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Use of Doxycycline and Other Antibiotics as Bacterial Sexually Transmitted Infection Prophylaxis in a US Sample of Primarily Gay and Bisexual Men

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Background: Doxycycline used as postexposure prophylaxis (doxyPEP) within 72 hours of sex reduces the risk of bacterial sexually transmitted infections (STIs) in people assigned male sex at birth. Little is known about current use of antibiotics as STI prophylaxis in US populations likely to benefit from doxyPEP.

Methods: We conducted an online survey in September 2023 of US adults recruited via sexual networking apps used mainly by gay and bisexual men (GBM). Respondents were asked about the use of antibiotics around the time of sex to prevent bacterial STIs.

Results: Of 903 respondents, most (96.2%) identified as GBM; 19.0% were living with HIV and 42.5% were using HIV preexposure prophylaxis (PrEP). Half (49.1%) had heard of using antibiotics to prevent STIs, and 95.6% were interested in use. Overall, 21.0% had used antibiotic STI prophylaxis, and 15.9% had done so in the past year. Among those reporting any use, most (78.1%) had used doxycycline; some used amoxicillin (16.7%), azithromycin (14.5%), or other antibiotics (14.1%). Among those reporting use in the past year, 46.9% used it for some, 28.1% for most, and 25.0% for all sex acts with casual partners during that period. Most (78.3%) of STI prophylaxis users reported their condom use did not change during periods of STI prophylaxis use, 17.2% indicated their condom use declined, and 4.5% indicated their condom use increased. For doxyPEP specifically, 35.7% had heard of it, and 13.0% had used it in the past year, of whom 21.0% had used a dosage other than the 200-mg dose shown to be effective.

Conclusions: In this sample of primarily GBM, interest in bacterial STI prophylaxis was nearly universal. However, some of the use was not informed by current clinical guidance or evidence from research studies. Efforts are needed to increase awareness of effective dosing and monitor real-world use.

Diagnoses of curable bacterial sexually transmitted infections (STIs), including syphilis, chlamydia, and gonorrhea, continue to increase in the United States and globally.¹ The response to STIs in most high-income countries has centered on “test and treat” models of care, but such strategies have not been successful in reducing the prevalence of STIs in key populations, including gay and bisexual men (GBM) and young heterosexuals.^{2–4} Recent randomized trials have shown that 200 mg of doxycycline used as postexposure prophylaxis (doxyPEP) within 72 hours of condomless sex reduces the risk of bacterial STIs in people assigned male sex at birth,^{5,6} with some modeling studies projecting that widespread doxyPEP use could substantially reduce STI incidence in this population.^{7,8}

In 2023, multiple US state and county health departments released recommendations for the prescription of doxyPEP to people at risk of STIs,⁹ and the US Centers for Disease Control and Prevention (CDC) released draft national guidelines for doxyPEP.¹⁰ However, important implementation questions remain as doxyPEP transitions from clinical trials to real-world use.¹¹ Multiple studies have estimated the prevalence of use of doxycycline and other antibiotics as STI prophylaxis among GBM in Europe and Australia,^{12–15} but little is known about the use of antibiotics as STI prophylaxis in populations likely to benefit in the United States. Understanding interest in STI prophylaxis, who is already using it, and individual decision making around use can help establish levels of use before widespread implementation following final CDC recommendations, and inform scale-up of doxyPEP including guidance for providers and health promotion messaging for populations likely to benefit.

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Conflict of Interest and Sources of Funding: M.W.T. has received speaker's honoraria, consultant fees, and investigator-initiated research funding from Gilead Sciences. K.H.M. has received unrestricted research grants from, and has served on scientific advisory boards for, Gilead Sciences and Merck, Inc., and received payment from UpToDate, Inc., for developing medical education content. D.S.K. has been coinvestigator and/or study physician on studies at The Fenway Institute funded by grants from Merck and Gilead Sciences and has received funds from Virology Education, Medscape, and UpToDate, Inc., for developing medical education content. All other authors report no potential conflicts.

Author Contributions: M.W.T. and J.L.M. conceptualized and designed the study. M.W.T. performed the data collection and analysis and wrote the first draft of the manuscript. All authors contributed to data interpretation, critically revised it for important intellectual content, and approved the final version of the manuscript. The corresponding

author had full access to all the data in the study and had final responsibility for the decision to submit for publication.

Ethics: Ethics approval for the study was obtained from the Institutional Review Board of Harvard Pilgrim Health Care Institute, Boston, MA.

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Received for publication March 14, 2024, and accepted June 17, 2024.

Supplemental digital content is available for this article. Direct URL citations appear in the printed text, and links to the digital files are provided in the HTML text of this article on the journal's Web site (<http://www.stdjournal.com>).

