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

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   - PEP is an unknown option for women at high risk in Nairobi
   - Condoms or PrEP? Women’s decision-making for the prevention of HIV-transmission in Kenya and South Africa
   - Male circumcision may reduce HIV transmission among MSM in China

2. 15 million accessing treatment
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5. Strengthening HIV integration
• Contraception for young girls living with HIV: barriers and facilitators to service provision in western Kenya

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HIV this month, published by UNAIDS, is a selective scan of new HIV-related information found in scientific journals. The Editors of HIV this month interpret original abstracts and provide editorial comment, so that information may be easily understood by people responding to the HIV epidemic in many diverse settings. The selection of material, its abridgement and other editorial changes, and also the original editorial comment are the responsibility of the Editors and do not represent any official statement of UNAIDS. It should be noted that (except for open access journals, e.g. PLoS) the authors and/or publishers retain copyright in the original published material to which HIV this month refers.
1. Reduce sexual transmission

Pre-exposure prophylaxis to prevent the acquisition of HIV-1 infection (PROUD): effectiveness results from the pilot phase of a pragmatic open-label randomised trial.


Background: Randomised placebo-controlled trials have shown that daily oral pre-exposure prophylaxis (PrEP) with tenofovir-emtricitabine reduces the risk of HIV infection. However, this benefit could be counteracted by risk compensation in users of PrEP. We did the PROUD study to assess this effect.

Methods: PROUD is an open-label randomised trial done at 13 sexual health clinics in England. We enrolled HIV-negative gay and other men who have sex with men who had had anal intercourse without a condom in the previous 90 days. Participants were randomly assigned (1:1) to receive daily combined tenofovir disoproxil fumarate (245 mg) and emtricitabine (200 mg) either immediately or after a deferral period of 1 year. Randomisation was done via web-based access to a central computer-generated list with variable block sizes (stratified by clinical site). Follow-up was quarterly. The primary outcomes for the pilot phase were time to accrue 500 participants and retention; secondary outcomes included incident HIV infection during the deferral period, safety, adherence, and risk compensation. The trial is registered with ISRCTN (number ISRCTN94465371) and ClinicalTrials.gov (NCT02065986).

Findings: We enrolled 544 participants (275 in the immediate group, 269 in the deferred group) between Nov 29, 2012, and April 30, 2014. Based on early evidence of effectiveness, the trial steering committee recommended on Oct 13, 2014, that all deferred participants be offered PrEP. Follow-up for HIV incidence was complete for 243 (94%) of 259 patient-years in the immediate group versus 222 (90%) of 245 patient-years in the deferred group. Three HIV infections occurred in the immediate group (1.2/100 person-years) versus 20 in the deferred group (9.0/100 person-years) despite 174 prescriptions of post-exposure prophylaxis in the deferred group (relative reduction 86%, 90% CI 64-96, p=0.0001; absolute difference 7.8/100 person-years, 90% CI 4.3-11.3). 13 men (90% CI 9-23) in a similar population would need access to 1 year of PrEP to avert one HIV infection. We recorded no serious adverse drug reactions; 28 adverse events, most commonly nausea, headache, and arthralgia, resulted in interruption of PrEP. We detected no difference in the occurrence of sexually transmitted infections, including rectal gonorrhoea and chlamydia, between groups, despite a suggestion of risk compensation among some PrEP recipients.

Interpretation: In this high incidence population, daily tenofovir-emtricitabine conferred even higher protection against HIV than in placebo-controlled trials, refuting concerns that effectiveness would be less in a real-world setting. There was no evidence of an increase in other sexually transmitted infections. Our findings strongly support the addition of PrEP to the standard of prevention for men who have sex with men at risk of HIV infection.

Abstract Full-text [free] access

Editor’s notes: The PROUD study was an open label pragmatic randomised controlled trial designed to assess the effectiveness of pre-exposure prophylaxis (PrEP) in gay men and other men who have
sex with men and whether the benefits are counteracted by risk compensation in users of PrEP. During the pilot phase of the study to test the feasibility of a large-scale trial the investigators found an unexpectedly high incidence of HIV infections. It was seven times higher than the national estimate reported for gay men and other men who have sex with men in the UK. The incidence of HIV infection was significantly lower in the group assigned to receive PrEP immediately, compared with the group assigned to receive it after a deferral period of one year. Moreover the reduction in HIV incidence was greater than has been observed in placebo-controlled trials. As a result the trial was stopped early on the recommendation of the trial steering committee. The high incidence of HIV suggests that, despite the broad eligibility criteria, the study population was highly selective and that the offer of PrEP attracted men who were at high risk of HIV and most likely to benefit from it. Despite some limitations, for example, lack of data on adherence and sexual behaviour, the results of this study are encouraging and have important implication for HIV prevention. They indicate that PrEP is effective in a real world setting, particularly in a population that is aware of its risk of HIV infection. Furthermore, there was no evidence of risk compensation among PrEP recipients.

Barriers to the uptake of postexposure prophylaxis among Nairobi-based female sex workers.


Introduction: Female sex workers (FSWs) in sub-Saharan Africa are at a particularly high risk for HIV infection. Postexposure prophylaxis (PEP) is available as part of an HIV care and prevention program through dedicated FSW clinics in Nairobi, Kenya, but is underutilized. We evaluated PEP knowledge, access, and adherence among clinic attendees.

Methods: An anonymous questionnaire was administered to unselected HIV-uninfected FSWs. Participants were dichotomized into high and low HIV risk categories based on self-reported sexual practices, and prior PEP use, knowledge, and adherence were then evaluated.

Results: One hundred thirty-four HIV-uninfected FSWs participated, with 64 (48%) categorized as being at high risk for HIV acquisition. High-risk FSWs were less likely to have heard of or accessed PEP than lower risk FSWs (37.5 vs. 58.6%, P = 0.014; and 21.9 vs. 40.6%, P = 0.019, respectively). Among higher risk FSWs, those who had accessed PEP were more likely to report treatment for a genital infection (71.4 vs. 42.0%, P = 0.049) or sex with an HIV-infected man (62.5 vs. 37.5%, P = 0.042) during the last 6 months. However, only 35.7% of high-risk women accessing PEP completed a full course of treatment, and noncompleters were more likely to report prior unprotected sex with an HIV-infected man (P = 0.023).

Conclusion: Despite freely available PEP for Nairobi-based FSWs, women at highest risk were less likely to have heard of PEP, access PEP, or complete the full course of therapy once initiated. Program delivery needs to be improved to ensure that FSW most at risk are able to benefit from this resource.

Abstract access

Editor’s notes: There is currently in the field a strong buzz around antiretroviral (ARV)-based prevention following the results from recently completed oral pre-exposure prophylaxis studies (PrEP). This excitement is also driven by the new guidelines from the World Health Organization which recommend immediate treatment of any individual testing HIV positive at any CD4 count and initiation of PrEP for individuals at substantially high risk for acquiring HIV. On the other hand, post-exposure prophylaxis (PEP), involving giving a one month supply of daily ARVs to someone recently
exposed or suspected to be exposed to HIV, has been in existence for almost two decades. Yet despite new WHO guidelines released in 2014 it struggles to be successfully implemented in instances of suspected sexual exposure. This paper presents a case illustrating how despite support from national policy and availability in clinics, women at high risk do not know about PEP and do not access it as they could. This study was able to correlate association of risk and the need to care for children with accessing and completing PEP regimens. This is a valuable insight into how messaging and education around PEP could be constructed. PEP could be a powerful tool in the ARV-based prevention tool box, and the broader combination prevention strategies in countries. However it is clear that efforts to improve access and uptake will need directed attention and excitement along with support for the other prevention options coming on to the market.

