

Hot Topic

National STD Curriculum Podcast

New Proposed Guidelines for Doxy PEP: Key Points

October 23, 2023

Season 4, Episode 2

On October 2, 2023, CDC published draft guidelines on the use of Doxy PEP, or Doxycycline postexposure prophylaxis, to prevent bacterial STIs. This episode reviews the guidelines' rationale, literature, side effects, antibiotic resistance, and recommendations.

Topics:

- Doxy-PEP
- doxycycline
- prophylaxis
- STIs
- STDs

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[Disclosures](#)

Disclosures for Meena S. Ramchandani, MD

None

References

[Guidelines](#)

Transcript

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[introduction](#)[00:00] Introduction

Hello everyone. My name is Meena Ramchandani. I'm an infectious disease physician at the University of Washington in Seattle. This podcast is dedicated to an STD [sexually transmitted disease] literature review for health care professionals who are interested in remaining up-to-date on the diagnosis, management, and prevention of STDs.

[background](#)[00:21] Background

Centers for Disease Control and Prevention. *Guidelines for the Use of Doxycycline Post-Exposure Prophylaxis for Bacteria Sexually Transmitted Infection (STI) Prevention*. Atlanta, GA: Centers for Disease Control and Prevention, US Dept of Health and Human Services; Updated October 2, 2023. [\[CDC\]](#)

We discussed recent literature published on Doxy PEP in an episode published in July of 2023. Now, Doxy PEP is the concept of a patient taking doxycycline for postexposure prophylaxis (or PEP for short) to prevent a bacterial STI in an event-driven way. This is a hot topic, and many clinics and providers are wondering how to implement Doxy PEP with their patients. The CDC just recently released draft guidelines for the use of Doxy PEP for bacterial STI prevention in October of 2023, and so I'd like to review key points from these draft guidelines in this episode.

[rationale](#)[01:01] Rationale

The first question is: What rationale do these draft guidelines give for using Doxy PEP?

1. As the incidence of bacterial STIs continue to increase in the U.S., novel approaches for STI prevention are needed to address this epidemic.
2. Doxycycline is a broad-spectrum, tetracycline antibiotic that has activity against multiple bacterial sexually transmitted pathogens. It is well absorbed, with minimal side effects, and has a long half-life of about 12 hours.
3. The concept of doxy PEP, which involves taking doxycycline 200 mg orally within 24 to 72 hours of condomless sex, is a practical intervention for bacterial STI prevention.

[literature-review](#)[01:44] Literature Review

In these guidelines, the CDC did a systemic literature review to evaluate whether doxycycline taken after sex decreases bacterial STIs compared to *not* taking this antibiotic as postexposure prophylaxis. They review four studies on the efficacy of doxycycline postexposure prophylaxis for reducing bacterial STIs, and I'll briefly summarize these in this episode.

1. The French IPERGAY Study was the first one that they discussed, and it evaluated 232 HIV-negative MSM [men who have sex with men] and transgender women taking HIV PrEP [preexposure prophylaxis] and found individuals who took Doxy PEP were found to have a reduced risk of acquiring chlamydia and syphilis by 70% and 73%, respectively. There was no significant difference in gonorrhea infections between the two groups.
2. The second study they reviewed was in San Francisco and Seattle, where 501 MSM and transgender women with HIV or on HIV PrEP with at least one male partner and at least one STI in the prior 12 months were enrolled. The study found reductions in the relative rates of gonorrhea, chlamydia, and early syphilis while on Doxy PEP. The number needed to treat to prevent a quarterly visit with an incident STI was 4.7 in the HIV PrEP cohort and 5.3 in persons with HIV.
3. In the French ANRS 174 DOXYVAC study, Doxy PEP was associated with significant reductions in gonorrhea, chlamydia, and syphilis in MSM on HIV PrEP who had at least one STI in the prior 12 months to enrollment.

- Now, looking at cisgender women, there was a study of 449 cisgender Kenyan women, which found no reduction in bacterial STIs. Hair analysis afterwards indicates possibly nonadherence may have been the reason for the lack of efficacy found in this study.

[side-effects](#)[03:42] Side Effects

Now, with regards to potential side effects, the CDC guidelines discuss potential side effects with using Doxy PEP.

