



Prevention effective adherence to oral PrEP among pregnant and postpartum women in South Africa

Dvora Joseph Davey, D. Nyemba, J. Castillo-Mancilla, L. Wiesner, J. Norman, R. Mvududu, N. Mashele, L. Johnson, L. Myer



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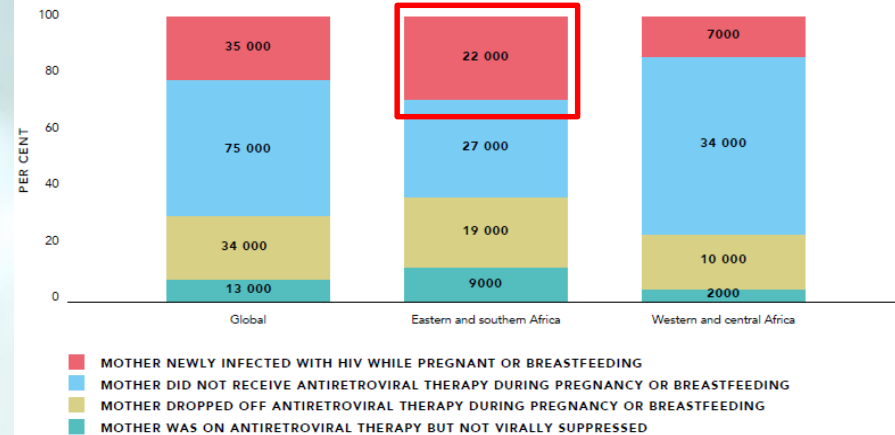




Background

- **High HIV incidence** during pregnancy and breastfeeding
- **Risk of vertical transmission high** in acutely infected women
 - **Half of new child infections** are in East and Southern Africa
 - >35,000 infant HIV infections from incident HIV during pregnancy or breastfeeding
 - ~22,000 infant infections in E. And Southern Africa

FIGURE 2.12 Percentage of new vertical HIV infections by cause of transmission, global and selected regions, 2021



Source: UNAIDS epidemiological estimates, 2022 (<https://aidsinfo.unaids.org/>).





PROBLEM

**South Africa expects
>76,000 new infant
HIV infections in the
next decade (without
effective PrEP)**

**~1/3 of all infant HIV
infections attributed to
acute maternal HIV
during
pregnancy/postpartum**



APPROACH

**Improve access and
use of HIV
prevention
strategies, incl. PrEP
to prevent new HIV
throughout pregnancy
and postpartum period
→**

**Support elimination
of vertical HIV
transmission**





Barriers to daily oral PrEP use in Pregnant and postpartum women

Logistical

- forgetting to take PrEP daily
- being away from home when PrEP should be taken
- logistics around PrEP collection esp when not in care
- transport and financial barriers

- ## Daily Pill-related
- pill side effects
 - pill burden during pregnancy/postpartum

Sociocultural

- anticipated PrEP stigma
- limited disclosure of PrEP use & concealment of PrEP particularly more challenging postpartum period (when not taking prenatal vitamins, in ANC)



Sources:

Moran, A. et al, *AIDS and Behavior* (2020)

