

Risk factors for recent HIV infection in Zambia, 2020

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BACKGROUND

Zambia has made significant progress toward achieving the UNAIDS 95-95-95 targets. As Zambia approaches HIV epidemic control, identifying recently infected (<1 year) persons is important to interrupt HIV transmission chains.

- Persons with recent infection are likely to be undiagnosed with a high viral load (VL), while still engaging in the risk behaviors that led to their infection.
- Rapid tests for recent infection (RTRI) can distinguish between recent and long-term infections. Results are confirmed by VL testing.

The Zambia Ministry of Health instituted HIV recent infection surveillance in 2019.

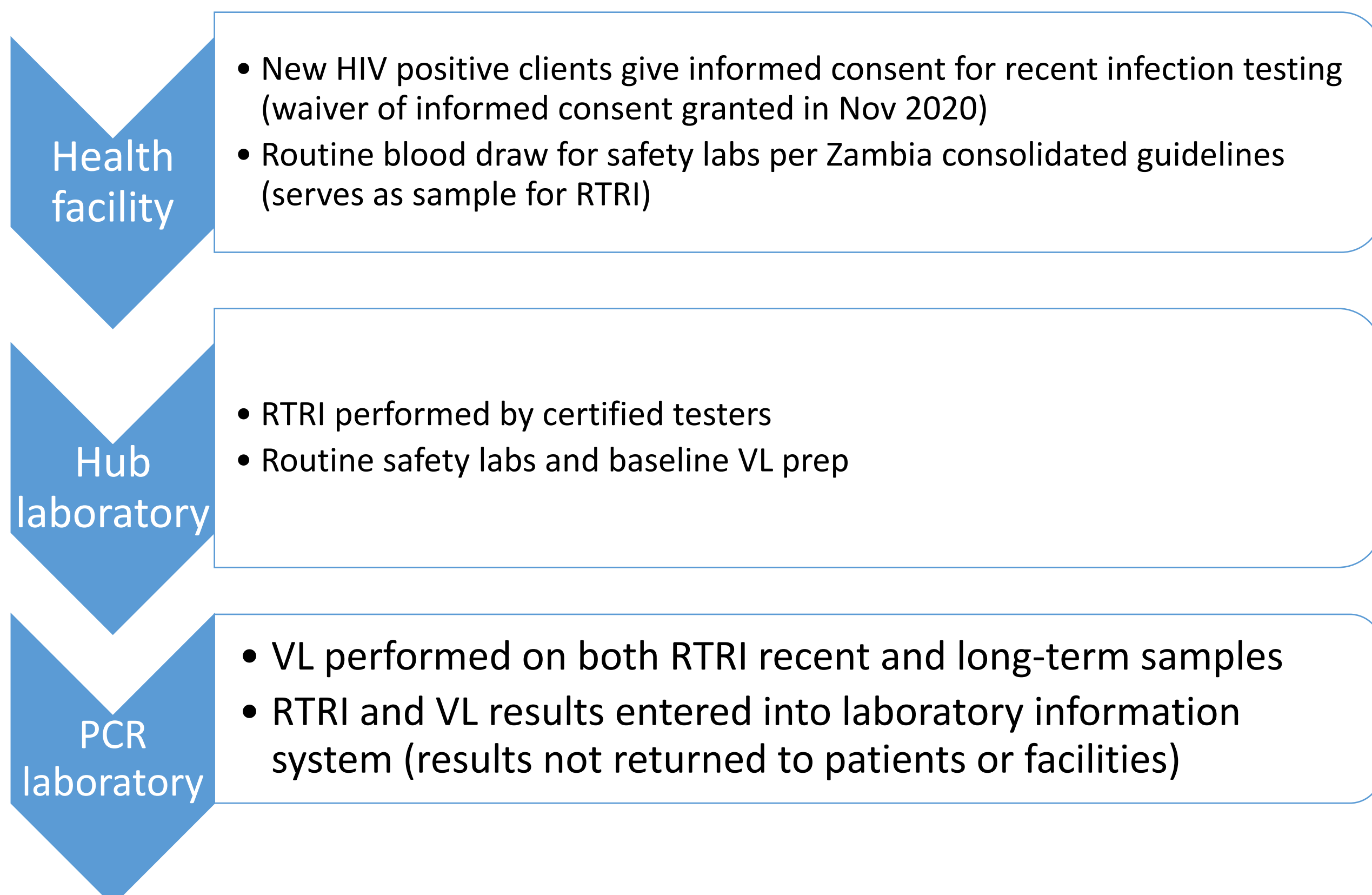
- Primary objectives of the program include identification of geographic areas and demographic characteristics associated with recent infection. This information can be used to target prevention interventions to specific high-risk population groups in Zambia.
- In 2020, the national program rolled out in Zambia's two highest HIV burden provinces, Lusaka and Copperbelt, which contribute approximately half of newly diagnosed HIV positives annually.

