Chlamydia trachomatis, Neisseria gonorrhoeae and Trichomonas vaginalis Colonization among Human Immunodeficiency Virus-Exposed Neonates in South Africa

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Background & Objectives

Background

- ***Chlamydia trachomatis* (CT), *Neisseria gonorrhoea* (NG) and *Trichomonas vaginalis* (TV) are major causes of morbidity among pregnant women**
- **May lead to pregnancy/birth complications including:**
  - Intrauterine Death
  - Premature Rupture of Membrane
  - Intrauterine Growth Restriction
- **May increase the risk of HIV MTCT**

Background

- **Can be transmitted from mother to child intrapartum:**
  - Neonatal Conjunctivitis
  - Pneumonia
- **Most transmission occurs during vaginal birth**
- **Cases have been reported among neonates born via Caesarean Section**
- **Lack of data on transmission rate in low-resource settings due to absence of intra-/post-partum testing and syndromic nature of management of neonatal infections**

Objective

- To determine rate of nasopharyngeal colonization with CT, NG and TV among neonates born to STI co-infected HIV+ women

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Methods

Study Design

- Cross-sectional analysis of neonates born to HIV+ mothers co-infected with CT, NG and/or TV
- Integrated molecular-based point-of-care diagnostic testing of STIs into basic services offered during the first postnatal PHC visit
- Part of longitudinal study assessing impact of STI testing and treatment on adverse pregnancy outcomes among HIV +ve women

