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HIV risk and attitudes toward PrEP among MSM-PWID in the U.S. Northeast

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HIV RISK AND ATTITUDES TOWARD PrEP AMONG MSM-PWID IN THE U.S. NORTHEAST

by

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ABSTRACT

Background: Although the total number of new documented HIV diagnoses annually decreased from 2008-2018, the rate of decrease started to slow in 2013, and substantial variation exists across at-risk groups. People who inject drugs (PWID) account for 9% of new diagnoses annually, with increasing incidence in this population starting in 2015. Among PWID, 34% of new HIV diagnoses occurred in individuals who were also classified as men who have sex with men (MSM), indicating that MSM-PWID have elevated HIV risk. Data on MSM-PWID are scarce, and programmatic and advocacy efforts in HIV prevention do not specifically target MSM-PWID, with no CDC-recommended interventions existing for this population.

Objective: We sought to characterize the complex, intersecting and unique HIV risks faced by MSM-PWID, including perceptions of HIV risk and attitudes toward antiretroviral pre-exposure prophylaxis (PrEP) among MSM-PWID in urban and non-urban areas of Massachusetts and Rhode Island.

Methods: We recruited PWID through community-based organizations (CBOs; e.g. syringe service programs) in 18 urban centers and smaller cities and towns across Massachusetts and Rhode Island. Participants completed semi-structured interviews exploring substance use behaviors and HIV prevention needs. This in-depth analysis

focused on describing the experiences and HIV prevention needs and attitudes of nine participants in the sample who reported a sexual orientation other than "heterosexual."

Results: Most participants identified as cisgender, bisexual men. However, the context of their sexual behaviors varied, with some participants only engaging in same-sex behavior during sex work. The relationship between identity and behavior is explored in the context of reported risk behavior. All participants engaged in at least one behavior that increased risk of HIV acquisition, including syringe sharing, inconsistent condom use, and sex work. Participants also described heightened risk when these behaviors overlapped, particularly within contexts of "sex parties" that some individuals described. At the same time, experiences of isolation and exclusion were common in the sample, indicating a potential vulnerability in this population. HIV risk perception varied among participants, but was not consistently aligned with the behaviors described. Many participants did not perceive needing HIV prevention services "yet," indicating that they did not view their risk to be high enough to warrant prevention services. Alternatively, some described needing to prioritize daily survival and mental health over HIV prevention efforts. Although knowledge of PrEP was low, acceptability of PrEP was high in this sample, and several participants provided specific suggestions for improving the feasibility of PrEP.

Conclusion: Data from this study illustrate the HIV risks and prevention needs of this at-risk population and highlight mechanisms to engage them in preventative care. Our main findings are (1) participants had low knowledge of PrEP, but were largely enthusiastic after learning about it from interviewers, (2) varying identity related to same-sex

behavior among men who have sex with men and inject drugs may play a role in shaping HIV risk and prevention needs, (3) specific healthcare and prevention service needs of this population emerged, including reducing risk at sex parties and improving access to non-stigmatizing mental health services. An in-depth understanding of the ways in which sexual orientation and gender identity shape HIV risk and prevention needs remains crucial in providing treatment and prevention services to MSM-PWID.

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LIST OF ABBREVIATIONS

CAS ..... Condomless anal sex

CBO ..... Community-based organization

CDC ..... Centers for Disease Control and Prevention

EBI ..... Evidence-based intervention

HIV ..... Human immunodeficiency virus

MSM ..... Men who have sex with men

PEP ..... Post-exposure prophylaxis

PrEP ..... Pre-exposure prophylaxis

PWID ..... People who inject drugs

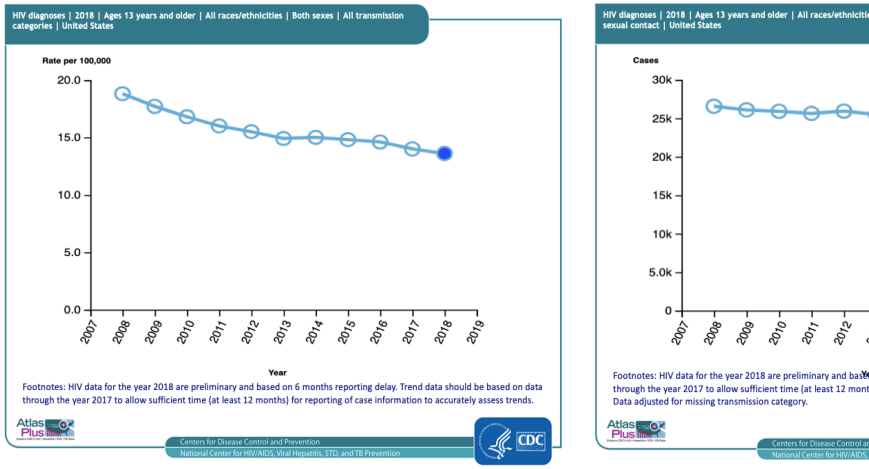
SSP ..... Syringe service program

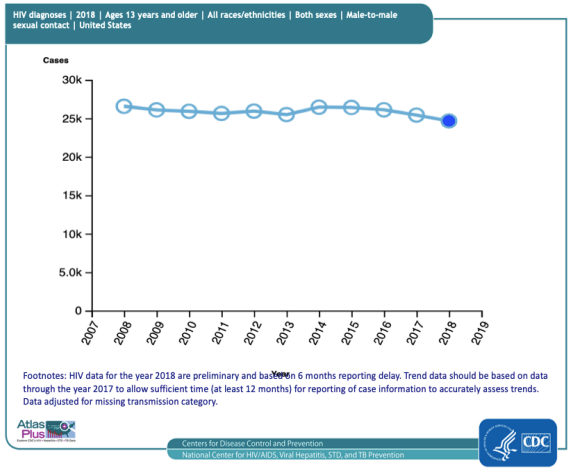
INTRODUCTION

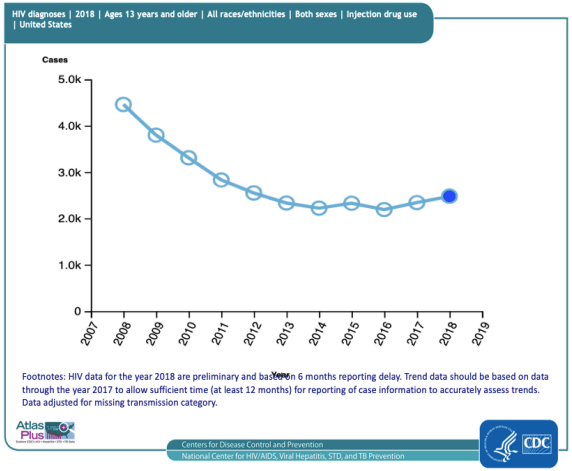
People who inject drugs (PWID) are disproportionately affected by human immunodeficiency virus (HIV), accounting for approximately 9% of new diagnoses annually.[1] PWID represent a key population needing more attention within HIV prevention efforts, as exemplified by the recent HIV outbreaks attributed to injection drug use in Scott County, Indiana (2014-15)[2]; Lawrence and Lowell, Massachusetts (2015-18)[3]; King County, Washington (2017-18)[4]; and Cabell County, West Virginia (2018-19)[5]. Among PWID, 34% of new HIV diagnoses occurred in individuals who were also classified as men who have sex with men (MSM).[1] This suggests that MSM carry not only the largest burden compared to any other group in the United States—70% of new HIV diagnoses in 2017[6]—but also a disproportionate burden within the community of PWID. The total number of new HIV cases is also likely much higher than reported, as approximately 14.5% of the population are estimated to have undiagnosed infections and account for 40% of transmissions nationally.[7]