DOI: 10.1097/OLQ.0000000000002061

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We conducted a national online survey of adults residing in the United States to explore interest in and experiences with using doxycycline and other antibiotics as bacterial STI prophylaxis. We estimated the prevalence and correlates of STI prophylaxis use and explored medication sources, dosing practices, reasons for use, and concerns related to using antibiotics to prevent STIs.

METHODS

Study Design

We conducted an online survey in September 2023 to assess interest in and use of antibiotics as STI prophylaxis among US residents aged at least 18 years. The survey was open to people of all gender identities and sexual orientations. We recruited participants from 3 online sexual networking apps used mainly by GBM: Grindr, Scruff, and Jack'd. The survey was also advertised through Facebook interest groups related to HIV PrEP and the health of people living with HIV. Survey responses were anonymous. Respondents could opt to enter a raffle to win a \$200 electronic gift card upon completion of the survey.

Measures

The survey included questions related to the use of STI prophylaxis, defined to participants as taking antibiotics before or after sex for the purpose of reducing their risk of getting a bacterial STI. Participants were asked about their awareness of and interest in using STI prophylaxis and whether they had used STI prophylaxis ever or in the last 12 months. Participants were asked about use of any antibiotics as STI prophylaxis, as well as the use of doxyPEP specifically.

Other survey domains included sociodemographics (age, gender identity, sexual orientation, race and ethnicity, HIV status, and state of residence), use of HIV PrEP and HIV postexposure prophylaxis (PEP), STI diagnosis history, sexual behaviors (number of anal sex partners, sexual positioning with casual partners, condom use, and participation in group sex), discussing STIs/STI testing with partners, and substance use before or during sex (i.e., chemsex).

Participants reporting use of STI prophylaxis were asked which antibiotics they had used, how they obtained the antibiotics, and how often and when (before and/or after sex) they had used STI prophylaxis with casual partners in the past 12 months. Participants reporting doxyPEP use in the past 12 months were asked how long after sex they had taken it and what dosages they had used. Participants reporting STI prophylaxis use were also asked whether their condom use had changed during periods of STI prophylaxis use.

The survey also explored reasons for interest in or use of STI prophylaxis, contexts in which STI prophylaxis was used, sources of information on STI prophylaxis, and concerns related to using STI prophylaxis (see Supplementary Materials 1, <http://links.lww.com/OLQ/B124>, for survey questions and response options).

Finally, respondents' attitudes toward STIs were assessed by including 7 attitudinal items with 5-point Likert scale responses (from "1 = strongly disagree" to "5 = strongly agree"), which were adapted from a previous study among GBM using PrEP.¹⁶

Statistical Analysis

We used descriptive statistics to characterize the overall sample of respondents. We then used log-binomial regression to compute unadjusted prevalence ratios (PRs) and corresponding 95% confidence intervals (CIs) for each independent variable in relation to recent (in the past 12 months) and lifetime use of antibiotics as STI prophylaxis. For the 7 attitudinal items, we calculated the proportion who agreed or strongly agreed among respondents

who did and did not report STI prophylaxis use in the past 12 months. We did not conduct multivariable analyses to adjust for confounding because we were not assessing causal relationships in this cross-sectional study.¹⁷ Analyses were conducted in Stata version 15.1 (StataCorp, College Station, TX).

Ethics Approval

The institutional review board at Harvard Pilgrim Health Care Institute approved this study with a waiver of written informed consent.

RESULTS

Respondent Characteristics

A total of 903 respondents completed the survey. Respondents were from all 50 US states, the District of Columbia and Puerto Rico, with a mean age of 41.7 years. Most were assigned male sex at birth (97.4%) and identified as GBM (96.2%). The majority of respondents identified as White (59.0%), not Hispanic (86.9%), and born in the United States (87.0%). At the time of survey completion, 51.9% had ever used HIV PrEP, and 42.4% reported currently using it; 19.0% were living with HIV. Approximately half of respondents (54.9%) reported ever being diagnosed with an STI, and a quarter (24.9%) reported an STI diagnosis in the past 12 months (Table 1).

Half of respondents (445, 49.3%) had heard of using antibiotics to prevent STIs. Nearly all respondents (95.0%) were interested in use of STI prophylaxis; 15.7% were slightly interested, 24.4% were moderately interested, and 54.9% were extremely interested (Fig. 1). Of those who had heard about STI prophylaxis, the most common sources of information were a doctor or clinician (37.8%), a friend (35.3%), and social media (30.3%). Most respondents (84.8%) said their preferred source of information for antibiotic use was a doctor or clinician (Table 2).

Overall, 189 (21.0%) respondents reported ever using antibiotics around the time of sex to prevent STIs, and 145 (16.1%) had done so in the past year. For doxyPEP specifically, 35.7% of respondents had heard of doxyPEP, and 13.0% had used it in the past 12 months (Fig. 1).

