

The feasibility and challenges of diagnosing and treating acute HIV infection (AHI) in a resource limited high HIV incidence setting in Eswatini

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Background

- Eswatini (formerly Swaziland) has the highest HIV incidence and prevalence in the world.
- Diagnosing and treating HIV infection before sero-conversion (acute HIV infection, [AHI]) may be crucial to reduce HIV transmission and increase patient health benefits.**
- Therefore, AHI care may contribute to achieving the UNAIDS 90-90-90 cascade targets.
- The diagnosis and treatment of AHI is routine practice in many well-resourced settings.
- However, **AHI care remains challenging in resource-poor settings**, limiting HIV epidemic control in high HIV incidence populations and settings.



Figure 1: Map of Eswatini and study site (red circle)

Objective:

We evaluated the feasibility of diagnosing and treating AHI in a high HIV incidence setting in Eswatini

Methods

- Patients were prospectively screened for and diagnosed with AHI using Xpert HIV-1 viral load (VL) quantification in one secondary care outpatient department in Shiselweni (Eswatini), from March to October 2019.
- Patients were eligible for VL testing if:**
 - HIV-negative as per routinely used rapid-diagnostic-tests (RDT) (Alere Determine™, Unigold™) **AND** had conditions suggestive of AHI (fever/ sore throat/ symptoms of sexual transmitted infection (STI)),
 - OR** had an inconclusive RDT test result, or
 - OR** were referred from the pre- and post-exposure prophylaxis programme as a presumptive AHI case.
- AHI was confirmed if** at least two VL measurements were between 40 to 9,999 copies/mL, or one VL measurement $\geq 10,000$ copies/mL.
- The RDT, VL testing and evaluation of risk factors of AHI were all performed on the day of study enrolment.
- We used descriptive statistics and Kaplan-Meier estimates to describe the AHI care continuum. Generalized linear models determined predictors of highly infectious cases of AHI, defined as patients with VLs $> 10,000$ copies/mL.

Results

Baseline characteristics

- Of 531 patients screened for AHI, **22 (4.1%) had AHI with a median VL of 53,100 (IQR: 4,980-903,000) copies/mL**. Seven (1.3%) had two VL results between 40 to 9,999 copies/mL and 15 (2.8%) had a VL $\geq 10,000$ copies/mL. The majority was women (77.3%; n= 17).

Predictors of AHI

- Predictors of highly infectious AHI (VLs $\geq 10,000$ copies/mL) were an **inconclusive RDT test result** (aRR 12.74; 95% CI: 3.81-42.65), **diagnosed sexually transmitted infection** (aRR 2.87; 1.22-6.72), **oral ulcer** (aRR 9.15; 4.21-19.87) and patient self-reported **fatigue** (aRR 4.14; 1.53-11.26).

ART initiation

- Of all AHI cases (n=22), **14 (63.6%) initiated ART at a median of 1.5 (IQR 0-4) days** since diagnosis of AHI, with 5 (35.7%) on the same day as diagnosis.

Retention on ART

- Overall **ART retention at the study site was 78.6%** (95% CI: 47.3%-92.5%) and **71.4%** (40.6%-88.2%) at **14 and 180 days** after treatment start.

Viral suppression

- Of patients due for VL testing and available VL measurements, 7/10 (70.0%), 8/9 (88.9%) and 6/6 (**100%**) had a **suppressed VL** at 2 weeks, 2 and 3 months after ART initiation.

Partner notification of AHI cases

- Of 20 sexual partners notified, 2 were already on ART, 8 did not present to the clinic, and 10 were contacted of whom **6 (60%) were found HIV positive**.