Although the total number of new documented HIV diagnoses annually was decreasing nationally from 2008-2018, the rate of decrease started to slow in 2013, and substantial variation exists across at-risk groups (Figure 1).[8] Among MSM, the rate of new HIV infections has remained stable at roughly 26,000 new infections per year. In PWID, the new infections decreased by 44% over a decade, but have begun to increase in recent years, following a persistent uptick in cases starting in 2015.[9]

Figure 1: HIV diagnoses among all transmission groups, MSM, and PWID from 2008-2018. Top left: Rate of HIV diagnoses per 100,000 among all transmission categories. 2008-2018. Top right: Cases of HIV diagnoses from Male-to-Male Sexual Contact. 2008-2018. Bottom center: Cases of HIV diagnoses in people who inject drugs. 2008-2018.







The Centers for Disease Control and Prevention (CDC) attributes the slowed rate of decrease in new HIV infections to a failure in providing prevention and treatment services to the most at risk, hard-to-reach populations, as exemplified by the increase in new HIV cases among PWID.[9] Only 37% of the CDC's Division of HIV/AIDS Prevention's annual budget of $325 million is allocated for MSM and PWID combined.[10] One study created a robust model to inform how this budget could be optimized and reallocated to appropriately address at-risk populations, which the study defined as 15 subgroups structured by gender, race/ethnicity, and three HIV transmission groups (MSM, PWID, high-risk heterosexuals). Based on the model, they recommend that 72% of the total annual budget be allocated toward MSM and PWID, rather than just 37%.[10] The study also suggests that resource allocation be continuously optimized based on current and future epidemic trends.

Misallocation of resources also extends into the research arena, where global investment in HIV prevention R&D is not appropriately targeted toward prevention in key populations. A study found that out of $281 million spent globally on HIV prevention research (e.g. product development, clinical trials, community education, policy advocacy), only $8.7 million was allocated to MSM, $3.5 million to transgender individuals, $1.8 million to PWID, and $0.6 million to male sex workers. The authors concluded that prevention research funds are not sufficiently channeled toward understanding the complex biological risk, preferences, and social determinants that affect populations most at risk for HIV acquisition.[11] Further, some of the hardest-to-reach populations at risk for HIV acquisition are not allocated anything. In our study, we

focus on the population of MSM-PWID, which experiences multiple, overlapping HIV risks and social vulnerabilities and yet remains understudied and excluded from many programmatic and advocacy efforts.

Quantitative data on MSM-PWID, though scarce, suggest that risk from overlapping injection and sexual behaviors are elevated due to unique vulnerabilities faced by this population. For example, among both MSM and PWID, experiences of stigma in healthcare settings have been well-documented and remain an important barrier to preventative care utilization including HIV testing and discussions surrounding HIV prevention strategies such as antiretroviral pre-exposure prophylaxis (PrEP).[12–17] In 2017, 29% of MSM and 42% of PWID reported no HIV testing in the past 12 months.[7] More targeted efforts to increase testing among these groups would reduce delays in diagnosis and represent missed opportunities for engagement in care. Furthermore, knowledge of PrEP is low among PWID, and recently published studies document the potential benefits of improved PrEP implementation in this community.[18–20] No studies to our knowledge have assessed PrEP awareness or acceptability among MSM-PWID. One quarter of HIV care providers reported having prescribed PrEP, most commonly for MSM and rarely for PWID.[21] MSM-PWID, however, may not be forthcoming about their sexual orientation or same-sex sexual behaviors due to anticipated stigma, likely inhibiting effective communication with providers and posing an additional barrier to prevention service utilization despite overlapping risks from co-occurring injection and sexual behavior.[22]

Importantly, behaviors should not be conflated with individuals' self-described identities when designing HIV prevention strategies. In terms of sexual orientation,

several studies have shown that MSM choose to identify in a variety of ways (e.g. gay, bisexual, heterosexual, "down low," etc.), especially in Black and Latino communities.[23–26] Strong identification with the gay community, however, is associated with decreased risk for HIV, likely due to highly visible prevention efforts in the LGBTQIA+ community.[27] Similarly, injection behavior is not synonymous with injection-related identity. Many individuals engaging in injection behavior will not label themselves a "person who injects drugs" or an "injection drug user" if they do not identify with their perceived connotations of these terms.[28,29]

Traditional HIV prevention strategies do not address this nuance in either MSM or PWID communities. A survey of 100 men who have sex with men and also inject drugs conducted in Denver, Colorado exemplified these points well, with participants stating "I'm not homosexual, I'm not heterosexual, I'm not bisexual. I'm sexual"; "How do I tell my wife and baby I'm going to a gay group?"; and "I'm not a junkie, I don't do heroin."[28] Because MSM-PWID often lack strong connections with both groups, an urgent need exists to further research this population so that more targeted interventions may be developed and oversimplification of behaviors in this community may be avoided.

No qualitative studies to our knowledge have explored the unique HIV risks or PrEP-related attitudes of MSM-PWID, highlighting the significance of our research. We thus sought to explore the complex interface between MSM and PWID identities in the context of HIV acquisition among a sample from urban and non-urban areas of Massachusetts and Rhode Island. In Massachusetts, HIV diagnoses in PWID decreased

91% from 2000-2014[30], consistent with national trends that largely resulted from healthcare reform and the increasing availability of syringe service programs (SSPs).[31] Rhode Island had similar success after SSPs became available in in 1994, leading to a drop in injection-related cases with less than 6 cases reported each year from 2009-2014.[32] Starting in 2015, however, renewed concern arose about the risk faced by PWID. From 2015-18, injection-related HIV outbreaks in Lawrence and Lowell, two cities in northeastern Massachusetts, demonstrated that transmission was shifting back to PWID and increasingly occurring in this population.[3,33,34] Our study on MSM-PWID adds to a growing body of literature aiming to understand the experiences and risk environments of subgroups[35–38] among the community of PWID, with the goal of creating a more nuanced approach to HIV prevention strategies.

