


Evidence of Potential Discriminatory HIV Pre-Exposure Prophylaxis (PrEP) Prescribing Practices for People Who Inject Drugs Among a Small Percentage of Providers in the U.S.

Journal of Primary Care & Community Health
Volume 13: 1–8
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DOI: 10.1177/21501319211063999
journals.sagepub.com/home/jpc


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Abstract

Introduction: A large percentage of people who inject drugs (PWID) are living with HIV. Yet, rates of HIV pre-exposure prophylaxis (PrEP) use among PWID remain low. Stigma surrounding substance use and PWID have been identified as potential barriers to PrEP. This study examined healthcare providers' concerns regarding PWID and willingness to prescribe PrEP to PWID. **Methods:** An online, cross-sectional survey of a diverse group of healthcare providers in the 10 U.S. cities with the greatest HIV prevalence was conducted between July 2014 and May 2015. Participants responded to a patient vignette of a PWID and asked to indicate whether the patient would be a candidate for PrEP and why via free-response text. Descriptive statistics are reported using frequency measures. Bivariate analyses were conducted using chi-squared comparisons and logistical regression. **Results:** Survey data from 480 providers were included in analyses. Of the 480 responses, 85.5% were classified as PrEP aware, while 14.2% were PrEP unaware. Additionally, 82.6% indicated the patient would be a good candidate for PrEP, 4.4% believed the patient was not a good candidate for PrEP, and 13% were unsure. Among those who were unsure or would not prescribe PrEP (n=84), open-ended responses indicated lack of knowledge (42.9%), concern about adherence (27.4%), concern about cost (4.8%), and bias (7.1%) as the primary reasons. **Conclusions:** Although the majority of providers in this study did not demonstrate bias against PWID, our study found that limited PrEP knowledge and bias are barriers to PrEP prescription among PWID for some providers. Interventions are needed that increase PrEP awareness of CDC guidelines and reduce implicit bias among providers.

Keywords

people who inject drugs, injection drug users, providers, HIV, pre-exposure prophylaxis

Dates received 10 September 2021; revised 12 November 2021; accepted 15 November 2021.

Introduction

Globally, 15.6 million individuals inject drugs, of whom approximately 3.2 million are living with HIV.¹ Additionally, injection drug use accounts for 10% of new HIV infections in the U.S.² Given the large percentage of HIV diagnoses within communities of people who inject drugs (PWID), finding strategies to prevent further spread and promote treatment within these communities is imperative. Recently, studies have shown that HIV pre-exposure prophylaxis (PrEP) is effective in preventing HIV among persons who inject drugs (PWID).³ Additionally, the Centers for Disease

Control and Prevention (CDC) released guidelines in 2014 to support PrEP prescription practices.⁴ These guidelines stated that PWID are at substantial vulnerability to HIV

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acquisition and recommended daily oral PrEP for HIV prevention.

Despite these guidelines and studies showing PrEP efficacy among PWID,⁵ PrEP is still under-prescribed to PWID. One study found that 76% of physicians had no PWID patients on PrEP, making them the least-prescribed priority population.⁶ Similar studies have found that PWID are prescribed PrEP less than other priority populations for HIV prevention, including sexual minority men and heterosexual serodiscordant couples.⁶⁻⁹ In 2018, researchers in San Francisco found that only 3% of PWID were on PrEP, and all of those PrEP users were sexual minority men who also reported injection drug use behaviors.¹⁰ Similarly, data from Boston indicate that only 2% of PWID were prescribed PrEP in 2019.¹¹ Too few PWID are currently prescribed PrEP, and determining reasons for this disparity is urgent and aligned with the goals to end the HIV epidemic in the U.S.¹²

PrEP is an evidence-based intervention capable of reducing the incidence of HIV among PWID when it is prescribed by healthcare providers.⁵ Low prescription rates suggest barriers to prescription; however, little is known on the reasoning behind why medical providers are reluctant to prescribe PrEP to PWID.¹³ Additionally, it is not clear how healthcare providers weigh the benefits of PrEP versus perceived concerns about potential nonadherence to PrEP among PWID.¹⁴ Research has shown that providers exhibit bias toward specific populations, including evidence of bias related to race, sexual practices, and substance use.^{15,16} For example, PWID in California describing feeling stigmatized by first responders and hospital staff, leading to delayed and substandard medical care.¹⁷ Calabrese et al¹⁸ found that a diverse group of providers perceived people who use substances as unreliable and unable to adhere to PrEP regimens. Previous research has also shown that providers are reluctant to prescribe antiretroviral therapy to PWID, with 52.4% of HIV providers stating they would defer treatment for PWID who are injecting daily even with advanced immunologic suppression, despite research showing survival benefits of antiretroviral therapy in PWID.^{19,20} However, limited research has explored PrEP prescribing practices for PWID and the role of stigma in low PrEP prescription among PWID. As such, further research is needed to determine whether PWID are similarly subjected to discriminatory PrEP prescribing practices in the U.S.¹⁸ The current cross-sectional study of 480 providers in 10 U.S. cities with the highest HIV incidence study examines healthcare providers' willingness to prescribe PrEP to patients who inject drugs.