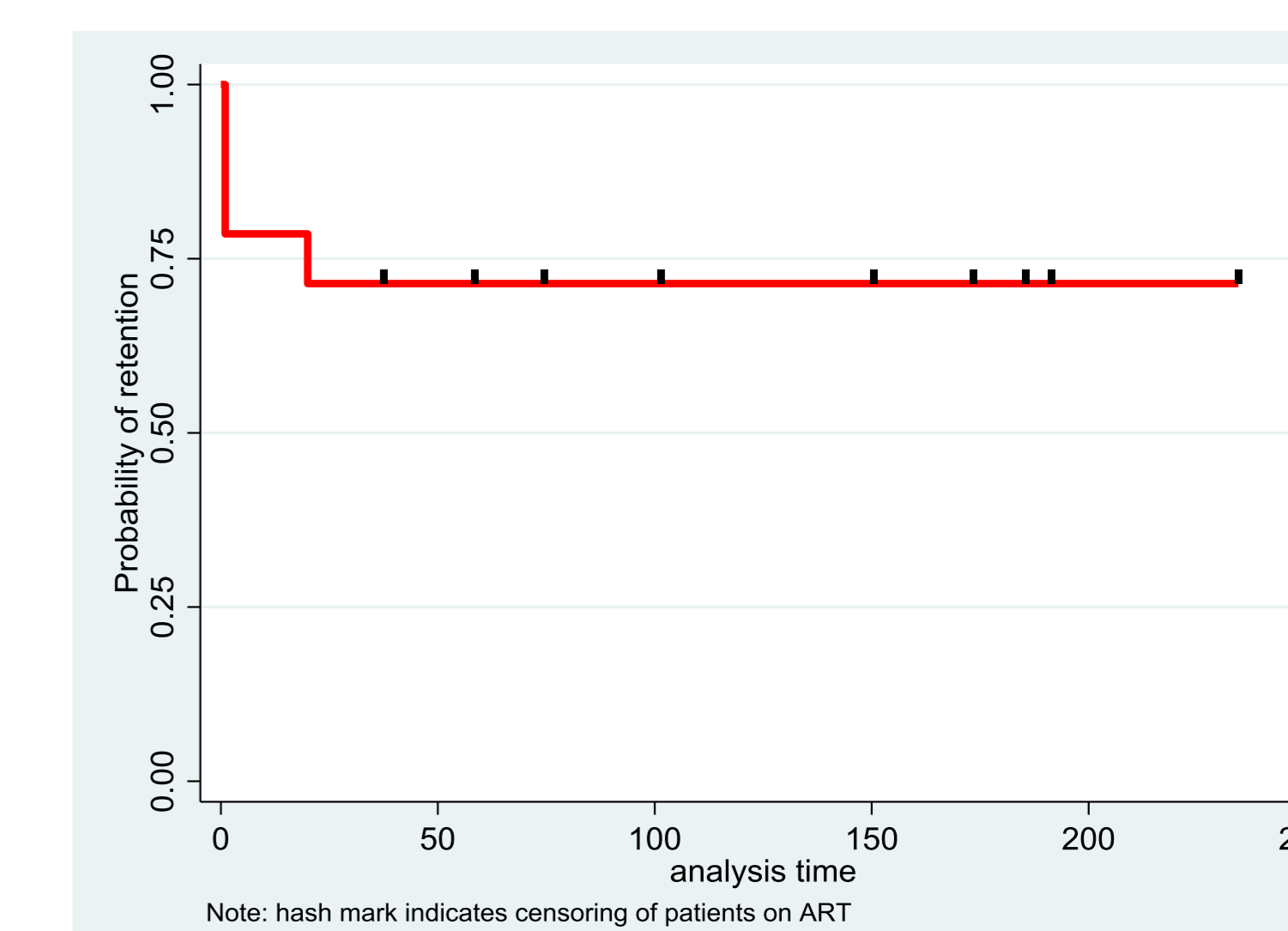


Figure 2: Kaplan-Meier estimate of retention on ART

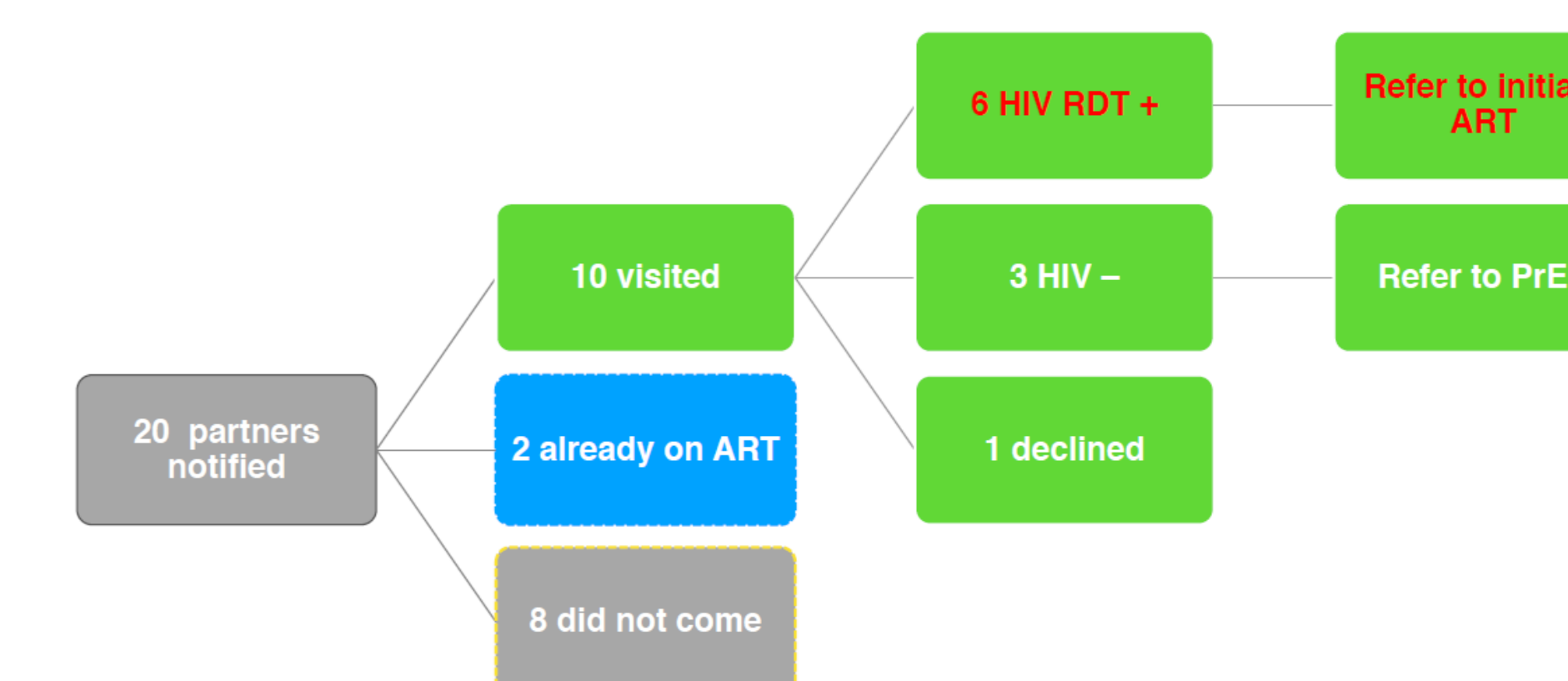


Figure 3: Outcome of partner notification services

Conclusions

- AHI screening can contribute to timely HIV diagnosis with potential public health benefits.
- Despite rapid VL suppression, ART initiation and retention remained suboptimal.
- Partner notification services show potential to further contribute to HIV case finding