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

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Peter Godfrey-Faussett and Celeste Sandoval
UNAIDS
1. HIV testing and treatment

Evaluation of a demand-creation intervention for couples’ HIV testing services among married or cohabiting individuals in Rakai, Uganda: a cluster-randomized intervention trial.


Background: Uptake of couples' HIV counseling and testing (couples' HCT) services remains largely low in most settings. We report the effect of a demand-creation intervention trial on couples’ HCT uptake among married or cohabiting individuals who had never received couples’ HCT.

Methods: This was a cluster-randomized intervention trial implemented in three study regions with differing HIV prevalence levels (range: 9-43 %) in Rakai district, southwestern Uganda, between February and September 2014. We randomly assigned six clusters (1:1) to receive the intervention or serve as the comparison arm using computer-generated random numbers. In the intervention clusters, individuals attended small group, couple and male-focused interactive sessions, reinforced with testimonies from 'expert couples', and received invitation coupons to test together with their partners at designated health facilities. In the comparison clusters, participants attended general adult health education sessions but received no invitation coupons. The primary outcome was couples' HCT uptake, measured 12 months post-baseline. Baseline data were collected between November 2013 and February 2014 while follow-up data were collected between March and April 2015. We conducted intention-to-treat analysis using a mixed effects Poisson regression model to assess for differences in couples' HCT uptake between the intervention and comparison clusters. Data analysis was conducted using STATA statistical software, version 14.1.

Results: Of 2135 married or cohabiting individuals interviewed at baseline, 42% (n = 846) had ever received couples' HCT. Of those who had never received couples' HCT (n = 1174), 697 were interviewed in the intervention clusters while 477 were interviewed in the comparison clusters. 73.6% (n = 513) of those interviewed in the intervention and 82.6% (n = 394) of those interviewed in the comparison cluster were interviewed at follow-up. Of those interviewed, 72.3% (n = 371) in the intervention and 65.2% (n = 257) in the comparison clusters received HCT. Couples’ HCT uptake was higher in the intervention than in the comparison clusters (20.3% versus 13.7%; adjusted prevalence ratio (aPR) = 1.43, 95% CI: 1.02, 2.01, P = 0.04).

Conclusion: Our findings show that a small group, couple and male-focused, demand-creation intervention reinforced with testimonies from 'expert couples', improved uptake of couples' HCT in this rural setting.

Trial registration: ClinicalTrials.gov, NCT02492061. Date of registration: June 14, 2015.

Abstract  Full-text [free] access

Editor’s notes: Effective programmes to increase HIV testing uptake are necessary, given new guidance from WHO recommending an immediate offer of antiretroviral therapy (ART) to all people who test HIV-positive regardless of CD4 count. This HIV testing demand creation trial involving married or cohabiting couples residing in Rakai, Uganda sheds light on strategies for achieving 90% knowledge of HIV-positive serostatus among all people living with HIV. In reality, HIV-serodiscordant couples have a striking 50% HIV prevalence from their partnership. Knowledge of serostatus is therefore critical to preventing HIV transmission to the HIV-negative partner and to an offspring. Such knowledge is also the doorway to early initiation of ART with its proven clinical benefits for the HIV-positive partner and reduced risk of HIV transmission to the HIV-negative partner. This intervention
trial contributes to the literature on couples’ testing uptake generated through studies in Rwanda and Zambia in which influential network agents invited couples to take up HIV testing and counselling together. This trial was conducted in a highly studied population that has undergone annual serosurveillance for over 20 years. At baseline 94.6% of individuals interviewed had already had an HIV test, 42% had a history of previous couples’ HIV testing and counselling (HTC), and 62.3% had had tested for HIV in the past year. People who had never received couples’ HTC formed the study populations. Couples in the programme clusters participated in couple- and male-focused demand creation small groups in which ‘expert couples’ shared their couple testing experiences. It is not possible to know which components of this relatively expensive programme were most effective. Uptake of couples HTC was modest at 20.3% compared with 13.7% in the control arm. Since this trial was conducted, new promising technologies have come on the horizon, including self-testing and point of care testing. Combining these with concerted efforts to reduce stigma and discrimination while increasing access to ART should see steady increases in uptake of couples’ HCT. Further, there is enough evidence now to suggest that engaging men and encouraging couple-to-couple conversations about testing can influence couples’ decisions to have an HIV test.

Uptake of home-based HIV testing, linkage to care, and community attitudes about ART in rural KwaZulu-Natal, South Africa: descriptive results from the first phase of the ANRS 12249 TasP cluster-randomised trial.


Background: The 2015 WHO recommendation of antiretroviral therapy (ART) for all immediately following HIV diagnosis is partially based on the anticipated impact on HIV incidence in the surrounding population. We investigated this approach in a cluster-randomised trial in a high HIV prevalence setting in rural KwaZulu-Natal. We present findings from the first phase of the trial and report on uptake of home-based HIV testing, linkage to care, uptake of ART, and community attitudes about ART.

Methods and findings: Between 9 March 2012 and 22 May 2014, five clusters in the intervention arm (immediate ART offered to all HIV-positive adults) and five clusters in the control arm (ART offered according to national guidelines, i.e., CD4 count ≤ 350 cells/µl) contributed to the first phase of the trial. Households were visited every 6 mo. Following informed consent and administration of a study questionnaire, each resident adult (≥ 16 y) was asked for a finger-prick blood sample, which was used to estimate HIV prevalence, and offered a rapid HIV test using a serial HIV testing algorithm. All HIV-positive adults were referred to the trial clinic in their cluster. Those not linked to care 3 mo after identification were contacted by a linkage-to-care team. Study procedures were not blinded. In all, 12 894 adults were registered as eligible for participation (5790 in intervention arm; 7104 in control arm), of whom 9927 (77.0%) were contacted at least once during household visits. HIV status was ever ascertained for a total of 8233/9927 (82.9%), including 2569 ascertained as HIV-positive (942 tested HIV-positive and 1627 reported a known HIV-positive status). Of the 1177 HIV-positive individuals not previously in care and followed for at least 6 mo in the trial, 559 (47.5%) visited their cluster trial clinic within 6 mo. In the intervention arm, 89% (194/218) initiated ART within 3 mo of their first clinic visit. In the control arm, 42.3% (83/196) had a CD4 count ≤350 cells/µl at first visit, of whom 92.8% initiated ART within 3 mo. Regarding attitudes about ART, 93% (8802/9460) of participants agreed with the statement that they would want to start ART as soon as possible if HIV-positive. Estimated baseline HIV prevalence was 30.5% (2028/6656) (95% CI 25.0%, 37.0%). HIV prevalence, uptake of home-
based HIV testing, linkage to care within 6 mo, and initiation of ART within 3 mo in those with CD4 count ≤ 350 cells/µl did not differ significantly between the intervention and control clusters. Selection bias related to noncontact could not be entirely excluded.

Conclusions: Home-based HIV testing was well received in this rural population, although men were less easily contactable at home; immediate ART was acceptable, with good viral suppression and retention. However, only about half of HIV-positive people accessed care within 6 mo of being identified, with nearly two-thirds accessing care by 12 mo. The observed delay in linkage to care would limit the individual and public health ART benefits of universal testing and treatment in this population.