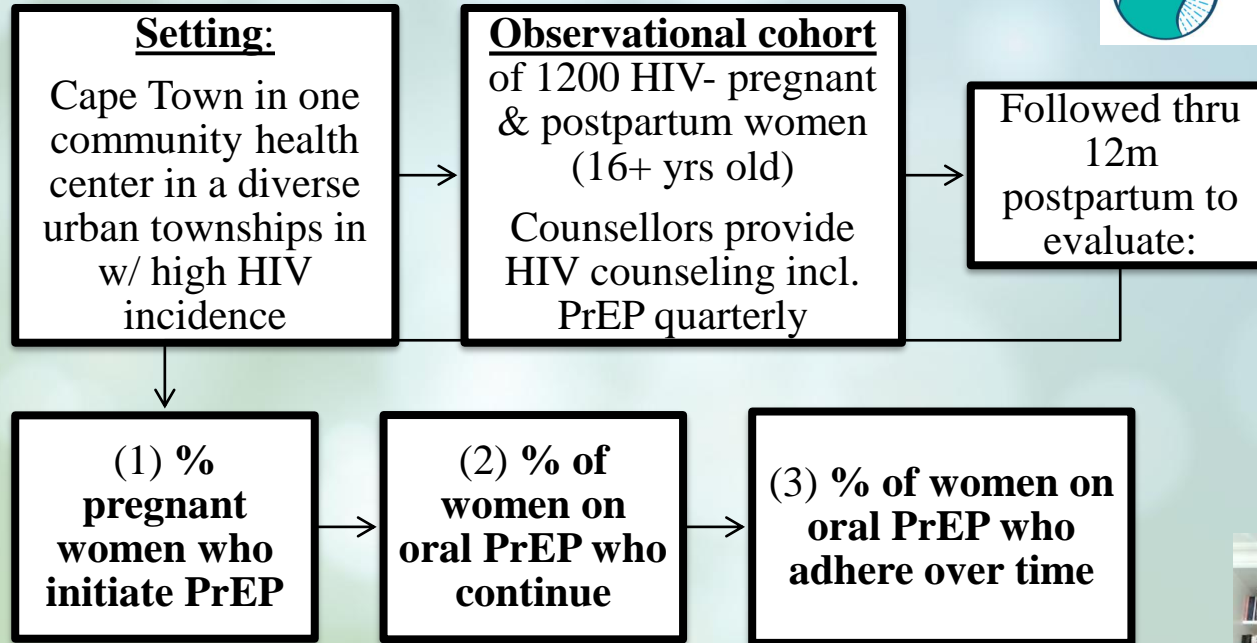
Beesham, I. et al, *AIDS and Behavior* (2021)

Pintye, J. et al, *Journal of Acquired Immune Deficiency Syndromes* (2021)