SPECIFIC AIMS

Despite growing research and biomedical advances in HIV prevention, the annual number of new HIV diagnoses nationally has begun to increase among PWID, suggesting an urgent need for change in our HIV prevention strategies. Several studies have documented the increased risk that men who have sex with men face, and a growing body of research demonstrates the particular risks faced by people who inject drugs. Very little research, however, seeks to understand the complex intersectional identity and unique risks faced by MSM-PWID, beyond a two-pronged approach that separately targets sexual and injection behavior that increase HIV acquisition risk. This paper seeks to identify unique themes in behaviors that increase risk of HIV acquisition; perception of HIV risk; and knowledge, acceptability, and feasibility of PrEP among MSM-PWID in urban and non-urban areas of Massachusetts and Rhode Island by conducting a qualitative analysis of 9 semi-structured interviews in this population.

METHODS

Study Design and Sample

This analysis drew from two qualitative studies that aimed to learn more about the experiences of PWID in the context of increasing public health concerns surrounding substance use in the U.S. Northeast.[33,39,40] The first study (2016-17) recruited and interviewed participants in Boston, MA and Providence, RI, whereas the second study (2018-19) focused on recruitment from 14 smaller towns across Massachusetts and Rhode Island. Participants in both studies were recruited from community-based organizations (CBOs) after being introduced to the study by staff at each CBO. Research personnel screened interested participants against the inclusion criteria: ≥18 years of age, past-month injection of any drug, and self-reported HIV-negative status. Purposive sampling methods were also used by research staff to ensure that a diverse subset of PWID were included in the sample in terms of age, gender, and substance-use and sexual risk behaviors.[41,42] Participants provided verbal informed consent, completed a 45- to 60-minute study session in a private location at each CBO, and were compensated with $25. Institutional Review Boards at both Boston University and Brown University approved all study protocols and instruments.

Data Collection

Research staff, trained in all aspects of the study's data collection, administered a brief quantitative survey to participants, followed by a longer qualitative interview. The

quantitative survey collected data about each participant's sociodemographic characteristics (e.g., age, sex, gender, sexual orientation), behaviors that increase risk of HIV acquisition, and knowledge and likelihood of using PrEP. The qualitative interview lasted approximately 45 minutes and consisted of semi-structured, open-ended questions about behaviors that increase risk of HIV acquisition, HIV risk perception, and attitudes toward PrEP. Sample questions included "*Can you tell me about how you or others you know inject drugs?*"; "*Are any of the people you use drugs with also your sexual partners?*"; "*What are the health concerns most important to you right now?*"; and "*Before today, what had you heard about PrEP?*" Interviews were audio recorded and then transcribed.

Data Analysis

Data collection continued until thematic saturation was reached, as determined during weekly study staff meetings. Development of a qualitative codebook occurred using a documented method[20] after all team members reviewed interview transcripts to create preliminary codes and codebooks. Codes were tested by individual team members, discussed to compare and identify areas of discrepancy, and ultimately revised to create the final codebook. The final codebook was tested two times to identify and address any additional discrepancies. Finalized codes were applied to all transcribed data in NVivo (v12) by three analysts, with one lead analyst evaluating code consistency throughout the process.

For this analysis, nine participants were selected from the overall sample by reviewing results of the quantitative survey for self-identified non-heterosexual men. We also reviewed qualitative data to identify non-heterosexual sexual behaviors. Full transcripts for each participant were analyzed in detail in order to fully contextualize the data, allowing us to understand their identities and behaviors in more nuanced ways. We then more specifically identified risk behaviors, perceived risk of HIV, and attitudes toward PrEP, paying special attention to codes including "Description of Injection Behaviors and Practices," "Sexual Behaviors," "Sex Work (formal, informal)," "Lack of relationships/isolation," "LGBTQA+ Topics," "PrEP," and "Perceived Risk of Negative Health Outcomes." Findings are illustrated using representative quotes with pseudonyms for each participant. Pseudonyms were assigned by research staff to each participant, paying attention to findings from documented methods of name assignment.[43] Results from this analysis are illustrated in this paper using representative quotes.

RESULTS

Participant Characteristics from Quantitative Survey

Among 9 MSM-PWID, age ranged from 25-59 years old. 6 participants identified their race as White. The remaining 3 participants identified as Black or African American, American Indian or Alaskan Native, or both. All participants were assigned male at birth and self-identified as male during quantitative data collection. 7 participants identified as bisexual, 1 as homosexual or gay, and 1 as other. 3 participants completed less than high school; 1 completed some high school; 2 completed high school or GED; 2 completed some college; and 1 completed college. 6 participants were unemployed, 1 employed part-time (less than 30 hours per week), and 2 employed full-time (30+ hours per week) (Table 1).

Table 1: Participant Characteristics. Socio-demographic factors among participants were collected in a brief quantitative instrument administered prior to each interview. Relevant data are shown here and include age, race, gender (M=male), sex (M=male), sexual orientation, highest level of education completed, and employment status (part time defined as less than 30 hours per week; full time defined as 30+ hours per week).

Participant Pseudonym	Age	Race	Gender	Sex	Sexual Orientation	Education	Employment Status
Robert	42	White	M	M	Homosexual or Gay	Less than high school	Employed part-time
Anthony	29	White	M	M	Bisexual	Less than high school	Unemployed
Marc	48	Black or African American	M	M	Bisexual	Some college	Unemployed
Elan	36	American Indian or Alaska Native	M	M	Bisexual	Less than high school	Unemployed
Daryl	59	American Indian or Alaska Native; Black or African American	M	M	Bisexual	Completed high school or GED	Unemployed
James	25	White	M	M	Bisexual	Completed college	Employed full-time
Gray	37	White	M	M	Bisexual	Some high school	Unemployed
Casey	40	White	M	M	Bisexual	Completed high school or GED	Unemployed
Stephen	43	White	M	M	Other	Some college	Employed full-time

Overview of Qualitative Results

Sexual orientation and gender identity were explored to provide context, when available, about participants' responses to the quantitative instrument (Table 1). Behaviors that increase risk of HIV transmission were broken into four categories: syringe sharing, inconsistent condom use, sex work, and sex parties. Next, HIV risk perception was reported and explored in the context of these behaviors. Although every participant engaged in at least one of these behaviors, they did not always have a correspondingly high perception of HIV risk. Knowledge, acceptability and feasibility of antiretroviral pre-exposure prophylaxis (PrEP), a preventative medication for HIV, was reported among the sample and described in the context of not only HIV risk, but also factors such as medical mistrust, use of services, and other potential barriers.

Sexual Orientation and Gender Identity

Participants identified and expressed their sexual orientation, sexual behaviors, and gender identity in a variety of ways. Robert identified as gay and described attraction toward men. He also identified as a cisgender man on the quantitative instrument, but then described his gender identity with more nuance during the qualitative interview, stating "I dress as a girl. I feel much more comfortable as a girl. I do it more realistically, where you can't tell I'm a guy and that I have an Adam's apple. In a way, I'm happy being a man but I'm more on the feminine side."

