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Sena Sayood

Laura R. Marks

Rupa Patel

Nathanial S. Nolan

Stephen Y. Liang

See next page for additional authors

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Authors

Sena Sayood, Laura R. Marks, Rupa Patel, Nathaniel S. Nolan, Stephen Y. Liang, and Michael J. Durkin

Low Knowledge of HIV PrEP Within a Midwestern US Cohort of Persons who Inject Drugs

Sena Sayood,¹ Laura R. Marks,¹ Rupa Patel,¹ Nathaniel S. Nolan,¹ Stephen Y. Liang,^{1,2} and Michael J. Durkin¹

¹Division of Infectious Diseases, John T. Milliken Department of Medicine, Washington University School of Medicine, St. Louis, Missouri, USA, and ²Department of Emergency Medicine, Washington University School of Medicine, St. Louis, Missouri, USA

We interviewed persons who inject drugs (PWID) to understand perceptions of pre-exposure prophylaxis (PrEP) to prevent HIV infection. Knowledge of PrEP was poor. Patients felt that PrEP was for sexual intercourse rather than injection drug use, and PWID managed on medications for opioid use disorder felt that they had no need for PrEP.

Keywords. fentanyl; heroin; HIV; opioid use disorder; PrEP.

Pre-exposure prophylaxis (PrEP) to prevent HIV has been most successfully adopted among men who have sex with men (MSM). However, comparatively little research has been performed among persons who inject drugs (PWID) and particularly among those with opioid use disorder (OUD), which represents another high-risk population [1]. The available literature confirms that PWID with OUD have HIV risk behaviors, yet frequently low awareness of PrEP. This includes people who remain engaged in treatment for OUD [2]. In rural areas, participants view PrEP as a method to reduce risk of HIV for sexual encounters, and homophobia remains a barrier to uptake [3]. Following education, interest in PrEP increased at 2 Northeastern US clinic sites [4]. However, the generalizability of these findings remains unclear, particularly for hospitalized patients who are not engaged in long-term OUD treatment programs and individuals from rural locations.

Our research team has been part of a Centers for Disease Control and Prevention (CDC)-funded quality improvement initiative to implement a toolkit to improve care of PWID who present to the hospital with serious injection-related infections

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Correspondence: Sena Sayood, MD, Division of Infectious Diseases, John T. Milliken Department of Medicine, Washington University School of Medicine, 4523 Clayton Ave., CB 8051, St. Louis, MO 63110 (sjsayood@wustl.edu).

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(SIRIs), such as endocarditis complicated skin and soft tissue infection, epidural abscess, and vertebral osteomyelitis. This program was implemented at 1 urban and 2 rural hospitals in Missouri [5]. Screening of the study population showed that 16.9% had at least 1 sexually transmitted infection (STI) [6], so one of the goals of this project was to increase PrEP uptake among hospitalized PWID at our sites. The aims of this study were to understand baseline knowledge, opinions, and interest in PrEP among PWID who are hospitalized with SIRI.

METHODS

We conducted individual, semistructured interviews of patients who were admitted to Barnes-Jewish Hospital (1431 beds), Missouri Baptist Sullivan Hospital (25 beds), and Parkland Health Center (130 beds) for SIRI between 2016 and 2020. Demographics, substance use history, infection characteristics, and comorbidities were obtained via electronic health record queries and manual data entry. An interview guide was developed to understand patients' thoughts about the CDC program elements and the program as a whole. Patients were interviewed by a health coach trained in qualitative research methods. Interviews were performed until thematic saturation was reached. Interviews were transcribed and inductively coded with NVivo (NVivo 12, QSR International) using a grounded theory approach. Sections focusing on HIV risk and PrEP were selected for this subanalysis. These sections included questions addressing perceived risk of HIV, interest in methods to reduce the risk of SIRI, specific methods to reduce HIV risk, and knowledge of PrEP. Each transcript was independently coded by 2 infectious diseases physicians (M.J.D. and S.S.). Investigators then met to compare and revise coding discrepancies. This study was approved by the Washington University Human Subjects Research Protection Office.