Motivations for reducing other HIV risk-reduction practices if taking pre-exposure prophylaxis: findings from a qualitative study among women in Kenya and South Africa.


Findings from a survey conducted among women at high risk for HIV in Bondo, Kenya, and Pretoria, South Africa, demonstrated that a substantial proportion would be inclined to reduce their use of other HIV risk-reduction practices if they were taking pre-exposure prophylaxis (PrEP). To explore the motivations for their anticipated behavior change, we conducted qualitative interviews with 60 women whose survey responses suggested they would be more likely to reduce condom use or have sex with a new partner if they were taking PrEP compared to if they were not taking PrEP. Three interrelated themes were identified: (1) "PrEP protects"-PrEP was perceived as an effective HIV prevention method that replaced the need for condoms; (2) condoms were a source of conflict in relationships, and PrEP would provide an opportunity to resolve or avoid this conflict; and (3) having sex without a condom or having sex with a new partner was necessary for receiving material goods and financial assistance-PrEP would provide reassurance in these situations. Many believed that PrEP alone would be a sufficient HIV risk-reduction strategy. These findings suggest that participants’ HIV risk-reduction intentions, if they were to use PrEP, were based predominately on their understanding of the high efficacy of PrEP and their experiences with the limitations of condoms. Enhanced counseling is needed to promote informed decision making and to ensure overall sexual health for women using PrEP for HIV prevention, particularly with respect to the prevention of pregnancy and other sexually transmitted infections when PrEP is used alone.

Abstract access

Editor’s notes: New HIV-prevention methods and messages may be understood differently by different people. For example, the protection from HIV infection for men 'at about 60%' that is afforded by medical male circumcision is not always well understood. Some men assume higher protection levels. The authors of this paper describe women’s HIV-prevention method intentions, should pre-exposure prophylaxis (PrEP) be available. The study is of women’s intention, not actual behaviour, but the findings provide useful insights into the way in which prevention messages are interpreted. In this case, the new method is seen to offer an alternative to using condoms. The authors describe the reasons women give for not using condoms based on their belief that PrEP would protect them from infection. The authors suggest that counselling to inform women of the other benefits of condoms, beyond HIV-infection, is necessary where PrEP is introduced as a HIV-prevention method. This may be so, but underlying the reasons the women gave for not wanting to use condoms was inequitable
relationships with their partners. The decision to use condoms often rests mainly with the man. While some women actively disliked condoms because of a reduction in sexual pleasure, many saw not using condoms as a way to sustain their relationship. The authors note that prevention strategies not only need to support women’s choices; but they also need to engage with women who lack choice.

Lower HIV risk among circumcised men who have sex with men in China: Interaction with anal sex role in a cross-sectional study.


Background: Voluntary medical male circumcision reduces the risk of HIV heterosexual transmission in men, but its effect on male-to-male sexual transmission is uncertain.

Methods: Circumcision status of men who have sex with men (MSM) in China was evaluated by genital examination and self-report; anal sexual role was assessed by questionnaire interview. Serostatus for HIV and syphilis was confirmed.

Results: Among 1155 participants (242 known seropositives and 913 with unknown HIV status at enrollment), the circumcision rate by self-report (10.4%) was higher than confirmed by genital examination (8.2%). Male circumcision (by exam) was associated with 47% lower odds of being HIV seropositive (adjusted odds ratio [aOR], 0.53; 95% confidence interval [CI], 0.27-1.02) after adjusting for demographic covariates, number of lifetime male sexual partners, and anal sex role. Among MSM who predominantly practiced insertive anal sex, circumcised men had 62% lower odds of HIV infection than those who were uncircumcised (aOR, 0.38, 95%CI, 0.09-1.64). Among those whose anal sex position was predominantly receptive or versatile, circumcised men have 46% lower odds of HIV infection than did men who were not circumcised (aOR, 0.54, 95%CI, 0.25-1.14). Compared to uncircumcised men reporting versatile or predominantly receptive anal sex positioning, those who were circumcised and reported practicing insertive sex had an 85% lower risk (aOR, 0.15; 95%CI, 0.04-0.65). Circumcision was not associated clearly with lower syphilis risk (aOR, 0.91; 95%CI, 0.51-1.61).

Conclusions: Circumcised MSM were less likely to have acquired HIV, most pronounced among men predominantly practicing insertive anal intercourse. A clinical trial is needed.

Abstract access

Editor’s notes: Randomised controlled trials in areas of high HIV prevalence in Africa have demonstrated that voluntary medical male circumcision (VMMC) can reduce heterosexual acquisition of HIV in men by around 60%. However the evidence is less clear that the protection conferred by VMMC also applies to gay men and other men who have sex with men by reducing HIV acquisition through insertive anal sex. This cross-sectional study of gay men and other men who have sex with men in China suggests that, overall, the odds of being HIV positive among circumcised men were about half that in uncircumcised men, after adjusting for differences in demographic factors and sexual behaviour. Biologically, circumcision is likely to protect gay men and other men who have sex with men who are exclusively or mainly the insertive partner, and among men in this group, there was a slightly larger protective effect, although not statistically significant. This supports a meta-analysis which found a similar finding among gay men and other men who have sex with men who practiced insertive anal sex. There was no association of VMMC and syphilis infection in this population, in line with other studies. The authors note that HIV prevention strategies among gay men and other men who have sex with men are still limited in China, and suggest studies to assess the feasibility of a
multicentre randomised controlled trial of the effect of VMMC on HIV acquisition among gay men and other men who have sex with men in this setting.

2. 15 million accessing treatment

Simplified HIV testing and treatment in China: analysis of mortality rates before and after a structural intervention.


Background: Multistage stepwise HIV testing and treatment initiation procedures can result in lost opportunities to provide timely antiretroviral therapy (ART). Incomplete patient engagement along the continuum of HIV care translates into high levels of preventable mortality. We aimed to evaluate the ability of a simplified test and treat structural intervention to reduce mortality.

