also blamed for rape through unacceptable behaviours including drinking alcohol. The authors conclude that the focus on rape by strangers hides women’s vulnerability to sexual violence from partners and argue that any move to legitimise PrEP for the threat of rape may undermine its use in consensual sex and reinforces negative gender norms about women’s vulnerability to strangers. They suggest that initiatives surrounding PrEP need to recognise and challenge harmful gender norms. This study has highlighted that while PrEP has not been imagined as a gendered HIV prevention tool, in contrast to microbicides, it does in fact emerge as a tool that will be gendered in potentially harmful ways.

7. Strengthening HIV integration

Measuring child awareness for adult symptomatic HIV using a verbal assessment tool: concordance between adult-child dyads on adult HIV-associated symptoms and illnesses.


Objectives: This study assessed children’s awareness for adult HIV-associated symptoms and illnesses using a verbal assessment tool by analysing inter-rater reliability between adult-child dyads. This study also evaluated sociodemographic and household characteristics associated with child awareness of adult symptomatic HIV.

Methods: A cross-sectional survey using a representative community sample of adult-child dyads (N=2477 dyads) was conducted in KwaZulu-Natal, South Africa. Analyses focused on a subsample (n=673 adult-child dyads) who completed verbal assessment interviews for symptomatic HIV. We used an existing validated verbal autopsy approach, originally designed to determine AIDS-related deaths by adult proxy reporters. We adapted this approach for use by child proxy reporters for reporting on HIV-associated symptoms and illnesses among living adults. Analyses assessed whether children could reliably report on adult HIV-associated symptoms and illnesses and adult provisional HIV status.
Results: Adult-child pairs concurred above the 65th percentile for 9 of the 10 HIV-associated symptoms and illnesses with sensitivities ranging from 10% to 100% and specificities ranging from 20% to 100%. Concordant reporting between adult-child dyads for the adult’s provisional HIV status was 72% (sensitivity=68%, specificity=73%). Children were more likely to reliably match adult’s reports of provisional HIV status when they lived in households with more household members, and households with more robust socioeconomic indicators including access to potable water, food security and television.

Conclusions: Children demonstrate awareness of HIV-associated symptoms and illnesses experienced by adults in their household. Children in households with greater socioeconomic resources and more household members were more likely to reliably report on the adult’s provisional HIV status.

Abstract

Children living with HIV-infected adults: estimates for 23 countries in sub-Saharan Africa.


Background: In sub-Saharan Africa many children live in extreme poverty and experience a burden of illness and disease that is disproportionately high. The emergence of HIV and AIDS has only exacerbated long-standing challenges to improving children’s health in the region, with recent cohorts experiencing pediatric AIDS and high levels of orphan status, situations which are monitored globally and receive much policy and research attention. Children’s health, however, can be affected also by living with HIV-infected adults, through associated exposure to infectious diseases and the diversion of household resources away from them. While long recognized, far less research has focused on characterizing this distinct and vulnerable population of HIV-affected children.

Methods: Using Demographic and Health Survey data from 23 countries collected between 2003 and 2011, we estimate the percentage of children living in a household with at least one HIV-infected adult. We assess overlaps with orphan status and investigate the relationship between children and the adults who are infected in their households.
Results: The population of children living in a household with at least one HIV-infected adult is substantial where HIV prevalence is high; in Southern Africa, the percentage exceeded 10% in all countries and reached as high as 36%. This population is largely distinct from the orphan population. Among children living in households with tested, HIV-infected adults, most live with parents, often mothers, who are infected; nonetheless, in most countries over 20% live in households with at least one infected adult who is not a parent.

Conclusion: Until new infections contract significantly, improvements in HIV/AIDS treatment suggest that the population of children living with HIV-infected adults will remain substantial. It is vital to ongoing efforts to reduce childhood morbidity and mortality to consider whether current care and outreach sufficiently address the distinct vulnerabilities of these children.

Abstract Full-text [free] access

Editor’s notes: This paper is an important contribution to the literature on the impact of the HIV epidemic. Using Demographic and Health Survey (DHS) data from 23 countries it highlights the considerable number of children living with HIV-positive adults in sub-Saharan Africa. However, notable exceptions from the analysis (no DHS data available) included South Africa. This, coupled with specific issues related to DHS data collection methods and response rates, means that the number of children living with HIV-positive adults is much higher. Reductions in mortality from HIV due to increased treatment availability and the addition of adults newly acquiring HIV means that population of children living with an HIV-positive adult will continue to increase in the near future.

Children living with HIV-positive adults are clearly vulnerable and like all vulnerable children should be focussed on in efforts to promote child wellbeing. The authors suggest, however, that children living with HIV-positive adults may have distinct vulnerabilities that need to be considered. These include direct exposure to opportunistic infections, social stigma and disrupted networks, as well as increases in poverty. The challenge for many countries is how to identify these children and ensure that focussed programmes are delivered effectively.