RESULTS

Thirty individuals were interviewed. Sixteen were African American, 18 were men, and 1 was transgender. The cohort had high rates of blood-borne infections (Supplementary Table 1). Over 63% had evidence of hepatitis C virus (HCV) or hepatitis B virus (HBV) infection based on antibody screening. Three patients were HIV positive. Several themes emerged from our qualitative analyses of PWID who were admitted to the hospital for SIRI and are summarized in Table 1.

Knowledge of PrEP

Overall awareness of PrEP was low, with only 5 interviewees (17%) endorsing that they had heard of it previously. Of these, 2 patients were already on PrEP and another had already acquired

Table 1. Themes and Representative Quotes About HIV Risk, Prevention Strategies, and Knowledge of PrEP Among PWID

Theme	Quotes
Knowledge of PrEP	"I believe I have [heard of PrEP]. Isn't it like a skin disease?" (Participant 6)
Perceived risk of HIV	"I'm not sexually active." (Participant 14) "Well, I had hepatitis back in the 60s. Luckily...I've had venereal diseases from sharing with other people. My brother died of AIDS.... I never shared anything after that." (Participant 63) Yeah, [I'm concerned about acquiring] hepatitis [C] but [I've] never [been concerned about] HIV [risk]. (Participant 233) "You know, I ain't no faggot right?" (Participant 238)
HIV prevention strategies	"Like rubbers. If I'm having sex, I use rubbers and I don't use the same.... Well, I don't use needles at all." (Participant 64) "I go through a needle exchange program, so I get brand new syringes, alcohol pads, and that sort of thing. And I don't share my needles." (Subject 74) "I used the new clean needles, and I didn't ever share. So, you know, obviously it's a concern, but I felt I was being careful enough to where it wasn't." (Participant 234) "I was lacking knowledge of a lot of things when it came to injecting drugs; even though I didn't share or using things, cottons and needles, I was careful about that." (Participant 91) "It was one of the main reasons that I used a clean one every time. I had to mention I didn't want to share. But that also helped me to always, no matter what I had to have a clean one. I thought I was doing right, because I was using just clean water. I've seen people get it out of the puddles of water, and it was raining. And so I'm thinking, at least I'm using clean water every time. I thought because I was boiling it, that that would take out anything that could be wrong, which I didn't think anything would be wrong with tap water, but I don't know if you knew, but the bacteria came out of tap water. And like I explained to the doctor about thinking that you would boil all that off. He was like, 'No.' Obviously there was still a bacteria in there which entered when I poked myself. And I always used alcohol wipes. So yeah, I just thought I was taking the right precautions and what have you." (Participant 226)
Interest in PrEP	"I don't want to have unprotected sex. I don't mess around with no anybody. I don't use no drugs no more, so I don't inject drugs no more." (Participant 91) "I'm not having sex right now." (Participant 227)

Abbreviations: PrEP, pre-exposure prophylaxis; PWID, persons who inject drugs.

HIV infection. Of the remaining interviewees who had not heard of PrEP, only 5 were interested in learning about it. One patient who was aware of PrEP dismissed the intervention as only applying to MSM using derogatory language.

Perceived Risk of HIV

HIV was generally not felt to pose a significant threat. Patients expressed that they felt their risk of HIV infection was low because they were sexually abstinent, engaged in safe sex practices, or did not have sex with MSM. One patient acknowledged the risk of HIV acquisition from injection drug use (IDU), and he had personal experience of a family member acquiring HIV several decades prior secondary to IDU. The risk of HCV acquisition was felt to be much more relevant to IV drug use. HBV infection was not reported as a specific concern from any of the patients despite increasing rates among PWID locally. After education that HIV could be transmitted via IDU, patients almost uniformly felt that once they received medications for opioid use disorder (MOUD) and abstained from using intravenous drugs that their risk for HIV was negligible.