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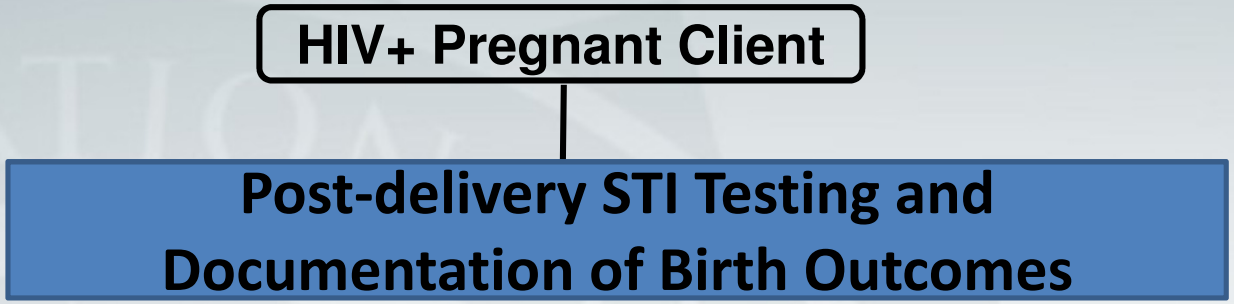
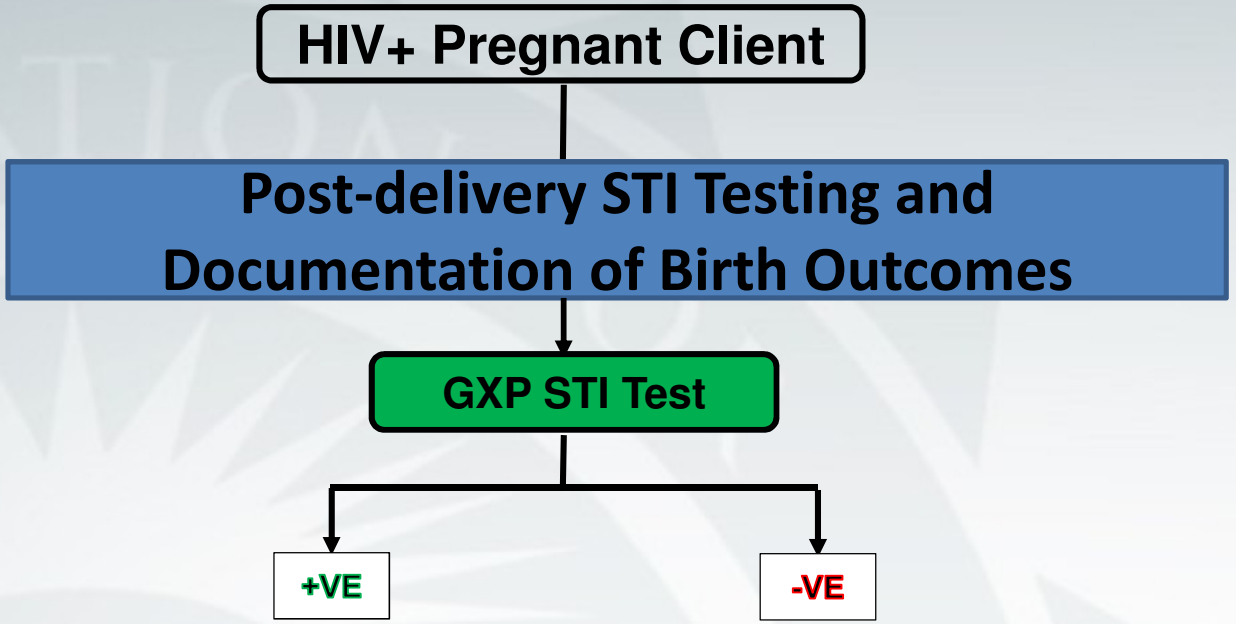