Factors Associated With Use of Antibiotics as STI Prophylaxis

Table 3 shows prevalence of use of antibiotic STI prophylaxis in the past 12 months and factors associated with recent use. Use of STI prophylaxis in the past 12 months was more common among respondents who had ever used HIV PrEP (PR, 2.09; 95% CI, 1.49–2.93) or were currently using it (PR, 2.66; 95% CI, 1.94–3.66). Recent STI prophylaxis use was also more common in those diagnosed with any STI in the past 12 months (30.4%; PR, 2.62; 95% CI, 1.96–3.5); those reporting never (PR, 10.2; 95% CI, 1.4–71.6), rarely (PR, 11.1; 95% CI, 1.57–79.25), or sometimes (PR, 9.48; 95% CI, 1.31–68.5) using condoms with casual partners compared with those who always used condoms; and those who participated in group sex monthly or more (PR, 4.11; 95% CI, 2.7–6.25) or a few times in the past 12 months (PR, 2.52; 95% CI, 1.69–3.75) compared with those reporting no group sex. Recent STI prophylaxis use was twice as common among respondents reporting both insertive and receptive sex in the past 12 months compared with those who reported only receptive sex (PR, 2.03; 95% CI, 1.22–3.39). A dose-response relationship was observed between number of casual anal sex partners in the past 12 months and prevalence of recent STI prophylaxis use, ranging from 3.5% of those reporting 0 to 1 partner to 47.2% of

TABLE 1. Characteristics of Survey Respondents (N = 903)

| Characteristic | n (%) |
|--|-------------|
| Age, mean (SD), y | 41.7 (12.6) |
| Age group, y | |
| 18–30 | 186 (20.6) |
| 31–40 | 276 (30.6) |
| 41–50 | 209 (23.2) |
| >50 | 232 (25.7) |
| Gender* | |
| Cisgender man | 827 (91.6) |
| Cisgender woman | 4 (0.4) |
| Transgender woman | 11 (1.2) |
| Transgender man | 13 (1.4) |
| Nonbinary/genderqueer/other gender identity (assigned male sex at birth) | 34 (3.8) |
| Nonbinary/genderqueer/other gender identity (assigned female sex at birth) | 6 (0.7) |
| Sexual orientation | |
| Gay/lesbian/homosexual | 689 (76.3) |
| Bisexual | 122 (13.5) |
| Heterosexual | 7 (0.8) |
| Other | 85 (9.4) |
| Race† | |
| White/Caucasian | 533 (59) |
| Black/African American | 205 (22.7) |
| Asian/Asian American/Pacific Islander | 45 (5) |
| Native American/Alaska Native | 17 (1.9) |
| Multiracial | 52 (5.8) |
| Other | 11 (1.2) |
| Ethnicity | |
| Hispanic | 118 (13.1) |
| Not Hispanic | 785 (86.9) |
| US region | |
| New England | 47 (5.2) |
| Middle Atlantic | 163 (18.1) |
| East North Central | 114 (12.6) |
| West North Central | 49 (5.4) |
| South Atlantic | 153 (16.9) |
| East South Central | 36 (4.0) |
| West South Central | 85 (9.4) |
| Mountain | 66 (7.3) |
| Pacific | 134 (14.8) |
| Puerto Rico | 3 (0.3) |
| NR | 53 (5.9) |
| Education | |
| Less than high school | 9 (1.0) |
| High school or equivalent | 107 (11.8) |
| Some college | 214 (23.7) |
| College graduate/graduate school | 307 (34.0) |
| Professional degree | 264 (29.2) |
| NR | 2 (0.2) |
| Income (USD) per year | |
| <20,000 | 199 (22) |
| 20,000–39,999 | 143 (15.8) |
| 40,000–59,999 | 156 (17.3) |
| 60,000–79,999 | 121 (13.4) |
| ≥80,000 | 278 (30.8) |
| NR | 6 (0.7) |
| Health insurance | |
| Private | 541 (59.9) |
| Medicaid | 124 (13.7) |
| Medicare | 79 (8.7) |
| None | 75 (8.3) |
| Other | 84 (9.3) |
| Living with HIV | 168 (18.6) |
| HIV PrEP | |
| Ever used HIV PrEP | 469 (51.9) |
| Currently using HIV PrEP | 383 (42.4) |

*Participants who reported male gender and female sex assigned at birth were classified as transgender men. Participants who reported female gender and male sex assigned at birth were classified as transgender women.

†Race categories are classified based on participant responses and not mutually exclusive as participants could select more than one category.