Marc identified as a cisgender, bisexual man on the quantitative instrument, and went on to describe sexual engagement with men in the context of sex work in the

qualitative interview. He also described the degree to which he was open and comfortable about his bisexuality: “I don’t want the wrong person walking through the door, saying oh, he's here, he gay? You know what I mean? I’m not gay, I’m just bisexual, instead.” Casey similarly identified as a cisgender, bisexual man on the quantitative instrument, and later described sex work with men. At the time of the interview, he had a primary female partner who also engaged in sex work with men.

Elan and Gray both identified as cisgender, bisexual men and described same-sex behavior in the qualitative interview. Elan discussed “having sex with numerous guys” in the context of PrEP’s utility. Gray also described having multiple male partners, largely in the context of sex parties.

Anthony, Daryl, and James all identified as cisgender, bisexual men on the quantitative instrument, but same-sex behavior did not come up in the qualitative interviews. Stephen identified as a cisgender man and described his sexual orientation as “Other” on the quantitative instrument. He had a primary female partner and two kids, but later described having multiple partners and stated that none of them were “recently” men.

Risk Behavior

Most participants engaged in injection and sexual behaviors that increase risk of HIV transmission, including syringe sharing, inconsistent condom use, sex work, and sex parties, as described below.

Syringe Sharing

Almost all participants engaged in syringe sharing. Early in interviews, some participants stated that they did not share syringes with others, though these individuals later described specific situations in which they shared. These situations varied in nature, but often revolved around a feeling of desperation, especially when experiencing withdrawal. Some participants explained that after reusing their only needle so many times that the dull tip became too painful or dangerous, they would consider sharing sharper needles from their peers. Casey described when he might find himself in this situation:

> "Instead of walkin' 20 minutes to go somewhere, I can just say, you know what? Fuck it. Just go upstairs and sometimes it hurts 'cause the needle will be dull. But usually when it's that time, the next time I will get brand new ones. Or I'll ask my roommates if they have some that are a little better than mine, you know? Yeah, but that's when I might share one of theirs that they have used, you know?"

Gray similarly described obtaining needles from friends in order to avoid causing physical trauma when his only needle was too old:

> "I was just using the same dirty needle for a long time. I went to Boston for a couple days and I brought that [needle] back with me over here and just hammered myself until it frickin' broke. It was broken in my skin…so I just get them off my friends."

For others, however, sharing was a more common practice, especially with their partners or friends. There was a common perception that limiting syringe sharing to only one

other person, or among a trusted group of individuals, was sufficient to avoid HIV acquisition. Casey initially said that he only shared with his partner, but upon further probing, said he also shares with "two roommates and another couple." Most participants acknowledged that syringe sharing was a practice that might place them at risk for HIV acquisition, indicating a desire to move away from it. However, many said they were unable to imagine a world in which they could stop sharing syringes completely. Stephen conversely said he never shared syringes, and instead purchased syringes as needed from the store, from friends, or from his dealer:

> "I've gotten them from Walmart a couple of times, they usually don't give you too much trouble. I've gotten them from Walgreens, I got them [from] friends, from dealers."

Some participants demonstrated their understanding and concern of the risk involved with syringe sharing and participated in altruistic practices to encourage peers to stop sharing. Robert would distribute clean needles amongst his peers when possible, going as far as bringing clean needles to the sex parties he attended. Stephen would always refuse to distribute his used needles, even amongst close friends, knowing that this could put them in danger of acquiring HIV and hepatitis C virus:

> "I don't want to give mine to anybody…I'll use mine a couple of times and get rid of it. And I'll give you a new one if you want one, but, no, I'm not gonna give you mine."

Inconsistent Condom Use

Many participants reported inconsistent condom use when engaging in anal or vaginal intercourse with their partner, regardless of the partner's sex or gender. Marc, however, described condom use with his female partner but not his male partner: "I had a girlfriend and we used a condom. Then I went with a guy one time without a condom." Most acknowledged that their low condom use could increase their risk of HIV acquisition but did not always alter their practices in response. Anthony did not comment on his condom use with male partners, but described never using condoms with his female partner with whom he also shared syringes, introducing multiple potential pathways for HIV transmission:

> "Never, never, never ever put a condom with that girl on. I don't think I did one time. I was like fuck condoms, yo'…I never used a condom I don't think, never once."

Other participants inconsistently used condoms. These participants acknowledged the importance of condom use and demonstrated a concerted effort to use condoms when possible. Casey, who had a primary female partner but had sex with men in the context of sex work, stated "I try to protect myself as much as possible, but there's been times that I haven't used condoms." Some participants identified specific situations in which condom use was either impossible or felt unwarranted. These situations ranged in nature. For instance, during sex work, condom use was considered more important but did not take precedence over immediate physical safety. In other situations, sex with a consistent partner, even when the relationship was not perceived as being completely monogamous, felt safe enough for participants to forego using condoms. This is exemplified by Marc, a

man who had a female partner but exchanged sex with other men, and who also identified frequent injection of drugs prior to sex:

> "I don't use condoms…this girl I'd been having sex with for a while, I haven't been using a condom with her in the last two three months. And, with the AIDS test, I don't have nothing, so [it's] kind of a risk, not [using a condom]."

While most participants still acknowledged the importance of using condoms, Stephen preferred the sensation of condomless sex. Early in the interview, he stated that his wife was his only partner, but later described having sex with others in secret, often in the context of substance use. He acknowledged the risk of using condoms inconsistently, but had low concerns for HIV acquisition that he could not articulate:

> "I usually don't use condoms, so yeah, you're always at risk. You know you're at risk for the whole gamut, and it's stupid, but I do it anyway just because it feels better…I don't know. I'm not worried about it for some reason."

Robert initially said he always used condoms for anal intercourse, but later in the interview described no condom use when attending "bareback parties," which he described as gay sex parties in which drug use was common.

> "They call them bareback parties. They don't want to use condoms. I don't understand. I've been at these parties before and I'm saying, 'Hey, I don't want to get sick' but they just laugh. And if you're at the parties, you got to do what you got to do. It's all unprotected, a lot of it's unprotected. When I'm with regular guys I try to be protected."

Sex work

Seven participants described current or past engagement in sex work, often for money, drugs, food, or shelter. Marc explained his sex work with other men for money:

> "Sometimes I have to go sell my ass. Sometimes I'll be with other guys to get money. I used to go over to the arcade. That's where all the guys go and I just go on in. Just trick for money…And I'd go buy my drugs."

