

Efficacy of Doxycycline as PEP to Prevent Bacterial STIs

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MEDLINE/PubMed and Embase were searched through June 30, 2023 using the terms: Medline/PubMed: (doxycycline) AND (chlamydia OR gonorrhea OR syphilis) AND (PEP OR post-exposure prophylaxis OR pre-exposure prophylaxis OR PrEP) AND (Clinical Trial[pt]).

EMBASE: ('doxycycline'/exp OR doxycycline) AND ('chlamydia'/exp OR chlamydia OR 'gonorrhea'/exp OR gonorrhea OR 'syphilis'/exp OR syphilis) AND (pep OR 'post-exposure prophylaxis'/ex OR 'post-exposure prophylaxis' OR 'pre-exposure prophylaxis'/exp OR 'pre-exposure prophylaxis' OR prep) AND randomized. Abstracts presented at major scientific conferences were also reviewed.

Inclusion criteria: randomized controlled trial; English; evaluated PEP as STI bacterial prophylaxis

Exclusion criteria: non-human subjects or in-vitro studies; unrelated papers; duplicates; unavailable full texts; abstract-only papers; case reports; non-English

Randomized controlled trials on the use of doxycycline as PEP to reduce bacterial STIs

	Design	Participants	Intervention	Primary Endpoint	Findings	Limitations	Quality of Evidence
iPrEx Trial France 2018(1)	RCT	N=232 MSM and TGW on TDF/FTC as PrEP (HIV-)	Doxycycline hyclate 200mg orally once within 24-72 hours after having condomless anal or oral sex versus no prophylaxis	First STI infection (gonorrhea, chlamydia or syphilis) during a 10-month follow-up period	Reduced risk of acquiring chlamydia and syphilis by 70% (HR 0.30 (95% CI 0.13-0.70) and 73% (HR 0.27 (95% CI 0.07-0.98), respectively. No significant difference in gonorrhea	Open-label Short follow-up	High
DoxyPeP USA 2023(2)	RCT	N=554 MSM and TGW (N=360 on PrEP; N=194 HIV+)	Doxycycline hyclate 200mg orally once within 72 hours after having condomless sex versus no prophylaxis	Relative risk of an STI infection per quarter.	PrEP: 65 STI endpoints (29.5%) occurred in controls and 47 (9.6%) in doxyPEP participants (RR 0.33; 95%CI 0.23-0.47; p<0.0001). HIV: 30 STI endpoints (27.8%) in controls and 31 (11.7%) in doxyPEP participants (RR 0.42; 95% CI 0.25-0.75; p=0.0014).	Open-label Short follow-up	High

	Design	Participants	Intervention	Primary Endpoint	Findings	Limitations	Quality of Evidence
DOXYVAC France CROI 2023(3)	RCT	N=502 MSM on HIV PrEP (HIV-)	Doxycycline monohydrate 200mg orally within 24-72 hours after sex versus no PEP versus 4CMenB vaccine versus no vaccine	Impact of doxycycline as PEP on time to first episode of syphilis or chlamydia and impact of 4CMenB vaccine on first episode of gonorrhea	Doxycycline as PEP reduced gonorrhea, chlamydia and syphilis infections (aHR of 0.49 (95% CI 0.32-0.76), 0.11 (95% CI 0.04-0.30) and 0.21 (95% CI 0.09-0.47), respectively). Receipt of 4CMenB was associated with a reduction in gonococcal infection (incidence 9.8/100 person years vs 19.7/100 person years in the study arm that did not receive vaccine; aHR 0.49 (95% CI 0.27-0.88)	Open-label Short follow-up	High
dPEP Kenya CROI 2023 (4)	RCT	N= 449 Cisgender women	Doxycycline hyclate 200mg orally within 72 hours after sex versus no doxycycline PEP	Any incident C. trachomatis, N. gonorrhoeae or T. pallidum	All bacterial STIs (RR 0.88; 95%CI 0.60-1.29), C. trachomatis (RR 0.73; 95% CI 0.47-1.13); N. gonorrhoeae (RR 1.64; 95% CI 0.78-3.47). There were only two syphilis infections during the study.	Open label, short follow-up	High

RCT = randomized controlled trial

MSM = Men who have sex with men

TGW = Transgender women

References

1. Molina JM, Charreau I, Chidiac C, et al. Post-exposure prophylaxis with doxycycline to prevent sexually transmitted infections in men who have sex with men: an open-label randomised substudy of the ANRS IPERGAY trial. *Lancet Infect Dis.* 2018 Mar;18(3):308-317.
2. Luetkemeyer AF, Donnell D, Dombrowski JC, et al. Postexposure doxycycline to prevent bacterial sexually transmitted infections. *N Engl J Med.* 2023 Apr 6;388(14):1296-1306. DoxyPEP Reference (Conference Data- needs to be updated when paper available)
3. Jean-Michel Molina, Beatrice Bercot, Lambert Assoumou, Algarte-Genin Michele, Emma Rubenstein, Gilles Pialoux, et al. ANRS 174 DOXYVAC: An Open-Label Randomized Trial to Prevent STIs in MSM on PrEP. CROI [Internet]. 2023 Feb 19;Seattle, Washington. Available from: <https://www.croiconference.org/abstract/anrs-174-doxyvac-an-open-label-randomized-trial-to-prevent-stis-in-msm-on-prep/>
4. Stewart J, Oware K, Donnell D, Violette L, Odoyo J, Simoni J, et al. Self-reported adherence to event-driven doxycycline postexposure prophylaxis for sexually transmitted infection prevention among cisgender women. STI and HIV 2023 World Congress, Chicago, IL. 2023 Jul 24; Seattle, Washington. Available from: <https://www.croiconference.org/abstract/doxycycline-postexposure-prophylaxis-for-prevention-of-stis-among-cisgender-women/>.

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