23RD IUSTI WORLD CONGRESS

ELEPHANT HILLS RESORT, VICTORIA FALLS, ZIMBABWE | 4 - 7 SEPTEMBER 2022

CONFRONTING INEQUITIES IN STI PREVENTION, DIAGNOSTICS AND CARE

IUSTI

INTERNATIONAL UNION AGAINST SEXUALLY TRANSMITTED INFECTIONS

Alex de Voux

Division of Epidemiology & Biostatistics
University of Cape Town

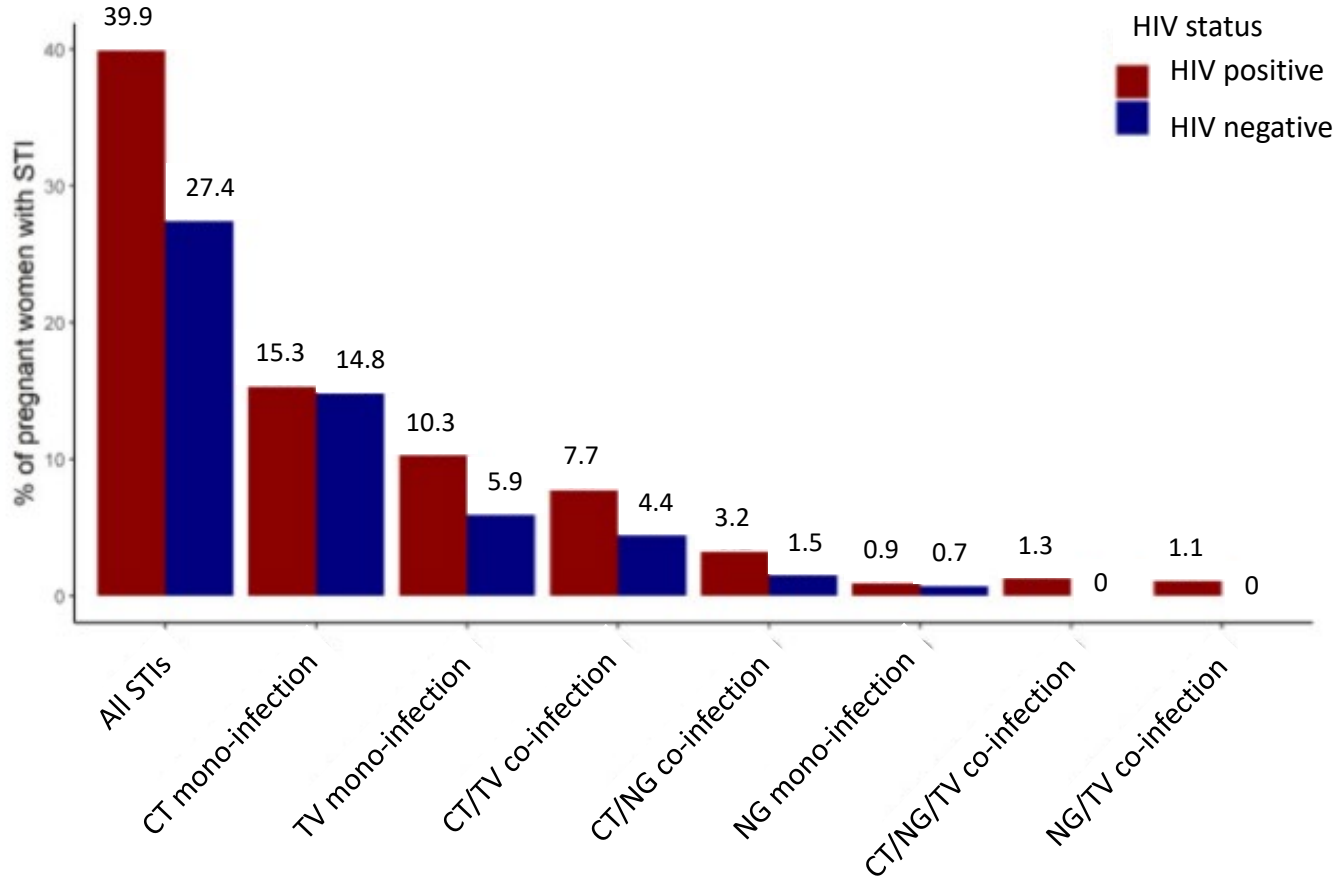
Point-of-care STI testing and HIV PrEP initiation among pregnant women in antenatal care — Cape Town, South Africa, 2019–2021