While sex work was a common practice for some, others only engaged in it when they lacked money for drugs or were desperately trying to avoid withdrawal symptoms. Casey had a female partner but described exchanging sex for money with men when experiencing withdrawal:

> "If we're sick, you have to do something. So we have people that will come pay money for sex or something. I'll leave the room or she [partner] will leave the room and they pay for the services and that's it. I have a couple guys that'll come see me that really pay a lot of money, so you know."

For some participants, sex work was also an unsafe environment in which they would forego safety or harm reduction practices. For instance, when asked if he inquired about the HIV status of his clients, Robert responded, "You can't even bring that up. You can't. That's a conversation you wouldn't bring up in a situation like that." Early in the interview, Robert stated that he started sex work at the age of 16. Later, he explained how this was the same age when he left home after disclosing his sexual orientation to his family: "I left home when I was 16 years old. I came out of the closet, I lived with a Jewish-Italian family, God, it's a little rough." For Robert, rejection from family members

due to his sexual orientation created the context for his engagement in sex work as a survival practice. He also described presenting as both a man and a woman in his current sex work. Regarding presenting as a woman, he said "it's like it's a mask, it's a disguise, like you could never tell who I am." Presenting as a woman not only added comfort for him, but also served as a tool to conduct sex work without being identified.

Sex parties

Distinct from sex work, a smaller number of participants described frequenting group sex parties with men. According to participants' descriptions, these parties involved large groups of men engaging in mostly anonymous sex. Participants also described both syringe sharing and low condom use with men in the context of these parties, which combined sex and drugs, most commonly methamphetamine (by injection) and "liquid G" (GHB). Robert explained that, in his experience, low condom use was not only the preference among individuals at these "bareback parties," but also heavily discouraged across the whole group. Because many of the injection and sexual behaviors described above would co-occur, these sex parties pose a unique and very high risk for HIV transmission. When describing sex parties, Gray said:

> "We used to have big sex parties and stuff like that. And crystal [methamphetamine] and G [GHB] used to be big. I've overdosed on liquid G like four times, five times…Yeah, it was bad. I mean, that's when I started using PEP [post-exposure prophylaxis] because a lot of times I wouldn't pay attention, or I'd

forget what pin [syringe] was mine ‘cause you would leave your stuff out all over the place [and] forget, you know?”

Reasons for attending sex parties varied. Interestingly, although Gray participated in sex parties, he would also host his own parties for a unique purpose—to steal money and drugs without engaging in any intercourse:

“There’s a big gay scene [in Boston]. I became a kind of escort thing through a friend of mine, and we used to throw these big hotel parties. My friend would knock everybody out and take all their money. It’s kind of horrible. So, that was part of the scene, I guess. We would do crystal [methamphetamine], we would have [GHB]…A lot of lawyers and doctors and stuff [came] from different cities and out of town. And [we would] set up hotel parties and we would have everything set up for them and he knew just the right amount just to knock them out. And then he’d use one of us as a scapegoat who could take off minutes later and they’d wake up and [he’d be] like, ‘Yeah, he took off with all your money,’ you know? And play it off."

Robert discussed attending sex parties to obtain drugs, which made him feel “stronger,” but later explained that the parties also gave him a sense of acceptance and belonging in the gay community, which helped address his sense of insecurity. He also reluctantly engaged in condomless sex—which, as noted previously, he identified as the norm at these parties—even if other individuals were HIV-positive:

“And even if they were sick [HIV-positive] at this party, I’d still go. Just to get high. I'm worried about catching something. I don’t want to catch [HIV]. I’ve lost

> too many friends to it, but I just want to get high and feel better and be part of something…I know I'm not anything to write home about. I'm aware of what's going on. A lot of times I play stupid because I don't want people to see the real [me]…I don't really find any people down here, friend-wise, or like someone that you can actually say is your friend.

Robert's description of feeling isolated and desiring inclusion is consistent with the idea that MSM-PWID may not feel well-accepted among any community, causing unique vulnerabilities in both their livelihood and our ability to reach them to provide much-needed preventative and mental health care.

HIV Risk Perception

In this sample, despite the large proportion of participants who reported engaging in behaviors that increase risk of HIV transmission (e.g., syringe sharing, inconsistent condom use, sex work and sex parties), personal HIV risk perceptions were not high or well-aligned with behaviors. For instance, Anthony described syringe sharing and no condom use, but said he viewed his HIV risk as "probably pretty low, probably real low." Anthony also elaborated that his risk was low "as of right now," introducing the idea that perception of HIV risk could change over time. James similarly touched on this idea, saying multiple times that his risk was not high "yet" and that he did not need to access services "yet." He also described relying on using drugs with a trusted group of individuals because he "knows they're usually good," but did not elaborate on how he knew this, or what "good" meant:

> "My biggest risk factor is probably just sharing the wrong needle, or not paying attention, and just going with somebody that obviously has HIV or could possibly contract it very easily, and just basically letting my guard down. Thankfully it hasn't reached that point yet, knock on wood. You just kinda have to watch out, I guess, and just kinda know who you're with. That's why I have a very selective group of people that I usually use [drugs] with, 'cause I know that they're usually good."

Other participants also explained that, although they considered themselves at high risk for acquiring HIV, they did not consider themselves to be at the *highest* risk. Casey, along with some other participants, appeared more comfortable pointing to peers who were engaging in even higher risk practices:

> "People that sell their bodies, prostitutes, male and female, and intravenous drug users, those people are [at highest risk]. Other people too, but those are the people that are mostly high risk. Sure, somebody else, [if] they're having sex with a few partners here and there, yeah, they're at risk, but they're not that [high risk]."

This sentiment was not the case for everyone. Robert engaged in syringe sharing and did not consistently use condoms at sex parties or during sex work, and did consider himself to be at high risk of contracting HIV due to these practices. He went on to note that most men who had sex with men and injected drugs like him held very low, and often inaccurate HIV risk perceptions:

> "Gay guys are just like, 'Oh, who cares?' I don't understand, like, I've been at these [sex] parties before and I'm saying, 'Hey, I don't want to get sick' but they just laugh. And if you're at the parties, you got to do what you got to do."

Daryl described how his perception of risk changed alongside his use of drugs. He explained that he took much greater chances while using drugs, and that he would not take these chances otherwise:

> "Yes, [I'm] worried about [getting STIs or HIV] a lot. You care about yourself [when you're sober], and when you're drinking and drugging, you don't care about yourself at all. You look at the person [and] they look healthy to you. You forget about this, you forget about that, and you just roll the dice. It's like rolling your life away."

Most participants differentiated between risk from sexual and injection-related behaviors. Some participants attributed high personal risk for HIV acquisition to syringe sharing, while others were more concerned about sexual risk. A common underlying factor was the idea that higher risk correlated with the number of people in each setting, i.e. group sex would carry a higher risk than sharing syringes with one person, whereas sharing a syringe with multiple people would carry a higher risk than unsafe sex with fewer partners. Casey, who said he shared needles with one trusted partner, described high risk when engaging in sexual behavior with many people when asked about his biggest risk factor for HIV acquisition:

> "I think most likely through sex. Because of the risk when you're playing with a lot of people, you know what I mean?"

