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Motivations for PrEP-Related Interpersonal Communication Among Women Who Inject Drugs: A Qualitative Egocentric Network Study

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Abstract

A qualitative egocentric social network approach was taken to explore motivations for pre-exposure prophylaxis (PrEP)-related communication between women who inject drugs and network members. Eligible participants were HIV-negative, 18 years or older, and participating in a PrEP demonstration project in Philadelphia, PA, USA. The study employed content analysis of in-depth interviews to identify themes related to contextual and relational factors impacting PrEP communication within networks. Participants ($n = 20$) named on average three network members, resulting in a total of 57 unique relationships. PrEP conversations occurred within 30 of the 57 relationships, and motivations were to benefit others, to benefit themselves, and due to a sense of obligation. Some conversations also occurred when a peer unexpectedly found their pills. Taking a qualitative approach to network analysis provided a nuanced understanding of how interpersonal characteristics motivated PrEP conversations. Network interventions that facilitate information diffusion and social support may increase PrEP uptake and adherence among women who inject drugs.

Keywords

substance use; addiction; altruism; health behavior; behavior; communication; social participation; social networks; community and public health; disclosure; confidentiality; privacy; health promotion; health; HIV/AIDS; infection; motivation; qualitative content analysis; egocentric network analysis; Philadelphia; Pennsylvania; USA

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Introduction

Despite representing only 3% of the U.S. population, people who inject drugs represented 6% of new HIV infections in 2017 and 28% of cumulative AIDS deaths (Centers for Disease Control and Prevention [CDC], 2018). Rising rates of opioid and fentanyl use in the United States has substantially increased the number of people at risk for HIV through use of shared injection equipment and high-risk sexual behaviors (Archibald, 2018; Dawson & Kates, 2018; DeMio, 2018; Massachusetts Department of Public Health, 2018; U.S. Department of Health and Human Services, 2018). Important gender-based disparities in HIV exist among people who inject drugs, with women reporting more injection and sexual HIV risk behaviors (Bryant et al., 2010; Neaigus et al., 2013). Many traditional HIV prevention tools, such as male condoms, rely on male partners for their implementation (Nyamathi et al., 1995; Worth, 1989). The need to engage and negotiate with partners on the utilization of these kinds of prevention tools can impede their use (El-Bassel et al., 2014; Moreno, 2007; Zhou, 2008). This signals the need for women-controlled HIV prevention strategies including pre-exposure prophylaxis (PrEP), a once-daily combination antiretroviral medication that effectively reduces risk of acquisition if taken consistently by women and people who inject drugs.

In 2014, the Centers for Disease Control and Prevention recommended Truvada® as PrEP for people who inject drugs and for women at risk for HIV (World Health Organization, 2015). However, PrEP awareness (Kuo et al., 2016; Shrestha et al., 2017; Stein et al., 2014) and uptake (Escudero et al., 2015; Stein et al., 2014; Walters et al., 2017) among people who inject drugs is low. Traditional methods of raising awareness about new HIV prevention modalities, such as education sessions during medical appointments, may not be ideal for reaching women who inject drugs, given barriers to health care utilization (Bungay, 2013; Heath et al., 2016; Luoma et al., 2007; Orchard et al., 2020), as well as PrEP prescription biases among health professionals toward patients with substance use disorders (Adams & Balderson, 2016; Edelman et al., 2017) and women (Pilgrim et al., 2018). Alternatively, research has shown that social networks can be organized to increase awareness and utilization of HIV prevention tools among people who inject drugs (Latkin, 1998; Theall et al., 2003; Tobin et al., 2011). Interpersonal communication among network members is a source of information sharing, advice seeking, and support (Goldsmith, 2004; Rogers, 1995) and can contribute to uptake of harm reduction innovations (Rogers, 1995). For example, studies show that people who inject drugs are motivated to initiate conversations with others who inject drugs about HIV prevention strategies, such as promoting condom use, to encourage others to reduce their HIV risk (Convey et al., 2010; Friedman et al., 2004). However, little is known about if and how women who inject drugs communicate with peers about PrEP, in other words, if and how PrEP-related interpersonal communication occurs.

The limited studies examining PrEP-related interpersonal communication demonstrate that PrEP users discuss PrEP within some relationships comprising their social network. Findings from PrEP clinical trials with women in African countries report that many women disclosed their trial participation and PrEP use to primary sex partners and kin, and that their support influenced participants' study participation and product use (Montgomery et al., 2008; van der Straten et al., 2014). Among current PrEP users in the United States and

Canada, studies focus on men who have sex with men and show that current PrEP users discuss PrEP with peers to learn more about PrEP (Klassen et al., 2017), to educate others about PrEP (Klassen et al., 2017; Mutchler et al., 2015), and as a way to let potential sex partners know that HIV transmission would be less likely because of their PrEP use (Newcomb et al., 2016). These studies provide important insight into the variety of PrEP-related conversations that may occur among PrEP users and network members. They also suggest that the content of the conversation may differ based on the relationship type of the network member. For example, PrEP users may discuss PrEP with kin to receive support and with peers to educate them about PrEP. However, less is known if and how women who inject drugs, a population nearly absent from PrEP-research, discuss PrEP with network members. Identifying women who inject drugs' motivations for initiating a PrEP-related conversation is important for understanding how social networks may contribute to PrEP information diffusion. In addition, knowing if different relationship types facilitate distinctive conversations is useful for identifying how networks can be leveraged to increase PrEP use within social networks of women who inject drugs.

To extend our understanding of the context and content of PrEP-related interpersonal communication among women who inject drugs and their peers, the following two research questions were explored:

Research Question 1 (RQ1):

What are the motivations for PrEP-related interpersonal communication among women who inject drugs and their network members?

Research Question 2 (RQ2):

How does the content and context of PrEP interpersonal communication between women who inject drugs and network members differ based on relationship type?