Methods and findings: In the "pre-intervention 2010" (from January 2010 to December 2010) and "pre-intervention 2011" (from January 2011 to December 2011) phases, patients who screened HIV-positive at health care facilities in Zhongshan and Pubei counties in Guangxi, China, followed the standard-of-care process. In the "post-intervention 2012" (from July 2012 to June 2013) and "post-intervention 2013" (from July 2013 to June 2014) phases, patients who screened HIV-positive at the same facilities were offered a simplified test and treat intervention, i.e., concurrent HIV confirmatory and CD4 testing and immediate initiation of ART, irrespective of CD4 count. Participants were followed for 6-18 mo until the end of their study phase period. Mortality rates in the pre-intervention and post-intervention phases were compared for all HIV cases and for treatment-eligible HIV cases. A total of 1034 HIV-positive participants (281 and 339 in the two pre-intervention phases respectively, and 215 and 199 in the two post-intervention phases respectively) were enrolled. Following the structural intervention, receipt of baseline CD4 testing within 30 d of HIV confirmation increased from 67%/61% (pre-intervention 2010/pre-intervention 2011) to 98%/97% (post-intervention 2012/post-intervention 2013) (all p < 0.001 [i.e., for all comparisons between a pre- and post-intervention phase]), and the time from HIV confirmation to ART initiation decreased from 53 d (interquartile range [IQR] 27-141)/43 d (IQR 15-113) to 5 d (IQR 2-12)/5 d (IQR 2-13) (all p < 0.001). Initiation of ART increased from 27%/49% to 91%/89% among all cases (all p < 0.001) and from 39%/62% to 94%/90% among individuals with CD4 count ≤350 cells/mm³ or AIDS (all p < 0.001). Mortality decreased from 27%/27% to 10%/10% for all cases (all p < 0.001) and from 40%/35% to 13%/13% for cases with CD4 count ≤350 cells/mm³ or AIDS (all p < 0.001). The simplified test and treat intervention was significantly associated with decreased mortality rates compared to pre-intervention 2011 (adjusted hazard ratio [aHR] 0.385 [95% CI 0.239-0.620] and 0.380 [95% CI 0.233-0.618] for the two post-intervention phases, respectively, for all newly diagnosed HIV cases [both p < 0.001], and aHR 0.369 [95% CI 0.226-0.603] and 0.361 [95% CI 0.221-0.590] for newly diagnosed treatment-eligible HIV cases [both p < 0.001]). The unit cost of an additional patient receiving ART attributable to the intervention was US$83.80. The unit cost of a death prevented because of the intervention was US$234.52.

Conclusions: Our results demonstrate that the simplified HIV test and treat intervention promoted successful engagement in care and was associated with a 62% reduction in mortality. Our findings support the implementation of integrated HIV testing and immediate access to ART irrespective of CD4 count, in order to optimize the impact of ART.
Abstract  Full-text [free] access

Editor’s notes: The pathway from testing HIV positive to initiation of antiretroviral therapy (ART) can be complicated to navigate. The pathway may involve multiple visits, with delays and potential for losses at each step. These delays and losses are particularly hazardous for people with low CD4 counts, for whom delay in starting ART increases the risk of early mortality.

In this study from China, the pathway from an HIV-positive test result to starting treatment prior to the study programme was complex. It required people to have a confirmatory HIV test, which had a turnaround time of 7-18 days, before blood was sent for a CD4 count, with a further 7-18 day delay before the CD4 result became available. People eligible for ART, based on a CD4 count below 350 cells/mm³, would be asked to attend a different facility, usually the county general hospital. Eligible individuals would have to attend education sessions and have further blood tests for assessment prior to starting ART.

The programme simplified the pathway to ART start substantially by starting ART educational sessions at the same visit as the first HIV-positive test result. A second visit, to the county general hospital, was required to have blood taken for a CD4 count and pre-ART assessments, along with further education and counselling. The county general hospital was responsible for all subsequent care, and providers were responsible for following up if people did not attend scheduled visits. ART was initiated regardless of CD4 count. Mortality prior to the programme was 27% overall; in the programme period it was 10%.

Although a before-after evaluation is less robust than a randomised design, this study illustrates the potential for major improvement in patient-relevant outcomes following a health system programme to simplify the patient pathway. The pathway prior to the programme was particularly complex and similar impacts may not be achievable in other systems. Nonetheless this is an impressive achievement, which should encourage programme managers to consider how systems could be modified to make them work more effectively for people.

Uptake, accuracy, safety, and linkage into care over two years of promoting annual self-testing for HIV in Blantyre, Malawi: a community-based prospective study.


Background: Home-based HIV testing and counselling (HTC) achieves high uptake, but is difficult and expensive to implement and sustain. We investigated a novel alternative based on HIV self-testing (HIVST). The aim was to evaluate the uptake of testing, accuracy, linkage into care, and health outcomes when highly convenient and flexible but supported access to HIVST kits was provided to a well-defined and closely monitored population.

Methods and findings: Following enumeration of 14 neighbourhoods in urban Blantyre, Malawi, trained resident volunteer-counsellors offered oral HIVST kits (OraQuick ADVANCE Rapid HIV-1/2 Antibody Test) to adult (≥16 y old) residents (n = 16 660) and reported community events, with all deaths investigated by verbal autopsy. Written and demonstrated instructions, pre- and post-test counselling, and facilitated HIV care assessment were provided, with a request to return kits and a self-completed questionnaire. Accuracy, residency, and a study-imposed requirement to limit HIVST to one test per year were monitored by home visits in a systematic quality assurance (QA) sample. Overall, 14 004 (crude uptake 83.8%, revised to 76.5% to account for population turnover) residents self-tested during months 1-12, with adolescents (16-19 y) most likely to
test. 10 614/14 004 (75.8%) participants shared results with volunteer-counsellors. Of 1257 (11.8%) HIV-positive participants, 26.0% were already on antiretroviral therapy, and 524 (linkage 56.3%) newly accessed care with a median CD4 count of 250 cells/µl (interquartile range 159-426). HIVST uptake in months 13-24 was more rapid (70.9% uptake by 6 mo), with fewer (7.3%, 95% CI 6.8%-7.8%) positive participants. Being "forced to test", usually by a main partner, was reported by 2.9% (95% CI 2.6%-3.2%) of 10 017 questionnaire respondents in months 1-12, but satisfaction with HIVST (94.4%) remained high. No HIVST-related partner violence or suicides were reported. HIVST and repeat HTC results agreed in 1639/1649 systematically selected (1 in 20) QA participants (99.4%), giving a sensitivity of 93.6% (95% CI 88.2%-97.0%) and a specificity of 99.9% (95% CI 99.6%-100%). Key limitations included use of aggregate data to report uptake of HIVST and being unable to adjust for population turnover.

Conclusions: Community-based HIVST achieved high coverage in two successive years and was safe, accurate, and acceptable. Proactive HIVST strategies, supported and monitored by communities, could substantially complement existing approaches to providing early HIV diagnosis and periodic repeat testing to adolescents and adults in high-HIV settings.

Abstract Full-text [free] access

Editor’s notes: The new global 90–90–90 targets call for 90% of all people with HIV to be diagnosed, 90% of people with HIV diagnosed to receive ART and 90% of people on ART to have a suppressed viral load by 2020. The first 90 (diagnosis of HIV) is essential to the second 90 (initiation of ART among people with HIV) and the ultimate outcome of the third 90 (viral load suppression among people on ART), which improves client outcomes and prevents HIV transmission.

The first 90 is also the most problematic, especially for adolescents, men and key populations, as HIV testing primarily takes place at the health care facility, which is typically underutilised by these groups.