Disclosure

Any circumstances that could give rise to a potential conflict of interest related to the conference or topic under discussion	Name of company, organization or institution
Sponsorship	None
Payment or other financial remuneration	None
Shareholder rights	None
Other relations	Cepheid donation of GeneXpert STI test kits Gilead donation of study drug (Truvada)

There is a high HIV/STI incidence among pregnant and breastfeeding women in South Africa

- One-third of infant HIV infections attributed to acute maternal HIV infections
- Adverse effects of HIV/STIs during pregnancy can include pre-term labour, low birthweight, fetal and neonatal death



Graybill et al., *AIDS*, 2020; Nyemba, D.C., *Sex Transm Infect* 2021

Oral PrEP (TDC/FTC) is safe and effective at reducing HIV acquisition in pregnancy and postpartum

- There are a number of (biological and behavioral) factors that place individuals at risk of HIV and STI acquisition
- PrEP programs can serve as a platform to deliver STI interventions, such as aetiological STI testing
- However, data are scarce on the impact of STI testing on PrEP initiation and continuation

Study objectives

1. Determine effect of STI testing modality (point-of-care vs. laboratory-based) on PrEP initiation and continuation

2. Evaluate impact of point-of-care STI testing on time to STI test results and treatment compared to laboratory testing

PrEP in pregnancy and postpartum study

PrEP-PP
Pre-exposure Prophylaxis in Pregnancy & Postpartum

- Ongoing prospective cohort study that enrolled consenting pregnant women in Cape Town at one community health centre in a diverse, urban township with high HIV incidence
- Pregnant women enrolled at their first antenatal care visit and followed through 12-months postpartum
- Received HIV testing & counselling and offered PrEP at quarterly study visits
- Trained study interviewers collected data on sociodemographic, relationship, and HIV risk factors

PrEP-PP Inclusion Criteria

PrEP-PP
Pre-exposure Prophylaxis in Pregnancy & Postpartum

1. ≥ 16 years old
2. Confirmed to be pregnant
3. Confirmed HIV-negative (4^{th} generation antigen HIV test)
4. Intend to stay in Cape Town for and after birth
5. No psychiatric or medical contraindications to PrEP

Note: Women did not need to take PrEP to be in study and could start and stop PrEP at any time during study

PrEP-PP
Pre-exposure Prophylaxis in Pregnancy & Postpartum

2314 SCREENED

621 INELIGIBLE (27%)

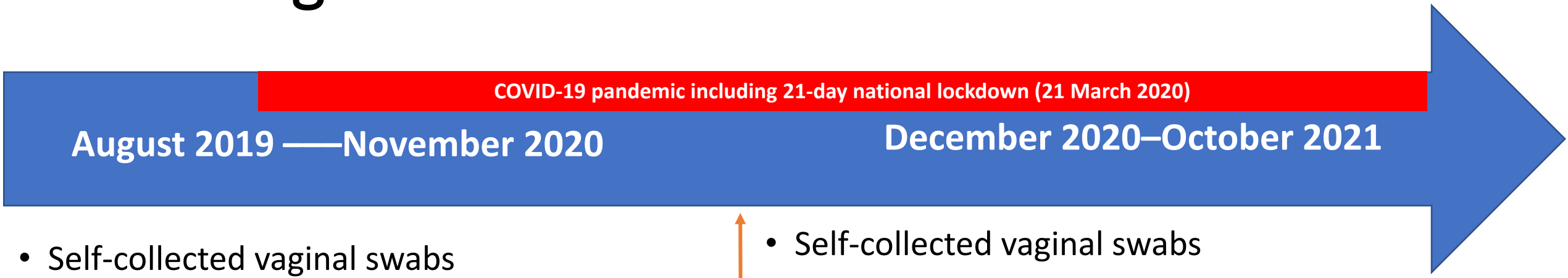
472 DECLINED PARTICIPATION (21%)