NR indicates not reported/no response.

those reporting more than 50 partners. Use was higher among those privately insured (20.0%), compared with those with no insurance (9.3%) or public insurance (8.9%–12.9%). Recent use of STI prophylaxis was not associated with race, ethnicity, being born in the United States, or ever reporting HIV PrEP use.

Factors associated with lifetime use of antibiotics as STI prophylaxis were similar to those associated with recent use (Supplementary Table 1, <http://links.lww.com/OLQ/B124>). Lifetime use of STI prophylaxis was more common among those living with HIV (26.8%) compared with those without HIV (19.6%; PR, 1.37; 95% CI, 1.02–1.83), and more common among respondents using HIV PrEP (29.5%) compared with those not using HIV PrEP (14.6%; PR, 2.02; 95% CI, 1.56–2.62).

Medication Sources, Frequency of Use, and Dosing Practices

Among the 189 respondents who reported ever using antibiotics around the time of sex to prevent STIs, most (78.1%) reported using doxycycline; 15.9% reported using amoxicillin, 13.8% reported using azithromycin, 13.8% reported using other antibiotics, and 7.4% were unsure which antibiotics they had used. Approximately half (49.7%) had used antibiotics as STI prophylaxis before sex; of the 68.8% who had used antibiotics as STI prophylaxis after sex, 49.2% reported having taken the antibiotics within 24 hours of sex, 40.8% between 24 and 72 hours after sex, and 8.5% more than 72 hours after sex. When asked about condom use with casual partners during periods of STI prophylaxis use, 78.3% of STI prophylaxis users reported their condom use did not change, 17.2% reported their condom use declined, and 4.5% reported their condom use increased.

Respondents reported multiple sources of medications used as STI prophylaxis: prescribed by a doctor or other clinician (60.3%), from a friend or partner (19.6%), leftover antibiotics from treatment of a previous STI (11.1%) or previous non-STI condition (19.6%), and purchasing antibiotics online without a prescription (13.2%) or with a prescription (9.5%) (Supplementary Table 2, <http://links.lww.com/OLQ/B124>).

Among the 135 respondents reporting STI prophylaxis before or after sex with casual partners in the past 12 months, 46.7% reported using it for some, 28.9% for most, and 24.4% for all sex acts with casual partners during that period. Among the 118 re-

spondents reporting use of doxycycline after sex in the past 12 months, 65.3% reported having taken the 200-mg dose shown to be effective, 21.2% reported having taken a dose less than 200 mg, and 22.0% reported using doxycycline but were not sure what dose they had used.

Reasons for Using Antibiotic STI Prophylaxis and Concerns Related to Use

The most reported reasons for using or being interested in using STI prophylaxis were not wanting to get an STI (86.7%), peace of mind (77.8%), to feel more comfortable during sex (59.8%), to prevent passing on an STI to regular partner(s) (56.7%), and to prevent passing on an STI to casual partner(s) (56.2%) (Table 4). Responses were similar between those with and without a history of STI prophylaxis use (Supplementary Table 3, <http://links.lww.com/OLQ/B124>).

When asked in which specific contexts respondents had used or would consider using STI prophylaxis, the most common responses were having sex with a new partner (73.7%), having sex with a casual partner (70.9%), participating in group sex (70.9%), having sex while traveling (67.6%), and having sex outside of a regular partnership (59.9%) (Supplementary Fig. 3, <http://links.lww.com/OLQ/B124>).

Concerns related to using antibiotics as STI prophylaxis are reported in Table 4. Half of respondents (51.1%) indicated concern about antimicrobial resistance, with similar proportions among those who had (48.8%) and had not (51.5%) used STI prophylaxis ($P = 0.480$; see Supplementary Fig. 2, <http://links.lww.com/OLQ/B124>). Other common concerns were cost of antibiotics (46.6%), long-term (42.4%) and short-term (36.3%) side effects, and the inconvenience of getting a prescription (33.1%). The proportion indicating concern about remembering to take the medicine around the time of sex was 17.2%.

Attitudes Toward STIs

Compared with respondents reporting no recent use of STI prophylaxis, a higher proportion of those reporting recent use of STI prophylaxis agreed with the statement “Getting an STI is no big deal” (36% vs. 12%, $P < 0.001$), and a lower proportion agreed with the statements “getting an STI could seriously affect my health” (47% vs. 73%, $P < 0.001$), “I feel I am unlikely to get an

