

Impact of birth HIV PCR testing on uptake of follow-up EID services for HIV-exposed infants in Cape Town

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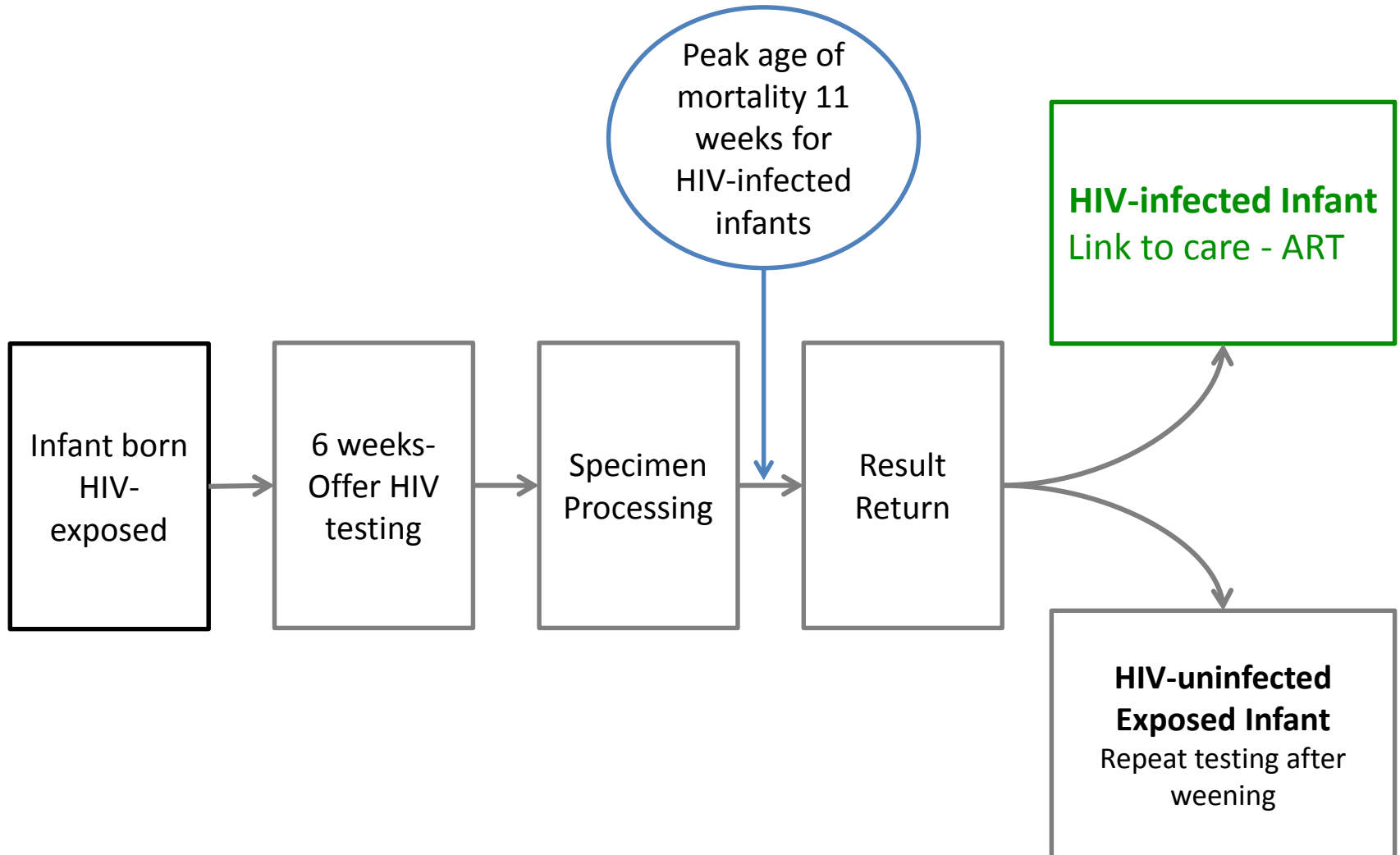
Background – Early Infant Diagnosis