Conversely, Gray, who described using PEP after group sexual encounters, described high risk when injecting drugs with many people:

> "I just think that there's more of a risk with a bunch of people shootin' up together. Because you're sharing. I've shared with so many people and it's like, 'Okay, you've got Hep C? Okay, that's fine, I've got Hep C too, don't worry about it.' You just believe what [people say]. You don't know how many times they did that with other people. So, I've taken big chances."

Interestingly, Robert described his HIV risk in the context of his sexual orientation. Robert, a self-identified gay man who injects drugs, was more worried about risk from injection, but thought that most gay men were more concerned sexual risk. This demonstrates a potential difference in the risk perception of men who have sex with men and inject drugs compared to their peers:

> Interviewer: Do you think people are more worried about getting HIV from injecting or sex?
>
> Robert: Injecting, [but] I think in the gay scene it's sex. [In] the straight world it's more injecting because they go, "Oh, we're straight, we're not going to catch anything." Please, you know?
>
> Interviewer: So gay men are more worried about sexual risk even though they are sharing needles?
>
> Robert: Yeah, but some of them are [aren't worried about] either, or they think that at these parties everyone has it. Why would you go to a gay party if you're not sick? One for the drugs, two for the drugs.

In addition to HIV risk perceptions that were inconsistent with reported behaviors, some participants explained that they were not concerned with HIV because they were unable to prioritize it in their lives. For example, James identified his primary health concern as navigating the day-to-day uncertainties that characterized his life. When probed about his health concerns more specifically, he identified his weight as his primary concern. Gray identified sharing needles as his primary health concern, but then went on to describe why this was not his primary concern overall, resurfacing the theme of isolation in this community:

> "It's a lot going on right now. I'm just trying to stay warm and alive…A lot of people have family here and stuff like that. I don't have any family in this area so it's been really tough on me lately."

This explanation emphasizes that, for many, day-to-day survival and meeting basic needs took precedence over most matters, including mitigation of HIV risk.

PrEP Knowledge, Acceptability, and Feasibility

Knowledge of PrEP

No participants had ever used PrEP, although Gray had used PEP more than once after he started attending sex parties in the Boston area. Some participants said they had heard of PrEP before the interview but could not go on to explain what it was or how it worked when prompted, demonstrating a substantial lack of knowledge about this HIV prevention medication. Stephen demonstrates his limited knowledge of PrEP in the following interaction:

Stephen: I've just seen a couple commercials. Just late-night watching TV. I don't even know what channel it was. But, yeah, I've seen a couple commercials.

Interviewer: So, if someone asked you about PrEP, would you be able to explain to them what it is?

Stephen: Not really, not really, no.

Robert had heard of PrEP from gay "hookup apps," but was surprised to learn that women could also benefit from it. Two participants had not heard of PrEP at all. When asked what he knew about PrEP, Daryl stated "Nothing. I hadn't heard nothing," demonstrating complete unawareness of it. He also expressed frustration about not having heard of PrEP: "How come they don't tell you this stuff? How come people don't tell you? It's amazing how people don't tell you stuff, you know?" After learning about PrEP from the interviewer, he was enthusiastic about the prospect of it, as further described below.

Acceptability of PrEP

After learning more about PrEP, six participants expressed positive attitudes about their own willingness to use it. Although some of these participants were initially unwilling to use it when surveyed before the qualitative interview (i.e., in response to "*How likely would you be to use PrEP in the future?*" on the brief quantitative instrument), four expressed increased interest in trying it after spending some time talking with interviewers during the qualitative interviews, as exemplified by Marc:

> "Yeah. I would like to take [it], because I put myself at high risk, you know? Like today I took an AIDS test and it came out negative, but you never know. I might just get that bad luck one day. But I think that taking a pill to prevent AIDS...Yeah, I wouldn't mind taking one of them."

Similarly, Casey said he was "Undecided" about his likelihood of using PrEP before the interview, but thought that PrEP was warranted in someone like himself, noting how it could be beneficial:

> "Well, because of the lifestyle that I live today, you never know. I know PrEP isn't guaranteed. But if you wear a condom, you take PrEP, and you try to do the following things, [your] chances [are lower]. So, rather than just not wearing a condom, you're doing two or more things to prevent [HIV]. It's good, you know."

Anthony, Elan, and Stephen were uninterested in taking PrEP after discussing it with the interviewer, but described scenarios in which their willingness could change. Anthony said he would be willing to learn more about PrEP before making a definitive decision, indicating that he wanted more information about it: "Yeah, I mean I'm interested in how it works, maybe, and I'm open ears. I don't mind hearing…Yeah, I wouldn't mind hearing about how it works, like what it does exactly." Elan's disinterest in using PrEP related to cost and insurance coverage, and he said he would be interested in PrEP if these financial and logistical barriers did not exist. Stephen, who did not share needles or use condoms, did not feel he was at high enough risk to warrant taking PrEP. He also expressed hesitance about PrEP's benefit:

> "I don't feel I'm that high risk anyway. I don't see myself taking that every day. Something about it feels funny [like] taking a pill for no apparent reason. You know, you can practice your safe sex practices and still get HIV…I don't know, to me it seems pointless [to take] a pill every day for what you might not get or you might not prevent anyway."

Participants were also asked if PrEP would be useful for the larger PWID community. Seven participants believed that it would be. Elan added that PrEP would be especially useful for "trans" individuals and people in the "gay world," in addition to PWID. James, who was initially undecided about his likelihood of using PrEP, later described how PrEP would not only provide added safety, but also promote recovery and health in PWID:

> "I think it would be [useful]. It definitely would offer a much safer alternative. And if they wanted to go down the road to recovery and get involved to the point of getting clean, it would definitely be a healthier and safer of a way of just going about that. And you know, like I said, we live in an opiate epidemic. There's a huge epidemic, not just with opiates, but just drugs in general. And it's definitely refreshing to know that there are safer alternatives out there and safer ways of injecting stuff or putting drugs in your body. So it's just good to know that there's at least methods out there that can at least be a little bit healthier."

Casey explained that PrEP would be even more useful for PWID engaging in sexual behaviors that increase risk of HIV transmission, noting that sex workers in particular do not always have the option of using a condom. He also countered the idea that being on PrEP would cause an increase in behaviors that increase HIV transmission:

> "I think it's great, you know, I really do, [especially for] people that are promiscuous and people that live on the edge. Now don't get me wrong. Just because you're taking a medication, you shouldn't put yourself at more risk. But for instance, people that live on the street and they're using a puddle of water and all kinds of crazy stuff to get high. I'm not saying [use PrEP] so that you can go out and just live recklessly. Plus, it's good to have it for people that [engage in] sexual services [when] condoms ain't sufficient enough, so I think it's great."