This article reports on a prospective study on community-based oral HIV self-testing (HIVST) among adults (16 years or older) in Blantyre, Malawi. HIVST involves individuals performing and interpreting their own HIV test, in this study by using an oral HIV test kit. The high acceptability and ease of distribution of oral test kits makes HIVST of special interest in settings with high HIV prevalence, where the aim is to achieve affordable universal coverage and regular repeat testing.

The authors found high uptake among men and adolescents (two hard-to-reach groups), and a high accuracy of HIVST, but suboptimal linkage post-testing to ART services: less than 60% of HIV-positive clients not yet on ART were linked to HIV care. However, they attribute these good outcomes partially to the involvement of trained volunteers in their community-based HIV care service delivery model. They suggest re-evaluating accuracy and uptake of post-testing services when using different tests or less supportive models, for example over-the-counter or vending machine sales of oral HIV test kits.

The authors found that 35% of participants had never previously tested. Interestingly they also found that among self-testing participants, HIV prevalence was highest in the age group 40-49 years (with a pooled estimate among men and women of 23%). The authors emphasize that the high acceptability of HIVST services among adolescents and men could facilitate linkage into HIV prevention programmes, such as pre-exposure prophylaxis and voluntary medical male circumcision, as well as ensuring prompt linkage into HIV care. They conclude that HIV self-testing is complementary to existing strategies in providing early HIV diagnosis and periodic repeat testing, and that HIVST has potential to be scaled up in other low-income settings where annual repeat HIV testing is recommended.
Intimate partner violence and engagement in HIV care and treatment among women: a systematic review and meta-analysis.

Hatcher AM, Smout EM, Turan JM, Christofides N, Stockl H. AIDS. 2015 Sep 5. [Epub ahead of print]

Objective: We aimed to estimate the odds of engagement in HIV care and treatment among HIV-positive women reporting intimate partner violence (IPV).

Design: We systematically reviewed the literature on the association between IPV and engagement in care. Data sources included searches of electronic databases (PubMed, Web of Science, CINAHL and PsycholInfo), hand searches and citation tracking.

Methods: Two reviewers screened 757 full-text articles, extracted data and independently appraised study quality. Included studies were peer-reviewed and assessed IPV alongside engagement in care outcomes: antiretroviral treatment (ART) use; self-reported ART adherence; viral suppression; retention in HIV care. Odds ratios (ORs) were pooled using random effects meta-analysis.

Results: Thirteen cross-sectional studies among HIV-positive women were included. Measurement of IPV varied, with most studies defining a ‘case’ as any history of physical and/or sexual IPV. Meta-analysis of five studies showed IPV to be significantly associated with lower ART use [OR 0.79, 95% confidence interval (95% CI) 0.64-0.97]. IPV was associated with poorer self-reported ART adherence in seven studies (OR 0.48, 95% CI 0.30-0.75) and lower odds of viral load suppression in seven studies (OR 0.64, 95% CI 0.46-0.90). Lack of longitudinal data and measurement considerations should temper interpretation of these results.

Conclusion: IPV is associated with lower ART use, half the odds of self-reported ART adherence and significantly worsened viral suppression among women. To ensure the health of HIV-positive women, it is essential for clinical programmes to address conditions that impact engagement in care and treatment. IPV is one such condition, and its association with declines in ART use and adherence requires urgent attention.

Abstract access

Editor’s notes: Intimate partner violence (IPV) is prevalent globally (30%). It has been associated with HIV infection and also with progression to AIDS among women living with HIV. However it is unclear how intimate partner violence may impact on HIV-associated health. This study examined associations between violence exposure and uptake of HIV treatment and care services. The authors conducted a systematic review and meta-analyses. From an initial search of 621 studies, 13 were included in these analyses: 12 were conducted in the United States of America and one in Haiti. All were cross-sectional. Measurement of intimate partner violence varied from a single question to validated scales. Some 11 measured lifetime IPV and two measured recent intimate partner violence, in the past 12 months.

Meta-analysis suggests intimate partner violence is associated with significantly lower odds of (i) current ART use (ii) self-reported adherence and (iii) worsened viral load suppression. There was insufficient data to measure retention in HIV care. These analyses suggest that uptake and adherence to ART is a key pathway through which intimate partner violence may negatively influence HIV-associated health of women. Further research is necessary, in low and middle income settings, and among key populations. Future studies should develop and test programmes to address intimate partner violence within HIV clinical care.
HIV-1 drug resistance and second-line treatment in children randomized to switch at low versus higher RNA thresholds.


Background: The PENPACT-1 trial compared virologic thresholds to determine when to switch to second-line antiretroviral therapy (ART). Using PENPACT-1 data, we aimed to describe HIV-1 drug resistance accumulation on first-line ART by virologic threshold.

Methods: PENPACT-1 had a 2 x 2 factorial design, randomizing HIV-infected children to start protease inhibitor (PI) versus nonnucleoside reverse transcriptase inhibitor (NNRTI)-based ART, and switch at a 1000 copies/mL versus 30 000 copies/mL threshold. Switch criteria were not achieving the threshold by week 24, confirmed rebound above the threshold thereafter, or Center for Disease Control and Prevention stage C event. Resistance tests were performed on samples ≥1000 copies/mL before switch, resuppression, and at 4-years/trial end.

Results: Sixty-seven children started PI-based ART and were randomized to switch at 1000 copies/mL (PI-1000), 64 PIs and 30 000 copies/mL (PI-30 000), 67 NNRTIs and 1000 copies/mL (NNRTI-1000), and 65 NNRTI and 30 000 copies/mL (NNRTI-30 000). Ninety-four (36%) children reached the 1000 copies/mL switch criteria during 5-year follow-up. In 30 000 copies/mL threshold arms, median time from 1000 to 30 000 copies/mL switch criteria was 58 (PI) versus 80 (NNRTI) weeks (P = 0.81). In NNRTI-30 000, more nucleoside reverse transcriptase inhibitor (NRTI) resistance mutations accumulated than other groups. NNRTI mutations were selected before switching at 1000 copies/mL (23% NNRTI-1000, 27% NNRTI-30 000). Sixty-two children started abacavir + lamivudine, 166 lamivudine + zidovudine or stavudine, and 35 other NRTIs. The abacavir + lamivudine group acquired fewest NRTI mutations. Of 60 switched to second-line, 79% PI-1000, 63% PI-30 000, 64% NNRTI-1000, and 100% NNRTI-30 000 were <400 copies/mL 24 weeks later.

Conclusions: Children on first-line NNRTI-based ART who were randomized to switch at a higher virologic threshold developed the most resistance, yet resuppressed on second-line. An abacavir + lamivudine NRTI combination seemed protective against development of NRTI resistance.

Abstract access

Editor’s notes: Paediatric guidelines recommend that children living with HIV initiate ART early in life. Therefore duration of treatment is likely to be for several decades in children. Children have tended to be maintained on failing therapies longer than adults due to limited treatment options, particularly in resource-limited settings.