- The most common adverse effect associated with doxycycline include photosensitivity and gastrointestinal symptoms. Severe side effects can include esophageal erosion and ulceration.
- In the Doxy PEP study, gastrointestinal side effects were more commonly reported in the Doxy PEP group, but no serious adverse events were attributed to doxycycline.
- A meta-analysis of 18 studies found an increased risk of gastrointestinal or dermatological adverse events for individuals on daily doxycycline, but serious side effects were thankfully rare.
- The CDC also examined data on longer-term doxycycline use, of at least 8 weeks, with regards to adverse effects that were published in the literature. Now, many of these studies included doxycycline use for acne treatment, malaria prophylaxis, and rosacea treatment.

[antibiotic-resistance](#)[04:42] Antibiotic Resistance

The question remains: Will taking Doxy PEP lead to antibiotic resistance? So, the following antimicrobial resistance data was reviewed in the draft guidelines, and we're going to summarize that in this episode.

- The Doxy PEP study in Seattle and San Francisco: they found at the 12-month follow-up, there was a 14% absolute reduction of individuals who were colonized with *Staphylococcus aureus* in the doxycycline arm, and they compared this to no significant change found in the standard of care arm (or the arm without Doxy PEP). They also found an 8% absolute increase in doxycycline-resistant *Staphylococcus aureus* in the doxycycline arm at the 12-month follow-up.
- They had low number of *Neisseria gonorrhoeae* isolates with MIC [minimal inhibitory concentration] data available, but 24% of gonococcal isolates were tetracycline-resistant at baseline. In the follow-up period, this included 11% of gonococcal isolates in the standard of care arm and a higher number at 30% in the Doxy PEP arm.
- The ANRS 174 DOXYVAC study found 100% of gonococcal isolates tested at baseline (which was only seven isolates), but they were all tetracycline-resistant.
- The CDC found that studies using doxycycline for acne treatment and malaria prophylaxis have generally found no relationship between daily doxycycline and doxycycline resistance in several bacteria, such as *Cutibacterium acnes* [formerly *Propionibacterium acnes*], staphylococcus epidermis, or gastrointestinal pathogens that cause diarrhea, but the data is limited and individuals took lower doses of doxycycline than what is used for Doxy PEP. And the ability to draw conclusions from these studies is also limited by their heterogeneity. Therefore, the potential risks related to the development of resistance and impacts on the microbiome will need to be closely monitored after implementation of the Doxy PEP guidelines.
- The guidelines indicate the goal of Doxy PEP would be to ensure those individuals who would most benefit from this prevention tool have access while minimizing excessive or unnecessary antimicrobial use.

[key-recommendations](#)[06:49] Key Recommendations

So, what are the key recommendations in the CDC draft Doxy PEP guidelines?

- First, to consider using doxycycline 200 mg taken once orally within 72 hours of oral, vaginal, or anal sex for any of the following groups of people: gay, bisexual and other MSM, and transgender women who have a history of at least one bacterial STI in the prior 12 months and who are at ongoing risk for

- bacterial STI acquisition.
2. The maximum doxycycline dose is 200 mg every 24 hours.
 3. Providers should also consider using Doxy PEP for MSM and transgender women who have not been diagnosed with an STI in the prior year if they may be participating in upcoming sexual activities that are known to increase likelihood of an STI exposure.
 4. All persons who are prescribed Doxy PEP should undergo bacterial STI testing at anatomic sites of exposure not only at baseline but also every 3-6 months, as well as HIV screening for persons who are HIV-negative.

Overall, these draft guidelines help to inform health care providers on the safe and effective use of Doxy PEP or postexposure prophylaxis with doxycycline to prevent gonorrhea, chlamydia, and syphilis.

[summary](#)**[08:07] Summary**

To conclude, I'd like to summarize some key points from this session:

1. Doxy PEP has shown to decrease bacterial STIs in MSM and transgender women as a method of STI prevention.
2. Doxy PEP has *not* been shown to be effective in cisgender women based on the data that we have available.
3. The CDC draft guidelines recommend consideration of Doxy PEP in gay, bisexual, and other MSM and transgender women with a history of at least one bacterial STI in the prior 12 months who are at ongoing risk for bacterial STI acquisition.
4. Adverse effects should be discussed with patients, including phototoxicity, gastrointestinal symptoms, and rarely esophageal ulceration.
5. The long-term effects of Doxy PEP on bacterial resistance and the microbiome are not fully known, but further studies will explore this.
6. Doxy PEP, when offered, should be implemented in the context of comprehensive sexual health approach, and this includes risk reduction counseling, STI screening and treatment, and linkage to HIV prevention or HIV care.

[credits](#)**[09:13] Credits**

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