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OBJECTIVE ASSESSMENT OF DOXYCYCLINE PEP USE AMONG CISGENDER WOMEN IN KENYA

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BACKGROUND

Doxycycline postexposure prophylaxis (doxycycline hyclate 200mg taken within 72 hours of sex) reduces incident bacterial STIs among men who have sex with men but not among cisgender women in initial trials.[1,2,3] **Adherence is a key component of effective biomedical interventions**, and some initial trials of HIV PrEP among cisgender women reported null results due to low adherence. Low adherence was most common among those under 24 years old in initial PrEP trials despite having an increased risk of HIV acquisition.[4,5]

METHODS

We analyzed doxycycline use with an objective metric among all follow-up visits of a randomly selected subset:

- n=50, 200 person-visits, participants assigned to doxycycline PEP

Open-label randomized trial among 449 women aged 18-30 years in Kisumu, Kenya.

- Participants returned quarterly over one year for STI testing and behavioral surveys; and provided hair samples for objective detection of doxycycline (UCSF Hair Analytical Laboratory).
- The **1cm hair segment from the scalp, representing exposure over approximately the preceding month**, was tested for doxycycline detectability (≥0.200 ng/mg) using liquid chromatography-tandem mass spectrometry.

Baseline and time-varying covariates potentially associated with doxycycline detection were assessed using modified Poisson regression with robust standard errors and generalized estimation equations.

Doxycycline PEP use was low.
Use was associated with age ≥24 years and not having a primary partner.

Table 1. Characteristics associated with doxycycline detection in hair samples collected quarterly from participants assigned to doxycycline PEP in the dPEP Kenya Study.

Characteristics	Doxycycline detected (58/200 quarters)	Unadjusted RR (95% CI)	Unadjusted P-value	Adjusted RR (95% CI)[1]	Adjusted P-value^
Age >= 24 years, baseline	46/108 (42.6%)	3.27 (1.70-6.27)	**<0.001**	2.08 (1.01-4.26)	**0.047**
Participant earns own income, baseline	48/120 (40.0%)	3.20 (1.54-6.63	**0.002**	1.93 (0.83-4.49)	0.125
Any STI detected, baseline	13/40 (32.5%)	1.16 (0.54-2.49)	0.712	-	-
Transactional sex, in prior 3 months	25/74 (33.8%)	1.29 (0.73-2.28)	0.380	-	-
Does not have a primary sex partner	16/30 (53.3%)	2.16 (1.38-3.38)	**0.001**	1.75 (1.11-2.75)	**0.016**
>1 sex partner, in prior 3 months	39/100 (39.0%)	2.05 (1.13-3.73)	**0.018**	1.55 (0.83-2.92)	0.171
Median sexual frequency, weekly					
Low (≤1)	23/88 (26.1%)	-	-	-	-
Moderate (2-3)	26/66 (39.4%)	1.51 (0.90-2.53)	0.122	-	-
High (≥4)	9/24 (37.5%)	1.43 (0.71-2.92)	0.319	-	-

^Model includes all unadjusted associations where p<0.05.

RESULTS

Doxycycline was detected in 29.0% (58/200) of hair samples, and 32.6% (58/178) when censoring pregnancy time off doxycycline.

- Age of 24 years or older, an independent income source, more than one partner, and no primary sex partner were all associated with detection of doxycycline.
- After adjustment, older age and not having a primary partner both remain significantly associated with doxycycline use.
- Common risk factors for STI exposure, e.g., higher frequency of sex, transactional sex, or prior STI, were not associated with the detection of doxycycline.
- Participants reporting a concern about getting an STI 34.4% (22/64) or concern that the primary partner had other partners 29.1% (23/79) did not exhibit an increase in doxycycline detection.

CONCLUSIONS

Use of event-driven doxycycline PEP was low among young women with high prevalence and incidence of STIs. More work is needed to understand adherence behavior and efficacy of doxycycline PEP for people assigned female sex at birth.

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