



NEW YORK CITY DEPARTMENT OF
HEALTH AND MENTAL HYGIENE
Ashwin Vasan, MD, PhD
Commissioner

Doxycycline Post-Exposure Prophylaxis (Doxy-PEP) to Prevent Bacterial Sexually Transmitted Infections

- Doxycycline 200 mg administered within 24-72 hours of condomless sex (doxy-PEP) has been shown in studies to reduce the incidence of syphilis, chlamydia, and gonorrhea among cisgender men who have sex with men (MSM) and transgender women with a recent history of these infections.
- With rising rates of sexually transmitted infections (STIs) in New York City (NYC), the NYC Department of Health and Mental Hygiene (NYC Health Department) strongly encourages providers to consider prescribing doxy-PEP to cisgender MSM and transgender women who have sex with men and who have a history of chlamydia, gonorrhea, or syphilis in the prior year, based on shared decision-making with the patient.
- Providers should present information on the effectiveness, benefits, and risks of doxy-PEP, as well as other options available to prevent STIs.

November 9, 2023

Dear Colleagues,

Given high and increasing rates of chlamydia, gonorrhea, and syphilis in NYC,¹ the NYC Health Department wants to ensure that health care providers who care for patients who may benefit from doxy-PEP are aware of the intervention, and that access to doxy-PEP and information about it is equitable. Doxy-PEP for bacterial STI prevention consists of 200 mg of doxycycline taken ideally within 24 hours, but no later than 72 hours, after condomless oral, anal, or vaginal/front hole sex.

This letter provides information on doxy-PEP study findings, populations for whom doxy-PEP should be offered, dosing and prescribing guidance, the benefits and risks of use, and counseling messages that can be used when discussing doxy-PEP with patients. The following guidance is designed to help providers and patients make informed decisions about doxy-PEP for bacterial STI prevention. Doxy-PEP is not for everyone, and initial implementation may be best limited to people at high risk for STIs, especially those who have had and may continue to acquire STIs that lead to substantial antibiotic treatment.

The U.S. Food and Drug Administration has not approved doxycycline for STI post-exposure prophylaxis and there is no national guidance for its use as STI prevention. However, the Centers for Disease Control and Prevention has released proposed guidelines for doxy-PEP as an STI prevention strategy for cisgender MSM and transgender women who have sex with men and is accepting public input until November 16, 2023.^{6,7} Some state and local health departments have released recommendations that include offering doxy-PEP using shared decision-making to other groups, which include transgender men and gender nonconforming people.^{8,9}

Studies on the Use of Doxy-PEP to Prevent STIs

Studies have demonstrated that doxy-PEP reduces the incidence of syphilis, chlamydia, and gonorrhea among cisgender MSM and transgender women who have sex with men. Two large studies in the past year (DoxyPEP and DoxyVac) demonstrated that doxy-PEP decreased these STIs among study participants with a history of bacterial STIs and was well tolerated with minimal side effects. A previous study from France (IPERGAY) showed reductions in the incidence of syphilis and chlamydia. Doxy-PEP was not found to reduce incident STIs among cisgender women,⁵ for whom further studies – including assessments of adherence – are needed to better understand reasons for ineffectiveness. Doxy-PEP has not been studied in transgender men.

Select Doxy-PEP Studies Among Cisgender MSM and Transgender Women, 2018-2023					
Study	Participating Population	Rate of STIs (gonorrhea, chlamydia, syphilis)		Relative Risk Reduction in STIs	Absolute Risk Reduction in STIs
		Doxy-PEP	No Doxy- PEP		
DoxyPEP ²	327 MSM and transgender women taking HIV pre-exposure prophylaxis (PrEP)	10.7% per quarter	31.9% per quarter	66%*	21.2% per quarter
DoxyPEP ²	174 MSM and transgender women with HIV	11.8% per quarter	30.5% per quarter	62%*	18.7% per quarter
DoxyVac ³	502 MSM on HIV PrEP	26.1 per 100 person-years	76.7 per 100 person-years	66%	51 per 100 person-years
IPERGAY ⁴	232 MSM on HIV PrEP	37.7 per 100 person-years	69.7 per 100 person-years	47%**	32 per 100 person-years

*The study found reductions of 87% for syphilis, 88% for chlamydia, and 55% for gonorrhea among people taking HIV PrEP, and reductions of 77% for syphilis, 74% for chlamydia, and 57% for gonorrhea among people with HIV.