- WHO recommends all HIV-exposed infants should be tested by six weeks of age
 - Virological tests
 - *Detect in utero, intra-partum and very early post-partum infections**
- 94% of HIV-exposed infants have access to a virologic test in South Africa¹

* Debate around effect of infant prophylaxis on the sensitivity of the assay at 6 weeks

¹ World Health Organization. Progress report on the global plan towards the elimination of new HIV infections among children and keeping their mothers alive. Geneva, Switzerland 2015

Background – 6 week EID Cascade

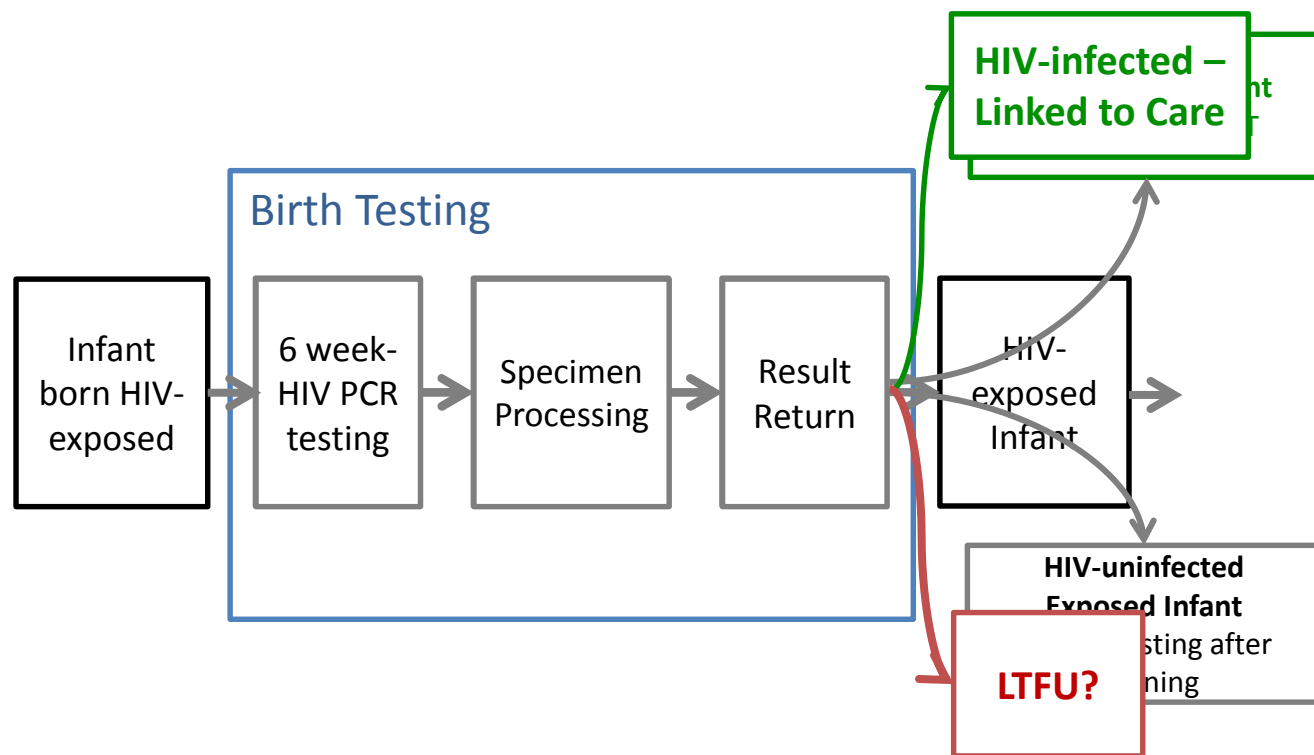


Background – Birth Testing

- Improved PMTCT coverage
 - Increased proportion of *in utero* infections relative to *intrapartum* and *early post partum*
 - More infected infants detectable at birth
- Benefits earlier treatment
 - Limit disease progression
 - Lower viral reservoirs
 - Increase survival¹