Daryl considered PrEP a life-saving medication, noting that its uptake would stop preventable deaths from occurring in PWID. He also tackled the idea of peer-based stigma, saying that PrEP would foster respect for HIV-positive individuals and pave the way for more serodiscordant relationships. Specifically, when asked why PWID are good candidates from PrEP, he stated:

> "Because they wouldn't all die. They wouldn't all catch HIV, like how I feel. I feel that they could have sex with more people that have HIV, you know, and they could live. We could all start living more normal lives with people that have HIV, you know?"

On the other hand, two participants did not think it would be valuable for most PWID. Anthony, for instance, thought that PrEP would only be valuable for people engaging in extremely high-risk behavior, which he identified as using "dirty" syringes and frequent, condomless anal sex.

Feasibility of PrEP

Five participants indicated that they believed that daily adherence to PrEP would not be a concern. They also indicated that having a routine would be helpful. Robert, for example, was already on antidepressants, and noted that the experience of already having to take one daily medication would make it easier to add another. Marc indicated that forgetfulness while under the influence of drugs could pose an issue, but was still very interested. Stephen explicitly indicated that adherence would be an issue due to a lack of interest in attending frequent doctor visits, which he found too inconvenient because he does not typically engage in preventative care:

> "That doctor visit every two months is kind of a pain in the ass. I mean I don't normally go to the doctor. For me to go, something's wrong. The only time I go to the doctor is when something's not right. So, for preventative maintenance it's like…like I said, I keep myself healthy, I'm feeling good, everything's good, everything functions the way it's supposed to, so I don't know. To me it's that doctor visit every two months, it would be a pain in the ass."

Elan echoed a similar sentiment, stating he preferred to stay away from hospitals unless necessary:

> "I know people die in hospitals. That's why [I don't go]. Now if you're ringing somebody back to life, that's different. [But] I'm not just going to go to the hospital for nothing."

Five participants expressed a preference for injectable PrEP, noting that this would be an effective solution to adherence problems. Anthony had no preference between a daily pill and an injection. Elan and James believed they would prefer oral over injectable PrEP.

Elan cited medical mistrust as his reason for avoiding injections of any kind from other people:

> "Oh, no, no, no, no, no, no, no. The only one that sticks me with needles is me and my tattoo artist. I'll stick with the pill. I have a crazy imagination about the world…That's why I don't like going to hospitals that much."

James explained that injectable PrEP would have the potential to cause trauma in individuals undergoing substance use recovery:

> "That might bring up bad things in the past. Especially for people who have used needles, or have injected stuff in their body, [injectable PrEP] may not be the best in terms of bringing about the past and everything."

Participants were also asked about their experience with healthcare, and several participants expressed hesitance about going to a doctor's office or hospital for their care. Robert described negative experiences with medical staff, saying "They think we're just addicts or fags or druggies or prostitutes and they would just rather we die. They don't think anyone's going to miss us and that's not always true, you know?" He also said "a lot of times" he does not disclose his drug use and sexual behavior to doctors. This was common among many participants. Daryl explained that he would hide his injection behavior from his doctor:

> "I don't let my doctor know that I do drugs because that would change [the] whole ball game with her…I think she wouldn't keep my appointments the [same] way. I think she would care less about that. I think that she wouldn't go the nine

> yards that she goes out the way for me. I think she would try to throw me in rehab, lock the door."

While other participants did not cite overtly negative experiences with providers, they did express a sense of anxiety or embarrassment around doctors. Marc stated "I get scared, you know? I just get worried. I've just got a lot of anxiety when I see the doctor." Gray described a similar feeling when he wanted to discuss HIV with a doctor:

> "I had to kind of put my tail between my legs when I went. I didn't know how they were going to look at me coming into the office like, 'Hey I think I may have HIV,' you know what I mean?"

Many participants, however, described scenarios that would increase their levels of comfort among healthcare staff. Common among them was the idea of non-stigmatizing behavior among staff and incorporation of mental health in the visit. Robert stated "I need someone good that I can talk to. It's more than just getting my meds. I want it to be physical where you can talk to the person." He also stated that if the provider could not address "psychological" aspects of his care, he would "ask to see a different provider or wouldn't be as open." His gender identity also played a role in his comfort, as he described wanting a female provider: "I feel more comfortable talking to a girl because I'm kind of like a girl myself." Marc similarly wanted mental healthcare, stating a preference for a psychiatrist in prescribing medication. Casey described a positive experience with staff at a rehabilitation facility where he received both substance use and mental health treatment. He elaborated on this important combination at the facility,

calling it a “dual diagnosis” center for its role in addressing his psychological needs, and contrasting it with other centers that only focus on substance use:

> “They’re more sensitive to you by the way that they talk to you, the way that they want the atmosphere to be around people. The staff is more sensitive to your needs whereas, you know, at the drug place [center with substance use treatment only] sometimes I see people that don't even like their job. They're just doing it for a paycheck, you know. So, I believe the people at [center with substance use *and* mental health treatment] are there to help you. I really enjoy--not enjoy--but I really prefer [it] than anywhere else. If you're working in one of those places you have to have some kind of compassion to help people. It takes a certain person to be able to help people like that. I just need the dual diagnosis thing. [It’s] the best place I've ever been to.”

This sentiment indicates a greater need for mental healthcare services in this population and for training in staff to combat stigmatizing behaviors.

DISCUSSION

In this qualitative study, we explored HIV risk perceptions, PrEP knowledge and attitudes, and experiences accessing different types of care among men who have sex with men and inject drugs. These data, taken as a whole, allow us to further understand the HIV risks and prevention needs of this population and highlight mechanisms to engage them in preventative care.

Among our sample, participants had low knowledge of PrEP, but were largely enthusiastic after learning about it from interviewers. Even the few participants who remained unenthusiastic about PrEP attributed their resistance to an insufficient understanding of the medication. Interestingly, we found that some participants who had reported hearing of PrEP were later unable to demonstrate a full understanding of the medication, including what it is, how it works, or where to get it. This shows that quantitative reports of PrEP knowledge are not always accurate, and may overrepresent individuals' knowledge of PrEP. Further, although knowledge of PrEP is suboptimal in MSM, data suggest that awareness of PrEP among MSM is slowly increasing.[44,45] Whether MSM-PWID knowledge of PrEP is also increasing remains unclear, raising important questions regarding effective dissemination of information among MSM-PWID. Increasing PrEP knowledge among MSM-PWID is fundamental to bolstering HIV prevention efforts in this population, but efforts specifically targeted at MSM-PWID have been low or nonexistent. The Centers for Disease Control and Prevention compiles a list of evidence-based interventions (EBIs) and best practices to aid varying communities

across the United States in HIV prevention. This list, compiled as part of the HIV/AIDS Prevention Research Synthesis Project, comprises the "Compendium of Evidence-Based Interventions and Best Practices for HIV Prevention," a commonly cited source for implementing HIV prevention interventions at the community level. In this list of fifty-seven population-specific EBIs, there are no interventions for men who have sex with men and inject drugs, reflecting a critical need for development of interventions specifically targeted toward this hard-to-reach population.[46]

