



Declining and stagnant trends in recent HIV-1 infection may suggest delays in diagnosis. Recency surveillance can capture programmatically relevant trends to inform testing strategies.

Trends in recent HIV-1 infection among new diagnoses in Eswatini and Rwanda, 2019–2021

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Background

As countries progress towards achieving 95% of people living with HIV (PLHIV) aware of their HIV status, new PLHIV diagnoses should comprise more recent and fewer long-term infections. We assessed trends in the proportion of recent HIV infections over time in Eswatini and Rwanda, where 87% (SHIMS2 2016–2017) and 83% (RPHIA 2018–2019) of HIV positive adults know their status, respectively.

Methods

- Utilized surveillance data from health facilities reporting ≥ 1 new PLHIV diagnoses that were tested for recent infection using the recent infection testing algorithm (RITA) each quarter.
 - A RITA is a combination of laboratory tests used to classify an HIV infection as recent or long-term. Using RITA, new diagnoses were classified as recent if rapid test for recent infection (RTRI) results indicated a recent infection and viral load (VL) was ≥ 1000 copies/mL.
 - A recent infection is a HIV-1 infection likely acquired < 12 months ago.
- We fit linear regression models using generalized estimating equations with robust variances to estimate the average change in the proportion RITA recent within each facility by quarter during the period of analysis.
 - Proportion RITA recent is the number of recent infections on RITA divided by the total number tested on RITA (either RTRI recent and had VL testing done, or RTRI long-term).
- Subgroup analyses examined results by age (< 30 and ≥ 30 years old), by sex, and by COVID-19 period (pre-COVID-19: April 2019–March 2020 and during COVID-19: April 2020–June 2021).
- Data analyses were conducted using SAS[®] 9.4 (SAS Institute Inc., Cary, NC).

Results

Eswatini:

- The proportion RITA recent decreased from 8.3% to 3.1% during July 1, 2019–June 30, 2021 (Figure 1).
- On average, the proportion RITA recent decreased by a factor of 0.85 (95% CI: 0.80–0.91) each quarter, overall. Significant decreases were observed in the pre-COVID-19 period (0.85; 0.73–1.00) but not during the COVID-19 period (1.00; 0.9–1.12) (Table 1).
- In subgroup analyses (Table 1), a statistically significant decline in the proportion RITA recent was observed among:
 - Females overall [0.87; 0.83–0.92] and in the pre-COVID-19 period [0.85; 0.73–1.00]
 - Clients < 30 years overall [0.88; 0.83–0.93] and in the pre-COVID-19 period [0.79; 0.68–0.91]
 - Clients ≥ 30 years overall [0.86; 0.76–0.99]

Rwanda:

- The proportion RITA recent remained stable (April–June 2019 quarter: 6.8% to April–June 2021 quarter: 4.9%) (Figure 1).
- No independent effect of quarterly calendar time on the proportion RITA recent by age, sex or COVID-19 period was observed (Table 1).

Conclusions

These declining or stagnant trends over the past two years may suggest missed opportunities to identify PLHIV early in their infection. Recency surveillance can help assess and inform testing interventions to reach and sustain epidemic control.

Figure 1: Proportion recent on the Recent Infection Testing Algorithm per quarter in Eswatini (July 1, 2019–June 30, 2021) and in Rwanda (April 1, 2019–June 30, 2021)

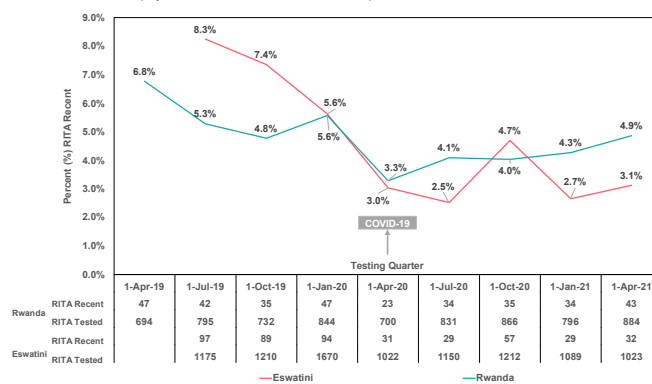


Table 1: Mean unit change in proportion recent on the Recent Infection Testing Algorithm per quarter in Eswatini (July 1, 2019–June 30, 2021) and in Rwanda (April 1, 2019–June 30, 2021)