Methods

Participants and Procedures

An online survey of healthcare providers practicing in the 10 U.S. cities with greatest HIV prevalence was conducted

between July 2014 and May 2015, as described in previous papers.²¹⁻²⁴ To be eligible, providers had to: (1) be working at least 4h per week in an outpatient setting; (2) have patients ages 13-64 years in their practice; and (3) describe their practice specialty as primary care (either Family Medicine, Internal Medicine [IM], or IM/Pediatrics), Obstetrics/Gynecology, Infectious Diseases, or HIV Medicine. Of the estimated 2088 providers invited to participate in the study, 525 enrolled, 480 provided at least partial data available for analysis, and 84 provided adequate free response answers to the scenario in question for qualitative analysis. Participants were provided an honorarium for survey completion and all study procedures were approved by the Institutional Review Board of the Medical College of Wisconsin.

Measures

Participants were provided several patient vignettes and asked to describe whether the patient would be a candidate for PrEP and why via free-response text. One of these scenarios included a person who reported injection drug use and needle-sharing behaviors: *"You are seeing a 35-year-old female patient who is addicted to heroin. She sees you every 6 months for routine visits for hypertension and occasionally on additional visits for acute problems. She has done well with her hypertension management on two medications. She is on a one-year waiting list to get into a methadone clinic. Your city does not have a needle exchange program. The patient routinely shares needles with some friends who live in her neighborhood and use drugs together. You test her for HIV today and the result is negative."* Providers were then asked: *"Would you consider this patient an appropriate candidate for PrEP?"* with *yes*, *no*, and *not sure* response options, followed by being asked *Why?* with a box for free response answers. Additional measures examined included demographics of providers, PrEP prescribing history, whether the provider had read the CDC guidelines as well as whether they were classified as "PrEP aware" or "PrEP unaware." PrEP awareness was determined by participants' response to the question "Are you aware of the concept of HIV PrEP, which is prescribing regularly-scheduled HIV medication to HIV-uninfected individuals to help prevent them from getting HIV?"

Data Analysis

The goal of the analysis was to identify bias among participants. Responses of participants who answered "no" or "not sure" to the described vignette were qualitatively examined. The first author coded whether each response included one of the 4 themes: lack of knowledge, concerns about adherence, concerns about cost, and/or bias against PWID. Bias against PWID was defined as responses showing

inclination or prejudice against PWID. Responses that fell into multiple categories were counted once for each category. Furthermore, we compared the participants who responded “no” or “not sure” to the clinical vignette described above to the participants who responded “yes” to his vignette with regards to PrEP prescribing history, participant demographics, whether participants had read the CDC guidelines, and whether they were classified as “PrEP aware” or “PrEP unaware.” Sample sizes of free response data greater than 25 responses have been found to be sufficient for qualitative analysis.^{25,26} Quantitatively, descriptive statistics were reported using frequency measures. Bivariate analyses were conducted using chi-squared comparisons and logistic regression for categorical and continuous variables, respectively.

Results

Of the estimated 2088 providers invited to participate in the study, 525 enrolled and 480 provided full data used for data analysis. Demographic data is listed in Table 1. Out of the 480 responses to the vignette, 399 providers (82.6%) answered that the patient would be a good candidate for PrEP and that they would prescribe it. Twenty-one (4.4%) answered that the patient was not a good candidate for PrEP, and 63 (13.0%) answered that they were unsure whether the patient was a good candidate for PrEP. Among all participants, 412 (85.8%) were classified as “PrEP aware,” while 68 (14.2%) were classified as “PrEP unaware.” Comparatively, of the 84 responses that answered “no” or “not sure,” 66 (78.6%) were classified as “PrEP aware,” while 18 (26.5%) were “PrEP unaware.” In bivariate analyses (see Table 1), providers who were classified as “PrEP unaware” were more likely to respond “no” or “not sure” to the question about PrEP candidacy for the PWID.