HIV Prevention Strategies

When asked about measures to reduce the risk of HIV infection, most patients listed safe sex practices, abstinence from IDU, or harm reduction methods with needle use. PrEP was not seen as adding benefit. The use of clean needles and not sharing needles were felt to be the single most important intervention in preventing infections. One interviewee, however, acknowledged that when they were desperate to use drugs, they would

sometimes neglect their harm reduction practices. No interviewees made any connection between prior IDU-associated infections or prior STIs and an increased risk of HIV acquisition. While HIV was perceived to be primarily a sexually transmitted infection, testing for STIs was not seen as important, and many participants endorsed that they had not been tested for any STIs within the past year.

Interest in PrEP

While the majority of patients were unaware of PrEP, there were participants who simply were not interested. When educated about PrEP during the course of the interview, 2 participants saw no relevance of the intervention. When pressed about their lack of interest, participants again cited abstinence from IDU, safe sex practices, or abstinence from sex as prevention methods they were already engaged in and did not see any value added by PrEP. Those interested were unenthusiastic and asked few follow-up questions.

DISCUSSION

Our findings highlight several unique barriers to implementing PrEP among PWID. Baseline knowledge of PrEP was poor despite a high rate of STIs [6]. Patients had a low perceived risk of HIV acquisition from IDU. Instead, patients felt that more concrete harm reduction methods such as using clean needles and avoiding sharing needles were more valuable and effective. As a result, interest in PrEP was low in this cohort. Once harm reduction methods were implemented or abstinence from injection opioid use via MOUDs was achieved, members of our cohort did

not see any added value of PrEP. Despite HIV being recognized more as an STI than as an IDU-associated infection, the perception remained that it is primarily a concern for MSM patients.

Our findings highlighting low baseline knowledge and high stigma with PrEP are similar to previously published studies [3, 7, 8]. However, unlike other studies, our cohort of patients showed very little interest in starting PrEP.

One unintended consequence of successfully increasing PrEP utilization among MSM may be increased stigma associated with PrEP use for IDU. Quotes from our group and others that erroneously associate PrEP with MSM highlight this issue. If PrEP is to be accepted at a higher rate among PWID, dedicated messaging and education will be required for PWID to understand that use of PrEP is not exclusive to the MSM population, IDU is a risk factor for HIV infection, there is a high rate of STIs among PWID not directly related to IDU, and PrEP may be a viable tool to reduce personal risk for HIV infection in the setting of continued risk factors.

Ideal timing for PrEP uptake among PWID is complicated. In our cohort, the majority of patients had started on MOUDs and reported that they no longer injected drugs. If the primary risk factor PWID have for acquiring HIV is IDU, there may not be substantial benefit from starting PrEP once a patient is consistently managed on MOUDs. Patients who continue to inject are the population most likely to benefit from receiving PrEP, but are less likely to follow up and remain engaged in care. Therefore, PrEP education in PWID must be pursued in a targeted fashion, taking into consideration individual risk factors.

This study has several limitations. All participants received care at hospitals that offered MOUDs and linkage to outpatient OUD care, including information about needle exchange programs. This access may have skewed their overall perception of HIV risk from IDU. Because our data were part of a larger study investigating SIRI specifically, detailed questions on risk factors related to sexual behaviors were not included. Future studies should focus on PWID who live in resource-poor areas with limited access to OUD care and have more detailed investigation into risk factors beyond IDU.

CONCLUSIONS

In our cohort of PWID hospitalized with SIRI, while knowledge of and interest in harm reduction techniques directly related to

IDU were high, PrEP knowledge and interest remained poor despite a high baseline rate of STIs. This study suggests that while PrEP education should be incorporated into harm reduction education, it must be done so in a fashion that takes into account individual risk factors to identify the highest yield interventions.

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Patient consent. All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1964 and its later amendments. Informed consent was obtained from all patients for being included in the study. This study was approved by the Washington University Human Subjects Research Protection Office (HRPO).

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