1194 WOMEN ENROLLED (52%)

1009 INITIATED PREP AT 1ST ANC VISIT (85%)

	MEDIAN AGE = **26 YEARS** MEDIAN GESTATION AGE = **21 WEEKS**
	**97%** SEXUALLY ACTIVE
	**60%** NOT MARRIED OR COHABITING
	**31%** UNSURE OF PARTNER HIV STATUS
	**12%** REPORTED IPV IN LAST YEAR
	**26%** HEARD OF PREP BEFORE

STI testing timeline in PrEP-PP



- Self-collected vaginal swabs
- Point-of-care testing using Cepheid/GeneXpert
- Tested for *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, and *Trichomonas vaginalis*
- Median time to STI result 0 days

- Self-collected vaginal swabs
- UCT laboratory testing, TaqMan Thermofisher (PCR Assays)
- Tested for *Chlamydia trachomatis*, and *Neisseria gonorrhoeae*
- Median time to STI result 26 days (IQR: 18-33)

Cepheid no longer produced sufficient STI tests for GeneXpert to support research studies

Participant Characteristics

	Overall (N=1194)		POC (N=646)		Lab (N=548)		P-value
	N (%) or Median (IQR)						
Maternal age (years)	26	(22–31)	26	(22–30)	27	(22–31)	0.52
Gestational age (weeks)	21	(15–31)	21	(14–29)	22	(15–32)	0.68
Education <grade 12	580	(49)	313	(54)	267	(46)	0.93
Employed	**428**	**(36)**	**254**	**(59)**	**174**	**(41)**	**0.01**
Gravidity:							
Primigravida	405	(34)	225	(56)	180	(44)	0.47
Multigravida	789	(66)	421	(53)	368	(47)	

Employment was higher in POC arm (prior to COVID lockdown, Aug 2019-Nov 2020)

Behavioral and Relationship characteristics

	Overall (N=1194)		POC (N=646)		Lab (N=548)		P-value
	N (%)						
Sexually active during pregnancy	1161	(97)	627	(97)	534	(97)	0.69
Cohabiting	441	(37)	230	(36)	211	(39)	0.15
Partner HIV status:							
HIV-	823	(69)	453	(70)	370	(68)	0.18
HIV+	20	(2)	7	(35)	13	(2)	
DK/No partner	351	(29)	186	(29)	165	(30)	
Used condom at last sex	362	(31)	200	(32)	162	(30)	0.56
Experienced IPV in past 12 months	142	(12)	89	(14)	58	(11)	0.09

No differences in sexual behavior or relationship status by STI test or before/during COVID-19 lockdown

STI prevalence

	Overall (N=1194)		POC (N=646)		Lab (N=548)		P-value
	N (%)						
Any STI (CT/NG/TV)	**373**	**(31)**	**221**	**(34)**	**152**	**(28)**	
CT/NG diagnosis	334	(28)	182	(28)	152	(28)	0.87
CT diagnosis	285	(24)	161	(25)	124	(23)	0.35
NG diagnosis	97	(8)	45	(7)	52	(9)	0.11
TV diagnosis	75	(6)			75	(12)	

