Bringing the Test to the Patient: Diagnosing and treating more infants, faster

Evaluating point-of-care (POC) testing for pediatric HIV in Eight sub-Saharan African Countries

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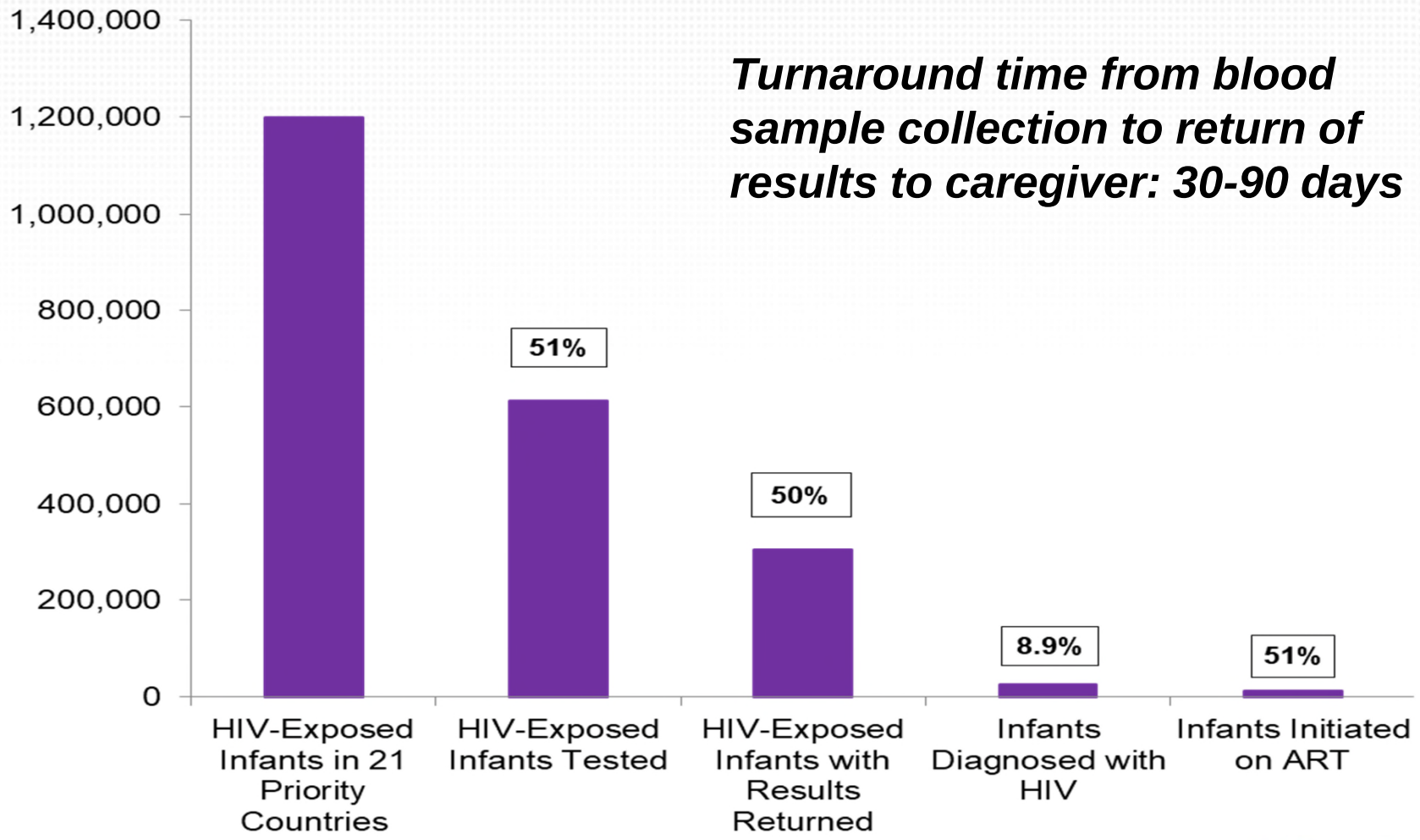
Overview

- Background
  - Why POC EID?
  - Optimizing EID through strategic placement: EGPAF's programmatic approach
- Methods: a pre-and post-analysis comparing conventional and POC EID
- Results
  - Key outcomes
  - Hub-and-spoke
  - High-yield entry points
  - Cost per test result returned
- Conclusions

