

County of Santa Clara

Public Health Department

Sexual Health and Harm Reduction Program
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San José, CA 95126
408.792.3720



March 20, 2023

Re: Doxycycline use as post-exposure prophylaxis to prevent bacterial sexually transmitted infections

Dear Medical Provider:

Two recent large trials have studied the efficacy of taking Doxycycline 200mg as post-exposure prophylaxis (doxy-PEP) within 72 hours after condomless sex among men who have sex with men (MSM) and transgender women (TGW) and have found doxy-PEP to be effective at protecting against chlamydia, gonorrhea, and syphilis infections.

While the [CDC has released considerations](#) for doxy-PEP as a strategy to prevent bacterial STIs, there is no detailed guidance yet and use of doxycycline for PEP for STIs remains off-label use. This guidance is for clinicians, including primary care providers, in Santa Clara County who are considering the use of doxy-PEP for patients.

Background:

[The DoxyPEP study](#) was conducted in San Francisco and Seattle and enrolled MSM and TGW who were either on HIV Pre-exposure prophylaxis (PrEP) or were living with HIV (PLWH). In those on PrEP, doxy-PEP reduced chlamydia by 88%, syphilis by 87%, and gonorrhea by 55%; in PLWH, doxy-PEP reduced chlamydia by 74%, syphilis by 77% (although did not reach statistical significance), and gonorrhea by 57%. These data were presented at the 2022 International AIDS Conference in July 2022.

[The ANRS DOXYVAC study](#) was conducted in France and enrolled MSM on PrEP in France. After a follow-up period of 9 months, the efficacy of doxy-PEP at preventing first infection was 89% for Chlamydia, 79% for Syphilis, 51% for Gonorrhea, and 45% for *Mycoplasma genitalium*. These results were presented at the 2023 Conference on Retroviruses and Opportunistic Infections in February 2023.

In both studies, adherence to doxycycline was high and adverse effects were minimal.

[A third trial, the dPEP trial](#), looked at the efficacy of doxy-PEP among cisgender women on PrEP in Kenya. This study found no significant reduction in STIs due to doxy-PEP. The results of this study were presented at the 2023 Conference on Retroviruses and Opportunistic Infections in February 2023.

Board of Supervisors: Sylvia Arenas, Cindy Chavez, Otto Lee, Susan Ellenberg, S. Joseph Simitian
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Data on antimicrobial resistance related to doxy-PEP

Results regarding [antimicrobial resistance in the US DoxyPEP study](#) were overall limited by a small sample size. The results did suggest that doxycycline may be less protective against gonorrhea strains with baseline resistance. This study also looked at *Staphylococcus aureus* resistance to doxycycline and overall found that in the doxy-PEP arm, there was a reduction in *S. aureus* colonization, a small increase from baseline in overall doxycycline resistance in the doxyPEP arm, but no difference in doxycycline resistant MRSA. In the ANRS DOXYVAC study, there was no significant difference in tetracycline resistance for Gonorrhea strains between doxy-PEP and standard of care arms.

Recommendations for Clinicians:

1. **Recommend doxy-PEP for:** Cisgender men and transgender women who are sexually active with cis male or trans female partners, have had condomless sex with more than one partner in the past year, and have had a bacterial STI in the past year.
2. **Offer doxy-PEP after shared decision making for:**
 - a. Cisgender men and transgender women, who have not had a bacterial STI in the past year, but have had condomless sex with more than one cis male or trans female partner in the past year.
 - b. Transgender men who have had condomless sex with more than one cis male or trans female partner in the past year. Current studies did not include this group and patients should be counseled about this fact.
3. **Can consider doxy-PEP on a case-by-case basis after shared decision making for:** Cisgender men who are sexually active only with cisgender women, but who have had condomless sex with more than one partner in the past year, and have had a bacterial STI (particularly syphilis) in the past year. Current studies did not include this group and patients should be counseled about this fact.
4. The dPEP study in Kenya did not show efficacy of doxy-PEP for preventing bacterial STIs among cisgender women, hence there are insufficient data to recommend it in this group at this time.

Patients should be counseled about the following:

Data around doxy-PEP trials:

1. Rates of efficacy of doxy-PEP among the included groups (MSM and TGW either with HIV or on PrEP) in the US DoxyPEP and ANRS DOXYVAC studies:
 - a. 74-89% for chlamydia, 77-87% for syphilis, 51-57% for gonorrhea
2. There are potential risks for antimicrobial resistance and larger, longer studies are needed to understand resistance better.