**Doxy-PEP did not decrease gonorrhea, likely because of the high prevalence of doxycycline-resistant gonorrhea in the population studied.

A waiting room survey of NYC Health Department Sexual Health Clinic patients in summer 2023 found that 37% of 145 MSM and transgender patients had heard of doxy-PEP for STI prevention. Of those, 33% had previously used it, with 72% of users having been prescribed doxy-PEP by a health care provider. Of the 145 respondents, 114 (78%) reported that they would either “definitely” or “probably” consider taking doxy-PEP to prevent STIs in the future (NYC Health Department, unpublished data as of September 20, 2023).

Studies are needed on the potential long-term effects of doxy-PEP on individual and population health. For example, doxy-PEP could lead to increased antibiotic resistance, with the risk varying by bacteria. For instance, there is a risk that doxy-PEP will lead to increased resistance for gonorrhea, the second most common bacterial STI in the U.S. While not commonly used to treat gonorrhea at the present time, doxycycline will no longer be a useful treatment for gonorrhea should resistance develop. In many parts of the world, gonorrhea is already resistant to doxycycline.

Antibiotic use, including doxy-PEP, could also lead to changes in people’s microbiomes.¹⁰ If increased antibiotic resistance or changes in the microbiome occur at the population level, they are likely to have the first and greatest impact on cisgender MSM and transgender women who have sex with men, the populations in which doxy-PEP will be most used. Evaluations of long-term impacts of doxy-PEP use on antimicrobial resistance and the microbiome are either being planned or are underway.

Recommendations for Health Care Providers

- **Take a comprehensive sexual history** as part of routine care for all patients to elicit information most useful for identifying an appropriate clinical course of action.¹¹
- Prescribe doxy-PEP based on **shared decision-making** with the patient; provide information on its effectiveness and potential benefits and risks, as well as other options available to prevent STIs.
- **Give particular consideration to prescribing doxy-PEP to MSM and transgender women with a history of bacterial STIs in the prior year**, especially those with a history of syphilis or multiple STIs.
 - Doxy-PEP is **not recommended for cisgender women** given the lack of sufficient trial data.
 - **Transgender men and gender-diverse patients assigned female sex at birth were not included in prior studies**, and the potential benefits and risks of doxy-PEP for them are unknown.
- **Consider prescribing doxy-PEP on an episodic basis** for patients who anticipate periods when their STI risk may be higher (e.g., attendance at group sex events).
- **Provide counseling related to doxy-PEP and include elements detailed at the end of this document.**
- **Offer doxy-PEP as part of comprehensive sexual health services, and support patients to make decisions about the full spectrum of prevention options available to them**, including alternatives to doxy-PEP (e.g., condom use), STI testing and treatment, HIV pre-exposure prophylaxis (PrEP) and emergency post-exposure prophylaxis (PEP), HIV testing, HIV treatment for people with HIV, and STI vaccines (e.g., human papillomavirus, hepatitis A, hepatitis B, and mpox vaccines).