Methods: PrEP-PP cohort study



Mixed methods evaluation that allows women to start or stop PrEP at any time



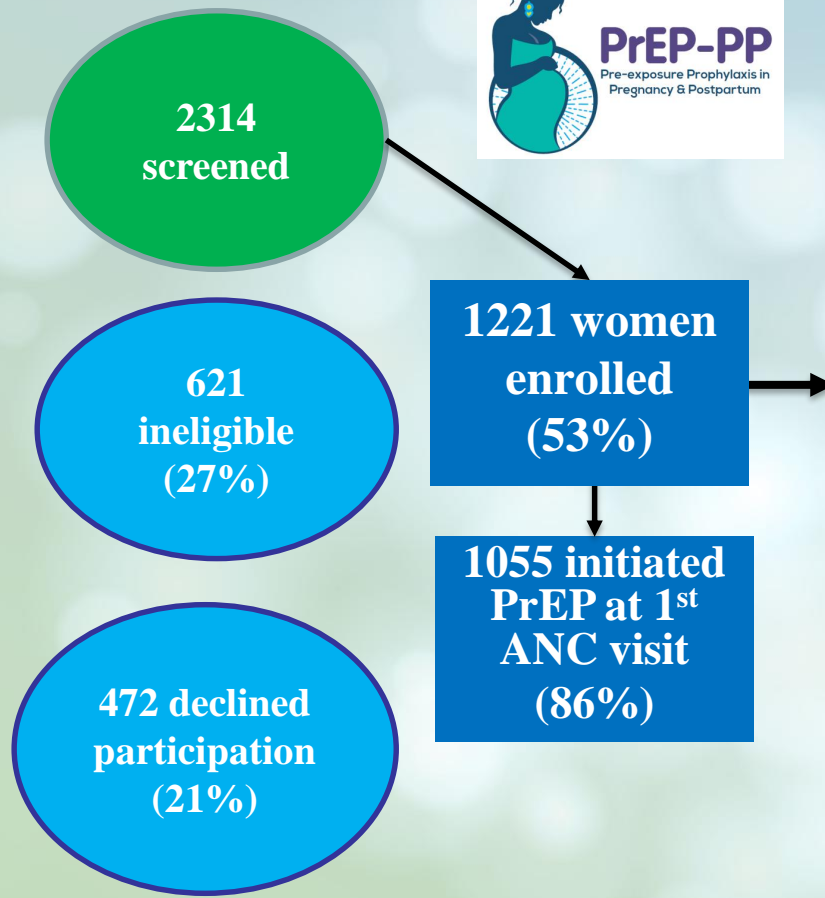











Objective Adherence Evaluation: Methods

- Recruited women on PrEP who returned for PrEP-PP study visit at 3+ months
- Obtained blood for dried blood spots to quantify tenofovir diphosphate (TFV-DP)*
 - Compared with self-reported adherence in those reporting taking PrEP in the past 30-days
- Assessed TFV-DP levels (≥ 2 doses/week compared with < 2 doses/week) by pregnancy vs. postpartum status – *to evaluate predictors of low/no PrEP use*
- Logistic regression models using generalized estimating equations to evaluate associated correlates to estimate odds ratios adjusting for covariates



* **Established TFV-DP levels by pregnancy vs. postpartum:** Stranix-Chibanda L, et al. Tenofovir Diphosphate Concentrations in Dried Blood and Postpartum Adolescent and Young Women Receiving Daily Observed Pre-exposure Prophylaxis in Sub-Saharan Africa. Clin Infect Dis. 2021



	Median age=26
	Median gestation age= 21 weeks
	93% sexually active
	90% reported recent condomless sex
	60% not married or cohabiting
	31% unsure of partner's serostatus
	13% reported IPV in last yr
	49% reported substance use in year
	26% had heard of PrEP before

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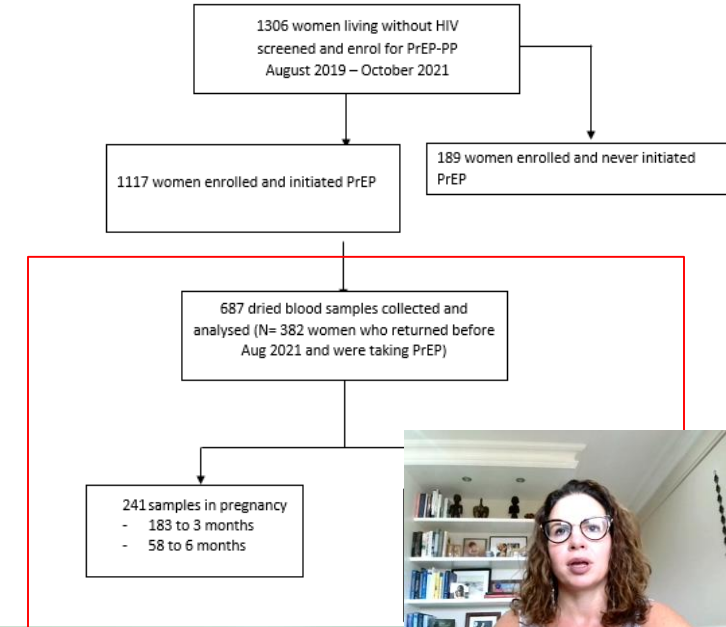




Cohort description (for TFV-DP analysis)

- Between Aug 2019-Aug 2021, we included n=382 women who returned for study visits, (n=687 DBS samples)*
 - 241 in pregnancy (35%)
 - 446 in postpartum (65%)
- Median age was 27 years (IQR: 23-32 years)
- 54% were >20 weeks gestation at first antenatal visit
- Median time on PrEP was 168 days (IQR=84-252 days)

Figure 1: Consort flow diagram for pregnant women enrolment in PrEP-PP study and eligible for dried blood spot analyses of tenofovir diphosphate (TFV-DP)



* Women who did not return for the visit, or did not report taking PrEP were excluded from analysis



Objective measures of recent PrEP use (n=687 samples)

*TFV-DP= tenofovir diphosphate

	Total (n=687)	Pregnant (n=331)	Postpartum (n=356)
Quantifiable TFV-DP	52%	67%	60%
TFV-DP (fmol per punch)			
< 2 doses/week	72%	75%	86%
2-6 doses/week	25%	30%	29%
7 doses/week	3%	7%	2%

- Overall, 72% had concentrations corresponding to <2 doses/week
- Any quantifiable TFV-DP declined over time from 67% at 3m in pregnant women to 31% of postpartum samples at 12m
- TFV-DP was lower in postpartum vs. pregnancy (aOR=0.44, 95% CI=0.35, 0.54; p=0.001)