The PENPACT-1 trial compared two HIV viral load thresholds, <1000 and <30 000 copies/ml, for switching to second-line ART among children taking non-nucleoside reverse transcriptase inhibitor (NNRTI) or protease inhibitor (PI)-based first-line regimens. As expected, children starting NNRTIs as their first-line regimen developed more NRTI mutations than children starting on boosted PIs. Importantly, children switching to second line ART at the higher viral load threshold were much more likely to develop resistance if they were taking NNRTI as their first line regimen than if they were taking boosted PIs. The study highlights the more “forgiving” nature of the PI drug class in terms of development of drug resistance. The main implication of this finding is that delayed switching on PI-based ART is a safe option in settings where future drug options are limited, as the risk of development of clinically significant PI or NRTI mutations is low. Interestingly, use of an abacavir +
lamivudine nucleoside backbone resulted in fewer thymidine analogue mutations (TAMs) than use of lamivudine + zidovudine or stavudine backbone. This finding was based on analysis of non-randomised data, but supports the current WHO recommendations to use abacavir as the first-line drug of choice in the NRTI backbone.

The impact of alcohol use and related disorders on the HIV continuum of care: a systematic review: alcohol and the HIV continuum of care.


Alcohol use is highly prevalent globally with numerous negative consequences to human health, including HIV progression, in people living with HIV (PLH). The HIV continuum of care, or treatment cascade, represents a sequence of targets for intervention that can result in viral suppression, which ultimately benefits individuals and society. The extent to which alcohol impacts each step in the cascade, however, has not been systematically examined. International targets for HIV treatment as prevention aim for 90% of PLH to be diagnosed, 90% of them to be prescribed with antiretroviral therapy (ART), and 90% to achieve viral suppression; currently, only 20% of PLH are virally suppressed. This systematic review, from 2010 through May 2015, found 53 clinical research papers examining the impact of alcohol use on each step of the HIV treatment cascade. These studies were mostly cross-sectional or cohort studies and from all income settings. Most (77%) found a negative association between alcohol consumption on one or more stages of the treatment cascade. Lack of consistency in measurement, however, reduced the ability to draw consistent conclusions. Nonetheless, the strong negative correlations suggest that problematic alcohol consumption should be targeted, preferably using evidence-based behavioral and pharmacological interventions, to indirectly increase the proportion of PLH achieving viral suppression, to achieve treatment as prevention mandates, and to reduce HIV transmission.

Abstract access

Editor’s notes: This systematic review examined the impact of alcohol consumption on each step of the HIV treatment cascade. This covered HIV diagnosis, linkage to care, retention in care, ART initiation and adherence, and sustained virologic suppression. Overall, there was an association between alcohol consumption and negative consequences on various steps of the treatment cascade. The majority of studies focused on the effect of alcohol use disorders and ART adherence, and on viral suppression. There was fairly consistent evidence of reduced adherence among people with alcohol use disorders. Key findings of this review include the lack of consistency in studies of alcohol consumption. Many studies are not using standardised, validated, measures such as the AUDIT, and there is the lack of studies on the association of alcohol use with earlier stages of the cascade, including testing uptake and linkage to care. Further studies in this area would be useful, to identify whether programmes focused on problematic alcohol use are necessary at HIV testing centres.

3. Avoid TB deaths

Evolution of extensively drug-resistant tuberculosis over four decades: whole genome sequencing and dating analysis of mycobacterium tuberculosis isolates from Kwazulu-Natal.

Background: The continued advance of antibiotic resistance threatens the treatment and control of many infectious diseases. This is exemplified by the largest global outbreak of extensively drug-resistant (XDR) tuberculosis (TB) identified in Tugela Ferry, KwaZulu-Natal, South Africa, in 2005 that continues today. It is unclear whether the emergence of XDR-TB in KwaZulu-Natal was due to recent inadequacies in TB control in conjunction with HIV or other factors. Understanding the origins of drug resistance in this fatal outbreak of XDR will inform the control and prevention of drug-resistant TB in other settings. In this study, we used whole genome sequencing and dating analysis to determine if XDR-TB had emerged recently or had ancient antecedents.

Methods and findings: **We performed whole genome sequencing and drug susceptibility testing on 337 clinical isolates of Mycobacterium tuberculosis collected in KwaZulu-Natal from 2008 to 2013, in addition to three historical isolates, collected from patients in the same province and including an isolate from the 2005 Tugela Ferry XDR outbreak, a multidrug-resistant (MDR) isolate from 1994, and a pansusceptible isolate from 1995. We utilized an array of whole genome comparative techniques to assess the relatedness among strains, to establish the order of acquisition of drug resistance mutations, including the timing of acquisitions leading to XDR-TB in the LAM4 spoligotype, and to calculate the number of independent evolutionary emergences of MDR and XDR.** Our sequencing and analysis revealed a 50-member clone of XDR M. tuberculosis that was highly related to the Tugela Ferry XDR outbreak strain. **We estimated that mutations conferring isoniazid and streptomycin resistance in this clone were acquired 50 y prior to the Tugela Ferry outbreak** (katG S315T [isoniazid]; gidB 130 bp deletion [streptomycin]; 1957 [95% highest posterior density (HPD): 1937-1971]), **with the subsequent emergence of MDR and XDR occurring 20 y and 10 y** (rpoB L452P [rifampicin]; pncA 1 bp insertion [pyrazinamide]; 1984 [95% HPD: 1974-1992] prior to the outbreak, respectively. We observed frequent de novo evolution of MDR and XDR, with 56 and nine independent evolutionary events, respectively. **Isoniazid resistance evolved before rifampicin resistance 46 times, whereas rifampicin resistance evolved prior to isoniazid only twice.** We identified additional putative compensatory mutations to rifampicin in this dataset. One major limitation of this study is that the conclusions with respect to ordering and timing of acquisition of mutations may not represent universal patterns of drug resistance emergence in other areas of the globe.

Conclusions: In the first whole genome-based analysis of the emergence of drug resistance among clinical isolates of M. tuberculosis, we show that the ancestral precursor of the LAM4 XDR outbreak strain in Tugela Ferry gained mutations to first-line drugs at the beginning of the antibiotic era. Subsequent accumulation of stepwise resistance mutations, occurring over decades and prior to the explosion of HIV in this region, yielded MDR and XDR, permitting the emergence of compensatory mutations. Our results suggest that drug-resistant strains circulating today reflect not only vulnerabilities of current TB control efforts but also those that date back 50 y. In drug-resistant TB, isoniazid resistance was overwhelmingly the initial resistance mutation to be acquired, which would not be detected by current rapid molecular diagnostics employed in South Africa that assess only rifampicin resistance.

Abstract  Full-text [free] access
Editor’s notes: Drug-resistant TB is estimated to be responsible for over 500 deaths globally every day, many of which are in people living with HIV. Improved understanding of how drug-resistant TB emerges and spreads in certain populations could help to inform the development of effective population-level programmes to eliminate TB. This study was conducted in KwaZulu-Natal, South Africa, an area with the highest population rates of drug-resistant TB in the world and the location of the largest ever outbreak of extensively drug-resistant TB (XDR-TB) in 2005-6. This study was not a population-based survey but rather 337 Mycobacterium tuberculosis isolates collated from different studies over a five year period (2008-2013), 20% of which were XDR-TB. Genetic analysis demonstrated that multidrug-resistant TB (MDR-TB) may have first emerged around 30 years ago and XDR-TB around 20 years ago in this region. The analysis highlighted that the current burden of drug resistance in this province is driven both by the transmission of drug-resistant strains and the emergence of new resistant strains. Unfortunately, although there were some data on HIV status of individual cases, the study design did not allow for an assessment of the impact of HIV on the emergence and spread of TB drug resistance. These data suggest that, in settings like KwaZulu-Natal, population-level strategies to interrupt drug-resistant TB transmission and to prevent the emergence of drug resistance will need to be combined effectively in order to eliminate TB.


