



Short-haul specimen referral system can result in the same key clinical outcomes, and similar key service delivery outcomes for early infant diagnosis testing at point-of-care. Lessons from eight sub-Saharan countries.

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BACKGROUND

- Access to diagnostic services can be significantly increased using specimen referral systems, despite long delays often associated with turnaround time from specimen collection to return of results.
- We introduced specimen referral over short distances (<1 hour) to increase access to point-of-care (POC) early infant diagnosis (EID).
- We compared key clinical and service delivery outcomes observed within testing facilities (POC model) to those within referring facilities (referral model), in eight sub-Saharan countries.

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 facilities using the referral model was 2 days [1-5] compared to 0 day [0-0] among facilities in the POC model, with a significant difference in the distributions of TAT (Figure 1 and Table 1).
- Whereas both models experienced same-day specimen transportation, caregivers took 1 day in the referral model vs 0 days in testing facilities to collect the result from their facility (Table 1).

Table 1: Facility-level comparison of key 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 | | 228 facilities (40,828 specimens) | 899 facilities (22,774 specimens) | |
| Percentage of results returned to caregiver (medians [IQR]) | | 100% [100-100] | 100% [100-100] | P=0.516 |
| Percentage of HIV-infected infants initiated on treatment (medians [IQR]) | | 100% [90-100] (n=1804) | 100% [100-100] (n=611) | p<0.001 |
| Median TAT and [IQR] from: | Blood collection to reception at testing facility (including sample transportation) | 0 days [0-0] | 0 days [0-0] | p<0.001 |
| | Blood reception to processing at testing facility | 0 days [0-0] | 0 days [0-0] | p<0.001 |
| | 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] | 1 day [0-3] | p<0.001 |
| Blood collection to result communication to caregiver (total TAT) | | 0 days [0-0] | 2 days [1-5] | p<0.001 |

*The significance threshold was set at 0.05

[IQR]= Interquartile ranges

METHODS

- We used data from POC EID testing forms (63,602) routinely used across all 1,127 facilities (228 POC facilities; 899 referring facilities) with access to POC EID from December 2016 to September 2018 across Cameroon, Côte d'Ivoire, Eswatini, Kenya, Lesotho, Mozambique, Rwanda, 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).

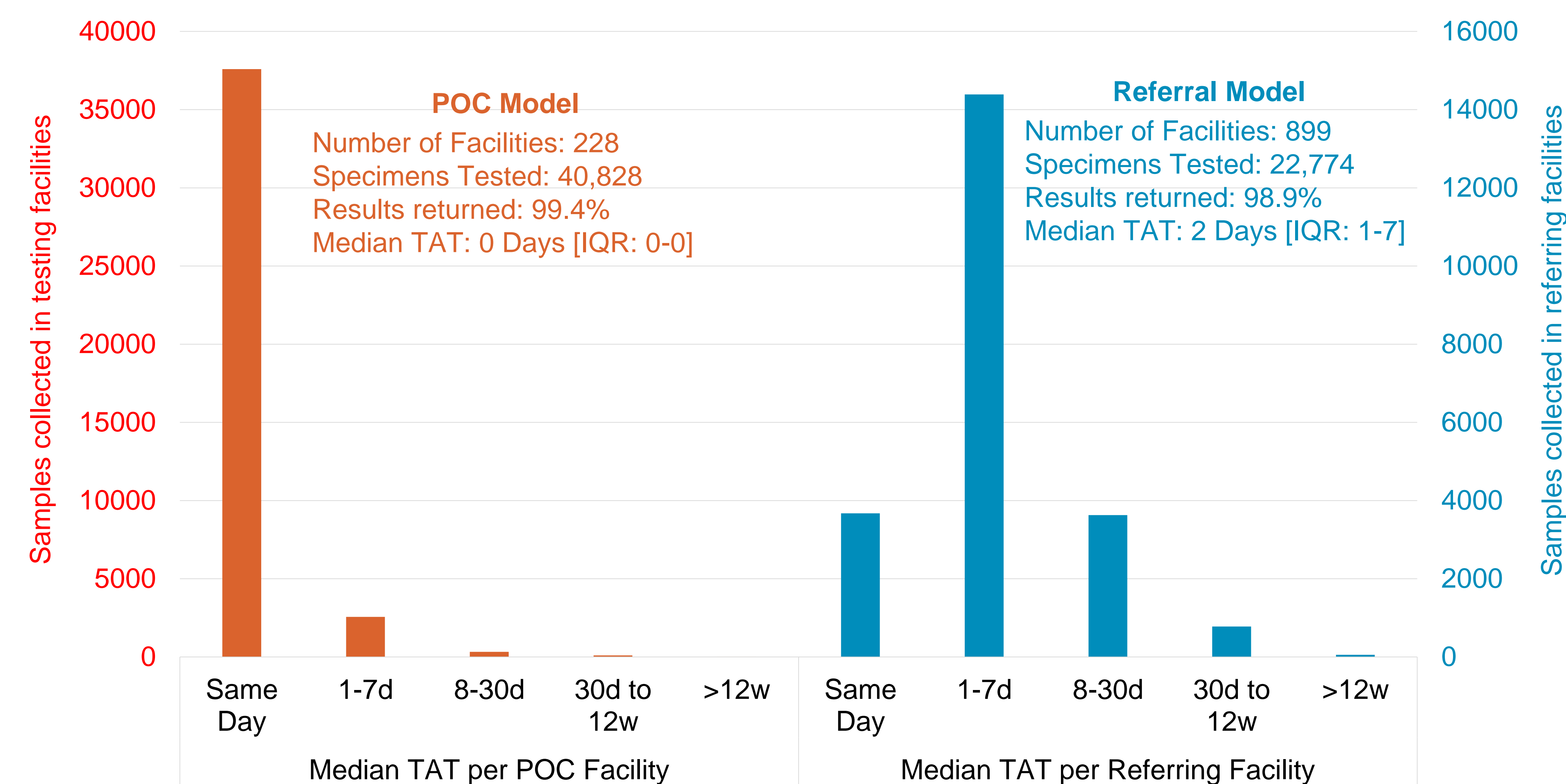


Figure 1: Distribution of median TAT from sample collection to return of results to caregiver observed in facilities of the POC and referral models

CONCLUSIONS

- A short-haul POC EID specimen referral system showed no significant differences in key clinical outcomes.
- An increment of two days in the total 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 facilities.
- Short-haul specimen referral can be considered to further increase access to POC EID.