Qualitative responses were divided into 4 categories based on underlying themes. Thirty-six qualitative responses (42.9%) were classified as “lack of knowledge,” illustrated by quotes such as “I do not know anything about PrEP,” mentioned by a 65-year-old Black female physician from Atlanta and “Not sure about [PrEP] efficacy with [intravenous/] drug injection,” reported by a 35-year-old multiracial female physician from Washington D.C. Twenty-three (27.4%) participants were concerned about adherence, illustrated by quotes such as “I would be unsure about the likelihood of compliance. . .” (45-year-old white female physician from Houston) and “Patient may not be trustworthy in adhering to medication” (54-year-old Black male physician from New York). Four (4.8%) participants were concerned about cost/lack of PrEP navigation knowledge, illustrated by quotes such as “Who will pay for the Truvada?” (57-year-old white female physician from Miami), and 6 (7.1%) exhibited bias specifically against PWID illustrated by quotes such as “She should be

responsible for her risky behavior” (60-year-old Asian male physician from Houston). Further representative quotes are presented in Table 2.

Discussion

The purpose of this study was to determine whether health-care providers exhibit concerns regarding PWID that could impede PrEP prescribing practices in the U.S. Although fewer than 10% of providers provided responses that we coded as concerns, we found these responses to be indicative of a barrier to PrEP prescribing practices to patients who reported injection drug use behaviors. It is also likely that discriminatory bias is more widespread, since among a nationwide sample of providers fewer than 70% indicated PWID should be prescribed PrEP in 2018.²⁷ Additionally, we found that many providers lacked knowledge about PrEP and had limited familiarity with the CDC PrEP guidelines⁴ in use at the time of the survey.

PrEP is one of the most exciting and efficacious new developments in the fight against the HIV epidemic, since it has been shown to reduce HIV transmission by up to 74% among PWID.^{5,28} PWID on PrEP have endorsed high satisfaction with PrEP and perceive PrEP as valuable.²⁹ However, providers are still uncomfortable prescribing PrEP to individuals in need, with fewer than 17% of patients who could benefit from PrEP currently prescribed it.^{30,31} We found that many providers lacked knowledge about PrEP, similarly to other recent studies.^{9,13,21,31-33} Out of the 84 respondents who did not think the patient was a good candidate for PrEP or were unsure, 42.9% were classified as lacking knowledge. Participants responding “no” or “not sure” regarding PrEP candidacy for a PWID were less likely to be PrEP aware than those who saw the PWID as a PrEP candidate. Increasing knowledge and comfort with PrEP among providers is a critical first step in achieving more widespread use and ensuring that more populations receive the standard of care needed, since studies have shown that greater knowledge of PrEP is associated with higher rates of prescription.^{34,35} In-service training models have been developed and tested to educate medical providers on recent biomedical advances³⁶; however, no research has been conducted on structured interventions to educate practicing medical providers on how to integrate PrEP prescribing services into traditional medical care.

Another important finding from our study was the bias demonstrated by some providers toward the patient in our vignette. This specific scenario was designed with minimal ambiguity and clearly painted the picture of a good PrEP candidate for providers, with no rationale for anticipating poor adherence. However, providers’ responses illustrated that they harbored biases against the patient in the scenario who reported injection drug use and needle-sharing behaviors, despite her meeting CDC guidelines for PrEP.^{4,37} It is possible

Table 1. Sample Characteristics and their Bivariate Associations Potential HIV Pre-Exposure Prophylaxis (PrEP) Prescribing Bias Among a U.S. Sample of Health Care Providers (n = 480).

Categorical variables	n	Col.%	Potential bias—No or not sure responses to patient's PrEP candidacy (n = 84)		χ^2 statistic
			n	Row %	
Gender					0.75
Cisgender female	216	45.0	37	17.1	
Cisgender male	253	52.7	44	17.4	
Transgender or prefer not to answer	11	2.3	3	27.3	
Race/ethnicity					5.86
Asian	81	16.9	12	14.8	
Black	53	11.0	6	11.3	
Latinx	39	8.1	7	18.0	
White	262	54.6	46	17.6	
Multi/another or prefer not to answer	45	9.4	13	28.9	
U.S. Region					2.36
Northeast	109	22.7	16	14.7	
Midwest	55	11.5	11	20.0	
South	200	41.7	40	20.0	
West	116	24.2	17	14.7	
Provider type					1.67
HIV provider	225	46.9	34	15.1	
Non-HIV primary care provider	255	53.1	50	19.6	
Professional position					2.24
Physician	409	85.2	76	18.6	
Nurse practitioner	44	9.2	5	11.4	
Physician assistant	27	5.6	3	11.1	
Practice type					4.05
Private hospital or clinic	234	48.8	49	20.9	
Public/other settings ^a	246	51.3	35	28.9	
Read CDC PrEP guidelines					0.30
No	227	47.3	42	18.5	
Yes	253	52.7	42	16.6	
PrEP awareness					4.42*
PrEP unaware	68	14.2	18	26.5	
PrEP aware	412	85.8	66	16.0	
PrEP prescribing history					2.36
No PrEP prescribing history	290	60.4	57	19.7	
PrEP prescribing history	190	39.6	27	14.2	
Continuous Variable	M	SD	M	SD	ANOVA
Age	50.0	8.5	49.2	8.3	F (1, 478) = 0.95

