Lost at the point of care: Failures of Point-of-Care Diagnostics in Advanced HIV Care

CROI 2026
1097

Jonathan Falconer[1,4], Montserrat Barrios[8], Romao Sabuni[6], Oulare Ibrahima[3], Barry Ibrahima[3], Naftal Joao[8], Nordino Munieca,[8] Gisele Mucinya,[2] Sako Fodé Bangaly[3], Rollin Ndombe[2], Tom Ellman[1], Petros Isaakidis[1], David Lawrence[5] , Joseph Jarvis,[5] Esther Casas[1], Nelesh P. Govender[4] on behalf of the AmbiOne study group

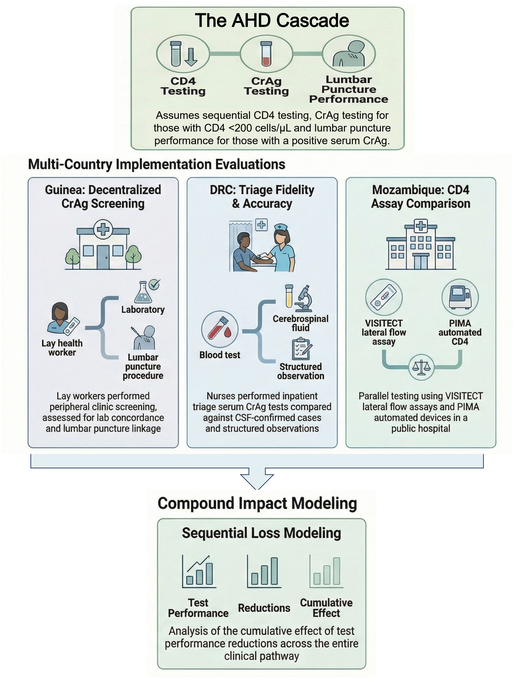
1, South African Medical Unit (SAMU), Medecins Sans Frontieres, OCB-Brussels, 2, Centre Hopital Kabinda (CHK), Kinshasa, MSF, OCB-Brussels, 3, Unite Sante Formation Recherche (USFR), Conakry, MSF, OCB-Brussels, 4. University of the Witwatersrand, Johannesburg, South Africa, 5, London School of Hygiene and Tropical Medicine (LSHTM), London, UK, Beira Central Hospital, Beira, Mozambique, MSF OCB-Brussels

BACKGROUND

- Point-of-care (POC) diagnostics are increasingly central to the World Health Organisation (WHO) recommended advanced HIV disease (AHD) care package.
- Laboratory evaluations define test performance under controlled conditions, but **real-world implementation gaps may substantially reduce effectiveness**.
- We evaluated cascade attrition in CD4 and POC cryptococcal antigen (CrAg) testing across three Médecins Sans Frontières (MSF)-supported HIV programs.

METHODS

- Evaluations were conducted in Guinea, Democratic Republic of Congo (DRC), and Mozambique to assess attrition rates of POC testing at different stages of the AHD diagnostic cascade.
- Retrospective program data at baseline was taken as "pre-implementation". Bespoke implementation packages for each stage were implemented and a prospective post-implementation evaluation conducted.
- **Ideal performance minus observed performance was defined as the attrition rate at each stage.**



Implementation gaps in point-of-care testing were associated with 66% diagnostic attrition across the advanced HIV cascade.

RESULTS:

CD4 detection of AHD (VISITECT in Mozambique):

- *Pre-implementation*: VISITECT detected fewer patients with CD4 <200 than PIMA (31% [160/508] vs 45% [234/517], p<0.001) (April – June 2025). *Attrition rate = 45% – 31%: 14%*
- *Post-implementation*: After quality control strengthening (improved lighting, refresher training, double blinded result reading) in October 2025, **VISITECT detection of CD4 <200 cells/µL increased to 40.8%** [601/1473], approaching the expected AHD prevalence identified by PIMA (figure 1). *Attrition rate = 45% -41%: 4%*