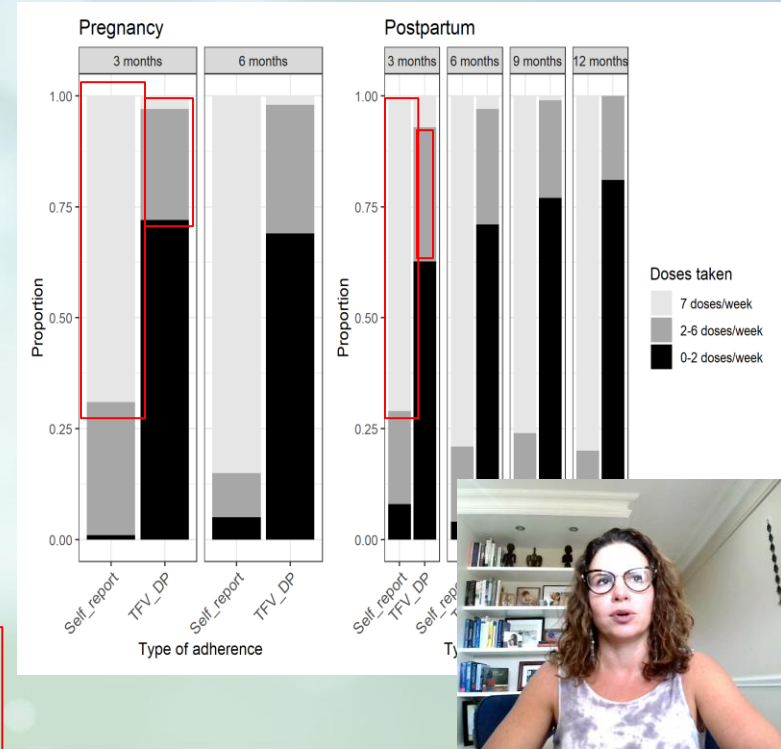




Results: Comparison with self-reported adherence

- **Self reported adherence on PrEP in pregnancy was high**
 - 70-80% who continued said they took 7 doses in past week
- **Objective adherence significantly lower...** In pregnant women at 3m:
 - 75% of pregnant women had any TFV-DP in DBS, yet:
 - 30% had concentrations consistent with 2-6 doses/wk
 - 7% had concentrations consistent with 7 doses/wk

Correlation coefficient between self report and objective levels low (0.10 [95% CI=0.02, 0.17])





Results: Factors associated with objective levels of PrEP

- Outcome: TFV-DP concentrations levels consistent with ≥ 2 days/week (vs. < 2 days or no TFV-DP)
- **Sex activity and HIV risk associated with increased odds of better PrEP adherence**

Covariate	aOR (95% CI)*
Age (per year)	1.01 (1.00, 1.02)
Gestational age at first ANC visit (≥ 20 weeks vs < 20 weeks)	1.59 (1.05, 2.41)
Postpartum vs. pregnant	0.43 (0.31, 0.58)
Partner living with HIV or unknown serostatus	1.50 (1.01, 2.22)
Breastfeeding vs not breastfeeding	1.83 (1.04, 3.20)
Sex frequency (≥ 5 times/month vs < 5 times or none)	2.11 (1.58, 2.82)

* Models adjusted for maternal age at baseline and pregnancy vs. postpartum status at study visit date





Study strengths and limitations

- **Strengths:**
 - **Integration:** Study integrated into ante and postnatal care
 - **Design:** Large cohort with follow up thru 12m postpartum
- **Limitations:**
 - **Generalizability:** study limited to one urban study site
 - **Potential bias:** Results only of those who report using PrEP - potential overestimation of the true proportion of women who took PrEP
 - **Labs:** Did not collect hematocrit, which may be low or variable in or postpartum women and may underestimate TFV-DP
 - **Retention:** Difficulties with study retention during COVID-19





Conclusion

- Adherence to PrEP using objective measures was poor in pregnant and postpartum women
- In sexually active & breastfeeding women recent adherence was higher, indicating the **importance of prevention effective adherence in this population**
- Focusing adherence interventions on pregnant & postpartum women at risk remains essential in offering PrEP services



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Contact: Dvora Joseph Davey
dvoradavey@ucla.edu

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