Abbreviation: CDC, Centers for Disease Control and Prevention.

Percentages may not add up to 100 because of rounding.

^aIncludes public hospitals, clinics, AIDS service organizations, other, and one missing response.

* $P < .05$. ** $P < .01$. *** $P < .001$.

that given a more ambiguous patient scenario that more providers would disclose bias. It is also important to note that, although overall bias was low, PrEP prescription rates are still low among PWID.⁶⁻⁹ This indicates that providers may harbor additional bias that they are unaware of or that they conceal in

the context of a survey due to social desirability.¹⁸ Finally, although only a small percentage of providers indicated bias in our study, bias can take many shapes and forms. It is possible that other bias and concerns exist among healthcare providers that coexist with the willingness to prescribe PrEP.

Table 2. Evidentiary examples of free-response data.**Lack of knowledge**

I do not know anything about PrEP—*65-year-old Black female physician from Atlanta*

PrEP should be held for high-risk sexual activity—at least at this point that's how I feel—*62-year-old white male physician from Philadelphia*

Not sure about [PrEP] efficacy with IV [intravenous/] drug injection—*35-year-old multiracial female physician from Washington D.C.*

[The patient is] not a candidate for PrEP; instead test every 3 to 6 months for HIV as patient is at high risk for HIV—*55-year-old Asian female physician from Los Angeles*

Just learned recently about PrEP and IV drug use—need to see more data on efficacy, probably is a candidate—*45-year-old white female physician from Chicago*

Concerns about adherence

I doubt she can afford the drug and I do not think she would be compliant with the drug—*55-year-old white male physician from Los Angeles*

I would be unsure about the likelihood of compliance (even though by the way the scenario is written, I understand she is compliant with her BP treatment)—*45-year-old white female physician from Houston*

She may not be compliant with the regimen nor the essential checks to monitor her. I would also be concerned about Hep B and C. Her "friends" may have HIV with a resistant virus. Too many risks and unknown factors to safely administer and monitor—*61-year-old male physician from Miami*

Patient may not be trustworthy in adhering to medication. I would consider it but have a discussion about adherence to medications—*54-year-old Black male physician from New York*

Concerns about cost/lack of PrEP navigation knowledge

It seems unlikely she would be able to afford it. If she had insurance that would cover it, she probably wouldn't be on a waiting list for a public methadone clinic—*56-year-old white male physician from Washington D.C.*

Will she be able to adhere to the more frequent visits? Who will pay for the Truvada?—*57-year-old white female physician from Miami*

Bias against injection drug use behavior

She should be responsible for her risky behavior—*60-year-old Asian male physician from Houston*

I would be concerned about how effective Truvada would be in a patient sharing equipment for injection drug use. I would aggressively try to help her gain access to clean syringes—*54-year-old Black male physician from New York*

If behavior continues after meds not sure that will help solve her long-term HIV risk—*48-year-old white male physician from Dallas*

Unfortunately, PWID face many barriers to healthcare in the US, including stigma, access to healthcare providers, and cost, among others.^{38,39} In fact, research has found that interpersonal stigma is a major barrier to interacting with healthcare providers among PWID, with some participants stating that they experienced an immediate change in treatment and attitude toward them from their provider upon disclosure.³⁸ This may lead to many PWID avoiding medical care or not disclosing their drug use to avoid any future negative interactions, which is detrimental to receiving standard of care including access to PrEP. Similarly, studies have shown experience working with PWID affects prescription practices, with providers with more experience treating PWID being more likely to prescribe medications.¹⁹ Consequently, lack of provider experience working with PWID, as well as lack of disclosure of drug use by patients, may be another significant barrier faced by PWID not explored in this study. In fact, PWID have highlighted the preference to seek HIV prevention services (including PrEP prescriptions) from Syringe Services Programs (SSP), drug treatment settings, and mobile healthcare vans^{39,41} to avoid bias from other healthcare providers in traditional settings. Our findings reveal this bias is, in fact, present among some healthcare providers, demanding policy-based interventions to address structural HIV and injection drug use stigma in traditional healthcare settings.

