

WEAX0105LB - Oral Abstract

TITLE

Impact of prevention and treatment interventions on population HIV incidence: Primary results of the community-randomized Ya Tsie Botswana prevention project

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Background: Antiretroviral therapy(ART) markedly reduces incidence in known HIV-discordant relationships. However, the impact of expanded access to HIV testing/counseling(HTC), ART, and male circumcision(MC) on community HIV incidence is unknown, particularly in settings with both high HIV prevalence and high baseline ART coverage such as Botswana.

Methods: The Ya Tsie Botswana Prevention Project was a pair-matched community-randomized trial that evaluated the impact of prevention interventions on HIV incidence in 30 rural/semi-urban communities throughout Botswana, from 2013-2018. Fifteen communities were randomized to receive community-wide HTC, linkage-to-care, earlier ART initiation, and enhanced MC services, and 15 communities received standard of care. Universal ART became standard of care in both arms mid-2016. A random sample of ~20% of households in each community was selected, and HIV-uninfected 16-64 year-old residents of these households enrolled in a longitudinal HIV incidence cohort (HIC) that underwent ~annual HTC. We compared HIV incidence by randomized arm over ~30 months. The pre-specified primary analysis used a permutation test of inverse variance weighted average of log- transformed incidence ratios from pair-specific, interval-censored Cox proportional hazards models (PHM); 95% CIs were obtained using standard pair-stratified Cox PHM for interval censored data. P-values are two-sided.

Results: Among 12,610 participants, at baseline 29% were HIV-infected, 72% of whom were already on ART (97% of individuals on ART had HIV-1 RNA < 400copies/mL). We enrolled 8,974 HIV-uninfected individuals in the HIC (4,487/arm), with median age 29 years (60% female). The median duration of follow-up was 29 months, and 95% of participants in each arm re-tested for HIV at >1 follow-up visit. 57 HIC participants in the intervention arm (annualized HIV incidence: 0.59%) and 90 in the control arm (annualized HIV incidence: 0.92%) acquired HIV. The HIV incidence ratio was 0.69 (P=0.09) in intervention vs. standard-of-care communities in the primary weighted-average Cox PHM. The pair-stratified Cox PHM produced 95%CI of 0.46-0.90 (incidence ratio=0.65, P=0.01).

Conclusions: We observed a 30% reduction in community HIV incidence with expanded HTC, linkage, ART, and MC campaigns. Importantly, our findings demonstrate that it is possible to reduce HIV incidence in high-HIV-prevalence settings that have already approached the ambitious UNAIDS 90-90-90 targets, by further increasing coverage.

[Figure 1A-B]

[More information](#)