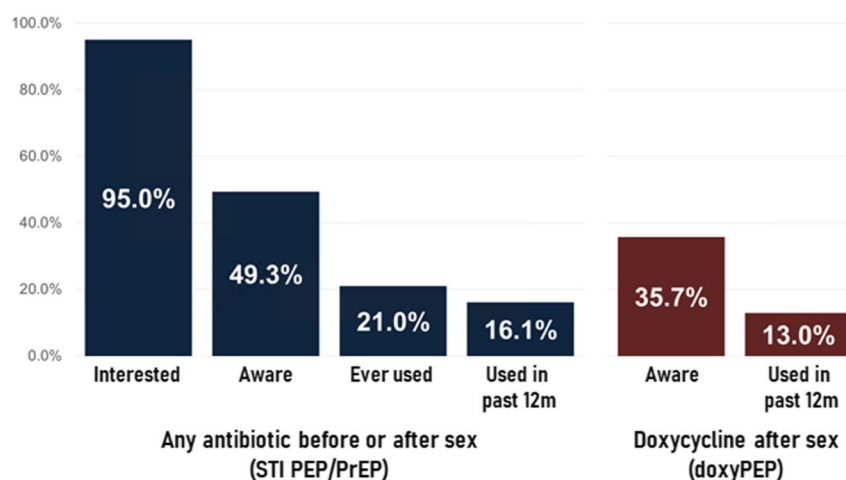


Figure 1. Proportion of participants reporting interest, awareness, lifetime use, and recent use of antibiotics as STI prophylaxis. Participants were classified as interested in using antibiotics if they selected “Extremely interested” (54.9%), “Moderately interested” (24.4%), or “Slightly interested” (15.7%). Awareness was defined as having heard of STI PEP/PrEP or doxyPEP, respectively.

TABLE 2. Sources of Information on Using Antibiotics as STI Prophylaxis

| | Sources of Information About Antibiotic STI Prophylaxis, n (% of Those Who Had Heard of STI Prophylaxis [N = 445]) | Preferred Source of Information About Antibiotic STI Prophylaxis, n (% of All Participants [N = 903]) |
|---|---|--|
| Doctor or other clinician | 168 (37.8) | 766 (84.8) |
| Online community group (e.g., PrEP Facts on Facebook) | 107 (24.0) | 242 (26.8) |
| Community organization | 67 (15.1) | 289 (32.0) |
| Social media | 135 (30.3) | 202 (22.4) |
| Friend | 157 (35.3) | 170 (18.8) |
| Regular or casual sex partner | 83 (18.7) | 142 (15.7) |
| News outlet (e.g., online news site) | 60 (13.5) | 177 (19.6) |
| Other | 35 (7.9) | 17 (1.9) |

STI" (11% vs. 20%, $P < 0.001$), and "I can't picture myself getting an STI" (6% vs. 16%, $P < 0.001$; Supplementary Table 3, <http://links.lww.com/OLQ/B124>). There was no difference between groups in the proportion who agreed with the statements "I worry about getting an STI" (72% overall), "getting an STI is something I think about often" (49% overall), and "it is important to me to avoid STIs" (87% overall).

DISCUSSION

In this sample of primarily GBM engaged in online networks in the United States, interest in using antibiotics as STI prophylaxis was nearly universal. We found that 21% of respondents had ever used antibiotic STI prophylaxis, and 16% had used it in the past 12 months, with recent use more common among those using HIV PrEP, living with HIV, and reporting more casual sex partners, group sex, and use of drugs/alcohol during or before sex. Although doxycycline as PEP was the most common method of antibiotic STI prophylaxis used, some respondents reported using medications or dosing strategies that have not been recommended for STI prevention. Our results suggest that use of STI prophylaxis could rapidly increase in the United States following CDC's recent endorsement, and that timely efforts will be needed to increase awareness of effective dosing and monitor real-world use during doxyPEP implementation.

Use of STI prophylaxis in our sample was more common than previously reported in several studies of GBM from the United Kingdom, Australia, and Europe. Two studies from Melbourne, Australia, conducted in 2018, reported that 13% of GBM attending a sexual health clinic had ever used any antibiotic as STI prophylaxis, and that 9.9% of HIV PrEP users had recently (within the past 1 month) used doxycycline prophylaxis (preexposure or postexposure), respectively.^{12,18} Several studies from the United Kingdom^{13–15,19} estimated the prevalence of lifetime use of any antibiotic STI prophylaxis among GBM to be between 3.6%¹⁴ and 8%¹³ with a higher prevalence among those using HIV PrEP. A Belgian study of GBM who engaged in chemsex reported a higher prevalence of STI prophylaxis use of 22%, consistent with our finding that recent STI prophylaxis use was more common among respondents reporting drug use before or during sex.¹⁵

