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Marked mortality and retention under-reporting in a large HIV program in Zambia

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BACKGROUND

Mortality and retention after entry into HIV care are crucial metrics of effectiveness of services in a region. However, under routine program conditions, deaths are underreported and overall estimates of mortality and retention and site-to-site variability in these outcomes may be biased. As a result, these vital metrics of performance cannot be reliably used for program improvement practices.

Retention to HIV care is a critical aspect of a successful Little is know about the outcomes among those in Zambia receiving HIV care that become lost to follow-up (LTFU) . To describe in more detail the how those in the HIV LTFU population a countrywide sample-based approach was employed in a rigorous tracing effort.

METHODS

We undertook a multi-stage sampling approach in which we selected a probability sample of facilities from a network of 70 facilities offering HIV care and treatment in Zambia, and then selected a simple random sample of lost patients within each facility for intensive vital status ascertainment. Deaths and in-care patients identified by tracing lost patients were used to revise overall outcome estimates through probability weights.

The Zambian national HIV care database was used to identify individuals that had been lost to follow-up. Lost to follow-up status was defined as no contact with the clinic >90 days and/or as last missed appointment date or a visit within the past 180 days of care.

Tracing teams were trained and deployed to HIV heath care facilities across Zambia. Patient records were reviewed for contact details and locator information. Tracers searched for identified LTFU sample over a two year period site-by-site.

RESULTS

Among a cohort of 54,172 patients newly starting ART in 30 facilities (63% women, median age 35 years at enrollment (IQR: 29-42) and median ART initiation CD4 level of 266 cells/mm3 (IQR: 141-395)), 11,152 were lost to follow up over two years (20%). The median clinic-level loss to follow up was 26% (IQR: 22%-28%, range 20% to 40%).

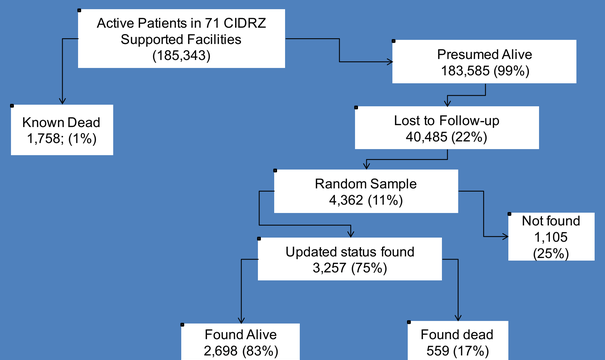


Figure 1. Tracing results

Among a random sample of 18% of all lost patients, 75% of outcomes were ascertained. Median clinic mortality among the lost across the 30 sites was 12% (IQR 8% to 17%, range 4% to 27%). Once outcomes among the lost were incorporated into overall estimates of mortality in the entire cohort, mortality at two years from ART rose from 2% (95% CI: 2% to 2%) to 9% (95% CI: 8% to 10%). Median site level mortality across the 30 sites was 9% (IQR: 5% to 15%, range 3% to 19%). The median ratio difference was 6-fold with IQR of 4-fold to 12-fold (Figure). Estimated retention across all sites was 61% at one year and 42% at two years, which rose to 86% and 78% upon incorporation of outcomes ascertained by tracing.

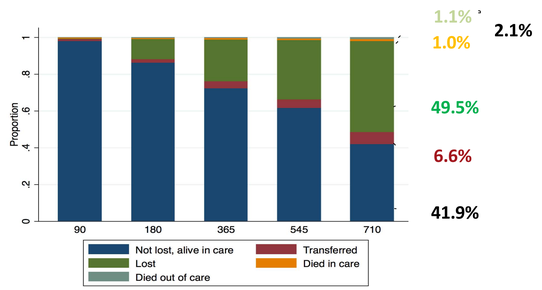


Figure 2. "Naïve" Outcomes Among New ART Initiators (N=54,240)

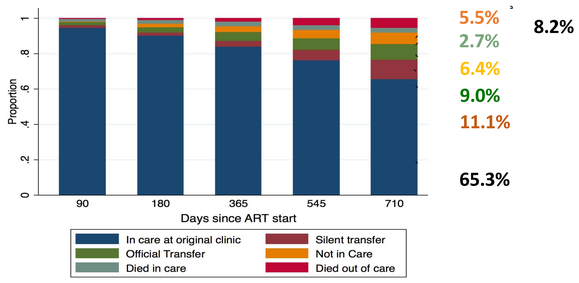


Figure 3. Revised Estimates in New ART Initiators Based on Sampling Lost to Follow-up (N=54,240)

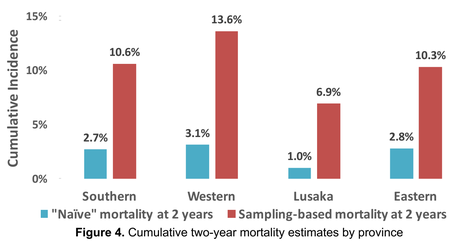


Figure 4. Cumulative two-year mortality estimates by province

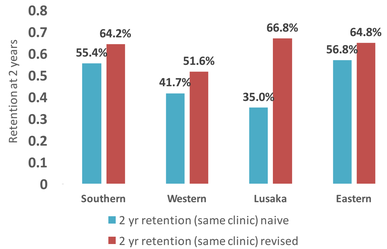


Figure 5. Two-year naïve and revised clinic retention estimates

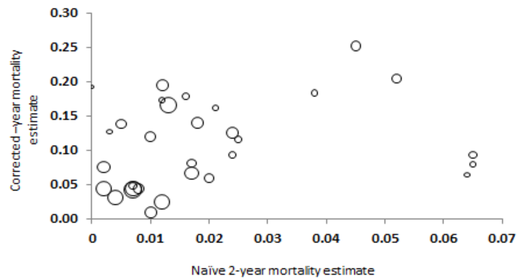


Figure 6. Mortality two years after ART initiation as estimated from passively reported mortality data (naïve) and after correction using a sampling based approach. Size of marker is proportional to clinic size. (N=54,172)

CONCLUSION

Routine program monitoring underestimated both mortality and retention outcomes, thus threatening to undermine assessments of public health effectiveness. A sampling based approach revealed that both the extent of underestimation and the actual revised mortality estimates differed markedly across facilities. Improved assessments of mortality and retention by facility can inform where to target efforts for improved outcomes.