Method

Methodological Approach

The main interest of the study was relationships in women who inject drugs' everyday lives, and why they may choose to discuss PrEP within some of these relationships and not others. Because communicating with peers about PrEP is inherently an activity engaged in within the context of social relationships, this study is guided by social network theory (Kadushin, 2012). Social network theory emphasizes that individuals are embedded within a web of relationships, and that to understand individuals' behaviors, it is imperative to identify meaning and patterns within relationships that may constrain or facilitate behavior. One approach to social network analysis is egocentric analysis, which is a process through which respondents (also known as "egos") list and describe their relationships with their social network partners (also known as "alters"). Egocentric analysis is particularly useful for understanding relationship patterns, social structures, and the influence of an individual's social network on his or her behavioral outcomes. This approach has been used extensively to understand interpersonal communications (Barrington et al., 2009; Fisher, 2005; Koehly et al., 2003; Tillema et al., 2010) and health behaviors (De et al., 2007; Huang et al., 2014;

Liu, 2016). Although egocentric network analysis is dominated by quantitative research methods, qualitative methods are also valid approaches when the intention of the investigation is to explore the subjective meaning of social network members and to generate hypotheses (Fuhse & Mützel, 2011; Scott & Carrington, 2011). Qualitative analysis of egocentric networks has been used previously to explore the connection between networks and a variety of health topics (Barrington et al., 2018; Carpentier & Ducharme, 2005; Dupuis-Blanchard et al., 2009). Therefore, we take a qualitative approach to egocentric network analysis to allow for an in-depth exploration of the social context in which interpersonal PrEP communication occurs among women who inject drugs and network members.

Sample

Participants were recruited from Project Sexual Health Equity, a longitudinal parent study in Philadelphia, PA, USA, assessing barriers and facilitators to PrEP engagement among women who inject drugs receiving care at a community-based syringe services program. Parent study participants were HIV-negative English-speaking females, 18 years or older, who had a PrEP indication based on clinical guidelines established by the CDC (2017), and who were offered a PrEP prescription through the parent study. To be eligible to participate in this study, participants had to be enrolled in the parent study and indicate during their first follow-up visit survey that they talked about PrEP with at least one peer. To recruit participants, participants' responses to the follow-up survey were reviewed, and participants were sequentially enrolled until saturation, the point in the analysis of data that sampling more data would not lead to more information related to research questions (Mason, 2010), had been reached. Saturation was assessed both in terms of code and meaning saturation (Hennink et al., 2017). Active self-reflection was used to recognize when code saturation had begun: This involved recognizing when during codebook development that no new codes were being added, all new themes were developed, and that the codebook structure had stabilized. This occurred after 15 interviews. However, participants continued to be recruited until a comprehensive understanding of motivations for and against PrEP communication within a variety of types of network members was reached, which speaks to meaning saturation. In total, code and meaning saturation was reached after 20 interviews.

Data Collection

One trained interviewer conducted qualitative interviews using a semi-structured instrument. Interviews were audio recorded using a digital recorder. Interviews were conducted in a private space at the syringe exchange and lasted approximately 1 hour. Following the interview, participants received a US\$20 cash incentive. The interviewer kept a journal of both descriptive and reflective field notes (Birks et al., 2008), in which thoughts and observations about each interview were recorded, paying special attention to ideas and issues discussed, similarities and differences among the interviews, and areas to explore in future interviews. During data collection, coauthors met to discuss findings and identify emerging ideas and topics. Data collection occurred between June and September 2018. All participants provided verbal informed consent, and research was approved by the institutional review boards at Drexel University and Prevention Point Philadelphia (ethics approval number: 1810006688).

Measures

The qualitative egocentric social network interview proceeded through the following steps: (A) It began with a “name generator” to elicit the names of social network members (Perry et al., 2018). Participants were asked to name up to six network members: (1) one main romantic partner, (2) one casual sex partner, (3) one transactional sex client, (4) one woman they know who injects drugs, (5) someone they inject drugs with, and/or (6) someone with whom they discuss important matters (Burt, 1984). Network members could be nominated for more than one relationship (i.e., a main romantic partner may also be someone with whom they inject drugs). (B) After the name generator was completed, participants were asked to describe each network member and their relationship, with probes for characteristics of the relationship (e.g., types and frequency of interactions, closeness, trust), and characteristics of each person (e.g., their gender, age). (C) The phenomenon of interest is PrEP-related interpersonal communication, which we are defining as any instance where women who inject drugs describes discussing PrEP with a network member. To explore this, participants were asked, “Have you ever talked to [network member 1-n] about PrEP? This can include giving them information about PrEP or asking advice about PrEP.” If yes, participants were asked to summarize the conversation and describe why they chose to talk to each of their named social network member. Such follow-up questions included, “Think back to your conversation about PrEP. Tell me a story about that conversation. I want to know all the details—where it happened, what you said, how it felt to talk about PrEP,” “You could have talked to anyone you know about PrEP. Why did you choose to talk to [person n] in particular?,” “What are some of the good things that could happen as a result of talking to [person n] about PrEP?” and “What are some of the bad things that could happen as a result of talking to [person n] about PrEP?” When participants indicated they had no PrEP communication with a specific network member, they were asked to describe why.

Data Analysis

All digital recordings were transcribed verbatim, anonymized, and managed using NVivo qualitative software (Bazeley & Jackson, 2013). Content analysis was used to identify themes regarding motivations for discussing PrEP with network members. The objective in qualitative content analysis is to systematically transform a large amount of text into a highly organized and concise summary of key results (Erlingsson & Brysiewicz, 2017). The analysis of the first interview, as well as field notes, formed the basis of an evolving coding system and provided direction for exploration in future interviews. This recursive and cyclical coding allowed for concurrent data collection and analysis. The first step of data analysis was to read and re-read transcripts to gain a general understanding of how participants experienced discussing PrEP (or not) with network members. Words or sentence that captured critical issues and thoughts identified by participants were highlighted. Next, codes were developed to create descriptive labels for the highlighted passages. Codes that appeared to relate to the same issue were sorted into categories. Categories were transferred to a dry erase board to provide a visual representation of this stage of data analysis. This process helped to identify connections among the categories. The process of grouping together categories facilitated the identification of themes within the data. Data analysis ended once new themes or patterns of data failed to emerge, and it was concluded that analytic saturation was reached.

Various procedures were put in place to increase credibility and dependability of findings. Credibility is achieved when research methods engender confidence in the truth of the data and researcher's interpretation of data (Polit & Beck, 2008). To improve credibility, the interviewer actively engaged with participants during each interview session to build trust and rapport, which assisted with data collection. The interviewer also engaged in member checking by sharing results of the analysis and interpretation with coauthors. Findings were also discussed with participants on an ongoing basis (Polit & Beck, 2008). To improve dependability, several transcripts were reanalyzed after starting the analysis process, which served as a kind of internal reliability process. Any discrepancies between the two analysis processes were discussed with coauthors until discrepancies were resolved.