| Country | Subgroup | Model | Total facilities | Total tested on RITA ¹ | Total RITA recent | Mean unit change in % RITA recent, β (95% CI) | P-value |
|-----------------------|-----------------|-----------------|------------------|-----------------------------------|-------------------|---|---------|
| Eswatini ² | None | Overall | 35 | 9551 | 458 | 0.85 (0.80, 0.91) | <0.001 |
| | | Pre-COVID-19 | 35 | 4055 | 280 | 0.85 (0.73, 1.00) | 0.04 |
| | | During COVID-19 | 35 | 5496 | 178 | 1.00 (0.90, 1.12) | 0.94 |
| | Female Only | Overall | 34 | 5104 | 339 | 0.87 (0.83, 0.92) | <0.001 |
| | | Pre-COVID-19 | 34 | 2299 | 205 | 0.85 (0.73, 1.00) | 0.04 |
| | | During COVID-19 | 34 | 2805 | 134 | 0.97 (0.87, 1.09) | 0.63 |
| | Male Only | Overall | 26 | 3046 | 84 | 0.85 (0.72, 1.01) | 0.06 |
| | | Pre-COVID-19 | 26 | 1439 | 57 | 0.90 (0.63, 1.29) | 0.57 |
| | | During COVID-19 | 26 | 1607 | 27 | 1.25 (0.93, 1.68) | 0.14 |
| | <30 years | Overall | 32 | 3656 | 319 | 0.88 (0.83, 0.93) | <0.001 |
| | | Pre-COVID-19 | 32 | 1727 | 195 | 0.79 (0.68, 0.91) | <0.001 |
| | | During COVID-19 | 32 | 1929 | 124 | 0.98 (0.87, 1.10) | 0.71 |
| Overall | | 30 | 4422 | 96 | 0.86 (0.76, 0.99) | 0.03 | |
| Pre-COVID-19 | | 30 | 1977 | 63 | 1.04 (0.71, 1.51) | 0.84 | |
| During COVID-19 | | 30 | 2445 | 33 | 1.20 (0.95, 1.51) | 0.13 | |
| Rwanda ² | None | Overall | 97 | 7142 | 340 | 0.95 (0.90, 1.01) | 0.09 |
| | | Pre-COVID-19 | 97 | 3065 | 171 | 0.95 (0.81, 1.11) | 0.5 |
| | | During COVID-19 | 97 | 4077 | 169 | 1.08 (0.94, 1.25) | 0.26 |
| | Female Only | Overall | 63 | 3798 | 201 | 0.96 (0.89, 1.03) | 0.23 |
| | | Pre-COVID-19 | 63 | 1554 | 96 | 0.98 (0.83, 1.17) | 0.87 |
| | | During COVID-19 | 63 | 2244 | 105 | 1.04 (0.88, 1.24) | 0.63 |
| | Male Only | Overall | 30 | 1362 | 49 | 0.91 (0.83, 1.01) | 0.08 |
| | | Pre-COVID-19 | 30 | 643 | 27 | 0.81 (0.56, 1.17) | 0.26 |
| | | During COVID-19 | 30 | 719 | 22 | 0.96 (0.75, 1.23) | 0.77 |
| | <30 | Overall | 44 | 2162 | 136 | 0.95 (0.88, 1.03) | 0.23 |
| | | Pre-COVID-19 | 44 | 893 | 71 | 1.09 (0.90, 1.32) | 0.38 |
| | | During COVID-19 | 44 | 1269 | 65 | 1.14 (0.96, 1.34) | 0.13 |
| ≥ 30 | Overall | 51 | 2817 | 105 | 0.94 (0.85, 1.04) | 0.25 | |
| | Pre-COVID-19 | 51 | 1198 | 53 | 0.90 (0.69, 1.17) | 0.43 | |
| | During COVID-19 | 51 | 1619 | 52 | 1.04 (0.81, 1.32) | 0.77 | |

¹Defined as the total number of persons tested on RITA (either RTRI recent and had viral load testing done, or RTRI long-term)
²Subgroup analyses by period examined trends in the proportion of recent HIV infections pre-COVID-19 (Eswatini: July 1, 2019–March 31, 2020; Rwanda: April 1, 2019–March 31, 2020) and during COVID-19 (April 1, 2020–June 30, 2021).

Additional Resources

1. <https://icap.columbia.edu/where-we-work/trace/>
2. <https://trace-recency.org>