Background: Cervical cancer screening efforts linked to HIV/AIDS care programs are being expanded across sub-Saharan Africa. Evidence on the age distribution and determinants of invasive cervical cancer (ICC) cases detected in such programs is limited.

Methods: We analyzed program operations data from the Cervical Cancer Prevention Program in Zambia, the largest public sector programs of its kind in sub-Saharan Africa. We examined age distribution patterns by HIV serostatus of histologically confirmed ICC cases and used multivariable logistic regression to evaluate independent risk factors for ICC among younger (≤35 years) and older (>35 years) women.

Results: Between January 2006 and April 2010, of 48 626 women undergoing screening, 571 (1.2%) were diagnosed with ICC, including 262 (46%) HIV seropositive (median age: 35 years), 131 (23%) HIV seronegative (median age: 40 years), and 178 (31%) of unknown HIV serostatus (median age: 38 years). Among younger (≤35 years) women, being HIV seropositive was associated with a 4-fold higher risk of ICC [adjusted odds ratio = 4.1 (95% confidence interval: 2.8, 5.9)] than being HIV seronegative. The risk of ICC increased with increasing age among HIV-seronegative women and women with unknown HIV serostatus, but among HIV-seropositive women, the risk peaked around age 35 and nonsignificantly declined with increasing ages. Other factors related to ICC included being married (vs. being unmarried/widowed) in both younger and older women, and with having 2+ (vs. ≤1) lifetime sexual partners among younger women.

Conclusions: HIV infection seems to have increased the risk of cervical cancer among younger women in Zambia, pointing to the urgent need for expanding targeted screening interventions.
Editor’s notes: Increasingly, HIV care services (includes AIDS) are providing platforms for introduction of cervical cancer screening programmes in sub-Saharan Africa. Screening is often also available for HIV-negative women. This analysis of data from a large routine programme gives a useful indication of the rates of identification of invasive cervical cancer (ICC), and describes the burden and distribution of disease; information relevant to future service provision. The association described of ICC with HIV and sexual behaviour is well-known. The findings highlight the importance of ensuring that younger women (especially if known to be HIV-positive) have access to routine screening. A significant part of the burden is borne by older women. HIV status may not always be known or revealed. Important questions remain concerning the cost-benefit of providing screening services and the effect of ART on risk of ICC. In addition, the potential role of human papilloma virus vaccine, which GAVI is currently implementing in demonstration projects in the region, in influencing the risk of ICC in younger women remains to be determined.

4. Close the resource gap

The impact of company-level ART provision to a mining workforce in South Africa: a cost-benefit analysis.


Background: HIV impacts heavily on the operating costs of companies in sub-Saharan Africa, with many companies now providing antiretroviral therapy (ART) programmes in the workplace. A full cost-benefit analysis of workplace ART provision has not been conducted using primary data. We developed a dynamic health-state transition model to estimate the economic impact of HIV and the cost-benefit of ART provision in a mining company in South Africa between 2003 and 2022.

Methods and findings: A dynamic health-state transition model, called the Workplace Impact Model (WIM), was parameterised with workplace data on workforce size, composition, turnover, HIV incidence, and CD4 cell count development. Bottom-up cost analyses from the employer perspective supplied data on inpatient and outpatient resource utilisation and the costs of absenteeism and replacement of sick workers. The model was fitted to workforce HIV prevalence and separation data while incorporating parameter uncertainty; univariate sensitivity analyses were used to assess the robustness of the model findings. As ART coverage increases from 10% to 97% of eligible employees, increases in survival and retention of HIV-positive employees and associated reductions in absenteeism and benefit payments lead to cost savings compared to a scenario of no treatment provision, with the annual cost of HIV to the company decreasing by 5% (90% credibility interval [CrI] 2%-8%) and the mean cost per HIV-positive employee decreasing by 14% (90% CrI 7%-19%) by 2022. This translates into an average saving of US$950 215 (90% CrI US$220 879-US$1.6 million) per year; 80% of these cost savings are due to reductions in benefit payments and inpatient care costs. Although findings are sensitive to assumptions regarding incidence and absenteeism, ART is cost-saving under considerable parameter uncertainty and in all tested scenarios, including when prevalence is reduced to 1%-except when no benefits were paid out to employees leaving the workforce and when absenteeism rates were half of what data suggested. Scaling up ART further through a universal test and treat strategy doubles savings; incorporating ART for family members reduces savings but is still marginally cost-saving compared to no treatment. Our analysis was limited to the direct cost of HIV to companies and did not examine the impact of HIV prevention policies on the
miners or their families, and a few model inputs were based on limited data, though in sensitivity analysis our results were found to be robust to changes to these inputs along plausible ranges.

Conclusions: Workplace ART provision can be cost-saving for companies in high HIV prevalence settings due to reductions in healthcare costs, absenteeism, and staff turnover. **Company-sponsored HIV counselling and voluntary testing with ensuing treatment of all HIV-positive employees and family members should be implemented universally at workplaces in countries with high HIV prevalence.**

Abstract Full-text [free] access

**Editor's notes:** HIV-associated diseases generally hit adults at the prime of their working life, which in turn takes a heavy economic toll on private companies. The infection increases rates of absenteeism, labour force turnover and costs of company operations. HIV care has been provided by mining companies in South Africa since 2002 (before the provision of ART in the public sector). Although the cost and cost-effectiveness of public sector HIV provision in South Africa has been estimated, the cost and impact of ART provision at the workplace level has not been established. This paper explores cost and impact of both HIV and ART in a mining company in South Africa.

A dynamic Markov health-state transition model, the Workplace Impact Model (WIM), was developed to evaluate both the past and future impact and costs of introducing ART into the workforce from the perspective of the employer. Two scenarios are explored: no ART provision, and scale-up of ART provision in the workforce. Costs and impacts are projected over a 20-year period starting in 2003.

The results illustrate that as ART coverage increases, there are increases in survival and employee retention, as well as reductions in absenteeism and benefit payments. These lead to cost savings compared to the no ART provision scenario. Annual cost of HIV to the company dropped by 5% and the mean cost per HIV-positive employee decreased by 14%. The biggest savings are due to reductions in benefit payment for death and ill-health retirement and in the cost of employee healthcare use. Importantly, the finding that ART is cost-saving is robust to the uncertainty around the model parameters as well as to other changes in the assumptions made in the model.