Trial registration: ClinicalTrials.gov NCT01509508.

Abstract

**Editor’s notes:** The UNAIDS treatment target set for 2020 aim for at least 90 percent of all people living with HIV to be diagnosed, at least 90 percent of people diagnosed to receive antiretroviral therapy, and for treatment to be effective and consistent enough in at least 90 percent of people on treatment to suppress the virus. This would result in about 73% of all HIV-positive people being virally suppressed.

This paper describes the key process indicators (such as uptake of initial and repeat home-based HIV testing, linkage to care, uptake of ART, and viral suppression) along the treatment cascade during the two-year initial phase of a trial evaluating a treatment as prevention package in a rural South African setting. Although the investigators were unable to contact one-quarter of the potential key population - especially men - they found good acceptance of home-based HIV testing.

However, they found disappointingly low rates of linkage to care. Only about half of HIV-positive participants not yet in care attended a clinic within six months of diagnosis. This increased to two-thirds after 12 months, partly due the efforts of a linkage-to-care team. They contacted those not linked to care three months after an HIV-positive test. Among people who did present to the clinics, the rates of ART uptake, retention in care and viral suppression were high.

The main study (reported at the AIDS 2016 conference in Durban) did not demonstrate an effect of offering immediate ART on HIV incidence at population level, mainly due the low rates of linkage to care following HIV diagnosis.

These results suggest that systems to improve linkage to care will be necessary if the individual and public health benefits of universal testing and treatment are to be maximised.

Initiation of antiretroviral therapy during acute HIV-1 infection leads to a high rate of nonreactive HIV serology.


Background: Third- and fourth-generation immunoassays (IAs) are widely used in the diagnosis of human immunodeficiency virus (HIV) infection. Antiretroviral therapy (ART) during acute HIV infection (AHI) may impact HIV-specific antibodies, with failure to develop antibody or seroreversion. We report on the ability of diagnostic tests to detect HIV-specific antibodies in Thai participants initiating ART during AHI.
Methods: Participants with detectable plasma HIV RNA but nonreactive HIV-specific immunoglobulin G, enrolled in an AHI study, were offered immediate initiation of ART. Participants were tested at initiation and at 12 and 24 weeks following treatment using standard second-, third-, and fourth-generation IAs and Western blot (WB).

Results: Participants (N = 234) initiating ART at a median of 19 days (range, 1-62 days) from HIV exposure demonstrated different frequencies of reactivity prior to and following 24 weeks of ART depending on the IA. Third-generation IA nonreactivity prior to ART was 48%, which decreased to 4% following ART (P < .001). Fourth-generation IA nonreactivity was 18% prior to ART and 17% following ART (P = .720). Negative WB results were observed in 89% and 12% of participants prior to and following 24 weeks of ART, respectively (P < .001). Seroreversion to nonreactivity during ART was observed to at least one of the tests in 20% of participants, with fourth-generation IA demonstrating the highest frequency (11%) of seroreversion.

Conclusions: HIV-specific antibodies may fail to develop and, when detected, may decline when ART is initiated during AHI. Although fourth-generation IA was the most sensitive at detecting AHI prior to ART, third-generation IA was the most sensitive during treatment.

Clinical trials registration: NCT00796146 and NCT00796263.

Abstract access

Editor’s notes: Antibodies to HIV become detectable around three weeks after HIV infection. Fourth generation HIV tests detect both HIV antibodies and the p24 HIV antigen, and can therefore detect HIV infection earlier than second and third-generation tests, which are based on detection of antibodies. Fourth generation tests therefore allow for earlier initiation of antiretroviral therapy (ART) relative to second- and third-generation HIV tests.

There have been sporadic reports of seroreversion from being HIV antibody positive to negative, or failure to seroconvert to being HIV antibody positive, following initiation of ART, particularly from paediatric populations. This study examined the impact of ART initiation during acute HIV infection on HIV diagnostic test results. Although the fourth-generation HIV test was the most sensitive at detecting acute HIV infection, it also had the highest frequency of seroreversion. Conversely, third generation HIV tests were positive prior to the start of ART in just over half of participants, compared to nearly all by 12 weeks after ART initiation. Notably, the Western blot, which was historically used as a confirmatory test for HIV, had high rates of non-reactivity in acute infection and 12% of tests were negative at 24 weeks after treatment, demonstrating that this test is not informative as a confirmatory assay in the context of acutely-treated HIV infection.

The recent WHO guidelines recommend ART for all HIV-positive people regardless of age and disease stage. Initiating ART as early as possible following HIV infection has also been recommended as a means to limit the size of the viral reservoir and improve prognosis. It is therefore likely that increasing numbers of individuals will start ART during early infection. There may be instances where individuals on ART may retest either due to doubts about results, or when they relocate to other HIV services. Clinicians need to be aware of the possibility of false-negative HIV antibody tests among people taking ART, particularly among individuals who initiated treatment during acute infection.

Point-of-care HIV tests done by peers, Brazil.

Problem: Early diagnosis of infections with human immunodeficiency virus (HIV) is needed especially among key populations such as sex workers, transgender people, men who have sex with men and people who use drugs.

Approach: The Brazilian Ministry of Health developed a strategy called Viva Melhor Sabendo ("live better knowing") to increase HIV testing among key populations. In partnership with nongovernmental organizations (NGOs), a peer point-of-care testing intervention, using an oral fluid rapid test, was introduced at social venues for key populations at different times of the day.

Local setting: Key populations in Brazil can have 40 times higher HIV prevalence than the general population (14.8% versus 0.4%).

Relevant changes: Legislation was reinterpreted, so that oral fluid rapid tests could be administered by any person trained in rapid testing by the health ministry. Between January 2014 and March 2015, 29,723 oral fluid tests were administered; 791 (2.7%) were positive. Among the key populations, transgender people had the greatest proportion of positive results (10.7%; 172/1612), followed by men who declared themselves as commercial sex workers (8.7%; 165/1889) and men who have sex with men (4.8%; 292/6055).

Lessons learnt: The strategy improved access to HIV testing. Testing done by peers at times and locations suitable for key populations increased acceptance of testing. Working with relevant NGOs is a useful approach when reaching out to these key populations.

Abstract

Editor’s notes: Brazil was a pioneer in provision of universal access to ART, adopting universal treatment for all people living with HIV in 2013. The HIV epidemic in Brazil is largely concentrated in key populations, where early treatment is less likely to be initiated than in the general population. In this report, the authors describe the results of a new strategy to allow trained peers from 53 non-governmental organisations (NGOs) to conduct rapid HIV screening tests using oral fluid tests, and refer clients with positive results for treatment. Key features were the full ownership of the testing implementation by the NGOs, extension of testing to social venues, and the matching of testers and clients by demographic characteristics. About half of the clients (53%) were first-time testers, providing clear evidence of the success of this new strategy. Future work should describe how individual NGOs revised their strategy over time, which NGOs were more successful in reaching key populations, and which NGOs were more successful in referring clients with positive results for test confirmation and treatment.

The effect of HIV counselling and testing on HIV acquisition in sub-Saharan Africa: a systematic review.


