



Can a short-haul specimen referral system work efficiently to access point-of-care early infant diagnosis testing?

Lessons from Lesotho and Zimbabwe.

Tebello Samosamo^{1*}, Haurovi William Mafaune^{2*}, Anafi Mataka¹, Addmore Chadambuka², Jean-François Lemaire³

¹Elizabeth Glaser Pediatric AIDS Foundation (EGPAF), Maseru, Lesotho; ²Elizabeth Glaser Pediatric AIDS Foundation (EGPAF), Harare, Zimbabwe. ³Elizabeth Glaser Pediatric AIDS Foundation (EGPAF), Geneva, Switzerland, *Authors contributed equally

BACKGROUND

- Specimen referral systems can increase access to diagnostic services, but are also vulnerable to logistical and system efficiency challenges.
- A short-distance (<1 hour), specimen referral system was adopted to increase access to point-of-care (POC) early infant diagnosis (EID).
- We performed a site-level comparison of key clinical and service delivery outcomes observed within testing facilities (POC model) to those within referring facilities (referral model).

RESULTS

- In both POC and referral models, there were no significant differences in the percentage of results returned (100%), or in the proportion of HIV-infected infants initiated on treatment (100%) (Table 1).
- The median total TAT observed across sites using the referral model (5 days [2-7.5]) was only five days longer than among sites in the POC model (0 days [0-0]), with a significant difference in the distributions of TAT (Figure 1 and Table 1).
- Whereas both models experienced same-day specimen transportation, caregivers took significantly longer (2 days vs 0 days) to collect the result from facility in the referral model (Table 1).

Table 1: Site-level comparison of key POC EID clinical and service performance indicators observed in facilities of POC and referral models

Indicator		POC Model	Referral Model	p value*
Number of facilities analyzed		50 facilities (6,297 specimens)	188 facilities (5,313 specimens)	
Percentage of results returned to caregiver (medians [IQR])		100% [100-100]	100% [100-100]	p=0.778
Percentage of HIV-infected infants initiated on treatment (medians [IQR])		100% [93-100] (n=218)	100% [100-100] (n=180)	p=0.111
Median TAT and [IQR] from:	Blood collection to reception at testing site (including sample transportation)	0 days [0-0]	0 days [0-1]	p<0.001
	Blood reception to processing at testing site	0 days [0-0]	0 days [0-0]	p=0.081
	Processing to result sent to requesting unit	0 days [0-0]	0 days [0-0]	p<0.001
	Result at requesting unit to result received by caregiver	0 days [0-0]	2 days [1-6]	p<0.001
	Blood collection to result communication to caregiver	0 days [0-0]	5 days [2-7.5]	p<0.001

*The significance threshold was set at 0.05

[IQR]= Interquartile ranges

METHODS

- We used data from POC EID testing forms routinely used across all 238 facilities (50 POC facilities; 188 referring facilities) with access to POC EID from February 2017 to March 2018 across Lesotho and Zimbabwe, combined.
- Key POC EID clinical outcomes (percentage of results returned to caregivers at facility and percentage of HIV-infected infants initiated on treatment) and key service delivery outcomes (intermediate turnaround times [TAT] in between specimen collection, transport, processing, result transmission facility, and return to caregiver, as well as total TAT [from specimen collection to result return to caregiver at facility]) were aggregated per facility.
- We assessed differences between the two delivery models using the Wilcoxon rank-sum test on summary statistics (median, range intervals, proportions) from aggregated facility outcomes, except for the TAT distribution analysis (Figure 1) which was performed from outcomes of individual EID sample requests disaggregated for their model of referral (testing or referral model).

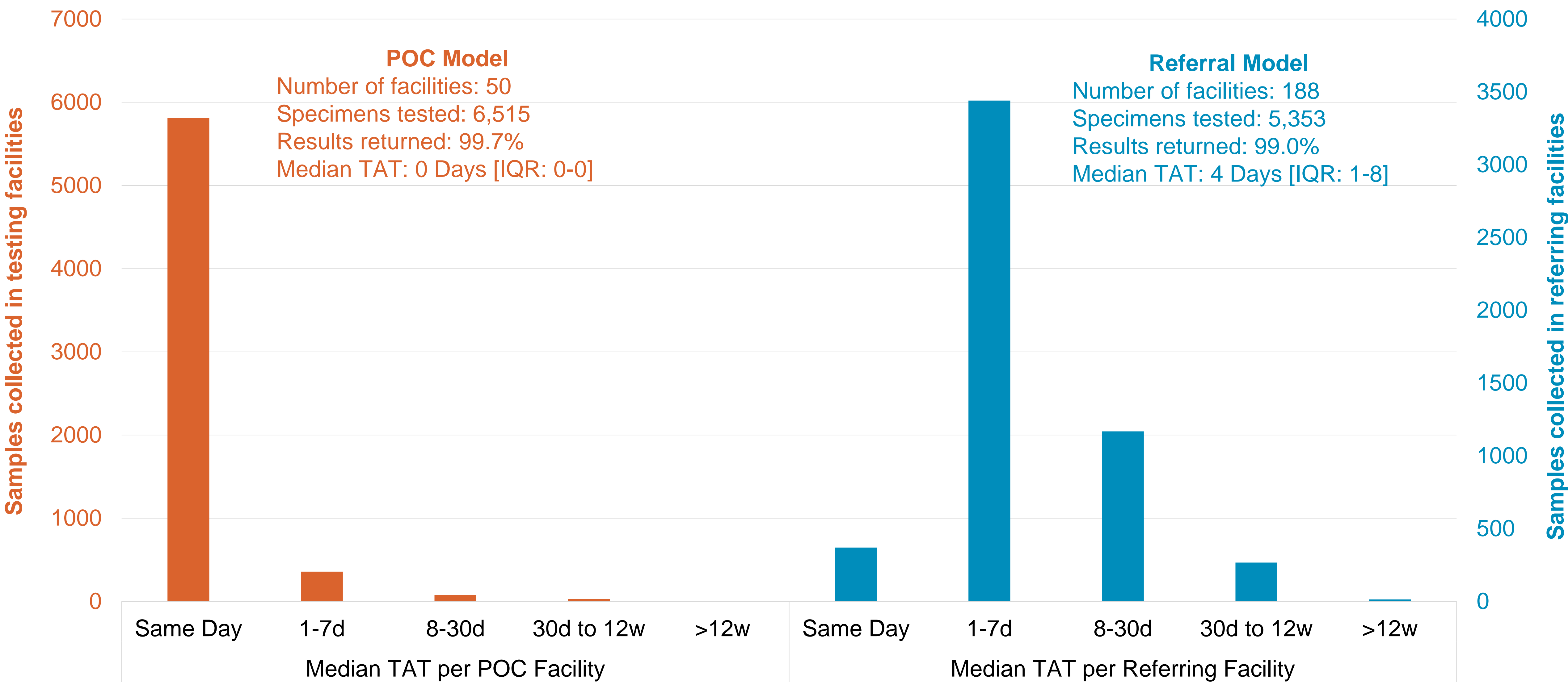


Figure 1: Distribution of median TAT from sample collection to return of results to caregiver observed in facilities of the POC and referral models

CONCLUSIONS

- A short-haul POC EID specimen referral system showed no significant differences in key clinical outcomes.
- An increment of only five days in the final TAT was observed in the referral model (mostly due to time required for caregivers to collect results), as compared to patients seen at POC testing sites.
- This model may be considered as a viable approach to increase access to POC EID.