STI treatment

	Overall (N=1194)		POC (N=646)		Lab (N=548)		P-value
	N (%) or Median (IQR)						
Days to STI treatment	**0**	**(0–18)**	**0**	**(0–0)**	**23**	**(11–49)**	**<0.01**
Treated on same day	143	(43)	143	(79)	0	(0)	
Treated on different day as STI diagnosis	**140**	**(42)**	**31**	**(17)**	**109**	**(72)**	**<0.01**
Not treated	**51**	**(15)**	**8**	**(4)**	**43**	**(28)**	**<0.01**

POC STI led to higher proportion of women getting STI treatment and getting STI treatment on same day as diagnosis

PrEP initiation at 1st antenatal visit

	Overall (N=1194)		POC (N=646)		Lab (N=548)		P-value
	N (%)						
Initiated PrEP	**1009**	**(85)**	**582**	**(90)**	**427**	**(78)**	**<0.01**
Confirmed PrEP *start* at 1-month:							
Yes	**826**	**(82)**	**444**	**(76)**	**382**	**(89)**	**<0.01**
No	15	(1)	8	(1)	7	(2)	
Lost to follow-up	168	(17)	130	(22)	38	(9)	

Higher proportion of POC-tested pregnant women initiated PrEP at 1st antenatal care visit compared to laboratory-tested pregnant women

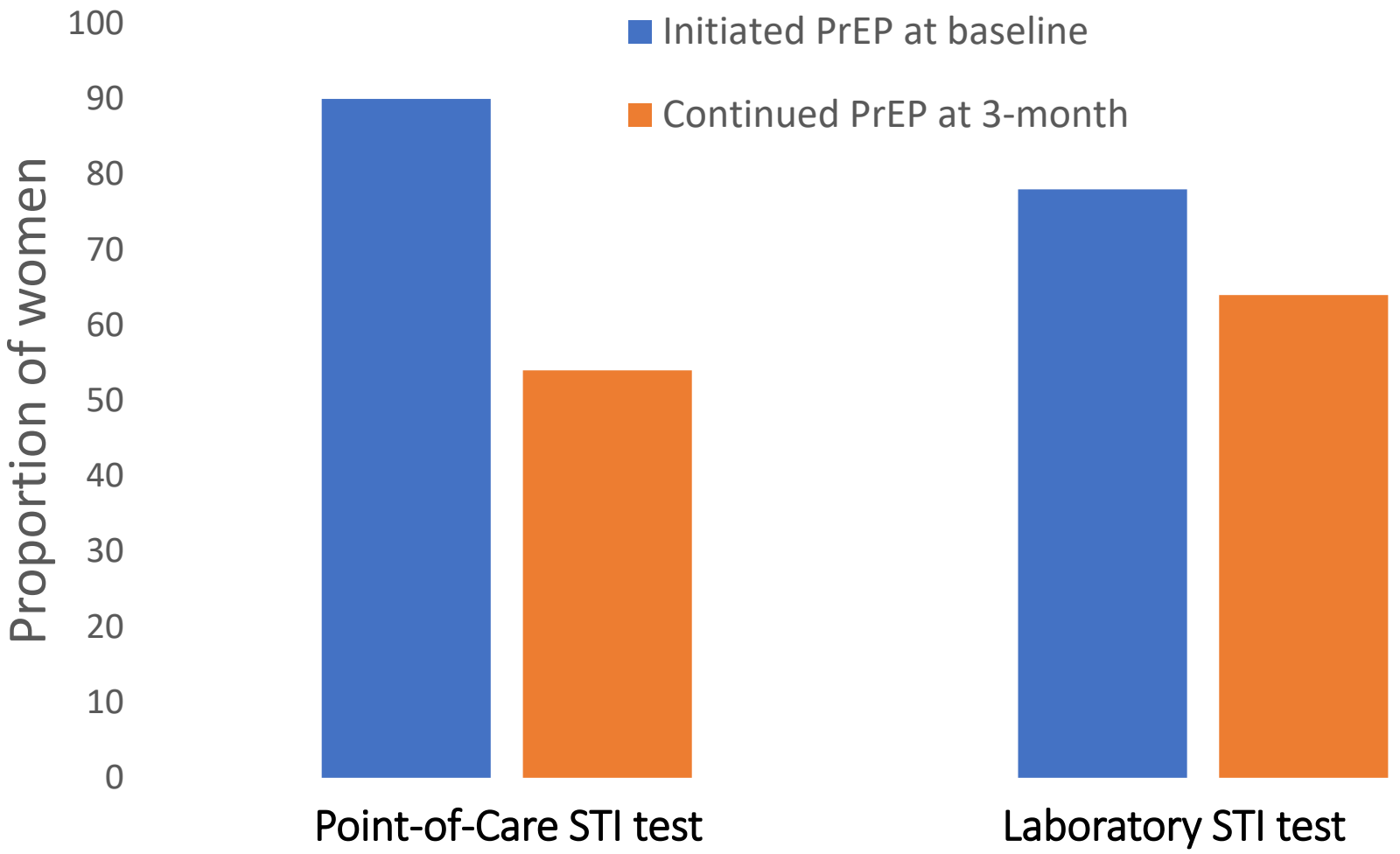
However, 1-month loss-to-follow-up was higher in POC-tested vs. laboratory-tested women