Results

The sample included 20 women who inject drugs, whose demographic characteristics are described in Supplemental Table 1. Participants listed an average of three network members, resulting in a total sample of 57 network members. All participants (20/20) discussed PrEP with at least one network member listed. Of the 57 total relationships listed by participants, a conversation about PrEP occurred within about half (30/57) of relationships. Figure 1 depicts the occurrence of PrEP communication within each of these relationships. From our data emerged four overall patterns of how women were motivated (or not) to discuss PrEP with social network members. PrEP communication is discussed in the following sections by motivating factors.

Motivation 1: Communication to Benefit Others

PrEP communication to benefit others occurred only with other women and mostly with other women who inject drugs (this dyad type is referred to as participant/woman-who-injects-drugs, hereafter). Participant/woman-who-injects-drugs was the most frequently reported dyad type, and PrEP communication occurred in 11 of the 18 participant/woman-who-injects-drugs relationships. PrEP communication within this dyad type was primarily motivated by altruism and specifically by a desire to provide a benefit to the woman receiving the information. The main benefit to discussing PrEP within these dyads was increasing the recipient's knowledge of a new HIV prevention tool. A secondary benefit was to inform the recipient about financial benefits they might receive from participating in the larger PrEP study from which the sample was recruited.

Most of the conversations occurring within participant/woman-who-injects-drugs dyads were unplanned and occurred as women crossed paths in their neighborhood or in the shelter where some participants lived. Because participants frequently interacted in person with the woman with whom they shared PrEP information, they perceived that they were aware of their peer's HIV-related risk (e.g., injecting drugs, engaging in transactional sex) and wanted to help them lower their HIV risk by sharing PrEP information. One participant describes why she told a woman who injects drugs about PrEP: "I thought she would be interested in [PrEP] because I see her doing heroin with needles. And I see her [engage in transactional sex], so I know she could benefit from [PrEP]." Similarly, one participant says, "I thought she was a great candidate [for PrEP] because she has a lot of casual sex and she's an IV drug

user. I mean, she couldn't be a better candidate." For others, PrEP communication included financial benefits from study participation, which was up to US\$140 over a 7-month time period. One participant told a friend, "I told her what PrEP is and that she may like it, and also to go do the study and get the money. I thought both would be helpful for her."

Importantly, participants were willing to share PrEP information with other women who inject drugs, regardless of how emotionally close they perceived their relationship, because communicators perceived few negative consequences would arise from initiating the conversation. When asked to describe the worst possible outcome from sharing PrEP information with another woman who injects drugs, participants usually answered that the individual would not take PrEP. The chance that the recipient would react negatively was unlikely and not a deterrent to sharing PrEP information. For example, one participant remarked,

The only reaction I can see of her negatively is just not being in the mood to hear about me talk about something that's like medical, by the book type stuff, maybe because it's boring? But that didn't stop me from talking to her about it.

One possible explanation for perceiving few negative consequences with other women who inject drugs is that study participants regularly interact with these women while they themselves are engaging in illegal and stigmatized behaviors (e.g., public drug use and sex work) in the neighborhood. As a result, they see their risks as similar to their female peers who inject drugs and feel that the peer would feel the same. Participants described that this similarity between women who inject drugs made it less likely that the peer would feel judged from receiving information about PrEP from them. One participant makes this point saying,

We see each other [engaging in transactional sex] so she knows why I told her about PrEP. I knew nothing bad would happen if I told her [about PrEP] because she knows I'm just as much at risk for HIV as she is. I'm no better than her.

Furthermore, the participant's narrative points to a sense of community among women who inject drugs in the neighborhood. In this way, sharing information about PrEP fits in with the prevailing culture of helping one another by sharing information about available resources. One participant describes this culture of information sharing saying,

In Kensington we have food, clothes, and we have some healthcare available that we tell each other about because we want to help each other . . . Some of us women still want to stick together and look out for one another. We try to tell each other where they are feeding or where they are giving out free clothes, and now about PrEP. Women listen to other women.

Within participant/woman-who-injects-drugs dyads that were emotionally close, participants were more likely to disclose their own PrEP use. In these instances, participants often experienced a secondary benefit to themselves of receiving support. For example, one participant said,

I just told her that she should get PrEP. That it was a good thing . . . I'm close to her and I want her to know PrEP is out there. I [also] told her I was taking it. She

thought it was a good idea because of what we do [referring to engagement in sex work].

In addition, one participant told her 16-year-old daughter:

I told her everything that I just learned about PrEP . . . I told her it was totally safe, and that I took them [PrEP pills] and it's fine . . . I told her to go talk to her doctor about it to see if she wants it. She was glad I'm taking it, and I think she's gonna talk to her doctor.

In this case, not only did the participant receive support as a secondary support but she also received some tertiary benefits knowing her daughter, who she perceived to be at risk from her own sexual behavior, may access an HIV prevention tool that she believed would benefit her. Conversations motivated by altruism contribute to the social capital within the community of women who inject drugs, whereby new information is shared with others, and participants may in turn benefit from receiving support and having access to new information shared by others.

Motivation 2: Communication to Increase Social Connection and Social Support

Participants also initiated PrEP communication to increase their sense of feeling connected with network members (i.e., social connectedness), as well as to increase their access to resources available within their networks (i.e., social support). PrEP communication to increase social connectedness and/or support occurred within 10 out of 14 participant–main romantic partner relationships and three out of five participant–casual sex partner relationships. The context of PrEP communication within these dyads centered on participants disclosing their PrEP use to someone they trust, namely, a sexual partner. Disclosure fostered participants' sense of interpersonal connection, and for some, enabled them to receive support for PrEP uptake and adherence.

Most participants expressed feeling a sense of social isolation stemming from their current drug use due to terminating contact with non-illicit drug using family members and friends during periods of drug use. One participant describes,

I disconnected myself from my family . . . I stay away from my family when I'm using because I don't want them to see me like this. And the people I hang with I just do drugs with. I don't even call them my friends. I have two girlfriends I haven't seen in years because they don't use. [Before,] they were always someone I could depend on, emotionally, spiritually. It wasn't like the people I hang with now, where it's about money or you know, give something to get something.

For socially isolated women who have a close romantic partner, disclosing their PrEP use to that partner was a way to share something new and important in their lives, making them feel less isolated. One participant said,

I told [my main romantic partner] I'm taking PrEP because it felt good to just let someone know what's going on in my life. If he wasn't in my life, no one would know what I'm doing. I'm not talking to my family right now.