¹ Francke et al. Clinical impact and cost effectiveness of early infant HIV diagnosis in South Africa: Test timing and frequency. Pre-publication JID

Background – Birth Testing Cascade



Returning a negative result to women immediately after delivery could cause confusion around the need for testing at 6 weeks

- Recent observational study – only 49% of infants returned for follow up testing after an initial test at birth¹

¹J Matritz et al. Low Uptake of Routine Infant Diagnostic Testing Following HIV PCR Testing at Birth. Poster Presentation. CROI 2016

Objectives

1. To compare the attendance at follow-up EID testing by receipt of an HIV PCR test at birth
 - Does receipt of a negative birth test impact uptake of 6 weeks testing?
2. Examine yield of targeted birth testing in this setting

Methods – Site and Cohort Characteristics

Site Characteristics

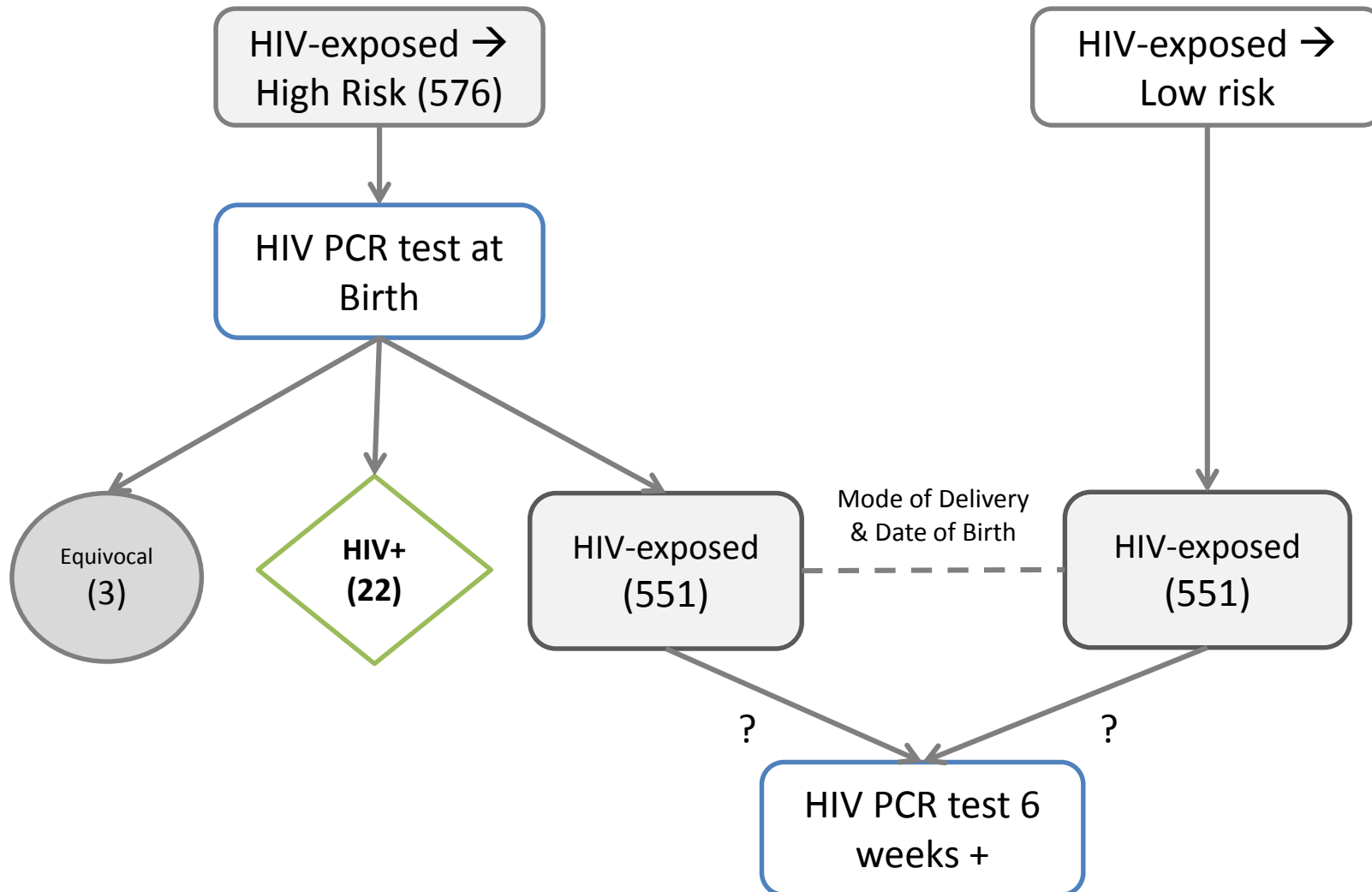
- Secondary level
 - Obstetric Hospital
- Women referred from primary care
- 13% of newborn HIV-exposed