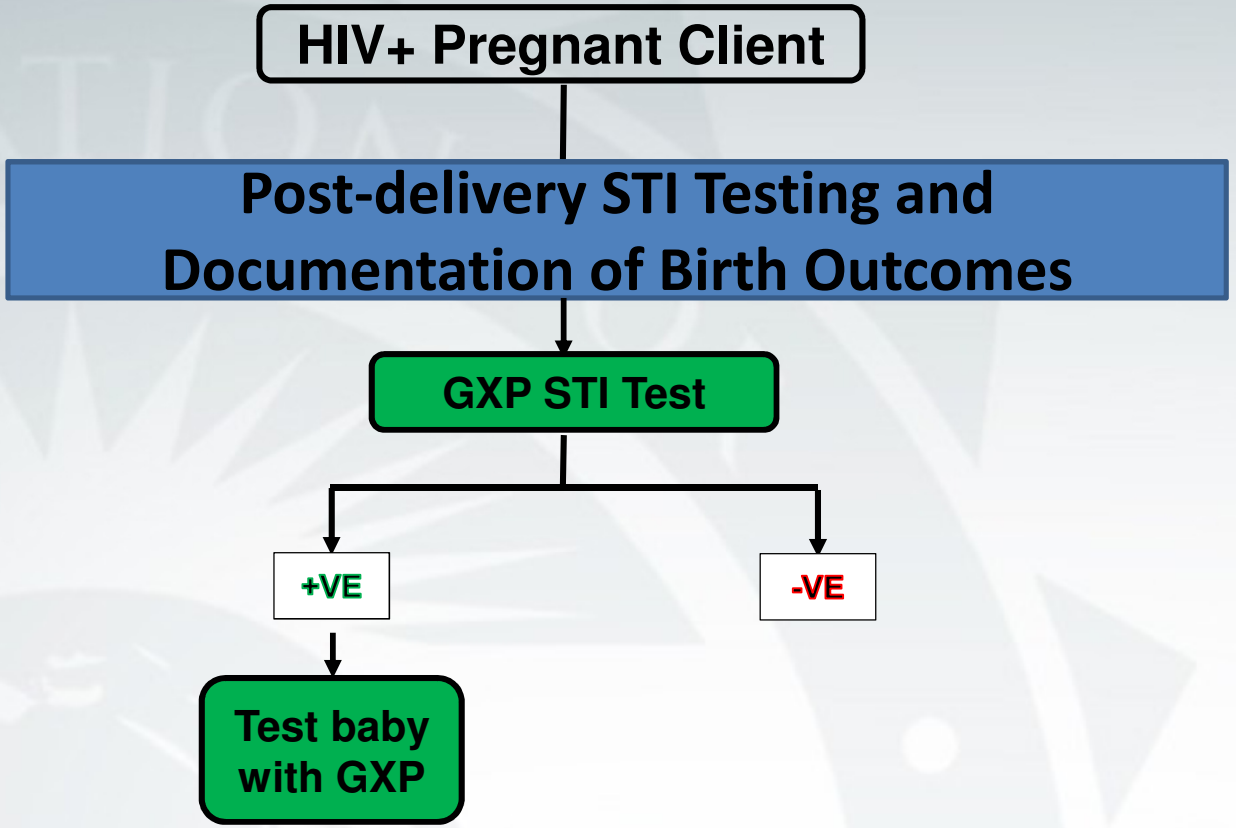
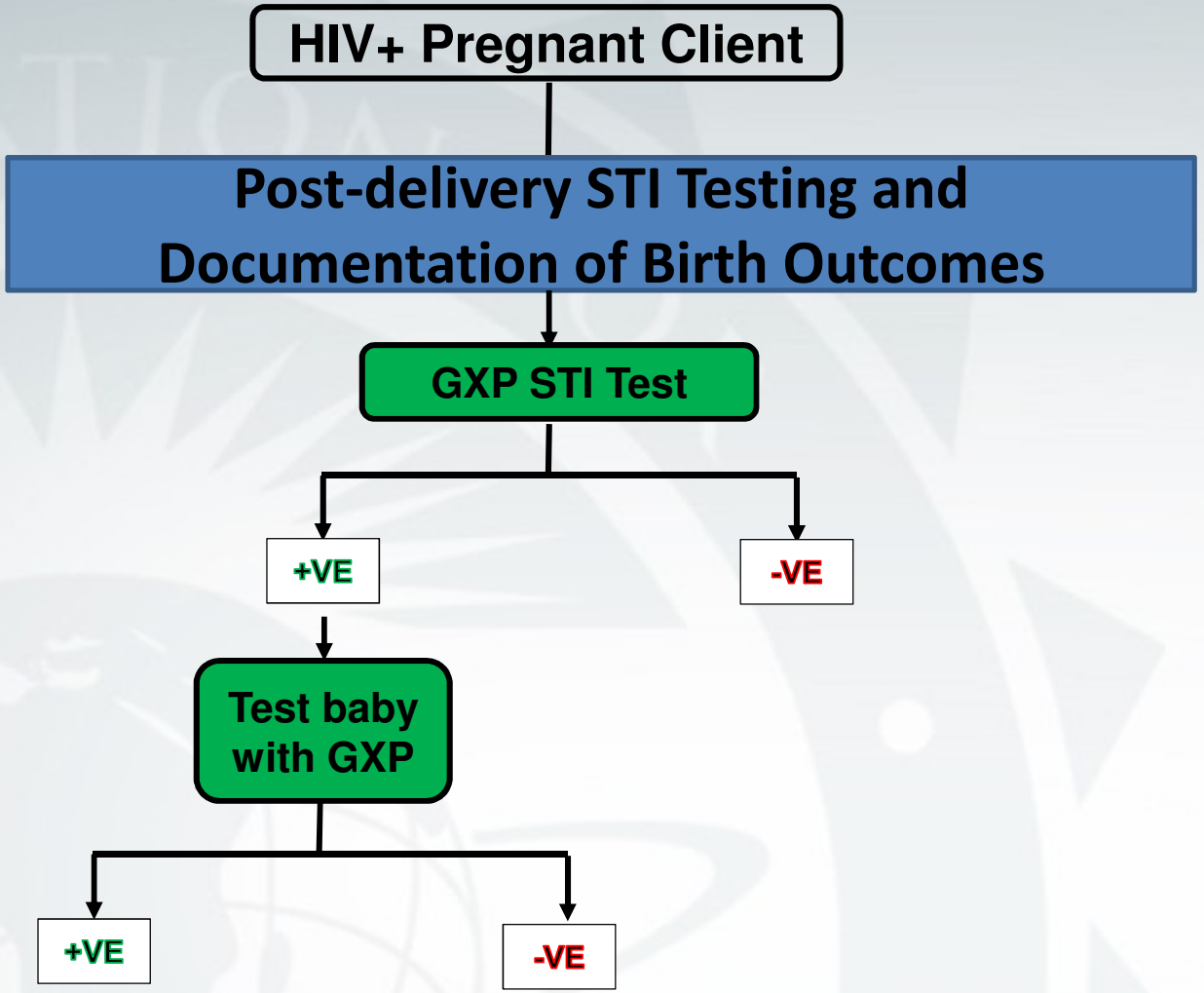
HIV+ Pregnant Client


