Lessons Learned from Implementation of Cryptococcal Meningitis (CM) Care Package for People with Advanced HIV Disease (AHD) in Delhi, India

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People Living with HIV (PLHIV) newly initiating on Antiretroviral Therapy (ART) were ~23% more likely to present with AHD. We effectively operationalized screening of PLHIV with AHD via Cryptococcal Antigen Lateral Flow Immunoassay (CrAg LFA) within the existing setup and reflexively tested CD4 samples, leading to ~100% coverage via same-day screening.

Background

Definition of AHD

PLHIV aged >5 years with CD4 <200 cells/mm³ or WHO Stage 3/4, and children <5 years not on ART for up to a year and not clinically stable are considered to have AHD[1].

Significance of AHD

PLHIV with AHD are highly immunologically compromised, susceptible to HIV-related opportunistic infections (OIs), and hence require frequent monitoring and rapid management of OIs, including CM.

Progress of AHD Care in India

In India, 35%-40% of PLHIV register in care with CD4<200 cells/mm³. To differentiate care for PLHIV with AHD, the National AIDS Control Program (NACP) included AHD care packages in treatment guidelines in 2021[2]. However, delivery of these packages at HIV treatment centers is currently underway.

Objectives

- Operationalize the recommended package of CM care for PLHIV with AHD
- Document experiences and learnings from the implementation to inform national scale-up

Description of Methodology

In 2022, we implemented CrAg LFA screening and CM care for PLHIV with AHD at Maulana Azad Medical College (Delhi, India) as per national guidelines (*Figure 1 and 2*).

Figure 1: Cascade of Care Offered to PLHIV

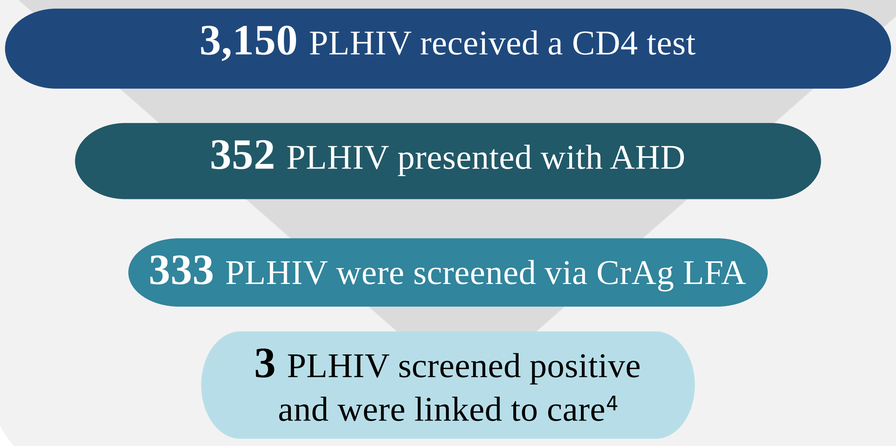
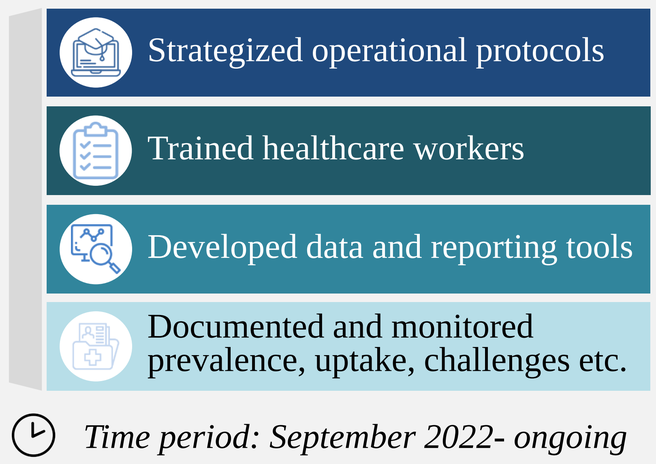


Figure 2: Capacity Building Measures



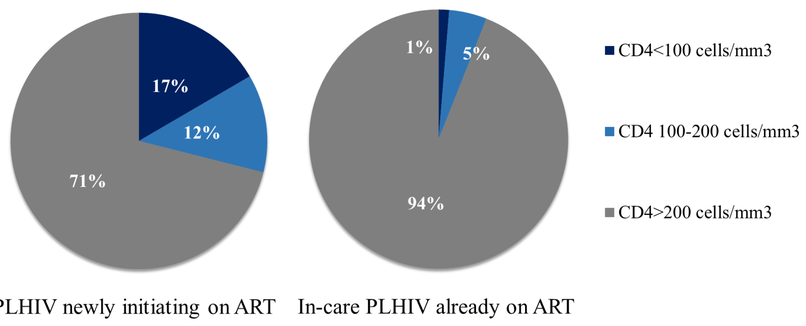
Time period: September 2022- ongoing

Lessons Learnt

Prevalence of AHD

- **CD4 Distribution:** 3,150 PLHIV underwent CD4 testing, of whom 243 (**7.7%**) had CD4<200 cells/mm³. However, the proportion of PLHIV newly initiating on ART with CD4<200 cells/mm³ (28.9%) was higher by **22.9%** than that of in-care PLHIV on ART (6.0%). Of the newly initiating PLHIV with AHD, 39 (**57.4%**) had CD4<100 cells/mm³ (*Figure 3*).