Awareness of STI prophylaxis (49.3%) and interest in use (95.0%) were also higher in our sample than in previous studies among GBM outside of the United States, with 20.0% to 28.9% of GBM in a UK study¹⁴ and Belgian study²⁰ saying they had heard of STI prophylaxis, and 63% of GBM in an Australian study expressing interest in STI prophylaxis.¹⁸ A large online study conducted in the United States in 2018, which also recruited participants via social networking apps used primarily by GBM, found

that 84% of respondents expressed interest in using doxyPEP for STI prevention.²¹ Increasing awareness of and interest in using STI prophylaxis likely reflects the growing body of evidence on the efficacy of doxyPEP for reducing STI incidence, the release of recommendations for doxyPEP prescribing in multiple US jurisdictions,⁹ and corresponding health promotion efforts from clinicians and community groups. The nearly universal interest in STI prophylaxis that we observed in our sample suggests that use will rapidly increase among GBM in the United States, as doxyPEP is more broadly implemented; indeed, recent data from community health centers in Boston and San Francisco have reported rapid uptake of doxyPEP since early 2023.^{22,23}

As a majority of STIs among GBM tend to be diagnosed among subsets of men experiencing reinfections,²⁴ identifying which populations and contexts will benefit the most from doxyPEP will be crucial for maximizing impact. We found that the frequency of use of STI prophylaxis during sex acts with casual partners was variable, but that participants preferentially used STI prophylaxis in contexts with the greatest likelihood of benefit. Although a large US trial among GBM and transgender women reported high adherence to doxyPEP (up to 87% of sex acts covered⁵), use in the real world will likely vary depending on clinical guidelines and recommendations, individual risk assessment, and context. In our sample, there was a range of contexts in which participants reported using or expecting to use STI prophylaxis, such as with new partners or while traveling. We also found that recent STI prophylaxis use was associated with sexual behaviors linked to STI risk, such as group sex, chemsex, and more anal sex partners. Although the impact of preferential use of doxyPEP with certain partners or in certain settings is unknown, modeling work indicates that use of doxyPEP among people recently diagnosed with a bacterial STI is likely to have significant population-level benefits for STIs.⁷ Our data suggest that anticipated periods of heightened STI risk, such as group sex or traveling overseas to high prevalence locations, could be explored as additional indications for doxyPEP prescribing.

We found that motivations for using STI prophylaxis varied, including reducing risk to self, partners, or community; to modify behavior (e.g., not wanting to use a condom or partner not wanting to use a condom, with 17% of participants reducing their condom use during periods of STI prophylaxis use); and for values-based reasons (e.g., peace of mind and to feel more comfortable during sex). A third of participants wanted to avoid having to take a less preferred antibiotic treatment regimen, such as a weeklong regimen or injectable treatment, if diagnosed with an STI. Although most respondents agreed that avoiding STIs was important to them, some respondents perceived STIs to be less serious when considering the impact on their health. Understanding potential doxyPEP users' motivations for wanting to prevent

TABLE 3. Factors Associated With Reported Use of Antibiotic STI Prophylaxis in the Past 12 Months