Our study suggests that varying identity related to same-sex behavior among men who have sex with men and inject drugs may play a role in shaping HIV risk and prevention needs. In our study, participants' sexual orientation (reported on our quantitative instrument) included gay, bisexual, and other, with 78% identifying as bisexual. Among those who self-identified as bisexual, there were differing descriptions in the qualitative interviews about what this identity entailed: some had sex with men as a regular practice, while others only referenced sex with men in the context of their sex work. Bisexuality is correlated with not only an increased likelihood of engaging in sex work, but also homelessness, unemployment, and secrecy of MSM behaviors, which may pose additional barriers in reaching this population.[47] Further, a growing amount of literature is identifying substance use disparities among bisexual individuals and other sexual minorities.[48–51] A recent study examining disparities in smoking, heavy episodic drinking, marijuana use, illicit drug use, and alcohol/substance use disorder found that young gay and lesbian individuals and middle-aged bisexual men had significantly higher odds on almost all outcomes, and bisexual women had higher odds across all ages.[48] A

2017 review of all evidence-based literature on bisexual health found strong evidence that bisexual individuals are at increased risk for mental health and substance use problems compared to their heterosexual or gay/lesbian counterparts.[51] Stigma- and discrimination-related stress were leading contributors to these disparities.

An in-depth understanding of the ways in which sexual orientation and gender identity shape HIV risk and prevention needs among men who have sex with men and inject drugs could obtained through further research using a systematic conceptual model. For example, the intersectional risk environment framework[52] helps contextualize the unique issues facing men who have sex with men and inject drugs. This model is an extension of the classical risk environment framework to examine how social factors interact with one another to produce differential risk.[53] Importantly, when injection behaviors co-occur with other social determinants, including sexual orientation, the resulting intersection occupies a landscape fraught with unique barriers to wellbeing. Future research should consider using this framework to determine comprehensive public health approaches in MSM-PWID and to better design interventions targeted at this community. Because of the nuance in how this population refers to their identity (e.g. "down low," "same gender loving," or "just messing around on the other team"),[47] many of our participants may not identify with advertising or marketing campaigns directed at LGBTQIA+ individuals or MSM. Future studies should consider a more specialized model for collecting data about each individual's orientation, and innovative methods should be considered over traditional communication strategies in reaching these populations.

Previous research, for example, has classified substance-using MSM into three classes, each with distinct strategies to reduce harm: those who used *lay* strategies (avoiding sharing drug preparation equipment, serosorting when sharing needles or having condomless anal sex (CAS), practicing withdrawal when having CAS); those who use *combined* sexual and substance use strategies (avoiding sharing needles, using bleach to clean needles and other equipment, and avoiding CAS when using drugs); and those who used *substance-use* strategies rather than sexual strategies.[54] By stratifying substance-using MSM into these three categories, researchers could better identify trends among specific subgroups of MSM, and then more effectively present relevant safety practices to each group. Future studies should consider a similar approach with MSM-PWID to identify specific patterns in harm reduction strategies in order to develop appropriate and tailored messaging.

Sex parties emerged as a unique social environment for many MSM-PWID in our sample. Several studies focus on the role of substances, broadly, in MSM-attended sex parties.[55–59] However, very few studies, none of which are qualitative to our knowledge, explicitly or solely examine the role of injected drugs in a group sexual context for MSM. Data from our study suggest that this social environment poses disproportionately high risks for HIV acquisition due to simultaneous sexual and injection behavior in a context where judgment may be impaired. Because men who have sex with men and inject drugs have higher odds of sharing syringes compared to their MSM or PWID counterparts—further evidence that traditional harm reduction messaging is not sufficient in this population—sex parties may pose an even more heightened risk.[60] However, this reliable

and unique social context may also serve as an opportunity to implement harm reduction interventions in this otherwise hard-to-reach population. Some cities have established drug user committees which use a peer-to-peer delivery model for disseminating important harm reduction information, programming, and safe injection kits.[61] Another example of a successful peer-to-peer delivery model is that for naloxone, the distribution of which is encouraged in many cities to prevent overdose deaths.[62] A similar model could be successfully used to deliver harm reduction materials to MSM-PWID in a sexual context. Some of our participants described a propensity for altruistic actions, suggesting that this type of intervention may be feasible and well-accepted.

Lastly, our study elucidated a particular need for mental health services in order to address unique vulnerabilities in MSM-PWID. The overlapping identities of MSM-PWID may make them more prone to social isolation. Studies have shown that MSM-PWID are not well-accepted among the larger gay community and report feeling "othered" by gay men who do not inject drugs.[63] On the other hand, MSM-PWID may not feel fully comfortable among their heterosexual peers who inject drugs, placing them at a stressful intersection between these two social groups and potentially causing feelings of isolation and exclusion, as evidenced by some of our participants' accounts. These negative feelings can be mitigated by providing access to mental health services in contexts that are culturally competent, non-stigmatizing, and unassuming about identity. Based on participant views in this study, we would recommend providing mental healthcare not only at CBOs, but at all potential health-related access points, and avoiding referrals to

any facilities segregated by gender, as homophobia among peers has been reported in exclusively male environments.

There are several limitations of this study. Firstly, our sample includes only nine participants. While these qualitative interviews provide important social context about MSM-PWID, care should be taken to avoid generalizing the themes of this paper to the entire MSM-PWID population or to other populations. The small sample size also limited our ability to analyze a more diverse subset of MSM-PWID, most notably in terms of race, but also other socio-demographic factors. Secondly, we recruited exclusively from CBOs, so the views of individuals not engaged with CBOs are not represented in this study. Because MSM-PWID have a lower likelihood of accessing substance use treatment[64], this is an especially important consideration. Thirdly, qualitative interview questions did not primarily target topics related to MSM behavior, resulting in potential gaps of information about these participants' habits as they relate to same-sex behavior.

Despite these limitations, our analysis is one of the first to provide qualitative context about the experiences and vulnerabilities of MSM-PWID, and we lay the groundwork for future research with this population. Data from our analysis elucidate specific prevention needs for this population by not only illustrating certain behaviors that increase their risk of HIV acquisition, but also describing methods to increase their initiation with and retention in care—namely, continuing to train staff in destigmatizing behavior and providing mental healthcare at any points of access in this population. Low knowledge but high enthusiasm of PrEP was an important finding, as understanding the

response of MSM-PWID to PrEP remains crucial in increasing access to PrEP as a preventative measure.

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