ICAP Journal Club

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Article

Steiner C, MacKellar D, Cham HJ, et al. **Community-wide HIV testing, linkage case management, and defaulter tracing in Bukoba, Tanzania: Pre-intervention and post-intervention, population-based survey evaluation**. *Lancet HIV*. 2020. Published online Sept 1. https://doi.org/10.1016/S2352-3018(20)30199-5

Study Summary

This article evaluates the population-level impact of a community-wide intervention to improve HIV testing and treatment outcomes in Bukoba, Tanzania, using pre- and post-intervention population-based survey results.

Study Setting
- Bukoba Municipal Council in Tanzania, which is a mixed urban and rural area with approximately 150,000 residents.
- All 11 government-supported health facilities serving the general public in Bukoba participated in the intervention, including eight public facilities (one regional referral hospital, two health centers, five dispensaries) and three faith-based health centers.

Methods
- Population-based, cross-sectional surveys were conducted in Bukoba before and after a community-wide intervention was implemented, known as the Bukoba Combination Prevention Evaluation (BCPE).
- BCPE interventions:
  o Over 2.5 years (October 2014–March 2017) the BCPE intervention, consisting of HIV testing, linkage support, and tracing of people living with HIV (PLHIV) lost to care, was implemented throughout Bukoba.
  o HIV testing was offered to all eligible patients attending outpatient department clinics at the 11 participating facilities. Community-based testing was also offered at all occupied homes at least once and at 79 male-frequented venues throughout Bukoba.
  o Linkage case management (LCM) was offered to all newly diagnosed PLHIV who were referred to participating facilities. In the LCM model, peer counselors living with HIV served as linkage champions for their clients and provided a comprehensive package of services for up to 90 days, which included sharing their personal experiences of living with HIV, escorted and facilitated enrollment in care, client navigation support, and assistance with mitigating real or perceived barriers to care.
  o During the intervention period, national guidelines for antiretroviral therapy (ART) eligibility expanded from CD4 count <350 cells/microliter through December 2015, to ≤500 cells/microliter (January 2016–September 2016), and to any CD4 cell count (Test

and Treat) beginning October 2016. Beginning in December 2015, eligible PLHIV were offered ART at their first clinic visit (same-day ART) and from November 2016, same-day ART was offered to all PLHIV at the point of diagnosis during community-based testing events.

- o Tracing of PLHIV lost to care was implemented from July 2016 to May 2017, for clients who had been lost from care since October 2014. Electronic medical records were queried quarterly to identify patients who had not received care within 90 days. Lay counselors traced clients for up to 30 days via phone and home visits. Clients who wished to return to care received treatment navigation, expedited care, and same-day ART services. Clients who were not contacted or refused services once were re-traced in a subsequent quarter.
- o Staff recorded testing, linkage, and tracing outcomes on standard forms. For LCM clients, enrollment in HIV care and ART initiation were measured during the 90-day case management period.

- Population-based surveys:
  - o Identical pre-intervention and post-intervention single-stage cluster sample surveys were conducted from November 2013–January 2014, and from June–September 2017, respectively.
  - o Census enumeration areas in Bukoba were randomly selected in proportion to ward population, and all consenting household members aged 18–49 years were eligible to participate in a computer-assisted personal interview and test for HIV.
  - o Staff conducted interviews on sociodemographic characteristics, previous HIV testing and diagnosis, and use of ART, followed by HIV testing in accordance with national guidelines. Blood specimens from HIV-positive participants were collected for viral load.
  - o Classification of previous HIV diagnosis and current ART use were based on interview self-report, medical record confirmation, or having achieved viral load suppression (<1000 copies/milliliter).