Relationships in which these conversations occurred were characterized by emotional closeness, trust, and previous positive experiences discussing important health matters. These factors enabled PrEP disclosure by giving participants the belief that their partner would react positively to their PrEP disclosure. One participant makes this point,

I can tell [main partner] anything. I know him. I know he doesn't react bad to anything. I've told him I gave him gonorrhea. I told him I [engage in transactional sex]. So I knew I could tell him I'm taking PrEP. But somebody else? If I don't know how they'll react, I won't tell them I'm taking [PrEP].

In addition to disclosing PrEP use to feel more socially connected, participants also initiated a PrEP conversation with peers they perceived could support their PrEP use by providing instrumental or informational support. For example, many women in the sample lived on the street and reported instances of their belongings being lost or stolen. For one participant, disclosing her PrEP use was motivated only by her need to have a safe place to store her pills, and her perception that this peer could provide this type of instrumental support because he is stably housed:

We didn't really have a big conversation about PrEP. I told him what it was but I didn't explain why I was taking it, or go into any detail. I was just like, "I'm taking this pill, can I store them in your garage?" So I keep my pills in his garage and I see him everyday to take my pill.

In another instance, a participant described seeking informational support in the form of advice,

I went to [my boyfriend's] shelter the night of the survey to ask his opinion about taking [PrEP] because I wasn't 100% sure about it. He asked how the survey went, and I asked, "Do you think I should take [PrEP]?" He said, "Yeah why not?" And that made it clear I should at least try it.

As these two cases illustrate, some participants required social support, namely, instrumental and information support, to facilitate PrEP uptake and adherence. In these instances, they engaged in PrEP communication to obtain needed resources.

Motivation 3: Disclosure of PrEP Use Due to Perceived Obligation

Some participants were hesitant to initiate a PrEP conversation, but felt obligated to do so out of fear that their PrEP pills would be discovered by someone they lived with. Participants were concerned that PrEP possession would be interpreted negatively. As a result, participants initiated a PrEP conversation to frame the PrEP narrative and preempt potential negative consequences associated with discovery.

Among friends they lived with, women feared their PrEP pills would be discovered and they would be accused of and judged negatively for having HIV. One participant was briefly staying with a female friend who injects drugs until she could move into a shelter, and describes,

I was living with her for some time when I got on [PrEP], so I had pills with me. I felt like I had to tell her what they were cuz they were under her roof and I didn't

want her to find them and think I had HIV. I told her about PrEP and what it does and she thought it was interesting.

In the context of romantic relationships, the concern was that participants would be accused of infidelity. One participant, who lived with her main romantic partner, was concerned that her PrEP-use disclosure would make him think she was unfaithful, but her fear of her pills being discovered and being accused of keeping a secret outweighed that concern and so she decided to disclose PrEP use to her partner. She reports,

I didn't want to outright tell [my boyfriend] I'm taking PrEP . . . He would automatically assume I'm cheating on him. But we live together, so he would have seen the pills. Then it would have started an argument because instead of me telling him up front he would have had to find out by catching me take the pill . . . Basically I told him that I'm taking a pill that helps . . . my risk of getting HIV. He asked me why I would take it. And I said, "Just in case. Cuz you never know what happens in the future." And he was OK with it.

As these comments illustrate, participant had concerns that PrEP discovery would lead to negative outcomes and used PrEP disclosure as a strategy to reduce potential negative outcomes.

Motivation 4: PrEP Use Disclosure After Unintentional PrEP Pill Discovery

Unlike previously described PrEP conversations which had preconceived motivations, a few participants had their pills discovered unexpectedly and felt forced to disclose PrEP extemporaneously. This most frequently occurred among participants who lived on the street and carried their pills with them due to not having a location to store them. As a result, a peer discovered their pills on them. When this occurred, participants used their knowledge of PrEP to inform the peer about PrEP. For example, one participant did not plan to disclose her PrEP use to her half-sister, but when she discovered her pills in her purse, she used the opportunity to teach her about PrEP and how to access it:

I didn't choose to talk to her about PrEP. She saw my [PrEP pills]. She thought I had drugs so she went into my bag. And I was like, "No, it's PrEP." So I had to tell her, "It's medicine. It prevents getting HIV." Her Mom died of HIV, she [engages in transactional sex], so I was like, "I can help get you on [PrEP], if you want it."

In another example, a participant disclosed her PrEP use when a sex client looked in her purse and saw her pills while she was engaging in transactional sex. She describes,

I was walking down [the street] and he pulled up next to me and said he would give me a ride. He went into my bag and grabbed my [PrEP] pills and he said, "I can look this medication up and get all the information of what it is." So I talked to him about it because he was gonna go find information about it anyway. I told him . . . that it stopped me from getting HIV . . . I felt like I was his teacher. He believed me and it was fine.

Unstably housed women who carry their pills on them are particularly vulnerable to having their pills accidentally discovered. When this happened, women in this study used these moments as an opportunity to educate peers about PrEP as a way to diffuse possible tension.

An Examination of When PrEP Communication Did Not Occur Among Network Members

A PrEP-related conversation did not occur within 27 of the 50 relationships. When reflecting on these relationships, participants either were open or not to discussing PrEP with these peers in the future. Within mostly participant/woman-who-injects-drugs dyads, respondents expressed an interest in informing these peers about PrEP to help them reduce their HIV risk, but often communication had not occurred due to not seeing the peer in-person since learning about PrEP. Conversely, participants reported that they would never discuss PrEP within some relationships, in particular with transactional sex clients, due to perceived negative outcomes.

Within participant/woman-who-injects-drugs and participant–main partner dyads where a PrEP conversation did not occur, participants attributed the lack of conversation to not seeing the peer in-person since learning about PrEP. However, participants expressed intention to initiate a PrEP conversation when they do see each other. One participant describes her plans to educate her female friend who injects drugs about PrEP to help her reduce her HIV risk:

The only reason I haven't talked to her about PrEP is timewise . . . I haven't seen her in a few days. I was already planning on talking to her today because I know I'll see her [at the syringe exchange]. I am going to tell her that PrEP could help her when she [engages in transactional sex] and god forbid a condom breaks.

Similarly, another participant describes why she has not discussed PrEP with her main partner:

Since I started on PrEP he's been in jail. And when we talk, we just don't have time to talk about PrEP. We focus more about the kids, our house, that kinda stuff. But he's actually ready to come home and when he does I will explain to him what [PrEP] is and why I take it because it is a part of my life now. I think he will think, "Better safe than sorry."