This paper is very strong due to the nuances built into the model, as well as due to the quality and precision of the data used. The model takes into account different factors associated with workforce profile, HIV progression, health effects of ART initiation, age groups, and job grade categories, to mention a few. It also includes CD4 progression data from the specific population for every trimester from 2003-2010. Additionally, it includes company-specific bottom-up cost data on the costs of providing ART (medications, monitoring costs, etc.). The potential policy implications, namely that it is cost-saving for employers to provide HIV care, is a substantial one. Provision of services by private companies may not only make business sense, they may also provide a respite to public sector HIV service provision programmes.

It would be interesting to see how these findings relate to other industries. Different industries have different features. Mining, for example, is a labour-intensive, high profit industry. Others are not. Understanding the costs and effects in other types of companies, and whether ART provision remains cost-saving, would be worthwhile in order to create more specific policy guidelines.

Modelling the impact and cost-effectiveness of combination prevention amongst HIV serodiscordant couples in Nigeria.
Objective: To estimate the impact and cost-effectiveness of treatment as prevention (TasP), pre-exposure prophylaxis (PrEP) and condom promotion for serodiscordant couples in Nigeria.

Design: Mathematical and cost modelling.

Methods: A deterministic model of HIV-1 transmission within a cohort of serodiscordant couples and to/from external partners was parameterized using data from Nigeria and other African settings. The impact and cost-effectiveness were estimated for condom promotion, PrEP and/or TasP, compared with a baseline where antiretroviral therapy (ART) was offered according to 2010 national guidelines (CD4 <350 cells/µl) to all HIV-positive partners. The impact was additionally compared with a baseline of current ART coverage (35% of those with CD4 <350 cells/µl). Full costs (in US $2012) of programme introduction and implementation were estimated from a provider perspective.

Results: Substantial benefits came from scaling up ART to all HIV-positive partners according to 2010 national guidelines, with additional smaller benefits of providing TasP, PrEP or condom promotion. Compared with a baseline of offering ART to all HIV-positive partners at the 2010 national guidelines, condom promotion was the most cost-effective strategy [US $1206/disability-adjusted-life-year (DALY)], the next most cost-effective intervention was to additionally give TasP to HIV-positive partners (incremental cost-effectiveness ratio US $1607/DALY), followed by additionally giving PrEP to HIV-negative partners until their HIV-positive partners initiate ART (US $7870/DALY). When impact was measured in terms of infections averted, PrEP with condom promotion prevented double the number of infections as condom promotion alone.

Conclusions: The first priority intervention for serodiscordant couples in Nigeria should be scaled up ART access for HIV-positive partners. Subsequent incremental benefits are greatest with condom promotion and TasP, followed by PrEP.

Editor's notes: Despite large reductions in incident HIV infections, Nigeria still has the second largest epidemic globally. Only 35% of eligible individuals (under Nigerian guidelines) receive antiretroviral treatment. A mathematical model was developed describing HIV-1 transmission between serodiscordant heterosexual partnerships and to/from external partners. The impact and cost-effectiveness of pre-exposure prophylaxis (PrEP), Treatment as Prevention (TasP) and condom promotion for serodiscordant couples was estimated. Two baseline scenarios were used. The first was offering ART at 2010 national guidelines (CD4+<350cells/µl) to all positive individuals. The second assumed current ART coverage (35%) among eligible HIV positive partners.

Scaling up current ART has the greatest impact, and is the most cost effective method for reducing new HIV infections in Nigeria, averting 15% of infections over 20 years. This equated to 35% of all infections under the strategy with the highest impact, which included TasP, long-term PrEP and condom promotion, and 73% of DALYs. The results were most strongly influenced by assumptions around frequency of sex within partnerships, per-act transmission rates, programme efficacy and dropout rates. As more resources become available, after giving ART to all eligible individuals, condom promotion was the next most cost-effective approach. In terms of DALYS averted however, TasP was more likely to be the most cost-effective initial programme.
The study illustrates that the first priority in Nigeria should be scaling up ART to all individuals who are already eligible under Nigerian guidelines from its current level of 35%. Condom promotion within serodiscordant couples was also predicted to be highly cost-effective. Additionally, initiating treatment regardless of CD4 count was predicted to bring about substantial and highly cost-effective additional gains in DALYs averted.

The authors illustrate that combination approaches are important in this setting and should be considered for future programme policy.

Food insecurity, chronic illness, and gentrification in the San Francisco Bay Area: an example of structural violence in United States public policy.


Food insecurity continues to be a major challenge in the United States, affecting 49 million individuals. Quantitative studies show that food insecurity has serious negative health impacts among individuals suffering from chronic illnesses, including people living with HIV/AIDS (PLHIV). Formulating effective interventions and policies to combat these health effects requires an in-depth understanding of the lived experience and structural drivers of food insecurity. Few studies, however, have elucidated these phenomena among people living with chronic illnesses in resource-rich settings, including in the United States. Here we sought to explore the experiences and structural determinants of food insecurity among a group of low-income PLHIV in the San Francisco Bay Area. Thirty-four semi-structured in-depth interviews were conducted with low-income PLHIV receiving food assistance from a local non-profit in San Francisco and Alameda County, California, between April and June 2014. Interview transcripts were coded and analysed according to content analysis methods following an inductive-deductive approach. The lived experience of food insecurity among participants included periods of insufficient quantity of food and resultant hunger, as well as long-term struggles with quality of food that led to concerns about the poor health effects of a cheap diet. Participants also reported procuring food using personally and socially unacceptable strategies, including long-term dependence on friends, family, and charity; stealing food; exchanging sex for food; and selling controlled substances. Food insecurity often arose from the need to pay high rents exacerbated by gentrification while receiving limited disability income-a situation resulting in large part from the convergence of long-standing urban policies amenable to gentrification and an outdated disability policy that constrains financial viability. The experiences of food insecurity described by participants in this study can be understood as a form of structural violence, motivating the need for structural interventions at the policy level that extend beyond food-specific solutions.

Abstract access

Editor’s notes: Studies in the United States of America have demonstrated a high prevalence of food insecurity among low-income people living with HIV. Despite this high prevalence, little is known about the precise structural mechanisms by which food insecurity is distributed across low and high income participants, particularly among people living with HIV. This paper begins to fill that knowledge gap. Using in-depth interviews among a group of low-income people living with HIV residing in the San Francisco Bay area, this study sought to investigate questions around how food insecurity manifests among certain groups in the population. Three themes relevant to the lived experience of food insecurity emerged from the interviews. The first being periods of significant food shortage where hunger or the anticipation of hunger was a serious source of anxiety for participants. The second was
around the perceived poor quality of food where participants were unable to afford a diet that they believed to be sufficiently healthy. They considered this to be detrimental to both their general and HIV-associated health. This led to a third theme: participants using a multitude of resourceful strategies in order to procure food. Some of the strategies they found personally uncomfortable or they perceived as socially unacceptable. A relevant theme around structural determinants of food security that also emerged was the disparity between rent payments and the disability income which participants received. In particular, rising rents due to an influx of people who benefited from the technology boom, alongside gentrification taking place in the San Francisco area made it particularly difficult for low income people living with HIV to afford to live in the city. In order to be able to purchase food which they considered as high priority they would have to ration their money and avoid buying items they considered as less of a necessity (for example, entertainment, travel or toiletries). This is particularly exacerbated by the issue of monthly disability payments being low relative to the cost of living. The findings presented in this paper suggest certain structural activities in order to prevent the adverse effects of food insecurity such as sexual risk, sub-optimal ART adherence and poor clinical outcomes for people living with HIV. There were two suggested measures. The first was protecting vulnerable populations from the market effects of urban regeneration through better state subsidies in housing. The second was helping state-dependent individuals afford an adequate and sufficiently healthy diet by reassessing the amount disbursed through the disability income.