Cohort Characteristics

- July 2013 – August 2015
- All mothers eligible for Option B+
- HIV PCR test at birth – Infants high risk for perinatal transmission
- Birth tests occurred within 48hrs of delivery: result return prior to discharge
- All HIV exposed infants tested at 6 weeks, or screened if presenting to hospital with OI



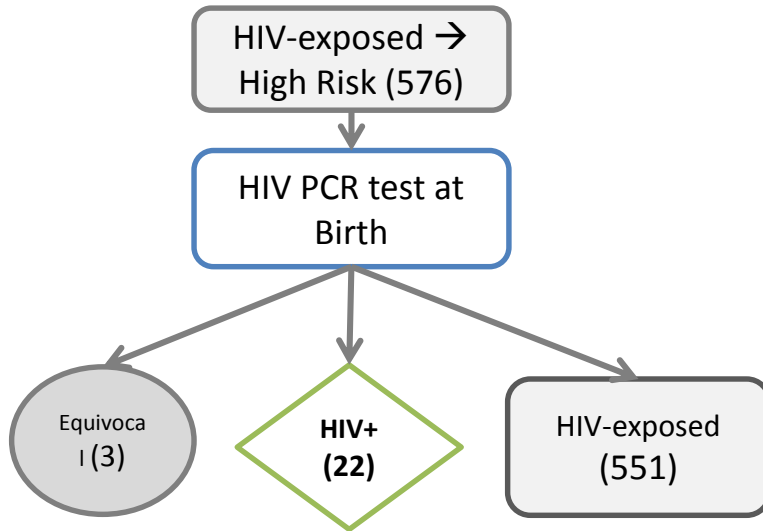
Methods – Study Sample



Analysis

1. Results of HIV PCR tests were determined from NHLS database
 - Non-attendance at follow up testing:
no subsequent HIV PCR test recorded since birth test or no recorded HIV PCR test
 - Linkage to care:
Infect infant specimen sent to laboratory for processing
2. Participant demographic characteristics
 - Mean/median, frequency
3. Logistic regression models
 - OR with 95% confidence intervals

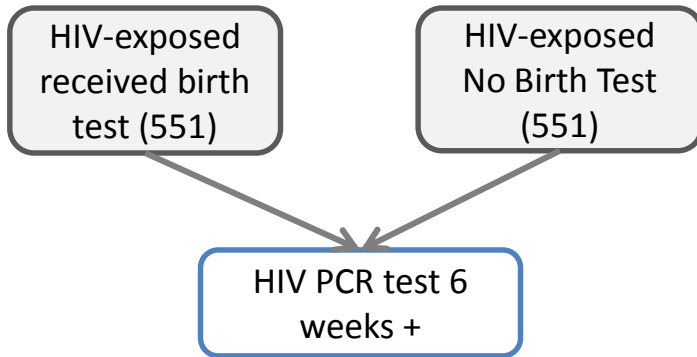
Results – HIV PCR test at birth



- 3.8% of birth tests positive (n=22)
- 95% confirmatory test
- 1 false positive result
- **71% linked to care w/in 3mths**
- **86% linked to care w/in 6mths**