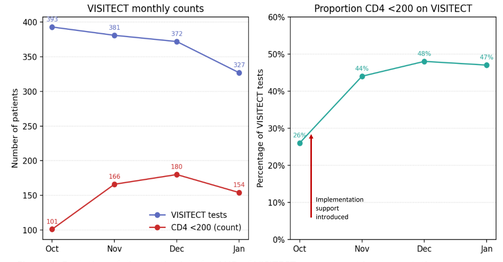


Figure 1: Evolution of diagnostic yield for AHD of VISITECT pre and post implementation

Serum CrAg performance at triage (Emergency department in the DRC):

- *Pre-implementation:* **22% (47/218) of CSF-confirmed cryptococcal meningitis cases (2021-23) had false-negative serum CrAg at triage**. Procedural errors like insufficient sample volume and reading errors were common. *Attrition rate = 22%*
- *Post–implementation*: Following retraining and laboratory-supervised quality assurance, the false-negative serum CrAg rate among confirmed cases decreased to 9% [(8/88), 2024 –25]. *Attrition rate = 9%.*

Decentralised CrAg testing and LP linkage (Primary care in Guinea)

- *Pre-implementation:* 1,177 CrAg tests were performed in primary care clinics with 2.5% positivity (30/1,177). **At baseline among those eligible for LP, linkage was 51%** (20/39) and concordance of CrAg testing with central labs 58% (7/12) (2022 – '23). *Attrition rate = 100%-51%: 49%.*
- *Post-implementation:* **With referral and transport support, linkage rose to 86% (12/14) and concordance to 92%** (11/12) (May – Oct' 24). (Figure 3). *Attrition rate = 100% -86%: 14%.*

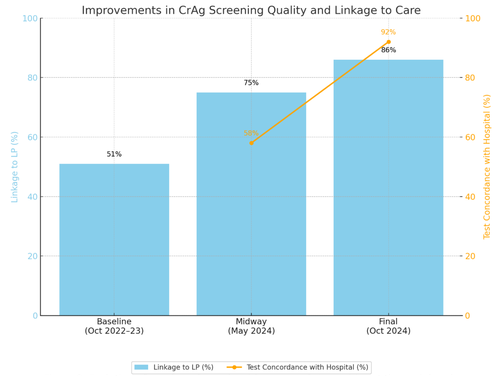
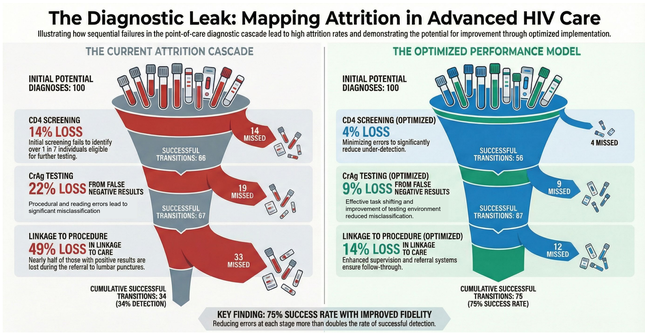


Figure 3: Evolution of number of people with a serum CrAg positive at the peripheral health centre that is effectively linked for lumbar puncture (blue bars) and how many CrAg positives are confirmed to be true positives on repeat testing at the hospital laboratory (orange marker).

Modelled attrition rate across the AHD cascade:

The compound impact of these implementation challenges across the AHD/cryptococcal cascade may result **in up to 66% of cases being missed (figure 4). This could reduce to 25% with implementation support.**



CONCLUSIONS

- Procedural and workflow gaps in point-of-care (POC) testing can substantially reduce effective diagnostic yield.
- **Improved performance following structured supervision and quality assurance indicates that under-detection was implementation-driven rather than intrinsic assay failure.**
- Compounded across CD4 testing, CrAg screening, and lumbar puncture completion, **these gaps could result in up to 66% attrition of true cryptococcal meningitis diagnoses.**

PLAIN LANGUAGE SUMMARY

Diagnostics for people living with advanced HIV disease in low resource settings are increasingly performed at the bedside instead of in the laboratory, support for use of these tests is necessary to avoid missed diagnoses due to implementation gaps.

FUNDED BY NIHR
This research was in part funded by the NIHR (project 134342) using UK aid from the Government to support global health research. The views expressed in this publication are those of the author(s) and not necessarily those of the NIHR or the UK government.