Objectives: Annually, millions of people in sub-Saharan Africa (SSA) receive HIV counselling and testing (HCT), a service designed to inform persons of their HIV status and, if HIV uninfected, reduce HIV acquisition risk. However, the impact of HCT on HIV acquisition has not been systematically evaluated. We conducted a systematic review to assess this relationship in SSA.

Methods: We searched for articles from SSA meeting the following criteria: an HIV-uninfected population, HCT as an exposure, longitudinal design and an HIV acquisition endpoint. Three sets of comparisons were assessed and divided into strata: sites receiving HCT versus sites not receiving
HCT (Strata A), persons receiving HCT versus persons not receiving HCT (Strata B) and persons receiving couple HCT (cHCT) versus persons receiving individual HCT (Strata C).

Results: We reviewed 1635 abstracts; eight met all inclusion criteria. **Strata A consisted of one cluster randomised trial with a non-significant trend towards HCT being harmful: incidence rate ratio (IRR): 1.4.** Strata B consisted of five observational studies with non-significant unadjusted IRRs from 0.6 to 1.3. **Strata C consisted of two studies. Both displayed trends towards cHCT being more protective than individual HCT (IRRs: 0.3-0.5).** All studies had at least one design limitation.

Conclusions: In spite of intensive scale-up of HCT in SSA, few well-designed studies have assessed the prevention impacts of HCT. The limited body of evidence suggests that individual HCT does not have a consistent impact on HIV acquisition, and cHCT is more protective than individual HCT.

Abstract access

**Editor’s notes:** Although it is plausible that knowing that you are HIV-negative might be an incentive for safer behaviour and thus reduce the risk of HIV acquisition, previous studies have not been conclusive. HIV counselling and testing (HCT) is an integral part of other prevention and treatment activities (e.g. voluntary medical male circumcision (VMMC) or pre-exposure prophylaxis (PreP)). The findings from this systematic review suggest that with the available evidence individual HCT does not consistently have a protective or harmful effect on HIV acquisition. Couples’ HCT may be protective but the authors caution against a simplistic interpretation, reminding us of limited evidence including imprecise estimates and possibilities of bias. There were just two studies on couples’ HCT and convincing evidence of benefit was only seen in the study which compared couples’ HCT with individual HCT. There could be systematic differences between people who sought couples’ versus individual HCT (who may be unable or unwilling to take up a couples programme). While couples’ HCT may be suited to some people and be protective for them, the wider applicability may be more limited. The authors describe the methodological challenges of measuring the impact of an HCT activity on HIV acquisition, including the fact that large cohorts need to be effectively followed for long periods. In addition, randomised comparisons with no HCT are not possible because of ethical barriers to withholding HCT. Another challenge the authors cite is that both the primary exposure (HCT) and the primary outcome (HIV acquisition) require an HIV test. Arguably, this could be circumvented by offering anonymised remote (eg laboratory) HIV testing to determine HIV acquisition, rather than point-of-care tests where results would be immediately available. The final message from this paper is that although convincing evidence for reduction in HIV acquisition from HCT is not apparent, it’s scale-up must continue. HCT is the gateway to other proven activities for both prevention and treatment.

Pathways to HIV testing and care in Goa, India: exploring psychosocial barriers and facilitators using mixed methods.


Background: Despite recognition of the importance of timely presentation to HIV care, research on pathways to care is lacking. The adverse impact of depression upon adherence to antiretroviral therapy is established. **There is emerging evidence to suggest depression may inhibit initial engagement with care. However, the effect of depression and other psychosocial factors upon the pathway to care is unknown.**
Methods: We used mixed methods to explore pathways to care of people accessing testing and treatment in Goa, India. Questionnaires including measures of common mental disorder, hazardous alcohol use, cognition and assessment of pathways to care (motivations for testing, time since they were first aware of this reason for testing, whether they had been advised to test, who had given this advice, time elapsed since this advice was given) were administered to 1934 participants at the time of HIV testing. Qualitative interviews were carried out with 15 study participants who attended the antiretroviral therapy treatment centre. Interview topic guides were designed to elicit responses that discussed barriers and facilitators of accessing testing and care.

Results: Pathways were often long and complex. Quantitative findings revealed that Common Mental Disorder was associated with delayed testing when advised by a Doctor (the most common pathway to testing) (AOR = 6.18, 2.16-17.70). Qualitative results showed that triggers for testing (symptoms believed to be due to HIV, and for women, illness or death of their husband) suggested that poor health, rather than awareness of risk was a key stimulus for testing. The period immediately before and after diagnosis was characterised by distress and fear. Stigma was a prominent backdrop to narratives. However, once participants had made contact with care and support (HIV services and non-governmental organisations), these systems were often effective in alleviating fear and promoting confidence in treatment and self-efficacy.

Conclusion: The effectiveness of formal and informal systems of support around the time of diagnosis in supporting people with mental disorder is unclear. Ways of enhancing these systems should be explored, with the aim of achieving timely presentation at HIV care for all those diagnosed with the disease.

Abstract Full-text [free] access

Editor’s notes: Late presentation to HIV care is associated with poorer outcomes for individuals living with HIV (increased risk of morbidity and death) and for treatment programmes (increased costs). The focus of this mixed methods study was to improve understanding of the impact of common mental disorders, hazardous alcohol use and cognitive impairment on accessing HIV testing and care in India. Although the investigators report that common mental disorders increased the possibility of delayed testing, internalised stigma and fear of discrimination was a common theme in the qualitative narratives. Stigma is associated with poorer mental health, including emotional distress, depression and reduced psychological functioning. It has also been linked to intermediate health outcomes such as seeking healthcare and adherence to antiretroviral therapy. These results reinforce the need to develop and evaluate programmes to address HIV-associated stigma so that people living with HIV can access care and benefit from treatment. However, development of appropriate programmes requires a better understanding of the complexities of HIV-associated stigma. These include the relationship between stigma, depression and social support and the intersection of HIV-associated stigma and other types of stigma experienced by people living with HIV, such as homophobia and gender discrimination.

Level of viral suppression and the cascade of HIV care in a South African semi-urban setting in 2012.

Objective: In 2012, 7 years after the introduction of antiretroviral treatment (ART) in the South African township of Orange Farm, we measured the proportion of HIV-positive people who were virally suppressed, especially among high-risk groups (women 18-29 years and men 25-34 years).

Design: A community-based cross-sectional representative survey was conducted among 3293 men and 3473 women.

Methods: Study procedures included a face-to-face interview and collection of blood samples that were tested for HIV, 11 antiretroviral drugs and HIV-viral load.

Results: HIV prevalence was 17.0% [95% confidence interval: 15.7-18.3%] among men and 30.1% [28.5-31.6%] among women. Overall, 59.1% [57.4-60.8%] of men and 79.5% [78.2-80.9%] of women had previously been tested for HIV. When controlling for age, circumcised men were more likely to have been tested compared with uncircumcised men (66.1 vs 53.6%; P < 0.001). Among HIV+, 21.0% [17.7-24.6%] of men and 30.5% [27.7-33.3%] of women tested positive for one or more antiretroviral drugs. Using basic calculations, we estimated that, between 2005 and 2012, ART programs prevented between 46 and 63% of AIDS-related deaths in the community. Among antiretroviral-positive, 91.9% [88.7-94.3%] had viral suppression (viral load <400 copies/ml). The proportion of viral suppression among HIV+ was 27.0% [24.3-29.9%] among women and 17.5% [14.4-20.9%] among men. These proportions were lower among the high-risk groups: 15.6% [12.1-19.7%] among women and 8.4% [5.0-13.1%] among men.