	HIV PCR Result at Birth
Negative	551
Positive	22
Confirmatory test	21
False Positive	1
Linked to care w/in 3mths	15
Linked to care w/in 6mths	3

Results – HIV PCR test at 6 weeks



- 0.4% of 6wk PCR tests positive (n=4)
- 100% confirmatory test
- **75% linked to care w/in 3mths**
- **100% linked to care w/in 6mths**

		Received birth test	No birth test
HIV PCR test result (6wks)	Negative	399	479
	Positive	2	2
	Confirmatory test	2	2
	False Positive	0	0
	Linked to care w/in 3mths	1	2
	Linked to care w/in 6mths	1	-

Results – Follow up EID test results

Result	Birth Test (N=551) %	No Birth Test (N=551) %	Total (N=1102) %
Attendance of follow-up HIV PCR test:			
Tested	(401) 73%	(470) 85%	(878) 79%
Not Tested	(150) 27%	(81) 15%	(231) 21%
Age if returned for follow-up HIV PCR test:			
Mean (SD)	59.6 (41.8)	49.5 (22.8)	54.1 (33.3)

Results – Demographics

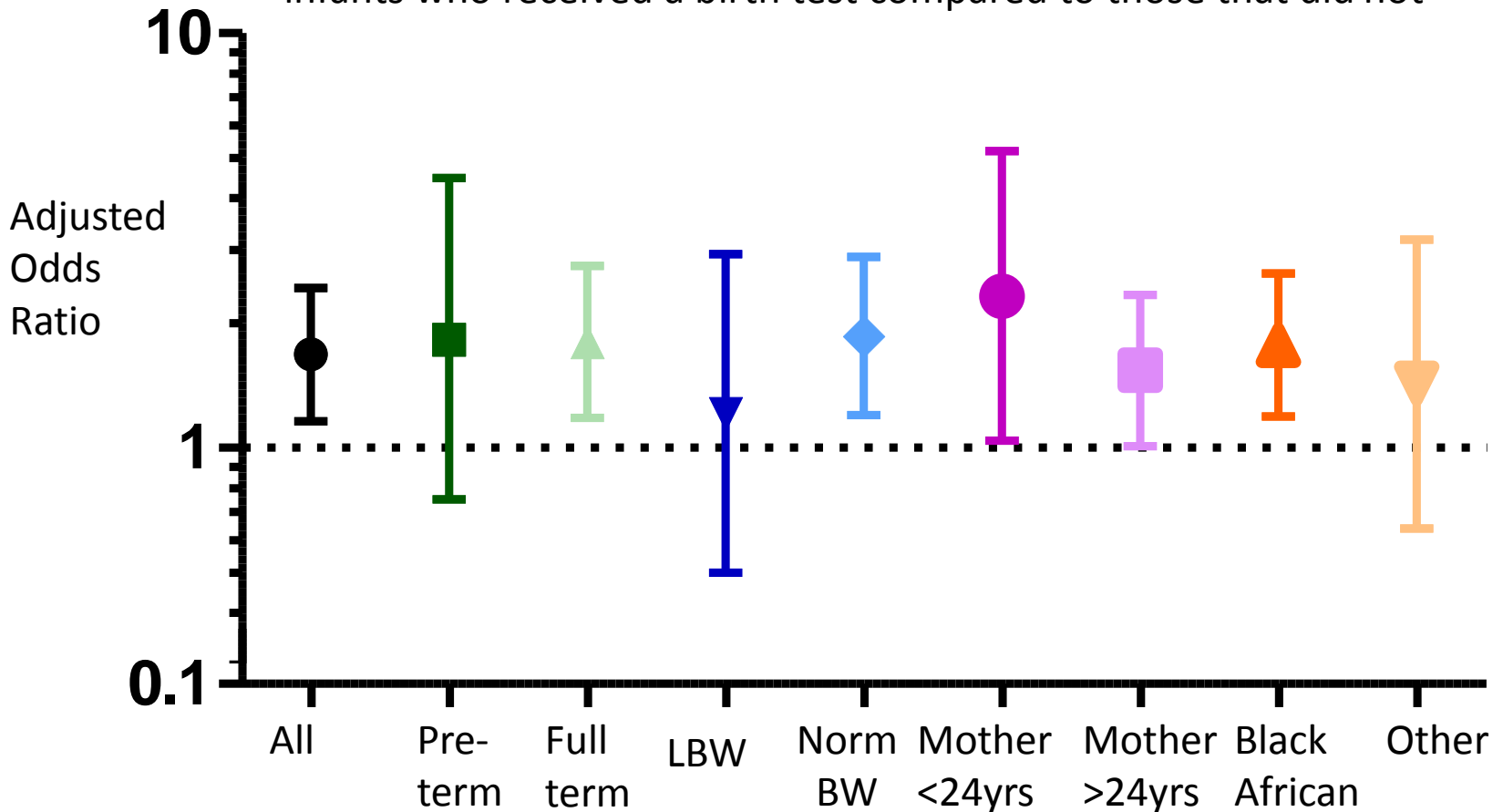
Variable	Birth Test % (N=551)	No Birth Test % N=551)	Total % (N=1102)
Sex:			
Female	(279) 51%	(276) 50%	(555) 50%
Birthweight (g):			
Low (<2500)	(184) 34%	(45) 7%	(229) 21%
Mode of Delivery			
C/S	(291) 53%	(291) 53%	(582) 53%
Gestation (wks)			
Preterm (34-37)	(148) 27%	(50) 9%	(198) 17%
Infant Feeding			
Breastfeeding	(438) 80%	(460) 83%	(898) 82%
Maternal Age (years)			
Adolescent Mothers (<24)	(157) 29%	(102) 19%	(259) 24%
Maternal Population Group			
Black African	(433) 79%	(454) 82%	(887) 81%