HIV+ Pregnant Client
Post-delivery STI Testing and
Documentation of Birth Outcomes


HIV+ Pregnant Client
Post-delivery STI Testing and Documentation of Birth Outcomes
GXP STI Test
+VE
-VE


HIV+ Pregnant Client
Post-delivery STI Testing and Documentation of Birth Outcomes
GXP STI Test
+VE
-VE
Test baby with GXP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GXP STI Test
+VE
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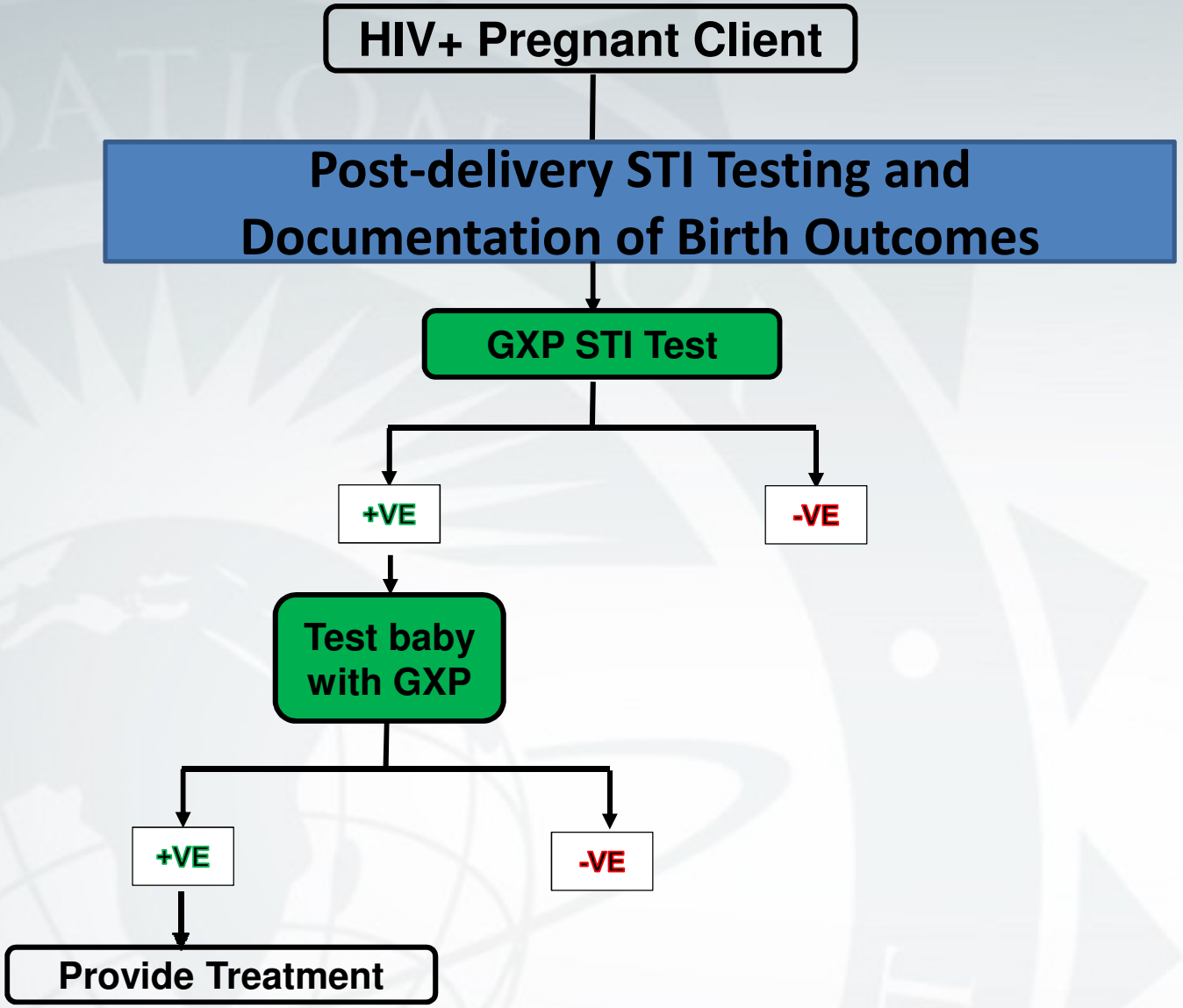
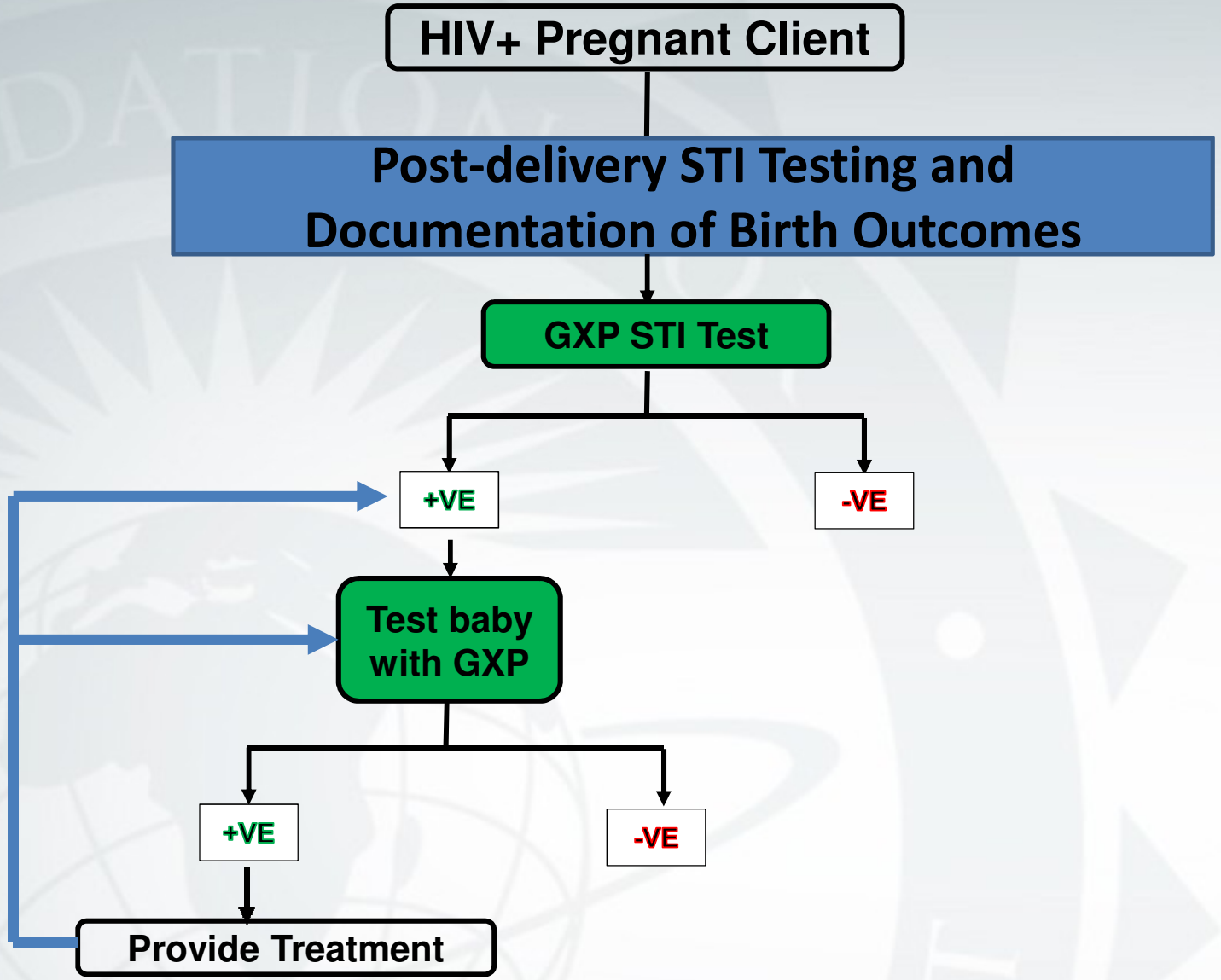