Conclusion: In Orange Farm, between 2005 and 2012, ART programs were suboptimal and, among those living with HIV, the proportion with viral suppression was still low, especially among the young age groups. However, our study showed that, in reality, antiretroviral drugs are highly effective in viral suppression at an individual level.

Abstract access

Editor’s notes: The efficacy of antiretroviral treatment (ART) in preventing HIV transmission from HIV-positive to HIV-negative people is clearly established. However, HIV incidence remains stubbornly high in many settings, and the challenge is to find ways to implement ART at sufficient scale, in combination with other effective programmes, to make an impact on HIV incidence at community level.

In this study, the authors surveyed a representative sample of adults in a community near Johannesburg, South Africa, where HIV prevalence is high and ART has been widely available since 2005. A trial of voluntary male medical circumcision (VMMC) was run in this location between 2002 to 2004, and a programme of incentivised VMMC and community mobilisation have been in place since 2008. The proportion of adults who had ever tested for HIV was nearly 80% among women and 60% among men, similar to that reported at national level in South Africa. Among survey participants with detectable ART agents in their blood, 94% had an HIV viral load below 1000 copies per ml, 92% below 400 copies per ml and 78% below 50 copies per ml. However, because ART programmes were sub-optimal at the time of the study, only 24% of all HIV-positive people in the survey had an HIV viral load below 400 copies per ml.

This study presents data from a real-world setting in South Africa. During the time of the study (2005-2012) treatment programmes were still sub-optimal (using the WHO 2006 treatment guidelines) but it shows that for all people on ART, significant levels of viral suppression were obtained. Of critical importance for treatment programmes will be to make sure that people have access to testing services and that testing and treatment programmes are linked.
2. Combination prevention

Integrated delivery of antiretroviral treatment and pre-exposure prophylaxis to HIV-1-serodiscordant couples: a prospective implementation study in Kenya and Uganda.


Background: Antiretroviral-based interventions for HIV-1 prevention, including antiretroviral therapy (ART) to reduce the infectiousness of HIV-1 infected persons and pre-exposure prophylaxis (PrEP) to reduce the susceptibility of HIV-1 uninfected persons, showed high efficacy for HIV-1 protection in randomized clinical trials. We conducted a prospective implementation study to understand the feasibility and effectiveness of these interventions in delivery settings.

Methods and findings: Between November 5, 2012, and January 5, 2015, we enrolled and followed 1013 heterosexual HIV-1-serodiscordant couples in Kenya and Uganda in a prospective implementation study. ART and PrEP were offered through a pragmatic strategy, with ART promoted for all couples and PrEP offered until 6 mo after ART initiation by the HIV-1 infected partner, permitting time to achieve virologic suppression. One thousand thirteen couples were enrolled, 78% of partnerships initiated ART, and 97% used PrEP, during a median follow-up of 0.9 years. Objective measures of adherence to both prevention strategies demonstrated high use (≥85%). Given the low HIV-1 incidence observed in the study, an additional analysis was added to compare observed incidence to incidence estimated under a simulated counterfactual model constructed using data from a prior prospective study of HIV-1-serodiscordant couples. Counterfactual simulations predicted 39.7 HIV-1 infections would be expected in the population at an incidence of 5.2 per 100 person-years (95% CI 3.7-6.9). However, only two incident HIV-1 infections were observed, at an incidence of 0.2 per 100 person-years (95% CI 0.0-0.9, p < 0.0001 versus predicted). The use of a non-concurrent comparison of HIV-1 incidence is a potential limitation of this approach; however, it would not have been ethical to enroll a contemporaneous population not provided access to ART and PrEP.

Conclusions: Integrated delivery of time-limited PrEP until sustained ART use in African HIV-1-serodiscordant couples was feasible, demonstrated high uptake and adherence, and resulted in near elimination of HIV-1 transmission, with an observed HIV incidence of <0.5% per year compared to an expected incidence of >5% per year.

Abstract Full-text [free] access

Editor’s notes: Long-term follow-up of the landmark HPTN-052 trial of ART for prevention of HIV transmission between HIV serodiscordant couples was covered in a recent issue of HIV This Month. In that trial, of the few transmission events that did occur, half were during the first few months of ART use in the HIV-positive partner, before viral load suppression. This study from Kenya and Uganda now suggests that offering pre-exposure prophylaxis (PrEP) to the HIV-negative partner to bridge the gap until virologic suppression may be an effective way to almost eliminate the risk of transmission.

In this study there were significant delays in ART initiation in the HIV-positive partner. At the start of the study the recommendation for ART initiation was a CD4+ cell count <350, and only half of the HIV-positive partners had initiated ART by six months. PrEP uptake by the HIV-negative partner was
high during this time period and high levels of adherence were sustained, suggesting that this was a feasible and acceptable strategy for discordant couples.

The activities were delivered using specific clinical research facilities and staff, so the logical next step would be to demonstrate scalability with delivery through routine health systems and through more innovative community-based systems.

A sport-based intervention to increase uptake of voluntary medical male circumcision among adolescent male students: results from the MCUTS 2 cluster-randomized trial in Bulawayo, Zimbabwe.


Background: Mathematical models suggest that 570 000 HIV infections could be averted between 2011 and 2025 in Zimbabwe if the country reaches 80% voluntary medical male circumcision (VMMC) coverage among 15- to 49-year-old male subjects. Yet national coverage remains well below this target, and there is a need to evaluate interventions to increase the uptake.

Methods: A cluster-randomized trial was conducted to assess the effectiveness of Make-The-Cut-Plus (MTC+), a single, 60-minute, sport-based intervention to increase VMMC uptake targeting secondary school boys (14-20 years). Twenty-six schools in Bulawayo, Zimbabwe, were randomized to either receive MTC+ at the start (intervention) or end (control) of a 4-month period (March to June 2014). VMMC uptake over these 4 months was measured via probabilistic matching of participants in the trial database (n = 1226 male participants; age, 14-20 years; median age, 16.2 years) and the registers in Bulawayo's 2 free VMMC clinics (n = 5713), using 8 identifying variables.

Results: There was strong evidence that the MTC+ intervention increased the odds of VMMC uptake by approximately 2.5 fold (odds ratio = 2.53; 95% confidence interval, 1.21 to 5.30). Restricting to participants who did not report being already circumcised at baseline, MTC+ increased VMMC uptake by 7.6% (12.2% vs 4.6%, odds ratio = 2.65; 95% confidence interval, 1.19 to 5.86). Sensitivity analyses related to the probabilistic matching did not change these findings substantively. The number of participants who would need to be exposed to the demand creation intervention to yield one additional VMMC client was 22.7 (or 13.2 reporting not already being circumcised). This translated to approximately US dollar 49 per additional VMMC client.

Conclusions: The MTC+ intervention was an effective and cost-effective strategy for increasing VMMC uptake among school-going adolescent male subjects in Bulawayo.