Why POC EID? Challenges with the EID Cascade



Turnaround time from blood sample collection to return of results to caregiver: 30-90 days

Source: On the Fast-Track to an AIDS-Free Generation, UNAIDS, 2016

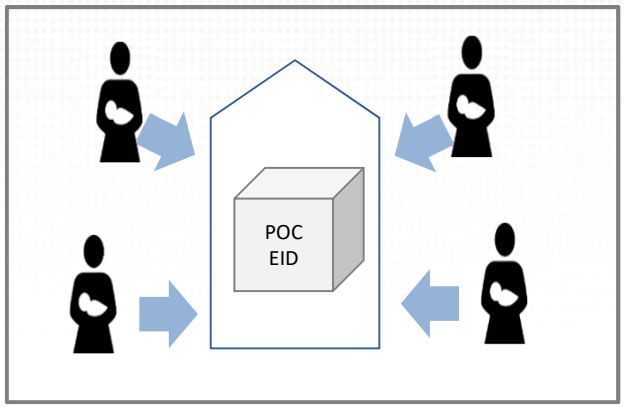
Implementing POC EID in Routine Clinical Care: EGPAFs' Approach

- Bringing the test closer to the client in ***nine*** project countries
- Pragmatic placement of POC platforms and implementation based on current resources and human resources
- Phased approach – started with a 6 month pilot period
- Maximize access to POC EID testing through hub-and-spoke models and multiple entry points

Strategies Used to Increase Access to Testing

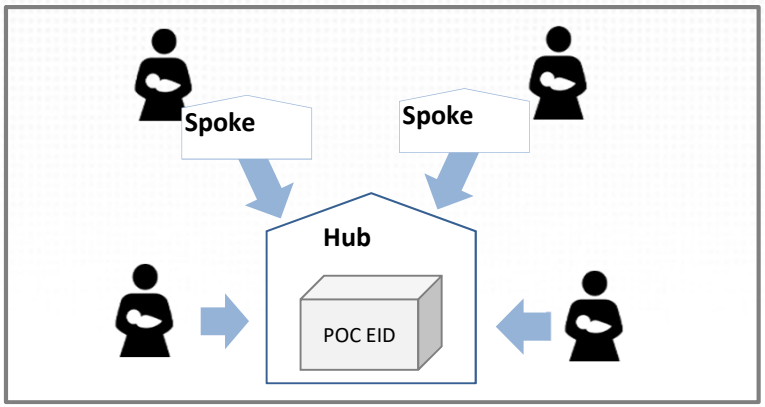
Stand-Alone Sites

Receive samples directly from clients and perform POC EID tests on site.



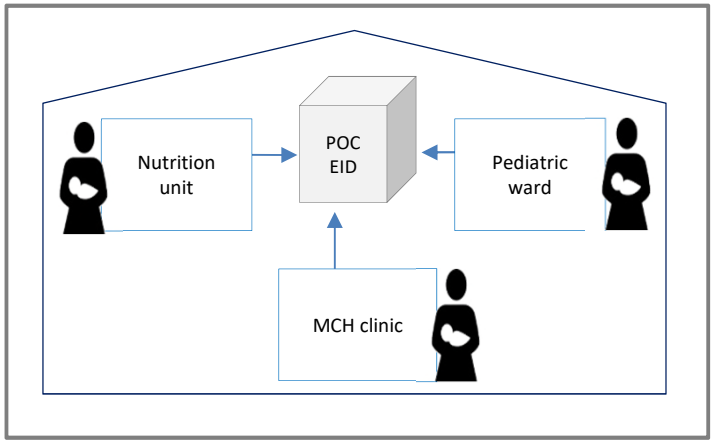
Hub-and-Spoke Networks

Hub sites provide testing for patients at that site and for spoke sites. Nearby spoke sites send samples to the hub sites for testing.



Multiple-Entry-Point Sites

Stand-alone or hub testing sites receive samples from different units or wards within the same health facility.



