Poster # 984

Cross-sectional HIV incidence at scale-up of ART in 24 rural communities in Botswana

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BACKGROUND

•Evaluation of HIV incidence in a population plays an important role in monitoring of HIV/AIDS epidemic and in evaluation of public health interventions.

•Knowledge of incidence rates is especially important for evaluation of large scale-up HIV preventive interventions.

•Direct real-time estimates of HIV incidence using cross-sectional sampling can provide critical information for design and evaluation of HIV prevention interventions.

•The ongoing scale-up of ART in southern African countries presents a substantial challenge to the accuracy and reliability of cross-sectional methods used for identification of HIV recency.

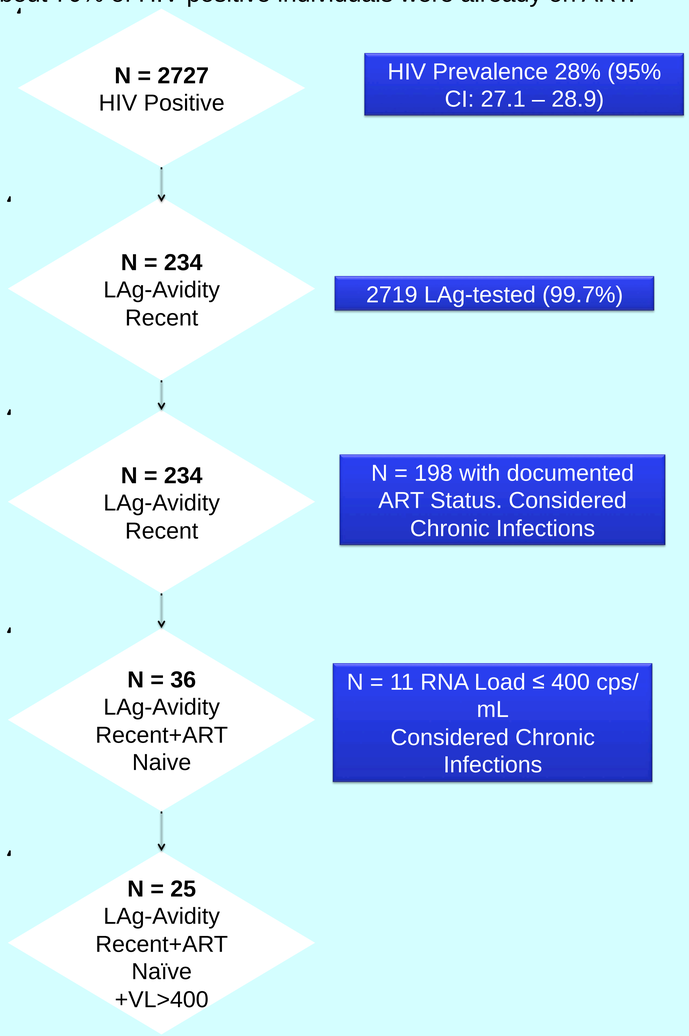
•We estimated HIV Incidence during household surveys in 24 rural communities from Oct 2013 to Aug 2015 using a algorithm combining Limiting Antigen Assay, viral load and documented ART status.

METHODS

- HIV recency was estimated at the baseline of the Botswana Combination Prevention Project (BCPP).
- Cross-sectional data were collected during household surveys in 24 rural communities from Oct 2013 to Aug 2015.
- An HIV incidence testing algorithm combining the Limiting-Antigen Avidity Assay (LAg-Avidity EIA) with documented ART status and level of HIV-1 RNA load (multi-assay algorithm described in Rehle et al., 2015[1] was used.
- The LAg cut-off normalized optical density was 1.5. ART status was documented. The HIV-1 RNA cut-off was 400 cps/mL.
- The Mean Duration of Recent Infection was 130 days and the False Recent Rate was set to zero. Incidence was calculated using the Assay-Based Incidence Estimation (ABIE) version 3 (Kassanjee et al., 2012)[2]

RESULTS

- A total of 2,727 individuals tested HIV-positive among 9,745 individuals with definitive HIV status (28.0% HIV prevalence, 95% CI 27.1%–28.9%) during the baseline household surveys.
- About 70% of HIV-positive individuals were already on ART.



RESULTS

- Thus, 25 LAg-Avidity EIA recent, ARV-naïve individuals with HIV-1 RNA above 400 cps/mL were classified as individuals with recent HIV infections. HIV incidence across 24 communities was estimated at 1.00% (95% CI 0.60%–1.41%).

CONCLUSIONS

- The increasing scale-up of ART in southern African communities requires adjustment of cross-sectional methods for identification of HIV recency.
- An algorithm that combines LAg-Avidity EIA testing with ART status and HIV-1 RNA data was used to estimate baseline HIV recency in 24 rural communities at baseline of the BCPP.
- This algorithm should be validated by longitudinal HIV incidence data in the future. HIV incidence in rural communities in Botswana was estimated at 1.0% in 2013–2015.

REFERENCES

1. Rehle, T., et al. (2015). "A Comparison of South African National HIV Incidence Estimates: A Critical Appraisal of Different Methods." PLoS ONE 10(7): e0133255

2. Kassanjee R, McWalter TA, Bärnighausen T, Welte A. A new general biomarker-based incidence estimator.Epidemiology. 2012; 23(5): 721-728.

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