Abstract access

Editor’s notes: WHO and UNAIDS have stressed the importance of focusing on schools and sports to increase uptake of voluntary medical male circumcision (VMMC) among adolescent males. Adolescents have the maximum potential gain from VMMC in terms of prevented infections, and the paper illustrates that the soccer-based ‘Make The Cut’ programme significantly increased VMMC in school-based adolescents. This follows an earlier trial of the programme in adult men in which the proportion accepting VMMC was 4.8% compared with 0.5% in the control arm.

The programme was designed to be brief and low cost. A trained, recently circumcised young male ‘coach’ led a one hour soccer-themed session in school. After the session the coach contacted
participants who expressed an interest in VMMC, and arranged transport to a VMMC clinic. The trial team faced the common problem that the clinics where they collected outcome data used a handwritten register rather than electronic records. To address this, the team linked the clinic records to trial participants using probabilistic matching of names and contact details.

Both the prevalence and background incidence of circumcision were higher than expected. Almost half of participants (48%) said they were already circumcised at the beginning of the trial (the authors anticipated 20%), reflecting the recent increased uptake in VMMC in Zimbabwe. Although the trial illustrates significant increase in VMMC, the absolute uptake remained relatively low in the programme arm (12.2%), and a combination of successful VMMC demand creation activities (for example including monetary or non-monetary incentives) are necessary to reach global targets.

3. Key populations

Migration and HIV infection in Malawi.


Objective: To evaluate the assumption that moving heightens HIV infection by examining the time-order between migration and HIV infection and investigate differences in HIV infection by migration destination and permanence.

Methods: We employ four waves of longitudinal data (2004-2010) for 4265 men and women from a household-based study in rural Malawi and a follow-up of migrants (2013). Using these data, we examine HIV status prior to migration. Migrants are disaggregated by destination (rural, town, and urban) and duration (return and permanent); all compared with individuals who consistently resided in the rural origin (‘nonmigrants’).

Results: HIV-positive individuals have significantly greater odds of migration than those who are HIV negative [odds ratio 2.75; 95% confidence interval (CI) 1.89-4.01]. Being HIV positive significantly increases the relative risk (RR) that respondent will be a rural-urban migrant [RR ratio (RRR) 6.28; 95% CI 1.77-22.26], rural-town migrant (RRR 3.62; 95% CI 1.24-10.54), and a rural-rural migrant (RRR 4.09; 95% CI 1.68-9.97), instead of a nonmigrant. Being HIV positive significantly increases the RR that a respondent will move and return to the village of origin (RRR 2.58; 95% CI 1.82-3.66) and become a permanent migrant (RRR 3.21; 95% CI 1.77-5.82) instead of not migrating.

Conclusion: HIV-positive status has a profound impact on mobility: HIV infection leads to significantly higher mobility through all forms of migration captured in our study. These findings emphasize that migration is more than just an independent risk factor for HIV infection: greater prevalence of HIV among migrants is partly due to selection of HIV-positive individuals into migration.

Abstract access

Editor’s notes: Previous studies in sub-Saharan Africa have identified that migrants are at greater risk of living with HIV than their non-migrant counterparts. There is however a lack of knowledge of the direction of causality between migration status and HIV status. This longitudinal study enabled analysis of the direction of causality between HIV acquisition and migration. Individuals living with HIV were significantly more likely to migrate in the future than people who were not living with HIV.
The effect was seen for all types of migration (rural to rural, rural to town (district capital) and rural to urban (regional capital)).

The true association between HIV status and migration status may exceed that illustrated as some individuals who were HIV negative at baseline may have become HIV positive prior to migration. The patterns identified could be driven by better healthcare being available in an urban setting. Alternatively individuals may move to avoid HIV-associated stigma in the relative anonymity of an urban environment. Previous research in Malawi has also illustrated that marriage and migration are closely linked. Thus marital dissolution following HIV infection may in part explain the patterns seen. Further qualitative studies are necessary to investigate such factors.

This study illustrates that an increasing emphasis needs to be placed on HIV prevention in the rural communities from which migrants originate, in addition to focusing on the risk in the urban areas.

Heterogeneity of the HIV epidemic in agrarian, trading, and fishing communities in Rakai, Uganda: an observational epidemiological study.


Background: Understanding the extent to which HIV burden differs across communities and the drivers of local disparities is crucial for an effective and targeted HIV response. We assessed community-level variations in HIV prevalence, risk factors, and treatment and prevention service uptake in Rakai, Uganda.

Methods: The Rakai Community Cohort Study (RCCS) is an open, population-based cohort of people aged 15-49 years in 40 communities. Participants are HIV tested and interviewed to obtain sociodemographic, behavioural, and health information. RCCS data from Aug 10, 2011, to May 30, 2013, were used to classify communities as agrarian (n=27), trading (n=9), or lakeside fishing sites (n=4). We mapped HIV prevalence with Bayesian methods, and characterised variability across and within community classifications. We also assessed differences in HIV risk factors and uptake of antiretroviral therapy and male circumcision between community types.

Findings: 17 119 individuals were included, 9215 (54%) of whom were female. 9931 participants resided in agrarian, 3318 in trading, and 3870 in fishing communities. Median HIV prevalence was higher in fishing communities (42%, range 38-43) than in trading (17%, 11-21) and agrarian communities (14%, 9-26). Antiretroviral therapy use was significantly lower in both men and women in fishing communities than in trading (age-adjusted prevalence risk ratio in men 0.64, 95% CI 0.44-0.97; women 0.53, 0.42-0.66) and agrarian communities (men 0.55, 0.42-0.72; women 0.65, 0.54-0.79), as was circumcision coverage among men (vs trading 0.48, 0.42-0.55; vs agrarian 0.64, 0.56-0.72). Self-reported risk behaviours were significantly higher in men than in women and in fishing communities than in other community types.

Interpretation: Substantial heterogeneity in HIV prevalence, risk factors, and service uptake in Rakai, Uganda, emphasises the need for local surveillance and the design of targeted HIV responses. High HIV burden, risk behaviours, and low use of combination HIV prevention in fishing communities make these populations a priority for intervention.

Abstract access

Editor’s notes: National estimates of HIV prevalence often conceal concentrated ‘sub-epidemics’ in particular geographical areas or populations. In this paper, the authors illustrate that within the Rakai
region of Uganda, there is extensive community-level variation in HIV prevalence, behavioural risk factors, and HIV service coverage. Such clustering of HIV infections can reduce the impact of population-based prevention. UNAIDS, along with other organisations, have called for a more focused response to HIV treatment and prevention, concentrating efforts on key populations to increase the effectiveness of programmes. While regional and national data are important to provide an overview of the epidemic, they do not provide the in-depth picture that is necessary. Understanding the extent to which HIV prevalence differs across communities and the drivers of these differences is crucial to provide an effective, community-specific HIV response. In Rakai, HIV prevalence was 2-3 times higher, and ART use was nearly 50% lower, in fishing communities than in trading and agrarian communities. However, the areas with the highest number of people living with HIV were in the larger, lower risk populations. One of the challenges of focused treatment and prevention programmes is the identification of geographical areas or sub-populations at highest risk. A better understanding of the community-level heterogeneity and transmission links between high and low risk areas is necessary. In this study, detailed household surveillance and epidemiological data were available; however, such fine-scale data are often not available. This finding of extensive heterogeneity across relatively close and seemingly similar communities has implications for focused approaches to HIV programmes, and demonstrates the importance of strong local HIV surveillance data.

