Impact of point of care HIV-1 RNA testing on time to HIV confirmation and ART start in Buenos Aires

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BACKGROUND

In Argentina, a middle-income country, HIV diagnosis is confirmed through RNA-HIV (viral load, VL), which is usually performed in specialized referral laboratories.

Individuals with preliminary diagnosis require a second appointment to receive HIV confirmation (HIV-C) needed to initiate anti-retroviral therapy (ART). Time to HIV-C depends on laboratory and administrative factors.

Shortening the diagnostic process is the first step towards implementing test and treat strategies. We hypothesized that point-of-care (POC) technologies would reduce:

- Time to results
- Proportion of delivered results (communicated to the participant)
- Time to ART initiation as compared with standard of care (SOC)

METHODS

A pilot study in 2 HIV testing centers within Buenos Aires:

- Non-government organization (NGO)
- Public hospital

Participants with a new preliminary HIV diagnosis (HIV-PD) after a reactive HIV rapid test were enrolled into the study.

Phase	1: SOC	2: POC
Method/strategy	conventional: mimics standard of care	point of care
Viral load	blood samples sent to the laboratory for RT-PCR	blood samples locally processed with m-PIMA™
HIV confirmation	delivered in a second appointment	same day

- Time from HIV-PD to HIV-C and ART initiation were evaluated as a continuous variable with Wilcoxon sum rank test.
- Categorical variables were tested with Chi-squared test or Fisher's exact test.
- Linear regression models were fitted with an interaction term between center and strategy to evaluate whether the effect on time to HIV-C or ART initiation differs for each strategy between centers.

POC viral load implementation was feasible and reduced the time from HIV preliminary diagnosis to HIV confirmation and ART initiation

RESULTS

Between May 2023 and July 2024, 91 people with HIV preliminary diagnosis (HIV-PD) were enrolled:

- Median age 30 years (IQR: 26-36)
- 84% cisgender men, 9% transgender women, and 7% cisgender women

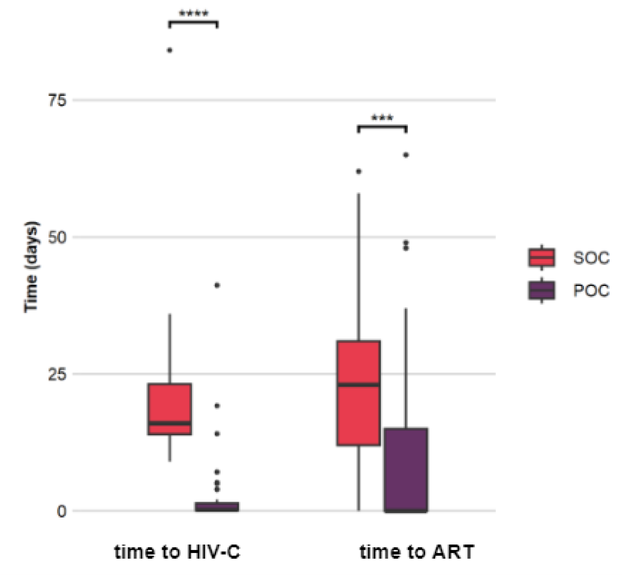
Phase	1: SOC n: 44	2: POC n: 47	p-value
HIV confirmation received, n (%)	43 (98%)	47 (100%)	0.5
Time to HIV confirmation, median [IQR]	16 days [14-23]	4 hours [3-34]	<0.001
Same day HIV confirmation, n (%)	0 (0.0%)	33 (70.2%)	<0.001
ART initiation, % (CI)	80% (64-90)	87% (74-95)	0.3
ART initiation < 30 days, % (CI)	66% (48-80)	85% (70-94)	0.045

- The interaction between strategy and center was not significant (p=0.0681), suggesting that time differences between SOC and POC do not differ between centers.



m-PIMA

Figure 1. Time to HIV confirmation and ART initiation by strategy



Box Plots - Time between rapid test and HIV diagnosis confirmation (time to HIV-C), and time between rapid test and Initiation of antiretroviral therapy (time to ART), across strategies

CONCLUSIONS

- **In this pilot study, POC implementation was feasible and adequate to reduce time to HIV-C and ART initiation.**
- Time to results was significantly shorter with POC strategy.
- Proportion of participants who started ART in less than 30 days was significantly higher with POC strategy.
- Site-specific practices should be considered when implementing POC technologies in clinical settings.
- Healthcare systems need to adapt to facilitate the rapid ART initiation strategy.

ADDITIONAL KEY INFORMATION

This study was supported by Abbott Rapid Diagnostics Argentina S.A.

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FUNDACIÓN HUÉSPED