



Challenges in Introducing Infant Diagnosis of HIV Using Dried Blood Spots for DNA PCR in Primary Health Care Settings

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ISSUE / BACKGROUND

To integrate Prevention of Mother-to-Child Transmission (PMTCT) programs into maternal child health (MCH) services, Mozambique pioneered a unique approach for HIV-exposed infant follow-up in primary health care settings, via a special 'at-risk child consultation' (ARCC). Children are followed in ARCC until final HIV infection status has been confirmed. Children determined to be uninfected will be followed in the under 5 clinic while those with confirmed HIV infection are followed in the care and treatment clinic.

Until recently, diagnosis of HIV infection in an HIV-exposed child using existing rapid tests occurred only at 18 months. However, data show that the majority of HIV-exposed infants are lost to follow-up before that time. Now, the Mozambican NIH Laboratory is able to provide early infant diagnosis (EID) using Polymerase Chain Reaction (PCR) testing of Dried Blood Spots (DBS).

Criteria for enrollment in ARCC:

- Premature birth
- Low birth weight
- HIV exposed infant
- Complications during labor/delivery
- Contact with adults with pulmonary TB
- Multiple birth
- Recovery from acute illness

PROGRAM DESCRIPTION / METHODS

National implementation of EID was implemented in 4 health centers in Maputo City (December 2006) with plans to roll out to additional sites through 2007. HIV-related ARCC services include infant feeding counseling and support, cotrimoxazole prophylaxis and infant HIV-testing (DBS PCR at 4 weeks and rapid antibody test at 18 months).

The Maputo City Health Directorate held coordination and orientation meetings involving HIV program managers and NGOs that support PMTCT implementation. NIH staff conducted a practical training for site nurses on DBS sample collection and handling.

A multidisciplinary national working group was created to:

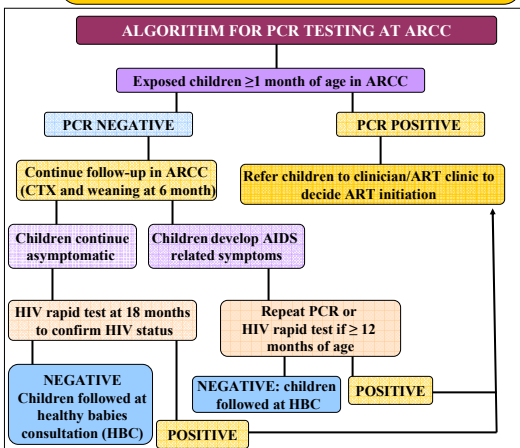
- Develop EID roll-out protocols using an ARCC setting for
- HIV-exposed infant follow-up services,
- Develop and implement an algorithm for PCR testing of DBS
- Design a system, sample flow and communication plan between central and provincial laboratories.

Initial DBS Training:

1. Lab logistics:
 - Blood collection technique
 - Sample handling
 - DBS transport logistics
2. Diagnosis via DBS PCR Algorithm
 - Pre and post test counseling at ARCC
 - Interpretation of results
 - Algorithm for HIV-infected children

Counseling and testing for EID

When children eligible for PCR testing are identified during routine ARCC or in other health center services, their mothers are counseled and advised to return on a day when DBS samples are collected. During counseling, mothers generally agree to test their children and anecdotally they do in fact return for testing.

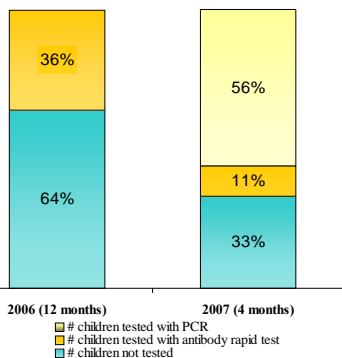


RESULTS

Different degrees of functionality and organization of ARCC have been observed at the 4 health centers. Common characteristics include:

- High lost to follow up rates
- Out-dated tracking system
- No regular mechanism to track defaulter children at community level

Percentage of Exposed Children tested in ARCC



Diagnosis of HIV exposed children at ARCC	Before DBS (Cum. '06)		After DBS Jan - April '07	
	Total	%	Total	%
Number of children in ARCC	450	-	753	-
Number of HIV exposed children in ARCC	285	63	541	72
Number of exposed children in follow up	68	24	94	17
Number of children tested with antibody rapid test	103	36	58	11
Number of DBS samples collected	Not performed		305	56
Number of PCR test results returned from the laboratory	Not performed		113	37

Since program implementation, the enrollment of HIV-exposed children has increased from 285 (2006) to 541 (Jan-Apr 2007):

- Out of 826 HIV exposed children, 137 (17%) were tested at 18 months using antibody rapid tests and 21 (15%) had a positive result.
- Of 541 HIV exposed children seen in ARCC after EID was implemented, 305 (56%) had a PCR test collected.
- Results were available for only 113 (37%) specimens collected, and 14 (12%) were PCR positive. The return of the results has been delayed due to renovations in the laboratory.
- Data regarding the communication of PCR results are incomplete for the period reported: nurses were recorded results in the ARCC register but not when parents received them.

CONCLUSIONS

- To address staffing constraints, training of MCH nurses in care of HIV-exposed and infected children should be a goal of PMTCT and Pediatric HIV programs, including identification and testing of HIV-exposed infants.
- EID training should include modules on counseling, disclosure, the need for follow-up testing, and outreach services for children lost to follow-up.
- Tracking, monitoring and evaluation systems to evaluate quality assurance issues should be an integral component of EID programming.
- Clinical supervisors should be trained in mentoring techniques to increase the confidence of MCH nurses in the skills necessary to perform their work.

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