Alternatively, participants would not initiate a PrEP conversation within some relationships, primarily transactional sex clients, due to potential negative outcomes of the conversation. A PrEP conversation did not occur within 11 of the 12 participant–transactional sex client dyads. With transactional sex clients, participants primarily feared that they would be physically harmed as a result of discussing PrEP. One participant describes of one transactional sex client,

I might explain PrEP wrong and I don't want him thinking that I have HIV when I really don't . . . He might think I have HIV and want to hurt me. Especially if we already did something, he would get angry. I'm a prostitute, so he would have every right to think like that.

Another anticipated negative outcome of discussing PrEP with a client is financial, that is, participants engaging in transactional sex feared losing the transactional relationship, which is an important source of income. One such participant describes,

If I brought up PrEP in any way, he wouldn't call me again . . . I would lose out on the money. It's not even a lot of money, but when you have nothing it really is. And that's enough of a reason for me to not bring it up.

In addition to anticipated negative physical and financial outcomes from transactional sex clients, concerns about negative social outcomes with casual sex partners and family members prevented other participants from initiating a PrEP conversation. One participant worried that her male casual sex partner would think she had HIV if she discussed PrEP with him. She reports,

He'd probably say, "Oh, who was you [having sex with]?" He's crazy. No thank you. He would try to . . . put me on blast in front of people. Tellin' people I have HIV. So I'm not telling him nothing about PrEP. Especially not me taking it.

Another participant was concerned that a conversation about PrEP with her son would lead to him questioning her about her sex and drug life, which would make her feel uncomfortable. She says, "I'm slightly uncomfortable talking to him about PrEP, and me taking PrEP. He might be judgmental cuz it might open the question like, 'Mom, why are you taking it?' He doesn't know that I do drugs."

As demonstrated in the previous comments, seeing the peer in-person was important for a PrEP conversation to be initiated within dyads. Important fear for physical, financial, and social security precludes a PrEP conversation from happening within specific dyads.

Discussion

This study explores motivations held by women who inject drugs for discussing PrEP with social network members after being recently offered a PrEP prescription. Combining social network theory with a qualitative analysis approach resulted in an in-depth understanding of social network and contextual factors, such as gender and emotional closeness, that influenced the process of PrEP communication. Figure 2 summarizes how respondents' decision to discuss PrEP within their social networks, as well as the content of these conversations, can be largely explained by social network level factors. First, when participants perceived a female peer to be at risk for HIV, and few negative outcomes were expected from discussing PrEP, participants provided PrEP information to help those peers decrease their HIV risk. Second, participants disclosed their PrEP use to peers with whom they are emotionally close to increase social connectedness and support. Third, when peers and participants lived together, and negative outcomes were anticipated from not disclosing PrEP use, participants disclosed their PrEP use to avoid negative outcomes. Finally, a few PrEP conversations occurred due to unexpected pill discovery. Therefore, findings support our approach that was guided by social network theory, because patterns within relationships had different effects on both whether or not PrEP communication occurred and also the different types of conversations that occurred. This study is the first that we know of to examine how social networks motivate PrEP communication patterns among women who inject drugs and network members, and findings can help inform how social networks may be useful for increasing PrEP awareness and uptake among women who inject drugs.

In this study, respondents frequently shared information about PrEP with other women who inject drugs perceived to be at risk for HIV to help them decrease their HIV risk. Some respondents also shared information about PrEP in the context of alerting them about the potential to receive financial incentives by participating in the parent study. This finding is in line with the study by Walters et al. (2017) that found women who inject drugs who engage in transactional sex were over 3 times more likely to report PrEP awareness, suggesting that women who inject drugs may be disseminating PrEP information through transactional sex networks (Walters et al., 2017). Findings from our study expand Walters' findings by providing possible explanations for why information is being disseminated. In this sample, women were motivated to share information about PrEP, as well as potential financial incentives associated with the parent study, out of altruism, or the desire to enhance another person's welfare (MacIntyre, 1967). In the case of their peers, especially those they perceived as being similar in terms of demographic characteristics or engagement in HIV risk (which in social network theory is described as homophily, McPherson et al., 2001), participants shared PrEP information to promote a new HIV prevention tool that could benefit the recipient, as well as shared information about the parent study as a potential way for the peer to make money through the study's participation incentives. The homophily principle posits that contact between similar people occurs at a higher rate than among dissimilar people and that homophilous ties promote the spread of information among individuals (Centola, 2011). In the context of this study, homophily relates to information diffusion in two ways. First, homophily may allow participants to identify other women who inject drugs as being at risk for HIV and as a result motivate participants to share information about PrEP. Similarly, homophily may allow participants to identify other women who inject drugs as benefiting from increased income through parent study participation, which motivated them to share information for their benefit. Second, homophily may protect against concerns that the network member would feel judged by receiving PrEP information, because both women are similarly at risk for HIV due to shared behaviors. Within the latter, the effect of homophily on sharing PrEP information may depend on the frequency of interaction, whereby the frequency of interaction makes the homophily apparent because both women are aware of the others' HIV risks by seeing them use drugs or engage in transactional sex.

In addition to conversations motivated by altruism, many conversations occurred with main and casual sex partners to receive support. Unlike findings from the VOICE-C PrEP trial (van der Straten et al., 2014), no participant in this study reported seeking partner permission to participate in the study nor to begin taking PrEP. While a small number of participants in this study utilized network members to receive advice or instrumental support related to PrEP, many participants disclosed their PrEP use because sharing what was going on in their lives made them feel socially connected, which made them feel good. This phenomenon speaks to the emotional benefits of social integration, which refers to attachment to society through informal ties to family and friends and formal links to community institutions (Fothergill et al., 2011; Seeman, 1996). Social integration has been associated with positive mental health outcomes, such as decreased suicide risk (Tsai et al., 2015), anxiety, and depression (Fothergill et al., 2011). Studies show that women who inject drugs are often socially isolated (El-Bassel et al., 2001; Farris & Fenaughty, 2002), which limits their ability

to access physical and psychological benefits of social support (Holt-Lunstad & Uchino, 2015). It is possible that PrEP-use disclosure is a way for women who inject drugs to feel more socially integrated by sharing updates on their life with another individual. It is also possible that participants gave PrEP information to other women as a way to increase social connectedness. However, this was not described by participants as being a motivation for PrEP communication with other women and should be explored in future studies.