This analysis describes risk factors for recent HIV infection among newly diagnosed HIV-positive clients enrolled in the surveillance program.

METHODS

RTRIs were performed at hub laboratories on whole blood samples from newly diagnosed HIV-positive clients aged 15+ years using the Asante™ rapid test (Figure 1). Patients with recent RTRI results and unsuppressed HIV viral load (VL) results (>1000 copies/ml) were classified as confirmed recent infections.

Figure 1. Zambia recent infection testing algorithm



Proportions of confirmed recent infections were calculated by sex, age group, geography (province/district) and testing modality (VCT, PITC, Index, PMTCT, and VMMC) and multivariate logistic regression was used to identify associations between these factors and recent infection status.

RESULTS

Overall, 2,748 persons were tested for recent infection, and 1,940 (71%) with complete demographic information and VL testing were included in this analysis (Table 1).

Table 1. Characteristics of persons enrolled in Zambia recent infection surveillance program, 2020

| | Clients with confirmed long-term infections (%) | Clients with confirmed recent infections (%) |
|-------------------------|---|--|
| Sex | | |
| Male | 748 (94.4) | 44 (5.6) |
| Female | 1,025 (89.3) | 123 (10.7) |
| Age group | | |
| 15-24 | 299 (84.5) | 55 (15.5) |
| 25-34 | 737 (91.4) | 69 (8.6) |
| 35-44 | 517 (94.0) | 33 (6.0) |
| 45+ | 220 (95.7) | 10 (4.3) |
| Province | | |
| Lusaka | 1,065 (90.0) | 118 (10.0) |
| Copperbelt | 708 (93.5) | 49 (6.5) |
| Testing modality | | |
| Index | 175 (94.1) | 11 (5.9) |
| PMTCT | 506 (92.0) | 44 (8.0) |
| VCT | 641 (91.7) | 58 (8.3) |
| PITC | 192 (90.6) | 20 (9.4) |
| VMMC | 6 (85.7) | 1 (14.3) |
| Other | 253 (88.5) | 33 (11.5) |
| Total | 1,773 (91.4) | 167 (8.6) |

The overall prevalence of recent infection was 8.6%. The prevalence was 10.7% among females versus 5.6% among males ($p < 0.001$). The prevalence was highest in ages 15-24, followed by ages 25-34, 35-44, and >45 years (15.5%, 8.6%, 6.0% and 4.3%, respectively).

When controlling for other variables, youth ages 15-24 (OR=1.5, 95% CI: 1.2-1.9) and females (OR=1.6, 95% CI: 1.1-2.4) were significantly more likely to present with recent infection. District-level geography and testing modality were not significantly associated with recent infection status.

CONCLUSIONS

One in 12 newly diagnosed persons with HIV in Zambia were infected within the last year. Women and youth have higher prevalence of recent HIV infection.

LIMITATIONS

- Stock-outs of RTRI test kits were common in certain high-volume hub laboratories throughout most of 2020, resulting in potential geographical bias in results.
- Restrictions on travel and in-person gatherings due to COVID-19 throughout 2020 limited ability to respond to health facilities and laboratories experiencing programmatic challenges.
- Until a waiver of informed consent was granted in November 2020, the written consent process was burdensome for site-level staff, particularly at certain high-volume HTS entry points, and limited enrollment in the program.

Targeted scale-up of evidence-based interventions, such as PrEP, contact tracing and counseling is needed to decrease transmission rates among these high-risk groups. HIV recent infection surveillance should continue to track population-specific recent infection trends over time as a measure of progress toward HIV epidemic control.

