Real-World Clinical Outcomes of Doxycycline Post-Exposure Prophylaxis for Bacterial STI Prevention

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Introduction

- Bacterial sexually transmitted infections (STIs) such as syphilis, gonorrhea, and chlamydia have **increased dramatically** in the United States during the last decade with over two million cases reported each year to the Centers for Disease Control and Prevention (CDC).
- STIs disproportionately impact **specific populations** including gay, bisexual, and other men who have sex with men (MSM) and transgender women (TGW), as well as African American/Black and Hispanic/Latino communities.
- Doxycycline post-exposure prophylaxis (DoxyPEP) is effective in preventing bacterial sexually transmitted infections (STIs) in clinical trials, but real-world effectiveness data is limited.

Methods

- **Open Door Health** is a community-based LGBTQ+ primary care and sexual health clinic in Providence, Rhode Island. We reviewed demographics, behaviors, DoxyPEP use, and STI results among patients presenting to the clinic from May 2023 to July 2025.
- Mixed-effects logistic regression models were used to assess associations between DoxyPEP use (past 30 days) and chlamydia, gonorrhea, and syphilis diagnoses. Significance was defined as $p<0.05$.

A real-world study of doxycycline post-exposure prophylaxis (DoxyPEP) for bacterial STI prevention found fewer chlamydia diagnoses, higher gonorrhea rates, and no clear benefit in syphilis prevention.

Results

- Among N=1,577 unique adults (median age 31), 22% identified as Black/African American, 22% Hispanic/Latino, 16% transgender, gender-diverse, or nonbinary, and 2.4% were people living with HIV (PLWH).
- Sixty-two percent of people had heard of DoxyPEP and **30%** reported ever using. Each year of age was associated with **2% higher odds** of ever using DoxyPEP (OR 1.02, 95% CI 1.01–1.03).
- PLWH had **higher** odds of DoxyPEP use (OR 2.92, 95% CI 1.46–5.85). DoxyPEP use in the last 30 days was associated with a **67%** reduction in chlamydia (aOR 0.33, 95% CI 0.12–0.92).
- For gonorrhea, DoxyPEP use was associated with **higher** odds of infection in people without HIV (OR 2.29, 95% CI 1.47–3.56) and PLWH (OR 15.85, 95% CI 1.81–138.44).
- For syphilis, there was **no** significant association (median-unbiased OR 0.64; exact 95% CI 0–4.07), consistent with low rates of observed syphilis infection (See **Table 1**).

Table 1: Characteristics of patients presenting for care

	Total (All)		Never taken DoxyPEP		Ever taken DoxyPEP		p-value
Characteristic	**N=1,458**	**%**	**N=1,024**	**%**	**N=434**	**%**	
Age at appointment, years (Median/IQR)			31 (26, 37)		32 (27, 38)		0.044
Race							0.988
White	934	73.0%	658	73.1%	276	72.8%	
Black	270	21.1%	189	21.0%	81	21.4%	
Other	75	5.9%	53	5.9%	22	5.8%	
Missing	179		124		55		
Ethnicity							0.371
Non-Hispanic	1078	77.8%	751	77.2%	327	79.4%	
Hispanic	307	22.2%	222	22.8%	85	20.6%	
Missing	73		51		22		
Sex at birth							<0.001
Male	1052	72.9%	666	65.9%	386	89.4%	
Female	391	27.1%	345	34.1%	46	10.6%	
Missing	15		13		2		
Gender identity							<0.001
Cisgender man	921	65.5%	566	57.8%	355	83.3%	
Cisgender woman	256	18.2%	223	22.8%	33	7.7%	
Transgender/genderqueer	229	16.3%	191	19.5%	38	8.9%	
Missing	52		44		8		
Insurance							0.31
Medicare	20	1.9%	17	2.3%	3	0.9%	
Private	1043	97.5%	721	97.0%	322	98.5%	
Other/Public/None	7	0.7%	5	0.7%	2	0.6%	
Missing	388		281		107		
HIV Status							0.002
HIV-negative	1425	97.7%	1009	98.5%	416	95.9%	
HIV-positive	33	2.3%	15	1.5%	18	4.2%	
Chlamydia							<0.001
Negative	1108	89.6%	771	92.4%	337	83.8%	
Positive	128	10.4%	63	7.6%	65	16.2%	
Missing/Not tested	222		190		32		
Gonorrhea							<0.001
Negative	1083	87.6%	774	92.7%	309	76.9%	
Positive	154	12.4%	61	7.3%	93	23.1%	
Missing/Not tested	221		189		32		
Syphilis							0.168
Negative	1093	98.9%	750	99.2%	343	98.3%	
Positive	12	1.1%	6	0.8%	6	1.7%	
Missing/Not tested	353		268		85		

Conclusion

- In this real-world setting, DoxyPEP awareness and uptake were substantial and highest among cisgender men and PLWH.
- Current DoxyPEP use was associated with fewer chlamydia diagnoses, higher gonorrhea rates, and no clear benefit in syphilis prevention.

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