In summary, the authors describe low-income people living with HIV participants who often found themselves pushed into situations of indignity, shame and poor health by large-scale economic forces beyond their control. Without funds to purchase food with adequate nutritional content, they often fell into absolute hunger or had poor diets that prompted concerns about their physical health. Despite the United States of America being a high income country with one of the highest GDP per capita, food insecurity continues to be a challenge. Only broad structural approaches with policy changes can help chronically ill and vulnerable individuals escape both indignities and negative health consequences of food insecurity in the 21st century.

Screening for tuberculosis among adults newly diagnosed with HIV in sub-Saharan Africa: a cost-effectiveness analysis.


Objective: New tools, including light-emitting diode (LED) fluorescence microscopy and the molecular assay Xpert® MTB/RIF, offer increased sensitivity for tuberculosis (TB) in persons with HIV but come with higher costs. Using operational data from rural Malawi, we explored the potential cost-effectiveness of on-demand screening for TB in low-income countries of sub-Saharan Africa.

Design and methods: **Costs were empirically collected in 4 clinics and in 1 hospital using a microcosting approach, through direct interview and observation from the national TB program perspective.** Using decision analysis, newly diagnosed persons with HIV were modeled as being screened by 1 of the 3 strategies: Xpert®, LED, or standard of care (ie, at the discretion of the treating physician).

Results: **Cost-effectiveness of TB screening among persons newly diagnosed with HIV was largely determined by 2 factors: prevalence of active TB among patients newly diagnosed with HIV and volume of testing.** In facilities screening at least 50 people with a 6.5% prevalence of TB, or at least 500 people with a 2.5% TB prevalence, Xpert® is likely to be cost-effective. At lower prevalence-including that observed in Malawi-LED microscopy may be the preferred strategy,
whereas in settings of lower TB prevalence or small numbers of eligible patients, no screening may be reasonable (such that resources can be deployed elsewhere).

Conclusions: **TB screening at the point of HIV diagnosis may be cost-effective in low-income countries of sub-Saharan Africa, but only if a relatively large population with high prevalence of TB can be identified for screening.**

Abstract access

**Editor’s notes:** This study provides guidance on when screening people newly diagnosed with HIV for tuberculosis (TB) using Xpert® MTB/RIF or LED microscopy is likely to be cost-effective. Previous studies suggest that both TB screening technologies may be cost-effective, but that cost-effectiveness will depend on how tests are implemented. In highly resource constrained settings, the affordability of TB screening, particularly using Xpert® MTB/RIF, remains a concern. It therefore may not be feasible to place screening equipment at all locations, and more guidance is required on the types of setting where these investments may have the most benefit.

The study finds that two factors are particularly important in the choice of TB screening at any specific site. First, the authors find that test volumes are critical to cost-effectiveness. This finding supports earlier studies from South Africa prior to Xpert® MTB/RIF roll-out – that suggest that ‘economies of scale’ drive the unit costs per test. The authors of this study add to this previous evidence by providing a detailed example from a low income setting. Second, on the effect side, TB prevalence is found to be a key driver of cost-effectiveness.

The authors provide an illustration of a simple approach and model that can be used by countries to select the different TB screening tests required. It should be noted however, that the authors are not able to fully consider some factors that may have an important impact on the cost-effectiveness of TB screening, due to data scarcity. For example, the extent and speed to which people are appropriately treated for TB under each option (including the standard of care). This has been shown to be an important consideration in other studies investigating the cost-effectiveness of Xpert® MTB/RIF. It should also be noted that the study determines cost-effectiveness using an approach that may not fully reflect financial constraints. Therefore additional analyses, using local data, are still required before applying the study’s results in different settings.

5. **Strengthening HIV integration**

**Barriers and facilitators adolescent females living with HIV face in accessing contraceptive services: a qualitative assessment of providers’ perceptions in western Kenya.**


Introduction: Avoiding unintended pregnancies is important for the health of adolescents living with HIV and has the additional benefit of preventing potential vertical HIV transmission. **Health facility providers represent an untapped resource in understanding the barriers and facilitators adolescents living with HIV face when accessing contraception.** By understanding these barriers and facilitators to contraceptive use among adolescent females living with HIV, this study aimed to understand how best to promote contraception within this marginalized population.

Methods: We conducted **structured in-depth interviews with 40 providers at 21 Family AIDS Care & Education Services - supported clinics** in Homabay, Kisumu and Migori counties **in western**
Kenya from July to August 2014. Our interview guide explored the providers’ perspectives on contraceptive service provision to adolescent females living with HIV with the following specific domains: contraception screening and counselling, service provision, commodity security and clinic structure. Transcripts from the interviews were analyzed using inductive content analysis.

Results: According to providers, interpersonal factors dominated the barriers adolescent females living with HIV face in accessing contraception. Providers felt that adolescent females fear disclosing their sexual activity to parents, peers and providers, because of repercussions of perceived promiscuity. Furthermore, providers mentioned that adolescents find seeking contraceptive services without a male partner challenging, because some providers and community members view adolescents unaccompanied by their partners as not being serious about their relationships or having multiple concurrent relationships. On the other hand, providers noted that institutional factors best facilitated contraception for these adolescents. Integration of contraception and HIV care allows easier access to contraceptives by removing the stigma of coming to a clinic solely for contraceptive services. Youth-friendly services, including serving youth on days separate from adults, also create a more comfortable setting for adolescents seeking contraceptive services.

Conclusions: Providers at these facilities identified attitudes of equating seeking contraceptive services with promiscuity by parents, peers and providers as barriers preventing adolescent females living with HIV from accessing contraceptive services. Health facilities should provide services for adolescent females in a youth-friendly manner and integrate HIV and contraceptive services.

Abstract

Editor’s notes: The article offers a clear picture of barriers and facilitators to access and uptake of contraceptive services for young girls living with HIV. It provides valuable evidence of providers’ views regarding integrated HIV and contraceptive services. The study was carried out with HIV care providers in different areas of western Kenya. The authors found that young girls find it difficult to access services, especially on their own, for fear of being seen as sexually active and/or promiscuous. Parental presence during consultations in HIV services can be a barrier to requesting contraceptives. But some parents are supportive and wish to prevent unintended pregnancies for their daughters. Young girls living with HIV might find it challenging to manage questions from their peers about their HIV medication and contraceptives. Providers’ themselves prioritise abstinence and condoms over offering hormonal contraceptives. Providers can feel protective towards the patients, whom they may see as ‘children’. The authors suggest that further involvement of parents, young boys and male partners can facilitate uptake of contraceptives for young girls living with HIV. The integration of HIV and contraceptive services for young girls can provide a crucial platform to reduce sexually transmitted infections, unintended pregnancies and vertical HIV transmission.