BCPE Results

- During the intervention period, 133,695 HIV tests were performed, including 56,304 (42%) among men and 43,247 (32%) among young adults aged 15–24 years.
- A total of 4,732 people tested HIV positive and were not in care. Of these, 4,143 were newly identified as living with HIV, including 1,583 newly diagnosed men, and 881 newly diagnosed young adults aged 15–24 years.
- Overall, 4,206 clients participated in LCM. Ninety percent (n = 2018/2233) of clients participating during the CD4 <350 cells/microliter period, 96% (n = 1168/1221) participating during the CD4 ≤500 cells/microliter period and 97% (n = 732/752) participating in the Test and Treat period enrolled in HIV care, of whom 52% (n = 1057/2018), 70% (n = 815/1168), and 89% (n = 649/732) initiated ART within 90 days of diagnosis, respectively.
- Excluding clients who were found to have moved (n = 504), transferred HIV care (n = 300), or died (n = 172), 50% (n = 820/1650) of the clients lost to care were contacted, of whom 74% (n = 604/820) returned to care and 70% (n = 573/820) initiated or re-initiated ART.

Population-based Survey Results
- In pre-intervention and post-intervention surveys, 73% (n = 4795/6532) and 74% (n = 5067/6844) of enumerated household residents aged 15–49 years were interviewed and tested for HIV, respectively.
- In both surveys, proportionally fewer men than women participated due to challenges contacting men for enrollment, with men representing 38% of residents tested in the pre-intervention survey and 41% in the post-intervention survey.
- The estimated population prevalence of HIV infection was similar between pre-intervention (8.9%) and post-intervention (8.4%) surveys, but the estimated population prevalence of undiagnosed HIV infection decreased by approximately half from the pre-intervention period (4.7%) to the post-intervention period (2.0%).
- The estimated population prevalence of undiagnosed HIV infection decreased by approximately two-thirds among residents aged 18–29 years (3.9% vs. 1.3%) and in those who had not completed a primary education (9.5% vs. 3.2%). Residents who did not own a mobile phone or television had a prevalence of undiagnosed HIV infection over five times higher than residents who owned either in 2017.
- By 2017, current ART use among PLHIV increased two times overall (32.2% vs. 70.9%) and among women (37.7% vs. 75.6%); nearly three times among men (23.0% vs. 62.1%); and nearly four times among young adults aged 18–29 years (16.7% vs. 64.4%).
- By 2017, diagnostic coverage among PLHIV increased from 47.4% to 76.2%; ART use among diagnosed PLHIV increased from 68.0% to 93.1%; and viral load suppression among PLHIV on ART increased from 88.7% to 91.3%.

Critical Analysis

Population-based surveys conducted before and after a community-wide testing, linkage, and tracing intervention found improvement in HIV testing and treatment outcomes among residents in Bukoba, Tanzania. While the intervention helped reduce gaps in HIV service coverage among men and young adults, and moved the community toward the 90-90-90 targets, some disparities remained in certain vulnerable sub-populations, such as residents with lower income or education levels.

The following points should be considered when interpreting the study findings:
- The intervention was conducted during a time of expanding ART eligibility in Tanzania, which likely contributed to the number of PLHIV on ART in the post-intervention period. Nonetheless, the LCM approach resulted in 90% or more of clients enrolling in HIV care, regardless of ART policy.
- BCPE was not an experimental community trial and there was no control community for comparison, making it difficult to isolate the direct impact of the BCPE intervention over general improvements in HIV services over the study period.
- The intervention was conducted before index testing had been scaled up widely in HIV programs. A focus on index testing could further reduce the prevalence of undiagnosed HIV infection in the community.
- While more resource intensive than standard of care at the time, BCPE relied on peer lay counselors to deliver services, which helped keep the costs down. For example, the estimated per client cost for peer-delivered LCM was 18.00 USD.

Implications

Findings from population-based surveys suggest that a community-wide intervention consisting of facility-based and community-based HIV testing, peer-delivered linkage support, and systematic tracing of PLHIV lost to care can support attainment of the 90-90-90 targets. In 2017, the BCPE facility-based testing and LCM interventions were approved by the Ministry of Health, Community Development, Gender, Elderly and Children in Tanzania as new service delivery models, leading to scale-up in all regions of Tanzania in 2019. While these approaches are promising at scale, they must be supplemented with additional strategies to reach sub-populations who are still lagging behind on HIV-related outcomes, such as those with lower levels of income and education.

This article synopsis was written by Cassia Wells. Share your thoughts on this article or suggest an article for Journal Club by emailing her at caw2208@columbia.edu.