Correlates of PrEP initiation among pregnant women in antenatal care (n=1009), Cape Town, South Africa

	Adjusted odds ratio (95% CI)*		P-value
STI test method:			
Laboratory	Ref		
Point-of-care	**2.07**	**(1.47–2.91)**	**<0.01**
CT and/or NG diagnosis	1.11	(0.76–1.61)	0.60
Maternal age ≥24 years	1.15	(0.72–1.81)	0.56
Gestational age ≥20 weeks	1.00	(0.98–1.02)	0.95
Multigravida (vs. primigravida)	**1.68**	**(1.08–2.62)**	**0.02**
Experienced IPV in past 12 months	1.65	(0.93–2.94)	0.09

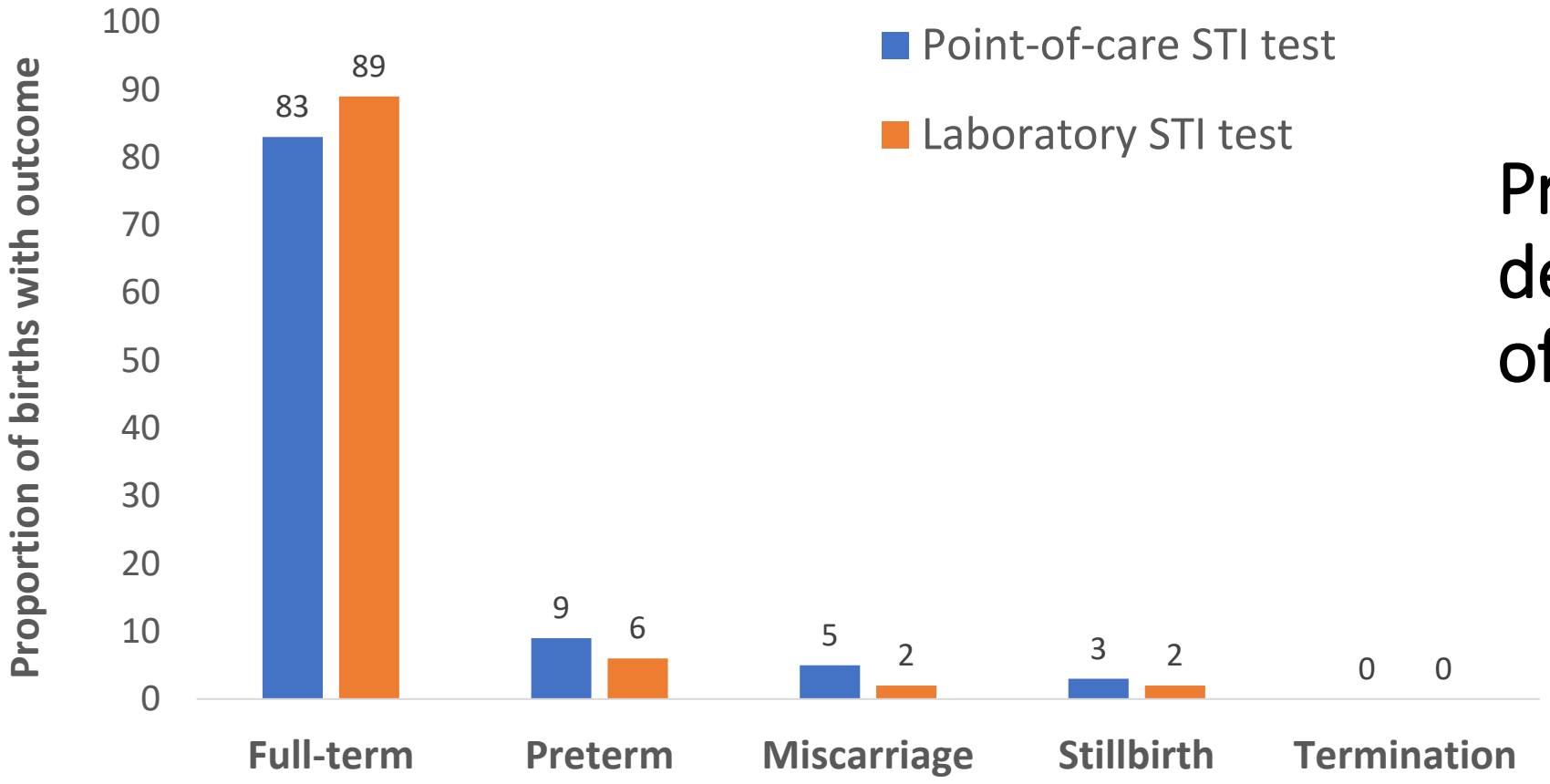
* Adjusted for employment status, relationship status and perceived risk of HIV acquisition