Results – Regression Analysis

		Multivariate Model	
Risk Factors	Categories	Adjusted OR	95% CI
Receipt of Birth Test	No Birth Test	-	
	Received Birth Test	1.68	(1.16-2.43)
Sex	Male		
	Female	(not included)	
Birthweight	Weight (g)		
	Normal Birthweight	-	-
	Low Birthweight (<2500g)	1.02	(0.70-1.48)
Maternal Age	Age (years)		
	Mature Mother (≥24)	-	-
	Adolescent Mother (<24)	1.03	(0.73-1.44)
Gestation	Gestation (wks)		
	Full Gestation		
	Preterm (<37)	(not included)	
Maternal Population Group	Black African		
	Coloured		
	Foreign	(not included)	
PMTCT Coverage	Received ART 12+weeks	-	-
	Received ART <12weeks	1.43	(0.94-2.15)
	No ART	2.33	(1.28-4.26)
Default on Treatment	No recorded default		
	Default recorded	(not included)	
Viral Load	VI ≥1000		
	VL >1000	(not included)	

Results – Subgroup analyses

Restricted analyses showing effect size in multiple subpopulations:
Association between non-attendance at follow-up EID testing for infants who received a birth test compared to those that did not



Limitations

- Results reflect a single urban setting within South Africa. All participants delivered at an obstetric hospital
 - Generalizations should be made with caution
- Social and demographic variables would provide greater insight into predictors for non-attendance
 - Risk factors used to identify infants as high risk at delivery could also be predictors for non-attendance

Conclusions

1. Targeted birth testing successfully identified mothers at high risk for transmission to their infants
2. Neonates undergoing HIV testing at birth appear less likely to receive subsequent EID testing compared to infants who did not receive a birth test.
 - More emphasis on negative results
 - How does universal birth testing affect these results?

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