HIV+ Pregnant Client
Post-delivery STI Testing and Documentation of Birth Outcomes
GXP STI Test
+VE
-VE
Test baby with GXP
+VE
-VE
Provide Treatment


HIV+ Pregnant Client
Post-delivery STI Testing and Documentation of Birth Outcomes
GXP STI Test
+VE
-VE
Test baby with GXP
+VE
-VE
Provide Treatment

Post-Delivery CT, NG and TV Testing

- CT, NG and TV were tested using the Xpert® assay
- HIV+ women self-collected two vulvovaginal swab specimens
- Two nasopharyngeal swab specimens were collected from neonates by research nurses.
- Specimens were tested immediately

Treatment

- Participants were given targeted treatment on the basis of the Xpert® result if positive
- HIV+ women were managed syndromically if negative for all three organisms on Xpert®
- Neonates who tested negative on Xpert® were managed according to the IMCI guidelines

Data Management

- Real-time data collection, using REDCap (Research Electronic Data Capture)
- Data stored in a secure, password-protected web-based server
- Participants were assigned unique participant identification numbers (PIN) to allow direct linkage of data,

MM3

MM3 Rephrase

Maanda Mudau, 07/06/2017

Ethics

- **Ethical clearance granted by:**
  - University of Pretoria
  - University of California, Los Angeles (UCLA)
- **Permission to conduct study granted by Tshwane DoH and facility managers**
- **Consent sought from participants before enrolment**
- **Participant data kept confidential – only accessible to relevant study staff**

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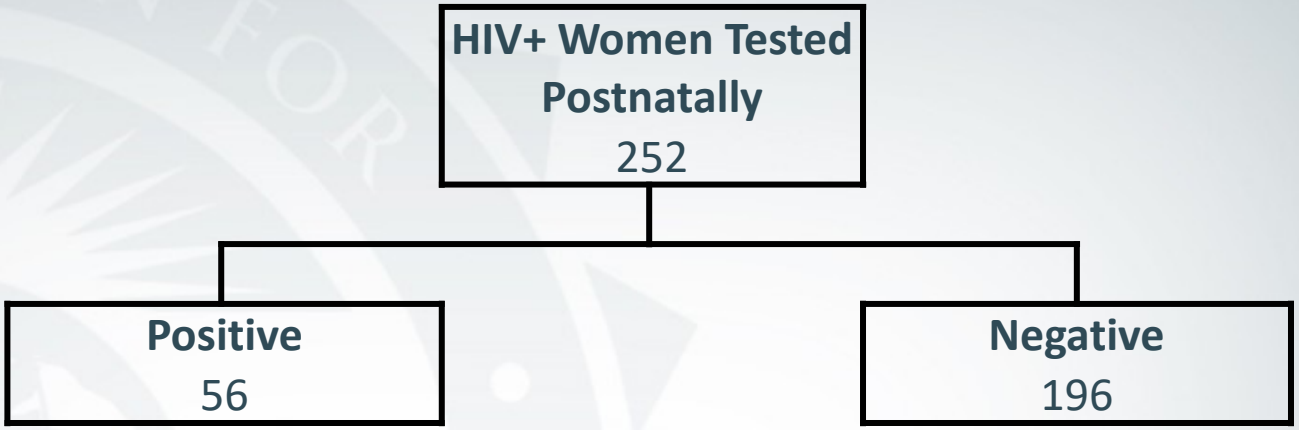
Results