Dosing and Prescribing Guidance

- **200 mg of doxycycline should be taken as soon as possible after condomless oral, anal, or vaginal/front hole sex, ideally within 24 hours and no later than 72 hours after sex.**
- **Either doxycycline hyclate or doxycycline monohydrate immediate release 100 mg tabs** (two tabs taken simultaneously) are acceptable.
- Doxycycline can be taken as often as every day, depending on frequency of condomless sexual exposure, but **no more than 200 mg should be taken within a 24-hour period.**
- **Doxycycline should be taken with fluids and patients should remain upright for 30 minutes after the dose.** Taking doxycycline with food may increase tolerability.
- **Doxy-PEP is not recommended for individuals already on a doxycycline regimen (e.g., for acne).**
- **Doxycycline should not be taken concurrently with polyvalent cations**, such as iron and calcium carbonate. It **should be taken at least 1 hour before or 2 hours after antacids, calcium, or iron-containing products.**
- **Screen and treat as indicated for STIs** (obtain nucleic acid amplification test for gonorrhea and chlamydia at anatomic sites of exposure, and serologic testing for syphilis) at initial doxy-PEP visit and 3-6 month follow-up visits. For individuals without HIV who are receiving PrEP, screen per [CDC HIV PrEP guidelines](#). For individuals without HIV who are not receiving HIV PrEP, consider screening for HIV every 3-6 months.
- **No laboratory monitoring** is needed with doxy-PEP.
- For ICD-10 diagnosis code, **use Z20.2** (Contact with and [suspected] exposure to infections with a predominantly sexual mode of transmission).
- **There is no standard number of doxycycline pills and refills to prescribe.** In the DoxyPEP study,² most participants used between 1 and 10 (median 4) doses of doxy-PEP per month. Some clinics are dispensing 30 tabs with 1 refill, or the equivalent of 30 total doxy-PEP courses. **The decision about number of pills and refills to prescribe is at the provider's discretion** and should be based on a discussion with the patient regarding expectations for frequency of requests for additional medication.

Counseling Messages When Discussing Doxy-PEP with Patients

Benefits of doxy-PEP

- The medicine in doxy-pep, doxycycline, has been used for many years, including to treat and prevent different types of conditions, including acne.
- In studies, doxy-PEP was found to be very effective in preventing chlamydia, gonorrhea, and syphilis in groups with a high risk of STIs.
- Using doxy-PEP can be empowering, allowing patients to take charge of their sexual health and reduce feelings of anxiety and stigma about STIs.
- Doxy-PEP might decrease how much STIs there are in the population as a whole, though this will depend on how many people use doxy-PEP.

Risks of doxy-PEP

- **Side effects:** Most patients have no or mild side effects. Possible side effects include sun sensitivity, pain or discomfort in the chest or throat after swallowing medication, and gastrointestinal symptoms like stomachache or diarrhea.
- **Antibiotic resistance:** Doxy-PEP could lead to increased antibiotic resistance in the future, both at the individual and population levels. This includes risk of increased resistance to the bacteria that cause gonorrhea, staph infections, pneumonia, *Mycoplasma genitalium* (responsible for persistent urethritis), as well as microorganisms in intestinal flora. There is no or low known risk of increased resistance for the bacteria that cause chlamydia and syphilis.
- **Weight gain:** Some studies show that long-term use of doxycycline for other conditions may result in abnormal weight gain, although this was not seen in the doxy-PEP study.²
- **Microbiome changes:** Doxy-PEP may result in changes in the microbiome—microbes, such as bacteria, fungi, viruses that naturally live on our bodies and inside us— some of which are important for general health. Some studies unrelated to doxy-PEP have linked changes in the microbiome to chronic illnesses, such as diabetes and inflammatory bowel disease. We do not know whether doxy-PEP may change microbiomes or the health impact of these potential changes.

Please contact Dr. Preeti Pathela, Executive Director of the NYC Health Department’s Sexually Transmitted Infections Program, at ppathela@health.nyc.gov if you have any questions about this guidance.

Sincerely,



Celia Quinn, MD, MPH
Deputy Commissioner
Division of Disease Control



Preeti Pathela, DrPH, MPH
Executive Director, Sexually Transmitted Infections Program
Bureau of Hepatitis, HIV, and Sexually Transmitted Infections

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Resources

- [New York State AIDS Institute Doxy-PEP Guidelines](#)
- [CDC 2021 STI Treatment Guidelines](#)
- [National Network of STD Clinical Prevention Training Centers Clinical Consultation Service](#)
- [NYC DOHMH Sexually Transmitted Infections Surveillance Report, 2021](#)