4. Elimination of gender inequalities

Intimate partner violence experienced by HIV-infected pregnant women in South Africa: a cross-sectional study.


Objectives: Intimate partner violence (IPV) during pregnancy may be common in settings where HIV is prevalent but there are few data on IPV in populations of HIV-infected pregnant women in Southern Africa. We examined the prevalence and correlates of IPV among HIV-infected pregnant women.

Setting: A primary care antenatal clinic in Cape Town, South Africa.

Participants: 623 consecutive HIV-infected pregnant women initiating lifelong antiretroviral therapy.

Measures: IPV, depression, substance use and psychological distress were assessed using the 13-item WHO Violence Against Women questionnaire, the Edinburgh Postnatal Depression Scale (EPDS), Alcohol and Drug Use Disorders Identification Tests (AUDIT/DUDIT) and the Kessler 10 (K-10) scale, respectively.

Results: The median age in the sample was 28 years, 97% of women reported being in a relationship, and 70% of women reported not discussing and/or agreeing on pregnancy intentions before conception. 21% of women (n=132) reported experiencing ≥1 act of IPV in the past 12 months, including emotional (15%), physical (15%) and sexual violence (2%). Of those reporting any IPV (n=132), 48% reported experiencing 2 or more types. Emotional and physical violence was most prevalent among women aged 18-24 years, while sexual violence was most commonly reported among women aged 25-29 years. Reported IPV was less likely among married women, and women who experienced IPV were more likely to score above threshold for substance use, depression and psychological distress. In addition, women who reported not discussing and/or not agreeing on
pregnancy intentions with their partner prior to conception were significantly more likely to experience violence.

Conclusions: HIV-infected pregnant women in the study reported experiencing multiple forms of IPV. While the impact of IPV on maternal and child health outcomes in the context of HIV infection requires further research attention, IPV screening and support services should be considered within the package of routine care for HIV-infected pregnant women.

Trial registration number: NCT01933477.

Abstract Full-text [free] access

Editor's notes: Intimate partner violence among women in sub-Saharan Africa is >30%. There is limited research examining intimate partner violence among women living with HIV. Research is important as intimate partner violence may impact on a woman’s ability to adhere to antiretroviral therapy. Among pregnant women, this includes during pregnancy and post-partum. This study describes the prevalence of recent intimate partner violence, and examines associations between recent intimate partner violence and demographic, relationship and psychological variables.

The study was set in a township in Cape Town, South Africa, where the majority of residents have low socio-economic status and HIV infection among women is approximately 30%. Some 21% percent of 623 participants reported any recent intimate partner violence in the past 12 months. Fifteen percent reported emotional violence, 15% physical violence (7% severe physical) and two percent sexual violence. Recent violence was associated with hazardous alcohol use, psychological distress and depression. It was more likely among unmarried women, and among women who had not discussed/agreed pregnancy prior to conception. There was no evidence to suggest intimate partner violence was elevated among women newly diagnosed with HIV.

These data suggest significant intimate partner violence experience among pregnant women living with HIV, living in this township. This study adds to the limited literature, examining intimate partner violence in the context of pregnancy and HIV. Longitudinal studies, and studies which examine the impact of intimate partner violence on ART uptake and adherence, including during pregnancy and post-partum, are necessary.

Update on hormonal contraceptive methods and risk of HIV acquisition in women: a systematic review of epidemiological evidence, 2016.


Objective and design: Some studies suggest that specific hormonal contraceptive (HC) methods (particularly depot medroxyprogesterone acetate [DMPA]) may increase women’s HIV acquisition risk. We updated a systematic review to incorporate recent epidemiological data.

Methods: We searched for articles published between 1/15/2014-1/15/2016, and hand-searched reference lists. We identified longitudinal studies comparing users of a specific HC method against either (1) non-users of HC, or (2) users of another specific HC method. We added newly identified studies to those in the previous review, assessed study quality, created forest plots to display results, and conducted a meta-analysis for data on DMPA versus no HC.

Results: We identified ten new reports: five were considered “unlikely to inform the primary question”. We focus on the other five reports, along with 9 from the previous review, considered "informative but with important limitations". The preponderance of data for oral contraceptive pills, injectable
norethisterone enanthate (NET-EN), and levonorgestrel implants do not suggest an association with HIV acquisition, though data for implants are limited. The new, higher-quality studies on DMPA (or non-disaggregated injectables), which had mixed results in terms of statistical significance, had hazard ratios (HR) between 1.2 and 1.7, consistent with our meta-analytic estimate for all higher-quality studies of HR 1.4.

Conclusions: While confounding in these observational data cannot be excluded, new information increases concerns about DMPA and HIV acquisition risk in women. If the association is causal, the magnitude of effect is likely ≤ HR 1.5. Data for other hormonal contraceptive methods, including NET-EN, are largely reassuring.

Abstract access

Editor’s notes: For several years there has been debate about whether the risk of HIV acquisition in women may be increased by the use of hormonal contraception. A systematic review published in 2014 included a meta-analysis of data from 22 studies, and this paper adds 10 new studies to the analysis. While these new papers carried some of the previous review’s limitations which cannot be ignored, the new data also lends further strength to the evidence and renewed analysis. The authors found some encouraging results which suggest that there is no significant increased risk of HIV with the use of oral contraceptives and the NET-EN injectable. However, this analysis does suggest that there is an increased risk of 1.4-1.5 of HIV with the use of DMPA. This is particularly concerning given the widespread use of this product throughout the world, and especially in areas where high rates of new HIV infections continue to persist, such as sub-Saharan Africa. Studies continue to explore this association of risk, and will hopefully produce evidence in the near future to definitively provide guidance as to how clinicians should direct the use of DMPA in women at risk of HIV.

5. Elimination of stigma

Stigma, facility constraints, and personal disbelief: why women disengage from HIV care during and after pregnancy in Morogoro region, Tanzania.


Millions of children are living with HIV in sub-Saharan Africa, and the primary mode of these childhood infections is mother-to-child transmission. While existing interventions can virtually eliminate such transmission, in low- and middle-income settings, only 63% of pregnant women living with HIV accessed medicines necessary to prevent transmission. In Tanzania, HIV prevalence among pregnant women is 3.2%. Understanding why HIV-positive women disengage from care during and after pregnancy can inform efforts to reduce the impact of HIV on mothers and young children. Informed by the tenets of Grounded Theory, we conducted qualitative interviews with 40 seropositive postpartum women who had disengaged from care to prevent mother-to-child transmission (PMTCT). Nearly all women described antiretroviral treatment (ART) as ultimately beneficial but effectively inaccessible given concerns related to stigma. Many women also described how their feelings of health and vitality coupled with concerns about side effects underscored a desire to forgo ART until they deemed it immediately necessary. Relatively fewer women described not knowing or forgetting that they needed to continue their treatment regimens. We present a theory of PMTCT disengagement outlining primary and ancillary barriers. This study is among the first to examine disengagement by interviewing women who had
actually discontinued care. We urge that a combination of intervention approaches such as mother-to-mother support groups, electronic medical records with same-day tracing, task shifting, and mobile technology be adapted, implemented, and evaluated within the Tanzanian setting.