Participant Testing

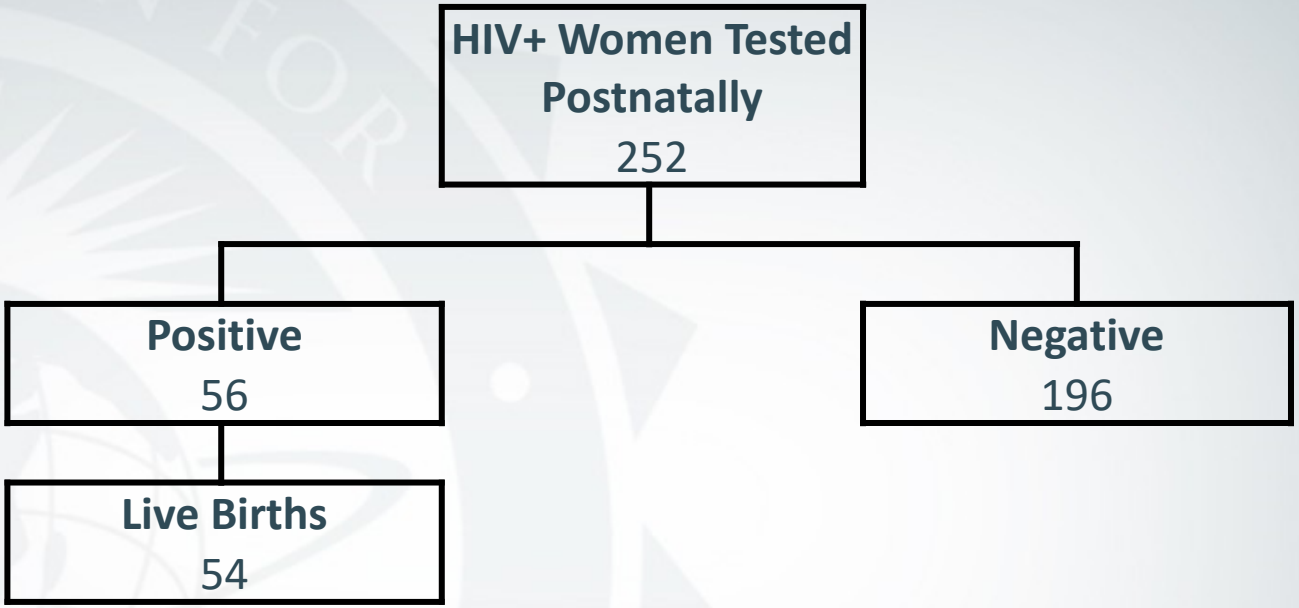
Participant Testing

HIV+ Women Tested Postnatally
252

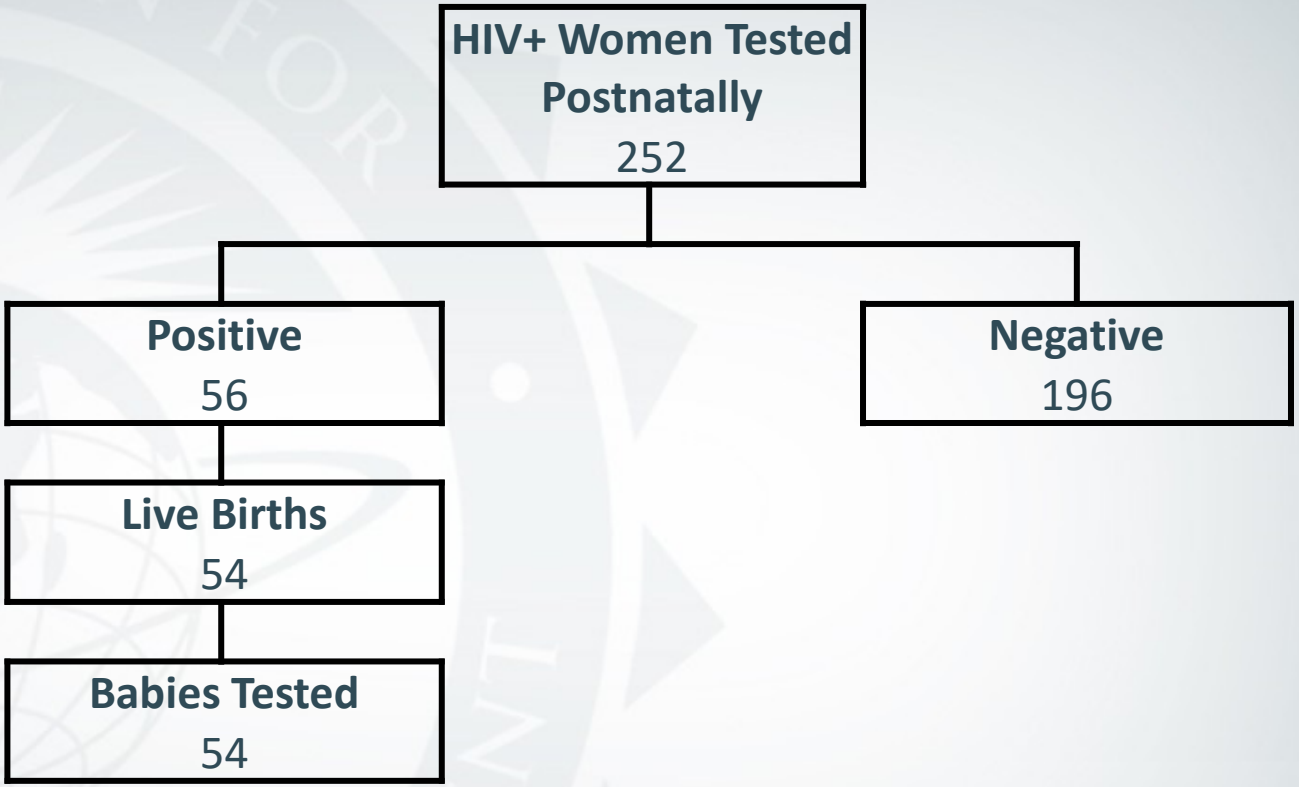
Participant Testing



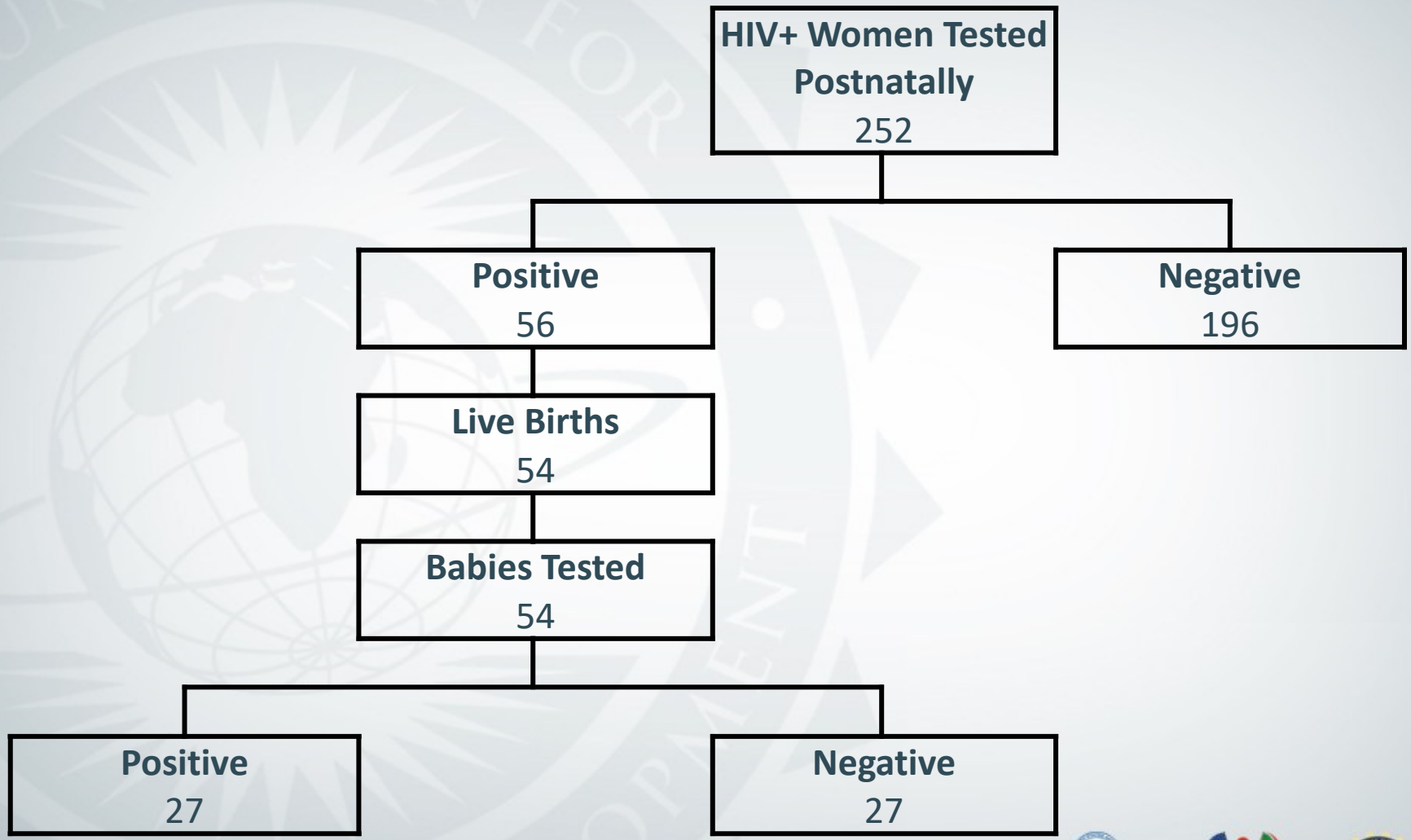
Participant Testing



Participant Testing



Participant Testing



Post- Delivery Maternal STI Prevalence

N = 252	n	%	95% CI
Any STI (CT/NG/TV) infection	56	22.20%	17.5% - 27.8%
Any CT infection	45	17.90%	13.6% - 23.1%
Any NG infection	4	1.60%	0.6% - 4.2%
Any TV infection	19	7.50%	4.9% - 11.6%