EGPAF POC EID Project: Evaluation Methods

Pre-intervention data – Conventional EID

- Retrospectively collected for 30 consecutive HIV-exposed infants who had a sample collected in *8 project countries*
- Data collected from facility registers from a subset of intervention sites
- Purposive sampling of sites (up to 20 sites per country)
- Tests conducted between March 2014 until May 2017.
- **Sample: 2,899 tests from 2,875 HIV-exposed infants from 96 sites**

Post-intervention data – POC EID

- Collected prospectively in all POC EID sites in *8 project countries*
- **Sample: 19,071 tests from 18,220 HIV-exposed infants**
- Presenting data collected until December 31, 2017 **from 339 sites,** including 106 testing sites and 233 spoke sites.

Evaluation Results: Conventional vs. POC EID

	Conventional EID	POC EID	p value
Median TAT from blood sample collection to result returned to caregiver (IQR)	55 days (31-77)	0 days (0-1)	p<0.001
Results received by caregiver within 30 days	18.7 % (542/2,899)	98.3% (18,737/19,058)	p<0.001
Percent of HIV-infected infants started on ART within 60 days of sample collection	43.3% (42/97)	92.3% (639/692)	p<0.001
Median TAT from blood sample collection to ART initiation for HIV-infected infants (IQR)	49 days (30-68)	0 days (0-3)	p<0.001

Evaluation Results: Testing vs. Spoke Sites

	Testing Sites (n = 106)	Spoke Sites (n = 233)	p value
Number of infants tested	13,070	5,155	---
Number of EID tests	13,673	5,398	---
Median TAT from blood sample collection to result returned to caregiver (IQR)	0 days (0-0)	2 days (1-7)	p<0.001
Results received by caregiver within 30 days	99.4% (13,591/13,667)	95.5% (5,146/5,391)	p<0.001
Percent of HIV-infected infants started on ART within 60 days	91.9% (488/532)	94.4% (151/160)	p=0.270
Median TAT from blood sample collection to antiretroviral therapy initiation for HIV-infected infants (IQR)	0 days (0-1)	3 days (1-5)	p<0.001

Evaluation Results: High-yield Entry Points

Entry Point	Infants Tested (% of all infants tested)	HIV-infected infant percent	Percent of HIV-infected infants started on antiretroviral therapy
PMCT	15,493 (85.4%)	3.2% (494/15,493)	95.1% (470/494)
Maternity	1,078 (5.9%)	1.1% (12/1,078)	66.7% (8/12)
Pediatric Inpatient	526 (2.9%)	15.2% (80/526)	86.3% (69/80)
Vaccination	412 (2.3%)	2.9% (12/412)	83.3% (10/12)
Outpatient	265 (1.5%)	17.7% (47/265)	87.2% (41/47)

Cost Per Test Result Returned

- Price of diagnostic technologies is a key consideration for national programs, implementers, and funders.

- Total cost of ownership includes: reagents, controls and other consumables, costs of equipment, logistics, basic training, and service and maintenance costs.

	Conventional	POC (current throughput)	POC (optimal throughput)
Total cost of ownership*	$24.25 ($17.50-31.00)	$37.20 ($31.95-42.47)	$26.75 ($21.00-32.50)
Cost per result returned in 30 days (range)	$**131.02 USD** ($96.26-$165.76)	$**37.89 USD** ($32.54-$43.25)	$**27.24 USD** ($21.39-$33.10)
Cost per result returned in 3 months (range)	$**38.89 USD** ($28.57-$49.21)	$**37.51 USD** ($32.21-$42.81)	$**26.97 USD** **(**$21.17-$32.76)

**https://www.theglobalfund.org/media/5765/psm_viralloadearlyinfantdiagnosis_content_en.pdf*

Conclusions

- POC resulted in significantly improved EID outcomes when compared with conventional EID:
  - Four times more likely for results to be returned to caregiver within 30 days with POC
  - Twice as likely for HIV-positive infants to be initiated on treatment within 60 days using POC
  - HIV-positive infants more likely to be initiated on treatment on the same day as blood sample collection
- Hub-and-spoke model successfully extends access to POC EID, without compromising care.
- POC EID is cost-effective: a worthy investment

Important real-world evidence that POC is a critical tool to closing the diagnostic gap in ensuring quality and effective EID.

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Thank You

For more information visit:

http://www.pedaids.org/pocdashboard