Some participants in this study felt obligated to disclose their PrEP use, often due to living with someone, which was also observed during the VOICE-C PrEP trial (van der Straten et al., 2014). This finding is important considering a commonly touted benefit of PrEP is its ability to be a discreet HIV prevention method (Van der Elst et al., 2013) that women can use without partner cooperation. The desire to hide PrEP use may be rooted in HIV stigma, and participants' concerns that they would be perceived as having HIV, which has been reported to be a barrier to PrEP initiation and adherence among people who inject drugs (Biello et al., 2018; Shrestha & Copenhaver, 2018). However, discreet PrEP use may be challenging among individuals who have unstable housing and carry their pills on their person, or bring their pills into various homes they stay in temporarily. Given participants' experience of feeling obligated to disclose their PrEP use, and the persistent HIV stigma among people who inject drugs, PrEP users would benefit from having the skills to explain what PrEP is to network members in the case of someone finding their pills. When clinicians prescribe PrEP, a component of the counseling session could include how to talk to others about PrEP. For example, potential PrEP users could be asked, "What would you say if your main partner found your pills?" In particular, teaching women who inject drugs to frame PrEP conversations with language that does not stigmatize HIV may also contribute to destigmatizing HIV and PrEP in the community. Practicing a conversation could benefit participants who want to talk to network members about PrEP, as well as to prepare PrEP users if they are forced to disclose their use.

In addition, women are disclosing their PrEP use to network members to increase social connectedness and support. Future studies should explore how these relationships could be activated to provide other types of support for women who are taking PrEP, such as adherence support. For example, qualitative findings from the Partners PrEP Study, a randomized trial evaluating PrEP efficacy among HIV-uninfected serodiscordant heterosexual couples in Uganda, demonstrated that PrEP use in stable couples may be associated with improved adherence (Ware et al., 2012). Thus, incorporating close romantic partners to support PrEP uptake and adherence could also be helpful for this population.

It is important to also consider the relationships in which a PrEP conversation did not occur. These are missed opportunities for spreading PrEP-related information and receiving various forms of support. It also may inform which network relationships may be less utilized in a peer-based PrEP information diffusion intervention. Many PrEP conversations did not occur among network members due to not seeing network members in person since learning about PrEP. Thus, in an intervention among women who inject drugs in this setting, study information may be limited to individuals who are geographically close and with frequent interactions. Importantly, many PrEP conversations did not occur due to anticipated negative repercussions, which speaks to anticipated judgment and stigma related to PrEP and HIV in

this community. It is likely that women who inject drugs will not be able to disclose PrEP information to transactional sex clients, even though they are also a population at risk for HIV.

Findings from this study have important implications for the design of interventions to promote PrEP for HIV prevention in this group. While other studies have shown that peer interventions among people who inject drugs have successfully been used to promote drug and sex related harm reduction behaviors among others who inject drugs (Latkin et al., 2004; Tobin et al., 2011), few peer interventions have focused on PrEP. Capitalizing off of the naturally occurring diffusion process with a peer-led information diffusion intervention could be an effective and cost-efficient strategy to increase PrEP awareness and uptake among women who inject drugs in this community. Given that the majority of PrEP conversations were initiated among other women who inject drugs and main romantic partners, diffusion interventions may be most likely to reach these network members, and less likely to reach others, like transactional sex clients.

Although this study has revealed valuable information from a unique and understudied population, its limitations should be noted. Because of our small sample recruited sequentially from a parent study, findings cannot be generalized to others and apply only to a similar population. Furthermore, participants noted that they alerted women who inject drugs about financial incentives that could be gained from participating in the parent study. Therefore, we cannot assess the extent to which conversations related to giving other women who inject drugs PrEP information would have occurred if the parent study did not have a financial incentive for participation that peers may be able to access if they joined the parent study. Furthermore, participants in this study were given US\$20 for their research participation and were also already participating in the parent study, for which they also received financial incentives for participation. Taken together, the financial incentives may have led to social desirability bias and overreporting the frequency of PrEP communication with peers. In addition, recruiting participants from a longitudinal PrEP implementation study may have led to selection bias. Specifically, self-selection bias may have occurred because participants who volunteer for a study may be different than the general population. This is a particularly salient limitation to this study because participants self-selected into both the parent study and this study. We hope to have limited the effect of social desirability bias by giving participants the opportunity to identify both with whom they did and did not discuss PrEP.

Despite these limitations, this article makes key contributions to science and methodology. This study provides a nuanced understanding of social relationships among women who inject drugs and how they motivate PrEP communication. Findings have implications for other important communication topics, such as overdose prevention information. In addition, findings suggest that social network interventions capitalizing off of peer diffusion and exchange of social support may be useful for PrEP uptake and adherence among women who inject drugs. Methodologically, this research demonstrates that qualitative methods can be powerful means for discerning themes in the social network data related to the social environment in which communication occurs.

Conclusion

Results from this study suggest that interpersonal PrEP communication occurred with a variety of network members and that motivations for discussing PrEP differed based on relationship type. PrEP communication occurred to benefit others, to benefit themselves, and due to a sense of obligation. Taking a qualitative approach to social network analysis provided a nuanced understanding of how social processes influence PrEP communication among women who inject drugs. Taken together, social networks could play an important role in increasing PrEP awareness and uptake among women who inject drugs and network members, both via diffusion of information and social support.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Biography

References

- Adams LM, & Balderson BH (2016). HIV providers' likelihood to prescribe pre-exposure prophylaxis (PrEP) for HIV prevention differs by patient type: A short report. *AIDS Care*, 28(9), 1154–1158. 10.1080/09540121.2016.1153595 [PubMed: 26915281]
- Archibald A. (2018, 10 24). HIV outbreak among homeless people worries health officials. *Real Change*. <https://www.realchangenews.org/2018/10/24/hiv-outbreak-among-homeless-people-worries-health-officials>
- Barrington C, Gandhi A, Gill A, Villa Torres L, Brietzke MP, & Hightow-Weidman L. (2018). Social networks, migration, and HIV testing among Latinos in a new immigrant destination: Insights from a qualitative study. *Global Public Health*, 13(10), 1507–1519. 10.1080/17441692.2017.1409783 [PubMed: 29199546]
- Barrington C, Latkin C, Sweat MD, Moreno L, Ellen J, & Kerrigan D. (2009). Talking the talk, walking the walk: Social network norms, communication patterns, and condom use among the male partners of female sex workers in La Romana, Dominican Republic. *Social Science & Medicine*, 68(11), 2037–2044. 10.1016/j.socscimed.2009.03.009 [PubMed: 19356834]
- Bazeley P, & Jackson K. (2013). *Qualitative data analysis with NVivo*. SAGE.
- Biello K, Bazzi A, Mimiaga M, Biancarelli D, Edeza A, Salhaney P, . . . Drainoni M. (2018). Perspectives on HIV pre-exposure prophylaxis (PrEP) utilization and related intervention needs among people who inject drugs. *Harm Reduction Journal*, 15(1), Article 55. 10.1186/s12954-018-0263-5
- Birks M, Chapman Y, & Francis K. (2008). Memoing in qualitative research: Probing data and processes. *Journal of Research in Nursing*, 13(1), 68–75. 10.1177/1744987107081254
- Bryant J, Brener L, Hull P, & Treloar C. (2010). Needle sharing in regular sexual relationships: An examination of serodiscordance, drug using practices, and the gendered character of injecting. *Drug and Alcohol Dependence*, 107(2), 182–187. 10.1016/j.drugalcdep.2009.10.007 [PubMed: 19942380]

