Doxycycline Postexposure Prophylaxis to Prevent *Trichomonas vaginalis* Among Cisgender Women

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BACKGROUND

- *Trichomonas vaginalis* (TV) is the most prevalent curable sexually transmitted infection (STI) and disproportionately affects cisgender women, leading to:
  - Reproductive complications
  - Increased risk of HIV acquisition
- Reports of resistance to metronidazole and tinidazole, the primary medications for *T. vaginalis*, signal the urgency for novel treatment and prevention strategies[1]
- In-vitro studies indicate doxycycline as a potential treatment[2]
- No studies have yet explored doxycycline's preventative efficacy against *T. vaginalis* infection
- Doxycycline post-exposure prophylaxis (dPEP) has been evaluated for STI prevention, such as gonorrhea and chlamydia; investigating its potential to prevent *T. vaginalis* could provide an additional benefit

Objective:

- To examine the effectiveness of dPEP in preventing *T. vaginalis* infection using data from the dPEP Kenya trial

Our study is the first to assess doxycycline post-exposure prophylaxis (dPEP) for *Trichomonas vaginalis* prevention in women on PrEP, showing no significant difference in incidence compared to standard of care.

METHODS

Study design:

- The dPEP study was an open-label randomized trial with 449 women (18-30 years) on oral PrEP in Kisumu, Kenya
- Participants were randomized to two groups:
  - dPEP: 200mg within 72 hours after condomless sex, not exceeding once daily
  - Standard of care (SOC): Quarterly STI screening and treatment, excluding dPEP.
- All participants were followed for 12 months with quarterly visits for:
  - STI testing, including *T. vaginalis* using Cepheid GeneXpert.
  - Hair samples (~50-100 strands were collected and analyzed for the presence of doxycycline
  - Surveys completed on health and behavioral parameters.

Analysis approach:

- Intention-to-treat analysis using Poisson regression with generalized estimating equations
- Survival analysis for time to first *T. vaginalis* infection was performed using Kaplan-Meier estimators and log-rank tests

RESULTS

- Baseline characteristics were similar between the dPEP (n=224) and SOC (n=225) groups, with a median age of 24 (IQR: 22-27) and 36.7% reporting engagement in transactional sex. The baseline prevalence of T. vaginalis was 4.9% in the dPEP group and 6.2% in the SOC group
- High retention rate with 97% of expected scheduled visits completed
- There were 56 incident *T. vaginalis* infections, with 27 cases in the dPEP group and 29 in the SOC group, among 46 participants (Figure 1)
- No significant reduction in *T. vaginalis* incidence with dPEP compared to SOC (RR: 0.96, 95% CI: 0.54-1.73) (Table 1)
- Time to first *T. vaginalis* infection showed no significant difference between dPEP and SOC groups using the log-rank test (p=0.7)
- In a subset of 50 participants assigned to dPEP who had testing done for detection of doxycycline in their hair , doxycycline was found in all quarterly hair samples for 29%(58/200) of visits

Table 1. Efficacy of dPEP on incident *T. vaginalis* in the Intent-to-treat population and select sub-groups[a]

Analysis/subgroup	Incident infections in dPEP arm	Incident infections Standard of Care arm	Relative Risk (95% CI)
Intention to Treat	27/849 (3.2%)	29/883 (3.3%)	0.96 (0.54-1.73)
Follow-up censored at pregnancy[b]	24/741 (3.2%)	24/804 (3%)	1.07 (0.58-1.98)
STI at Baseline[c]			
None	18/658 (2.7%)	19/692 (2.7%)	0.99 (0.47-2.07)
STI at Baseline [d]	9/191 (4.7%)	10/191 (5.2%)	0.90 (0.35-2.32)
Age Group			
18-24 years	20/512 (3.9%)	20/494 (4%)	0.96 (0.50-1.86)
25-30 years	7/337 (2.1%)	9/389 (2.3%)	0.89 (0.27-2.95)
Transactional Sex [c]			
None	9/367 (2.5%)	13/448 (2.9%)	0.84 (0.32-2.26)
Transactional Sex	9/335 (2.7%)	14/299 (4.7%)	0.57 (0.23-1.41)
Contraceptive use[c]			
None	6/286 (2.1%)	13/355 (3.7%)	0.56 (0.20-1.58)
Hormonal contraceptives[e]	21/563 (3.7%)	16/528 (3.0%)	1.23 (0.60-2.51)

CI = Confidence Interval; dPEP = Doxycycling pre-exposure prophylaxis.

a The denominator represents the number of quarterly visits with test results.

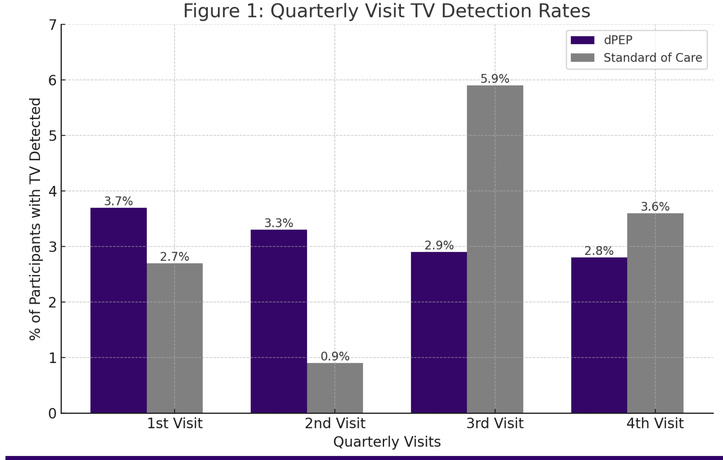
b For the 'Pregnancy time censored' population, person-time stops at a positive pregnancy test, with no re-entry for later negative tests

c At baseline

d STI includes *T.vaginalis*, *C. trachomatis*, *N. gonorrhoeae*, *T. pallidum*

e Contraception includes IUD, implant, DMPA, and oral contraceptive pills

Figure 1: Quarterly Visit TV Detection Rates



CONCLUSIONS

- Randomization to the dPEP group did not reduce the incidence of *T. vaginalis* infections in cisgender women on oral PrEP in Kenya
- Low use of doxycycline may have contributed to this null result, highlighting the need to explore its role in preventing *T. vaginalis* in future research

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