Neonatal CT/NG/TV Colonization Rate

	Neonates Tested	Number Positive	% Positive
Any STI (CT/NG/TV) infection, n (%)	54	27	50%
Mother has CT infection, n (%)	43	22	51%
Mother has NG infection, n (%)	3	0	0%
Mother TV infection, n (%)	18	5	28%

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Neonatal CT/TV Colonization Rate (by gestational age)

	Neonates Tested	Number Positive	% Positive
Pre-Term	2	1	50%
Full-Term	52	26	50.0%

Neonatal CT/TV Colonization Rate (by birth weight)

	Neonates Tested	Number Positive	% Positive
Low birthweight	5	4	80%
Normal birthweight	43	22	51%
Large birthweight	5	1	20%

Conclusions

- **Significant burden of STI co-infections in HIV+ women postnatally**
- **High rates of transmission of CT from mother to child**
- **Significance of colonization is unknown**
- **Among infants born to mothers with CT cervicitis:**
  - 20 – 50% develop conjunctivitis
  - 5 – 30% develop pneumonia

Conclusions

- Further studies to understand significance of colonization and risk factors for progression to clinical infection
- Integrate additional STI testing and targeted treatment during pregnancy

Acknowledgements

- **Tshwane District Dept. of Health**
- **FPD Research Unit**
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- **Collaborators**
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  - Dr Dvora Joseph Davey, UCT/UCLA
  - Drs James McIntyre and Remco Peters, Anova
- **U.S. NIH and PEPFAR funding**

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Any CT infection, n (%)	45	17.9%	13.6% - 23.1%
Any NG infection, n (%)	4	1.6%	0.6% - 4.2%
Any TV infection, n (%)	19	7.5%	4.9% - 11.6%
Mono-Infections	45	17.9%	13.6% - 23.1%
CT mono-infection, n (%)	34	13.5%	9.8% - 18.3%
NG mono-infection, n (%)	1	0.4%	0.06% - 2.8%
TV mono-infection, n (%)	10	4.0%	2.1% - 7.3%
Multi-Infections	11	4.4%	2.4% - 7.7%
CT/NG co-infection, n (%)	2	0.8%	0.2% - 3.2%
CT/TV co-infection, n (%)	8	3.2%	1.6% - 6.3%
NG/TV co-infection, n (%)	0	0.0%	
CT/NG/TV co-infection, n (%)	1	0.4%	0.06% - 2.8%

Treatment Regimens (Women)

Infection	Female Participants	Sexual Partners
Chlamydia trachomatis	Oral Azithromycin (two 500mg tablets)	Oral Azithromycin (two 500mg tablets)
Neisseria gonorrhoea	Ceftriaxone 250 mg IM and oral Azithromycin (two 500mg tablets)	Oral Cefixime (one 400mg tablet) and oral Azithromycin (two 500mg tablets)
Trichomonas vaginalis	Metronidazole 400 mg BD x 7 days	Metronidazole 2g stat dose

Treatment Regimens (Babies)

Infection	CT	NG	NG (*If a Calcium containing IV infusion (eg. Ringer-lactate or Neonatolyte) is given or expected to be given)	TV
Drug	Azithromycin	Ceftriaxone*	Cefotaxime	Metronidazole
Target Dose	20 mg/kg	50 mg/kg	100 mg/kg	50 mg/kg
Formulation				200 mg/5mL
Route	Oral	IM	IV or IM slowly	Oral
Weight	**Dose**	**Dose**	**Dose**	**Dose**
<1 kg	20 mg orally 1x per day for 3 days	50 mg IM 1x	100 mg IV or IM slowly	50 mg orally 1x = 1.25 mL
1 - 1.9 kg	40 mg orally 1x per day for 3 days	100 mg IM 1x	200 mg IV or IM slowly	100 mg orally 1x = 2.5 mL
2 - 2.9 kg	60 mg orally 1x per day for 3 days	125 mg IM 1x	300 mg IV or IM slowly	150 mg orally 1x = 3.75 mL
3 - 3.9 kg	80 mg orally 1x per day for 3 days	125 mg IM 1x	400 mg IV or IM slowly	200 mg orally 1x = 5mL
4 - 4.9 kg	100 mg orally 1x per day for 3 days	125 mg IM 1x	500 mg IV or IM slowly	250 mg orally 1x = 6.25 mL
5 - 5.9 kg	120 mg orally 1x per day for 3 days	125 mg IM 1x	600 mg IV or IM slowly	300 mg orally 1x = 7.5 mL
6 - 6.9 kg	140 mg orally 1x per day for 3 days	125 mg IM 1x	700 mg IV or IM slowly	350 mg orally 1x = 8.75 mL

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