- Bungay V. (2013). Health care among street-involved women: The perpetuation of health inequity. *Qualitative Health Research*, 23(8), 1016–1026. doi 10.1177/1049732313493352 [PubMed: 23761930]
- Burt RS (1984). Network items and the general social survey. *Social Networks*, 6(4), 293–339.
- Carpentier N, & Ducharme F. (2005). Support network transformations in the first stages of the caregiver's career. *Qualitative Health Research*, 15(3), 289–311. 10.1177/1049732304270813 [PubMed: 15761101]
- Centers for Disease Control and Prevention. (2017). Preexposure prophylaxis for the prevention of HIV infection in the United States, 2017 [Clinical practice guideline]. <https://www.cdc.gov/hiv/pdf/risk/prep/cdc-hiv-prep-guidelines-2017.pdf>
- Centers for Disease Control and Prevention. (2018). HIV surveillance reports, 2017. <http://www.cdc.gov/hiv/library/reports/hiv-surveillance.html>
- Centola D. (2011). An experimental study of homophily in the adoption of health behavior. *Science*, 334(6060), 1269–1272. 10.1126/science.1207055 [PubMed: 22144624]
- Convey MR, Dickson-Gomez J, Weeks MR, & Li J. (2010). Altruism and peer-led HIV prevention targeting heroin and cocaine users. *Qualitative Health Research*, 20(11), 1546–1557. 10.1177/1049732310375818 [PubMed: 20639354]
- Dawson L, & Kates J. (2018). HIV and the opioid epidemic: 5 key points. <https://www.kff.org/hiv/aids/issue-brief/hiv-and-the-opioid-epidemic-5-key-points/>
- De P, Cox J, Boivin JF, Platt RW, & Jolly AM (2007). The importance of social networks in their association to drug equipment sharing among injection drug users: A review. *Addiction*, 102(11), 1730–1739. 10.1111/j.1360-0443.2007.01936.x [PubMed: 17935581]
- DeMio T. (2018, 10 24). CDC called in to investigate HIV surges in the Cincinnati region. *The Enquirer*. <https://www.cincinnati.com/story/news/2018/10/24/ohio-ken-tucky-ask-cdc-help-hiv-cases-linked-injected-drugs-rise-cincinnati/1684956002/>
- Dupuis-Blanchard S, Neufeld A, & Strang VR (2009). The significance of social engagement in relocated older adults. *Qualitative Health Research*, 19(9), 1186–1195. 10.1177/1049732309343956 [PubMed: 19690201]
- Edelman EJ, Moore BA, Calabrese SK, Berkenblit G, Cunningham C, Patel V, . . . Fiellin DA (2017). Primary care physicians' willingness to prescribe HIV preexposure prophylaxis for people who inject drugs. *AIDS and Behavior*, 21(4), 1025–1033. 10.1007/s10461-016-1612-6 [PubMed: 27896552]
- El-Bassel N, Gilbert L, Rajah V, Foleno A, & Frye V. (2001). Social support among women in methadone treatment who experience partner violence: Isolation and male controlling behavior. *Violence Against Women*, 7(3), 246–274. 10.1177/10778010122182433
- El-Bassel N, Shaw SA, Dasgupta A, & Strathdee SA (2014). People who inject drugs in intimate relationships: It takes two to combat HIV. *Current HIV/AIDS Reports*, 11(1), 45–51. 10.1007/s11904-013-0192-6 [PubMed: 24477931]
- Erlingsson C, & Brysiewicz P. (2017). A hands-on guide to doing content analysis. *African Journal of Emergency Medicine*, 7(3), 93–99. 10.1016/j.afjem.2017.08.001 [PubMed: 30456117]
- Escudero DJ, Kerr T, Wood E, Nguyen P, Lurie MN, Sued O, & Marshall BDL (2015). Acceptability of HIV Pre-exposure Prophylaxis (PrEP) among People who Inject Drugs (PWID) in a Canadian setting. *AIDS and Behavior*, 19(5), 752–757. 10.1007/s10461-014-0867-z [PubMed: 25086669]
- Farris CA, & Fenaughty AM (2002). Social isolation and domestic violence among female drug users. *The American Journal of Drug and Alcohol Abuse*, 28(2), 339–351. 10.1081/ADA-120002977 [PubMed: 12014819]
- Fisher D. (2005). Using egocentric networks to understand communication. *IEEE Internet Computing*, 9(5), 20–28. https://www.microsoft.com/en-us/research/wp-content/uploads/2016/02/ieee_egocentric.pdf
- Fothergill KE, Ensminger ME, Robertson J, Green KM, Thorpe RJ, & Juon H-S (2011). Effects of social integration on health: A prospective study of community engagement among African American women. *Social Science & Medicine*, 72(2), 291–298. 10.1016/j.socscimed.2010.10.024 [PubMed: 21131117]