Figure 3: CD4 Distribution based on ART initiation



- **Demographic Distribution:** Of the 352 PLHIV, AHD prevalence was highest among adults aged **20-49 years** (84.7%), **males** (79.0%) and **heterosexuals** (50.9%).
- **Status in Care:** Only 18.2% of the 352 PLHIV with AHD presented with **WHO Stage 3/4**. Of 345 PLHIV with AHD[3], 87.5% PLHIV were on ART, 4.6% had a loss-to-follow-up, and 4.4% died. Of 349 PLHIV with AHD[3], AHD prevalence was highest among those for whom 5-10 years (**23.5%**), 2-5 years (18.1%) and >10 years (14.6%) had passed since ART was initiated.

Operational Improvements

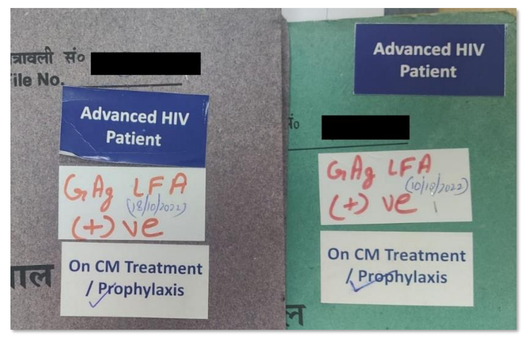
Rapid screening via CrAg LFA was challenging due to a one-day turnaround time (TAT) of CD4 results, reluctance of eligible PLHIV to expedite their second visit for sample collection, and difficulty in demarcating those with a pending test during their visit.

I. Rapid Linkage to CrAg Screening: To avoid revisitation, plasma from remnant samples with CD4<200 cells/mm³ was reflexively screened via CrAg LFA during CD4 testing, leading to **~100% PLHIV being screened** and **reduction in median TAT** between CrAg and CD4 testing from 26 days to 1 day.

II. Strengthened Client-tracking Mechanisms: We capacitated the staff to systemize follow-up phone calls, distinguish AHD records using stickers (*Figure 4*), and separately stack records of PLHIV with a pending test.

III. Streamlined Monitoring Systems: Monitoring progress was challenging due to lack of AHD/CM indicators in the current data systems. Hence, a consolidated line list linked to a dashboard was created to track progress and ensure follow-up.

Figure 4: Use of Stickers for Demarcation

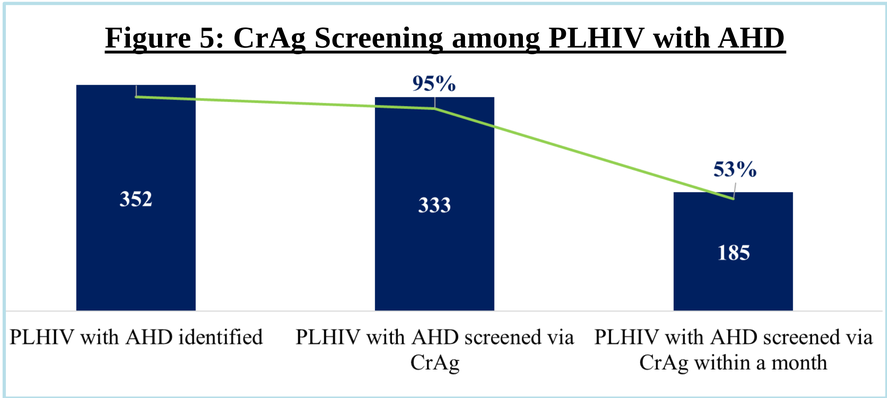


*Consequently, 333 (**94.6%**) PLHIV with AHD were screened via CrAg LFA (Figure 5), and all PLHIV presenting with **WHO Stage 3/4** were screened within the same day.*

CrAg / CM Positivity

Of the 346 PLHIV screened via CrAg LFA, 3 (0.87%) screened positive. All 3 PLHIV were asymptomatic for cryptococcal infection and/or negative for cerebrospinal fluid (CSF) CrAg, and hence received fluconazole prophylaxis.

Figure 5: CrAg Screening among PLHIV with AHD



Conclusion

While expansion of the implementation to other treatment centers is ongoing, preliminary learnings suggest that **differentiated care for AHD in India would be beneficial**. CrAg screening paired with **reflex testing can be effectively operationalized** by utilizing the existing setup at HIV treatment centers. **National scale-up of the AHD package of care** should be accompanied by a defined modus operandi, TAT reduction of CD4 tests, incorporation of AHD metrics in reporting systems, capacity building and procurement of optimal commodities, including those for rapid screening for Tuberculosis.

[1] *WHO Guidelines for Managing Advanced HIV Disease, 2017*
[2] *National Guidelines for HIV Care and Treatment, National AIDS Control Organization (NACO), 2021*
[3] *This represents the number of PLHIV for whom the stated data / variable was available*
[4] *PLHIV screening positive were linked to CSF CrAg testing for confirmation and CM treatment / prophylaxis as per their results and symptoms*

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