Abstract access

Editor’s notes: The push for universal access to antiretroviral therapy for everyone living with HIV faces many obstacles. In many parts of the world, pregnant women are offered HIV testing as a part of antenatal care. Treatment is then offered if a woman is found to be HIV-positive. Many women accept this care, having been provided with the information that this is beneficial for their baby and also themselves. Some women who accept treatment take themselves out of care. This can be detrimental not only for the HIV status of their baby, but also for their general antenatal care. As the authors of this paper note, there is a growing body of literature that describes losses to care from the provider perspective. There are also a number of papers about women who have accepted care, who describe why others refuse treatment. It is unusual to find detailed findings from interviews with women who have dropped out of or refused HIV treatment while pregnant. While the findings are not particularly surprising, the authors of this paper have captured the individual reasons why the 40 women interviewed in their study, left or never entered care. The reasons given underline the challenge of ’prompt treatment’. Many women were not ready for immediate treatment. Fears of the clinic layout ’betraying’ a woman’s status are described. So too are the negative attitudes of health providers as well as family and community members. The authors provide an excellent example of how good qualitative research, conducted and analysed in an exemplary manner, offers valuable insights. This paper provides valuable information on an often hidden minority of women who are not ready or able ’to test and treat’.

HIV-related stigma, shame, and avoidant coping: risk factors for internalizing symptoms among youth living with HIV?


Youth living with HIV (YLH) are at elevated risk of internalizing symptoms, although there is substantial individual variability in adjustment. We examined perceived HIV-related stigma, shame-proneness, and avoidant coping as risk factors of internalizing symptoms among YLH. Participants (N = 88; ages 12-24) completed self-report measures of these potential risk factors and three domains of internalizing symptoms (depressive, anxiety, and PTSD) during a regularly scheduled HIV clinic visit. Hierarchical regressions were conducted for each internalizing symptoms domain, examining the effects of age, gender, and maternal education (step 1), HIV-related stigma (step 2), shame- and guilt-proneness (step 3), and avoidant coping (step 4). HIV-related stigma, shame-proneness, and avoidant coping were each correlated with greater depressive, anxiety, and PTSD symptoms. Specificity was observed in that shame-proneness, but not guilt-proneness, was associated with greater internalizing symptoms. In multivariable analyses, HIV-related stigma and shame-proneness were each related to greater depressive and PTSD symptoms. Controlling for the effects of HIV-related stigma and shame-proneness, avoidant coping was associated with PTSD symptoms. The current findings highlight the potential importance of HIV-related stigma, shame, and avoidant coping on the adjustment of YLH, as interventions addressing these risk factors could lead to decreased internalizing symptoms among YLH.

Abstract access
**Editor's notes:** This study examined the relationship between stigma, shame and avoidant coping strategies and the development of internalizing symptoms, such as anxiety and depression, in young people living with HIV. It is based on researcher-administered questionnaires with 88 young people living with HIV attending an HIV clinic in Philadelphia, USA. The questionnaire included multiple scales to assess. These included young people’s self-reported issues with HIV stigma; tendency to feel shame; tendency to feel guilt; avoidant coping strategies; depressive symptoms; anxiety symptoms; and post-traumatic stress disorder symptoms. Multiple statistical analyses were performed, controlling for the effects of gender, age and maternal education. The study found that HIV-associated stigma, shame and avoidant strategies are risk-factors for the development of depression, anxiety and post-traumatic stress disorder in young people living with HIV. The study provides evidence for the development of psychosocial support that focuses on shame reduction as a way to mediate the impact of stigma on mental health outcomes for young people living with HIV.

6. **Financing**

Cost and efficiency of a hybrid mobile multi-disease testing approach with high HIV testing coverage in East Africa.


Background: In 2013-14, we achieved 89% adult HIV testing coverage using a hybrid testing approach in 32 communities in Uganda and Kenya (SEARCH: NCT01864603). To inform scalability, we sought to determine: 1) overall cost and efficiency of this approach; and 2) costs associated with point-of-care (POC) CD4 testing, multi-disease services, and community mobilization.

Methods: We applied micro-costing methods to estimate costs of population-wide HIV testing in 12 SEARCH Trial communities. Main intervention components of the hybrid approach are census, multi-disease community health campaigns (CHC), and home-based testing (HBT) for CHC non-attendees. POC CD4 tests were provided for all HIV-infected participants. Data were extracted from expenditure records, activity registers, staff interviews, and time and motion logs.

Results: The mean cost per adult tested for HIV was $20.5 (range: $17.1 - $32.1) [2014 US$], including a POC CD4 test at $16 per HIV+ person identified. Cost per adult tested for HIV was $13.8 at CHC vs. $31.7 via HBT. The cost per HIV+ adult identified was $231 ($87 - $1245), with variability due mainly to HIV prevalence among persons tested (i.e., HIV positivity rate). The marginal costs of multi-disease testing at CHCs were $1.16/person for hypertension and diabetes, and $0.90 for malaria. Community mobilization constituted 15.3% of total costs.

Conclusions: The hybrid testing approach achieved very high HIV testing coverage, with POC CD4, at costs similar to previously reported mobile, home-based, or venue-based HIV testing approaches in sub-Saharan Africa. By leveraging HIV infrastructure, multi-disease services were offered at low marginal costs.

Abstract access

**Editor’s notes:** Ensuring high rates of HIV testing is critical to managing the HIV epidemic in many countries. With a positive diagnosis, recent WHO recommendations suggest that people living with HIV can immediately be put onto treatment which improves their own health, alongside reducing the
chance that they will pass on infection to others. There are many different ways to carry out HIV testing, and this study looks at the differences in costs between community health campaigns (which also test for other diseases including hypertension and diabetes), and home-based testing. This paper estimates that it was less costly to carry out an HIV test through a multi-disease community programme than home-based testing. The authors suggest that because of the robust infrastructure that has been developed for HIV testing in Uganda and Kenya, the additional cost for testing for other diseases is very low. There has been some criticism that the response to the HIV epidemic has been at the expense of reducing ill-health from other conditions. Using HIV infrastructure to support testing for diseases like hypertension and diabetes is a good way to counter these criticisms, and improve the overall health of the population.

Modeling the cost-effectiveness of home-based HIV testing and education (HOPE) for pregnant women and their male partners in Nyanza Province, Kenya.


Introduction: Women in sub-Saharan Africa face a 2-fold higher risk of HIV acquisition during pregnancy and postpartum and the majority do not know the HIV status of their male partner. Home-based couple HIV testing for pregnant women can reduce HIV transmission to women and infants while increasing antiretroviral therapy (ART) coverage in men. However, the cost-effectiveness of this program has not been evaluated.

Methods: We modeled the health and economic impact of implementing a home-based partner education and HIV testing (HOPE) intervention for pregnant women and their male partners in a region of Western Kenya (formally Nyanza Province). We used data from the HOPE randomized clinical trial conducted in Kisumu, Kenya, to parameterize a mathematical model of HIV transmission. We conducted an in-country microcosting of the HOPE intervention (payer perspective) to estimate program costs as well as a lower cost scenario of task-shifting to community health workers.