3. Doxy-PEP only protects against bacterial STIs, and not against viral infections including HIV, mpox, HSV, and HPV.
4. [Although pharmacology studies](#) show adequate rectal, urethral, and vaginal drug concentrations for prevention, current studies showing efficacy only included cisgender men and transgender women who are sexually active with other cismen or transgender women; one study conducted among ciswomen has not shown efficacy for doxy-PEP. Other groups were not included in studies.

Considerations while taking doxycycline:

1. Take doxycycline with a large glass of water and remain upright for 30 minutes after taking it to reduce pill esophagitis.
2. Avoid taking doxycycline with calcium containing supplements, antacids, multivitamins, or calcium rich foods including dairy products within 2 hours of doxycycline as this may reduce efficacy.
3. Doxycycline works best when taken on an empty stomach (1 hour before and 2 hours after meals). However, if taking doxycycline on an empty stomach causes stomach upset, it can be taken with food.
4. Although doxycycline is generally well-tolerated (and has been used for long term prophylaxis for diseases like malaria), there is a risk of sun sensitivity. Patients should be counseled to wear sunscreen and/or avoid prolonged sun exposure while taking doxycycline.
5. Doxycycline has a rare risk of benign intracranial hypertension and other serious side effects like esophageal ulcers.
6. Doxycycline should be avoided during pregnancy. Patients who could get pregnant should be counseled to stop doxycycline if they become pregnant.

Prescribing and Monitoring Information:

Prescribing Information:

1. 200mg of doxycycline should be taken soon (ideally within 24hrs), but no later than 72 hours, after condomless oral, anal, or vaginal sex.
2. Individuals should not take more than 200mg of doxycycline within a 24-hour period. Individuals can take doxycycline as frequently as every 24hrs.
3. Either Doxycycline hyclate or Doxycycline monohydrate immediate release 100mg (2 tabs taken simultaneously) are acceptable.

Monitoring and STI screening:

1. LFTs, renal function, and a CBC should be checked periodically in patients taking doxycycline for a prolonged period per the package insert. Providers can consider checking these annually.

2. Persons taking doxy-PEP should be screened at the initial visit and every three months for HIV (if not known to be living with HIV), syphilis, and gonorrhea and chlamydia at all sites of exposure.
3. If a patient is diagnosed with an STI while using doxy-PEP, they should be treated according to CDC STI treatment guidelines.

Ensure comprehensive sexual health services for those being offered doxy-PEP:

1. **PrEP:** Those being offered doxy-PEP should be offered HIV PrEP (if they are not living with HIV or are not on it already.) Patients should be counseled about the different options for PrEP including a daily pill, 2-1-1 PrEP, and injectable PrEP.
2. **Vaccinations:** Vaccinations for sexually transmitted or sexually associated infections should be offered for eligible individuals. These include: mpox vaccination (Jynneos), Meningococcal ACWY vaccine, Hepatitis A, Hepatitis B, HPV vaccine, and influenza vaccine.
3. **HIV linkage to care:** Those patients living with HIV should be linked to care to ensure that they are virally suppressed.
4. **Harm reduction and medication assisted treatment services:** Patients should be asked about concomitant drug use, and those who describe using drugs should be referred to harm reduction services and medication assisted treatment programs.

For additional assistance regarding PrEP access, HIV linkage to care, low cost STI screening, and harm reduction services for patients, you can contact the Sexual Health and Harm Reduction Program at the Santa Clara County Public Health Department at 408-792-3720.

Sincerely,



Akanksha Vaidya, MD MPH
STD/HIV Controller

References:

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<https://www.croiconference.org/abstract/doxycycline-postexposure-prophylaxis-for-prevention-of-stis-among-cisgender-women/>
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<https://www.croiconference.org/abstract/mucosal-pharmacology-of-doxycycline-for-bacterial-sti-prevention-in-men-and-women/>
6. San Francisco Department of Public Health. “Health Update Doxycycline Post-Exposure Prophylaxis Reduces Incidence of Sexually Transmitted Infections”. [Health update_DoxyPEP_FINAL.1.pdf \(sfcityclinic.org\)](#)