PWID face many unique challenges to accessing PrEP, including potential discriminatory PrEP prescribing practices impeding PrEP use among PWID as identified in our analysis. Our findings align with a previous report by Calabrese et al,¹⁸ which similarly found providers had concerns about PrEP adherence among PWID. Providers' concerns about adherence among PWID appear unwarranted, as PWID on PrEP who have engaged in bio-behavioral interventions for PrEP adherence have outstanding rates of adherence.^{29,42}

An important consideration for future research is how to reduce bias among providers to increase PrEP prescriptions for PWID. Investigators of a 2019 systematic review found that the most effective ways to reduce implicit bias included using intentional strategies to overcome biases, where participants were instructed to implement specific strategies designed to reduce bias, exposing participants to counter stereotypical exemplars, and induce emotion.⁴³ Promising approaches to reduce bias among providers should target these strategies: (1) showing providers evidence of efficacy of PrEP among PWID, (2) introducing them to individuals who successfully adhere to PrEP and informing them of evidence-based strategies that improve PrEP adherence among PWID, and (3) illustrating the life experiences and unique challenges PWID have in overcoming addiction.

Finally, educating PWID about PrEP is another strategy that could be used to increase PrEP prescription. Overall, PWID have low awareness of PrEP or PEP, with a New York study showing that PWID were significantly less likely to be aware of PrEP compared to men who have sex with men—another priority group for PrEP.⁴⁴ A similar study in Baltimore, Maryland, found that only about one fourth of PWID had heard of PrEP, but 63% were interested in taking it after learning about it.⁴⁵ Finally, a study in Washington, DC, found that over half of PWID participants were willing to take PrEP if it were offered at no cost.⁴⁶ Educating PWID may be key in giving them more autonomy in their own healthcare and access to PrEP.

Our study has several limitations that merit mention. First, our study is subject to social desirability bias. It is plausible that discriminatory bias against PWID may be more common among healthcare providers than it appeared in our study. Second, our data were collected in 2014 to 2015, and PrEP has received notable attention since the time of data collection, though the CDC issued guidelines for prescribing PrEP to PWID in 2013.⁴⁷ Nonetheless, PrEP roll-out has largely focused on other priority populations (eg, sexual minority men), and the low reported rates of PrEP uptake among PWID coupled with continued findings of suboptimal PrEP prescription practices indicate our data remain impactful and generalizable. Third, our sampling strategy resulted in recruitment of providers in the 10 U.S. cities with greatest overall HIV incidence, which reduces generalizability to other areas, including rural settings with unique challenges responding to the opioid epidemic. Finally, response rate of the survey was estimated at 23%, which is higher than most online surveys with medical providers but still an important limitation. Additional nationwide research is needed, particularly in rural states with concurrent HIV and opioid epidemics. Last, our sample predominantly included physicians, and more research is needed with other prescribing providers and medical care providers.

Conclusion

In summary, PrEP is highly effective in preventing HIV among PWID, yet our research illuminated the potential of discriminatory PrEP prescribing practices of a small minority of healthcare providers in the U.S. that could impede optimal levels of uptake among PWID. The opioid epidemic is contributing to an increase in HIV transmission among PWID, with 10% of new HIV diagnoses occurring among PWID.² However, PrEP uptake and adherence is disproportionately low among PWID.³⁹ Interventions and changes to medical training may be needed to educate providers about PrEP and reduce bias against PWID. Healthcare providers have the privilege and responsibility to provide PrEP to patients in need, and additional work is needed to

further support PrEP roll-out to help end the HIV epidemic in the U.S.

Acknowledgments

The authors acknowledge the contributions of other members of the study team, especially Drs. Jill Owczarzak, Timothy McAuliffe, Laura Bogart, and Jeffrey Kelly. We also thank our staff at the Center for AIDS Intervention Research and our participants who volunteered their time.

Declaration of Conflicting Interests

The author(s) declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: AEP receives research funding from Gilead Sciences, Inc. All other authors declare that they have no conflict of interest.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: Funding support was provided by Gilead Sciences, Inc. (IN-US-276-0123, PI: Petroll) and the National Institute of Mental Health (K01-MH118939, PI: John; K01-MH112412, PI: Quinn; P30-MH052776, PI: Kelly). The content of this manuscript is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

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