Results: The incremental cost of adding the HOPE intervention to standard antenatal care was $31-37 and $14-16 USD per couple tested with program and task-shifting costs, respectively. At 60% coverage of male partners, HOPE was projected to avert 6987 HIV infections and 2603 deaths in Nyanza province over 10 years with an incremental cost-effectiveness ratio (ICER) of $886 and $615 per disability-adjusted life year averted for the program and task-shifting scenario, respectively. ICERs were robust to changes in intervention coverage, effectiveness, and ART initiation and dropout rates.

Conclusions: The HOPE intervention can moderately decrease HIV-associated morbidity and mortality by increasing ART coverage in male partners of pregnant women. ICERs fall below Kenya's per capita gross domestic product ($1358) and are therefore considered cost-effective. Task-shifting to community health workers can increase intervention affordability and feasibility.

Abstract access

Editor's notes: HIV remains one of the most serious public health and economic challenges in sub-Saharan Africa. In this study, a deterministic mathematical model was used to assess the cost-effectiveness of providing home-based partner education and HIV testing to couples as a part of routine antenatal care in western Kenya. Detailed cost and effectiveness data were obtained from
home-based partner education and an HIV testing programme in Kisumu, Kenya. The model was parameterised using data from that region. The model was analysed for two scenarios; the status quo (with no activity) and the activity scenario in which home-based partner education and HIV testing was added to the status quo with 60% coverage of male partners of pregnant women. Sensitivity analysis was conducted to ascertain the robustness of key model assumption on the study findings. The authors found home-based partner education and HIV testing activities to be a cost-effective method to reduce HIV disease prevalence in Kenya as it increases ART coverage in male partners of pregnant women. This is a very interesting study which confirms previous findings that community-based HIV counselling and testing is cost-effective.

7. Health systems and services

Structure and quality of outpatient care for people living with an HIV infection.


Policy-makers and clinicians are faced with a gap of evidence to guide policy on standards for HIV outpatient care. Ongoing debates include which settings of care improve health outcomes, and how many HIV-infected patients a health-care provider should treat to gain and maintain expertise. In this article, we evaluate the studies that link health-care facility and care provider characteristics (i.e., structural factors) to health outcomes in HIV-infected patients. We searched the electronic databases MEDLINE, PUBMED, and EMBASE from inception until 1 January 2015. We included a total of 28 observational studies that were conducted after the introduction of combination antiretroviral therapy in 1996. Three aspects of the available research linking the structure to quality of HIV outpatient care were evaluated: (1) assessed structural characteristics (i.e., health-care facility and care provider characteristics); (2) measures of quality of HIV outpatient care; and (3) reported associations between structural characteristics and quality of care. Rather than scarcity of data, it is the diversity in methodology in the identified studies and the inconsistency of their results that led us to the conclusion that the scientific evidence is too weak to guide policy in HIV outpatient care. We provide recommendations on how to address this heterogeneity in future studies and offer specific suggestions for further reading that could be of interest for clinicians and researchers.

Abstract access

Editor’s notes: The availability of antiretroviral therapy has resulted in remarkable decreases in HIV-associated mortality. Complexity in the management of HIV infection has however grown along with these advances in treatment. Health-care providers are confronted with challenges associated with antiretroviral therapy including toxicities; drug-drug interactions and drug resistance; and comorbidities and aging among the population living with HIV. In order to achieve optimal health outcomes, care for people living with HIV should be provided at health-care facilities and by care providers with sufficient expertise. A variety of different delivery models have been attempted to achieve this. There are a growing number of studies assessing care delivery models and programmes in outpatient HIV care. In this article the authors provide an overview of the scientific literature linking health-care facility and care provider characteristics to the quality of HIV outpatient care.
The authors conducted a systematic review of articles that reported an original observational research study with an adult population living with HIV, were conducted after 1996, and that did not focus exclusively on interventions.

The authors acknowledge the limitations of their research. These included a disproportionate number of studies based in the USA and sub-Saharan Africa (thus limited generalisability); diversity in the definition of structural variables; a wide scope of measures of quality of care used in studies; and limited inclusion of peoples’ healthcare experiences. The authors summarise two main implications of their research. First, they note that their findings suggest that health-care provider experience improves outcomes among people living with HIV although they are unable to make recommendations regarding facility volume requirements for outpatient care. Second, they advocate for the need for research to extend to regions outside the USA and sub-Saharan Africa. They also note the need for researchers to align their methods of measuring quality including going beyond HIV-associated morbidity in the evaluation of health outcomes. Peoples’ preferences and retention in care should also play an important role in the evaluation of the quality of care.

Implementation and operational research: use of symptom screening and sputum microscopy testing for active tuberculosis case detection among HIV-infected patients in real-world clinical practice in Uganda.


Background: The uptake of intensified active TB case-finding among HIV-infected patients using symptom screening is not well understood. We evaluated the rate and completeness of each interim step in the TB pulmonary "diagnostic cascade" to understand real-world barriers to active TB case detection.

Methods: We conducted a cohort analysis of new, antiretroviral therapy-naive, HIV-infected patients who attended a large HIV clinic in Mbarara, Uganda (March 1, 2012-September 30, 2013). We used medical records to extract date of completion of each step in the diagnostic cascade: symptom screen, order, collection, processing, and result. Factors associated with lack of sputum order were evaluated using multivariate Poisson regression and chart review of 50 screen-positive patients.

Results: Of 2613 patients, 2439 (93%) were screened for TB and 682 (28%) screened positive. Only 90 (13.2%) had a sputum order. Of this group, 83% completed the diagnostic cascade, 13% were diagnosed with TB, and 50% had a sputum result within 1 day of their visit. Sputum ordering was associated with WHO stage 3 or 4 HIV disease and greater number of symptoms. The main identifiable reasons for lack of sputum order in chart review were treatment of presumed malaria (51%) or bacterial infection (43%).

Conclusions: The majority of newly enrolled HIV-infected patients who screened positive for suspected TB did not have a sputum order, and those who did were more likely to have more symptoms and advanced HIV disease. Further evaluation of provider behavior in the management of screen-positive patients could improve active TB case detection rates.

Abstract access

Editor’s notes: This cohort analysis of people enrolling for HIV care at a President’s Emergency Plan for AIDS Relief (PEPFAR) clinic in Uganda used medical record review to identify barriers to active TB case finding in a programmatic setting. This study is unique in evaluating each step along the entire
TB diagnostic cascade, from the WHO screening tool, which asks about four symptoms, through to sputum result, in a setting where TB diagnosis was based on sputum microscopy, prior to availability of Xpert® MTB/RIF.

The authors found high uptake of TB symptom screening at enrolment to HIV care, with cough being the most commonly reported symptom. However, most people with symptoms suggestive of TB were not documented to have had sputum investigation ordered, this being the major point of loss from the TB diagnostic pathway. Given that the prevalence of active TB among people newly testing HIV positive is consistently high in African countries, this represents a substantial missed opportunity for prompt identification and treatment of TB. The study design did not allow in-depth evaluation of the reasons for lack of sputum order since this may not be clearly documented in medical records. Factors such as a person’s inability to produce sputum should also be considered. Ultimately, a high sensitivity, affordable, non-sputum based, point-of-care diagnostic test for TB is necessary to overcome the barriers inherent in the current complex TB diagnostic pathway.