Low Uptake of Routine Infant Diagnostic Testing Following HIV PCR Testing at Birth

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Background

- Growing emphasis on testing HIV-exposed infants at birth to detect intrauterine infections
- Concerns have been raised that birth testing may reduce uptake of routine early infant diagnostic testing (EID) at 6 weeks of age.
- There are no data to address this question
- We examined the association between birth PCR and subsequent EID testing in the Western Cape province of South Africa (SA)
- 6-week EID test coverage is estimated to reach >70% of all HIV-exposed infants in this setting

Methods

- SA National Health Laboratory Service data on all HIV PCR tests conducted in the province (approximately 14 000 per year) were accessed
- Infants with **birth PCR** (defined as testing in the **first 7 days of life**) and **subsequent EID testing** (**8 to 182 days of age**) were linked probabilistically using Finegrained Record Integration and Linkage Tool (FRIL; Atlanta, USA)
- FRIL sensitivity analyses were used to maximise linkage of birth tests to subsequent EID testing
- We compared two birth testing policy periods:
  - **discretionary testing** by clinicians (DT; Jan 2009 to March 2014), and
  - testing of all '**high risk' pregnancies** based on duration of maternal ART, documented HIV viraemia, and related factors (HR; April 2014 to June 2015)

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Results

- 3322 newborns received birth testing (80% within three days of life), increasing >20-fold after the start of HR testing policies
- Most birth tests were undertaken in obstetric hospitals, though the proportion of birth tests from primary care facilities increased from 11% under DT to 33% under HR testing
- Birth positivity rates decreased from 6% (2009) to 1.6% (2015)
- Of children with negative birth PCR results, only 49% had any evidence of a follow-up EID test, decreasing to 43% when restricted to a window around prescribed EID testing, but was stable over DT vs HR testing policies.

Table. Numbers of HIV PCR tests conducted at birth, birth test results, and follow-up early infant diagnosis (EID) testing rates across the Western Cape province, South Africa, under different birth testing policies, 2009-2015.

	All children with birth tests	Clinician discretion birth testing policy	'High risk' birth testing policy	p-value
Period dates	Jan 2009 - June 2015	Jan 2009 to Mar 2014	Apr 2014 to Jun 2015	
Number of birth tests conducted	3322	1094	2228	
Mean birth tests conducted per month	43	17	159	
Number of facilities with birth testing	113	44	113	
Test location: Obstetric hospital	2459 (74)	975 (89)	1484 (67)	0.001
Primary care clinic	863 (26)	**119 (11)**	**744 (33)**	
Test result: Negative	3179 (95.7)	1027 (93.9)	2152 (96.6)	
Indeterminate	40 (1.2)	19 (1.7)	21 (0.9)	0.001
Positive	103 (3.1)	**48 (4.4)**	**55 (2.5)**	
Children with negative birth test linked to any repeat test from 8-182 days of age	**1547 (49)**	491 (48)	1056 (49)	0.506
Children with negative birth tests linked to any repeat test from 28-112 days of age (denoting EID)	**1368 (43)**	386 (38)	982 (46)	0.249
Mean (SD) in days age at repeat testing	51.7 (0.6)	50.3 (1.2)	52.3 (0.7)	0.112

Conclusions

- Changing policies have led to dramatic increases in birth tests
- Follow-up EID resting rates in infants testing negative at birth are substantially lower than local estimates of 6-week EID coverage
- These data suggest that careful implementation of birth testing will be required to avoid undermining postpartum EID services