| Recent Use (Past 12 mo) of Antibiotic STI Prophylaxis | | | |
|--|--------------------------|--------------------|----------|
| Variable | Prevalence of Use | PR (95% CI) | P |
| Born in the US | | | |
| No | 17.4% | Ref | |
| Yes | 15.4% | 0.88 (0.57–1.37) | 0.580 |
| Living with HIV | | | |
| No | 15.4% | Ref | |
| Yes | 19.1% | 1.24 (0.87–1.77) | 0.237 |
| Ever used HIV PrEP | | | |
| No | 10.3% | Ref | |
| Yes | 21.5% | 2.09 (1.49–2.93) | <0.001 |
| Currently using HIV PrEP | | | |
| No | 9.4% | Ref | |
| Yes | 25.1% | 2.66 (1.94–3.66) | <0.001 |
| Ever used HIV PEP | | | |
| No | 15.0% | Ref | |
| Yes | 21.7% | 1.44 (0.99–2.1) | 0.059 |
| Age group, y | | | |
| 18–30 | 18.8% | Ref | |
| 31–40 | 18.5% | 1 (0–0) | <0.001 |
| 41–50 | 17.7% | 0.98 (0.67–1.45) | 0.927 |
| <50 | 9.5% | 0.94 (0.62–1.43) | 0.775 |
| Race* | | | |
| White/Caucasian | 18.0% | Ref | |
| Black/African American | 14.0% | 0.78 (0.52–1.16) | 0.220 |
| Asian/Asian American/Pacific Islander | 12.5% | 0.7 (0.27–1.77) | 0.447 |
| Native American/Alaska Native | 0% | — | — |
| Multiracial | 14.7% | 0.82 (0.45–1.49) | 0.514 |
| Other | 18.2% | 1.01 (0.28–3.59) | 0.985 |
| Ethnicity | | | |
| Not Hispanic | 16.8% | Ref | |
| Hispanic | 11.0% | 0.66 (0.38–1.12) | 0.122 |
| Region | | | |
| New England | 19.1% | Ref | |
| Middle Atlantic | 20.9% | 1.09 (0.56–2.11) | 0.799 |
| East North Central | 7.9% | 0.41 (0.17–0.97) | 0.043 |
| West North Central | 10.2% | 0.53 (0.19–1.47) | 0.225 |
| South Atlantic | 15.0% | 0.79 (0.39–1.58) | 0.497 |
| East South Central | 11.1% | 0.58 (0.19–1.73) | 0.330 |
| West South Central | 12.9% | 0.68 (0.3–1.51) | 0.340 |
| Mountain | 3.0% | 0.16 (0.04–0.7) | 0.015 |
| Pacific | 28.4% | 1.48 (0.78–2.83) | 0.234 |
| Puerto Rico | 0.0% | — | — |
| Education | | | |
| High school or less | 16.4% | Ref | |
| Some college | 15.9% | 0.97 (0.58–1.62) | 0.908 |
| College graduate/graduate school | 16.9% | 1.03 (0.64–1.67) | 0.891 |
| Professional degree | 31.4% | 1.92 (1.23–3.00) | 0.004 |
| Income (USD) per year | | | |
| <20,000 | 6.5% | Ref | |
| 20,000–39,999 | 9.8% | 1.5 (0.73–3.09) | 0.273 |
| 40,000–59,999 | 18.6% | 2.85 (1.53–5.29) | 0.001 |
| 60,000–79,999 | 16.5% | 2.53 (1.31–4.9) | 0.006 |
| ≥80,000 | 24.5% | 3.74 (2.13–6.59) | <0.001 |
| Health insurance | | | |
| None | 9.3% | Ref | |
| Private | 20.0% | 2.14 (1.04–4.42) | 0.04 |
| Medicaid | 12.9% | 1.38 (0.6–3.2) | 0.45 |
| Medicare | 8.9% | 0.95 (0.35–2.58) | 0.919 |
| Other | 8.4% | 0.9 (0.33–2.46) | 0.843 |
| Ever diagnosed with an STI | | | |
| No | 7.3% | Ref | |
| Yes | 23.5% | 3.25 (2.22–4.75) | <0.001 |
| Diagnosed with multiple STIs in the past 12 mo | | | |
| No | 13.3% | Ref | |
| Yes | 32.8% | 2.47 (1.82–3.35) | <0.001 |
| Number of anal sex partners in past 12 mo | | | |

Continued next page

TABLE 3. (Continued)

Recent Use (Past 12 mo) of Antibiotic STI Prophylaxis

| Variable | Prevalence of Use | PR (95% CI) | P |
|--|-------------------|--------------------|--------|
| 0–1 | 3.5% | Ref | |
| 2–5 | 7.9% | 2.23 (0.91–5.44) | 0.078 |
| 6–10 | 17.1% | 4.85 (2.05–11.46) | <0.001 |
| 11–20 | 27.3% | 7.73 (3.36–17.79) | <0.001 |
| 21–50 | 29.3% | 8.30 (3.57–19.29) | <0.001 |
| >50 | 47.2% | 13.36 (5.79–30.83) | <0.001 |
| Sexual positioning with casual anal sex partners in the past 12 mo | | | |
| Receptive only | 10.4% | Ref | |
| Insertive only | 16.0% | 1.54 (0.86–2.75) | 0.145 |
| Both insertive and receptive | 21.2% | 2.03 (1.22–3.39) | 0.007 |
| Condom use with casual partners in the past 12 mo | | | |
| Always | 1.9% | Ref | |
| Very often | 17.3% | 9.35 (1.23–71.2) | 0.031 |
| Sometimes | 17.6% | 9.48 (1.31–68.45) | 0.026 |
| Rarely | 20.6% | 11.14 (1.57–79.25) | 0.016 |
| Never | 18.8% | 10.15 (1.44–71.64) | 0.020 |
| Participation in group sex in past 12 mo | | | |
| Never | 8.0% | Ref | |
| A few times | 20.1% | 2.52 (1.69–3.75) | <0.001 |
| About once a month/more than once a month | 32.8% | 4.11 (2.7–6.25) | <0.001 |
| Use of drugs before or during sex in the past 12 mo | | | |
| Never | 16.8% | Ref | |
| A few times | 27.1% | 1.38 (0.97–1.98) | 0.077 |
| About once a month/more than once a month | 29.5% | 1.60 (1.10–2.33) | 0.014 |

For factors associated with reporting ever using antibiotics as STI prophylaxis, see Supplementary Table 1, <http://links.lww.com/OLQ/B124>.

*For regression analyses, participants reporting more than one race were classified as multiracial.