Proportion of pregnant women initiating PrEP and continuing at 3 months by STI test



79% of women returned after 3 months:
75% among laboratory-tested and
82% of POC-tested women

Pregnancy outcomes by STI test



Pregnancy outcomes determined for >90% of women

Discussion

- High prevalence of curable STIs during pregnancy (~30%) with >90% of women sexually active
- Laboratory STI testing increased median time to results (26 days) which may contribute to poor pregnancy and birth outcomes and HIV risk in pregnancy
  - 19% of lab-tested women treated after giving birth compared to 4% among POC-tested women
- Higher proportion of pregnant women deciding to initiate PrEP after POC STI test (independent of STI result)

Study limitations

- Differing time periods for each STI testing modality (spanning COVID-19 lockdown in South Africa)
    - However, sexual behaviours and relationships did not differ before/after COVID lock down
- Study conducted in one public health facility in Cape Town limiting generalizability
- Did not collect information on presence of STI-related symptoms nor analyse NG resistance

Recommendations

PrEP-PP
Pre-exposure Prophylaxis in Pregnancy & Postpartum

- Include targeted STI interventions, such as point-of-care, aetiological tests, into PrEP programmes among pregnant women to;

  (1) Reduce burden of STIs among pregnant women and consequent adverse outcomes

  (2) Increase understanding of HIV risk factors when assessing PrEP start and continuation

Thank You!

PrEP-PP
Pre-exposure Prophylaxis in Pregnancy & Postpartum

Special thanks to:

- Co-authors: Rufaro Muvudu, Nyiko Mashele, Anna Happel, Heather Jaspan, Landon Myer, Dvora Davey Joseph
- PrEP-PP study staff
- Pregnant women who participated in the study
- Western Cape Department of Health
- Gilead for the study drug (Truvada©)
- Cepheid, Inc. for the GeneXpert STI test donations

Donors: NIMH (R01MH116771; PI Joseph Davey & Myer) and Fogarty International (K01TW011187; PI Joseph Davey)