STIs and incorporating them into clinician training and education on person-centered delivery of doxyPEP may help facilitate shared decision making and improve uptake among those likely to benefit.²⁵

Identifying the underlying drivers of using antibiotics to prevent STIs may also help identify candidates for future STI prevention strategies, such as vaccines,^{26,27} which may be preferred

TABLE 4. Reasons for and Concerns Related to Use of Antibiotics as STI Prophylaxis

| | n (%) |
|--|------------|
| Reasons for using STI prophylaxis (N = 860)* | |
| Not wanting to get an STI | 746 (86.7) |
| Peace of mind | 669 (77.8) |
| To feel more comfortable having sex | 514 (59.8) |
| To prevent passing on an STI to my regular partner(s) | 488 (56.7) |
| To prevent passing on an STI to my casual partner(s) | 483 (56.2) |
| To protect my community | 462 (53.7) |
| Not wanting to use a condom | 444 (51.6) |
| Partner not wanting to use a condom | 286 (33.3) |
| To prevent having to take a different antibiotic if I were diagnosed with an STI | 267 (31.0) |
| Recommended by a doctor or clinician | 246 (28.6) |
| To prevent side effects | 161 (18.7) |
| Suggested by a partner | 104 (12.1) |
| Concerns related to using STI prophylaxis (N = 903)† | |
| Worried about antibiotic resistance | 461 (51.1) |
| Cost of antibiotics | 421 (46.6) |
| Long-term side effects | 383 (42.4) |
| Short-term side effects | 328 (36.3) |
| Inconvenience of getting a prescription | 299 (33.1) |
| Not enough information to decide if I should use it | 156 (17.3) |
| Not remembering to take the medicine around the time of sex | 155 (17.2) |
| Not wanting people to know I am taking antibiotics to prevent STIs | 93 (10.3) |
| Not enough STI risk to need it | 91 (10.1) |
| No concerns | 91 (10.1) |

*N = 860 is the number of participants who reported previous use of antibiotic STI prophylaxis (n = 189) or reported no use but interest in use (n = 671). Participants reporting previous use of STI prophylaxis were asked, “which of the following were reasons for using antibiotic STI prophylaxis?” Participants reporting no use but interest in use were asked, “which of the following are reasons you would use antibiotic STI prophylaxis?” Supplementary Figure 1, <http://links.lww.com/OLQ/B124>, shows responses split by whether participants reported previous STI prophylaxis use (reasons for use) or no previous use (reasons for interest in use).

†All participants were asked if they had any of the listed concerns related to the use of antibiotic STI prophylaxis.


given the concerns about antibiotic STI prophylaxis use that were endorsed by our respondents. For example, the most reported concerns were adverse effects of using antibiotics and being worried about antimicrobial resistance, both of which were expressed among people with and without a history of STI prophylaxis use. Other concerns expressed by respondents, such as the inconvenience of getting a prescription and cost of antibiotics, indicate that efforts may be needed to improve service delivery and access through innovative models of care that reduce the burden on individuals who are interested in using doxyPEP.

Black and Latinx GBM are disproportionately impacted by HIV and STI epidemics in the United States,²⁸ underscoring the importance of equitable implementation of biomedical prevention strategies such as antibiotic STI prophylaxis. We observed a slightly lower uptake of STI prophylaxis among Black and Latinx men, but these differences were not statistically significant and were far less pronounced than the racial and ethnic disparities that have been observed in uptake of HIV PrEP.²⁹ Moreover, the near-universal interest in STI prophylaxis that we observed across subgroups, including in Black and Latinx populations (data not shown), could facilitate uptake. We also observed that recent use of STI prophylaxis was more common among those with professional degrees and those with private insurance, suggesting socioeconomic differences in access. Attention to equity in implementation of doxyPEP will be crucial for ensuring access for the populations most likely to benefit and for preventing racial and ethnic inequities such as those that have persisted in use of HIV PrEP.

This study has several limitations, primarily related to generalizability. Respondents were recruited via convenience sampling from online geosocial networking apps mainly used by GBM, and we could not assess differences between users who did and did not respond to the survey recruitment ad. Our sample was also highly educated (87.0% had at least some college education), and most (59.5%) were privately insured. Our sample included only a small number of transgender and gender-diverse people assigned male sex at birth, for whom doxyPEP is also recommended. Additional research will be needed to understand interest in and use of antibiotic STI prophylaxis in transgender and gender-diverse populations.

In this online study of primarily GBM, we found that nearly all respondents were interested in using antibiotic STI prophylaxis, and that 1 in 5 had used it before. Motivations for using STI prophylaxis and contexts in which respondents anticipated using it varied, with results suggesting that GBM will preferentially use doxyPEP in situations where they perceive it will be most beneficial. Medications and dosages used for STI prevention varied and included regimens not recommended for use as STI prophylaxis. Our study highlights the need for prompt guidance on effective doxyPEP dosing and timely efforts to monitor real-world use.

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