- Friedman SR, Maslow C, Bolyard M, Sandoval M, Mateu-Gelabert P, & Neaigus A. (2004). Urging others to be healthy: "Intravention" by injection drug users as a community prevention goal. *AIDS Education and Prevention*, 16(3), 250–263. 10.1521/aeap.16.3.250.35439 [PubMed: 15237054]
- Fuhse J, & Mützel S. (2011). Tackling connections, structure, and meaning in networks: Quantitative and qualitative methods in sociological network research. *Quality & Quantity*, 45(5), 1067–1089.
- Goldsmith DJ (2004). *Communicating social support*. Cambridge University Press.
- Heath A, Kerr T, Ti L, Kaplan K, Suwannawong P, Wood E, & Hayashi K. (2016). Healthcare avoidance by people who inject drugs in Bangkok, Thailand. *Journal of Public Health*, 38(3), e301–e308. 10.1093/pubmed/fdv143 [PubMed: 26491067]
- Hennink MM, Kaiser BN, & Marconi VC (2017). Code saturation versus meaning saturation: How many interviews are enough? *Qualitative Health Research*, 27(4), 591–608. 10.1177/1049732316665344 [PubMed: 27670770]
- Holt-Lunstad J, & Uchino B. (2015). Social support and health In Glanz K, Rimer BK, & Viswanath KV (Eds.), *Health behavior: Theory, research, and practice* (pp. 183–204). Jossey-Bass.
- Huang GC, Unger JB, Soto D, Fujimoto K, Pentz MA, Jordan-Marsh M, & Valente TW (2014). Peer influences: The impact of online and offline friendship networks on adolescent smoking and alcohol use. *Journal of Adolescent Health*, 54(5), 508–514. 10.1016/j.jadohealth.2013.07.001
- Kadushin C. (2012). *Understanding social networks: Theories, concepts, and findings*. Oxford University Press, USA.
- Klassen BJ, Lachowsky NJ, Lin SY, Edward JB, Chown SA, Hogg RS, . . . Roth EA (2017). Gay men's understanding and education of new HIV prevention technologies in Vancouver, Canada. *Qualitative Health Research*, 27(12), 1775–1791. 10.1177/1049732317116419 [PubMed: 28936925]
- Koehly LM, Peterson SK, Watts BG, Kempf KK, Vernon SW, & Gritz ER (2003). A social network analysis of communication about hereditary nonpolyposis colorectal cancer genetic testing and family functioning. *Cancer Epidemiology, Biomarkers & Prevention*, 12(4), 304–313.
- Kuo I, Olsen H, Patrick R, Phillips G II, Magnus M, Opoku J, . . . Greenberg A. (2016). Willingness to use HIV pre-exposure prophylaxis among communityrecruited, older people who inject drugs in Washington, DC. *Drug and Alcohol Dependence*, 164, 8–13. 10.1016/j.drugalcdep.2016.02.044 [PubMed: 27177804]
- Latkin CA (1998). Outreach in natural settings: The use of peer leaders for HIV prevention among injecting drug users' networks. *Public Health Reports*, 113(Suppl. 1), 151–159. [PubMed: 9722820]
- Latkin CA, Hua W, & Davey MA (2004). Factors associated with peer HIV prevention outreach in drug-using communities. *AIDS Education and Prevention*, 16(6), 499–508. 10.1521/aeap.16.6.499.53794 [PubMed: 15585427]
- Liu H. (2016). Egocentric network and condom use among mid-age female sex workers in China: A multilevel modeling analysis. *AIDS Patient Care and STDs*, 30(4), 155–165. 10.1089/apc.2015.0349 [PubMed: 27028182]
- Luoma JB, Twohig MP, Waltz T, Hayes SC, Roget N, Padilla M, & Fisher G. (2007). An investigation of stigma in individuals receiving treatment for substance abuse. *Addictive Behaviors*, 32(7), 1331–1346. 10.1016/j.addbeh.2006.09.008 [PubMed: 17092656]
- MacIntyre A. (1967). Egoism and altruism In Edwards P (Ed.), *The encyclopedia of philosophy* (pp. 426–466). Macmillan.
- Mason M. (2010). Sample size and saturation in PhD studies using qualitative interviews. *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research*, 11 <https://www.qualitative-research.net/index.php/fqs/article/view/1428>
- Massachusetts Department of Public Health. (2018). CDC joins Department of Public Health in investigating HIV cluster among people who inject drugs. <https://www.mass.gov/news/cdc-joins-department-of-public-health-in-investigating-hiv-cluster-among-people-who-inject>
- McPherson M, Smith-Lovin L, & Cook JM (2001). Birds of a feather: Homophily in social networks. *Annual Review of Sociology*, 27(1), 415–444. 10.1146/annurev.soc.27.1.415

- Montgomery CM, Lees S, Stadler J, Morar NS, Ssali A, Mwanza B, . . . Pool R. (2008). The role of partnership dynamics in determining the acceptability of condoms and microbicides. *AIDS Care*, 20(6), 733–740. 10.1080/09540120701693974 [PubMed: 18576176]
- Moreno CL (2007). The relationship between culture, gender, structural factors, abuse, trauma, and HIV/AIDS for Latinas. *Qualitative Health Research*, 17(3), 340–352. 10.1177/1049732306297387 [PubMed: 17301342]
- Mutchler MG, McDavitt B, Ghani MA, Nogg K, Winder TJA, & Soto JK (2015). Getting PrEPared for HIV prevention navigation: Young black gay men talk about HIV prevention in the biomedical era. *AIDS Patient Care and STDs*, 29(9), 490–502. 10.1089/apc.2015.0002 [PubMed: 26121564]
- Neaigus A, Reilly KH, Jenness SM, Hagan H, Wendel T, & Gelpi-Acosta C. (2013). Dual HIV risk: Receptive syringe sharing and unprotected sex among HIV-negative injection drug users in New York City. *AIDS and Behavior*, 17, 2501–2509. 10.1007/s10461-013-0496-y [PubMed: 23640654]
- Newcomb ME, Mongrella MC, Weis B, McMillen SJ, & Mustanski B. (2016). Partner disclosure of PrEP use and undetectable viral load on geosocial networking apps: Frequency of disclosure and decisions about condomless sex. *JAIDS: Journal of Acquired Immune Deficiency Syndromes*, 71(2), 200–206. 10.1097/qai.0000000000000819 [PubMed: 26761520]
- Nyamathi AM, Lewis C, Leake B, Flaskerud J, & Bennett C. (1995). Barriers to condom use and needle cleaning among impoverished minority female injection drug users and partners of injection drug users. *Public Health Reports*, 110(2), 166–172. [PubMed: 7630993]
- Orchard T, Murie A, Salter K, Elash H-L, Bunch M, Middleton C, & Benoit C. (2020). Balance, capacity, and the contingencies of everyday life: Narrative etiologies of health among women in street-based sex work. *Qualitative Health Research*, 30, 518–529. [PubMed: 31216937]
- Perry BL, Pescosolido BA, & Borgatti SP (2018). *Egocentric network analysis: Foundations, methods, and models*. Cambridge University Press.
- Pilgrim N, Jani N, Mathur S, Kahabuka C, Saria V, Makyao N, . . . Pulerwitz J. (2018). Provider perspectives on PrEP for adolescent girls and young women in Tanzania: The role of provider biases and quality of care. *PLoS ONE*, 13(4), Article e0196280. 10.1371/journal.pone.0196280
- Polit DF, & Beck CT (2008). *Nursing research: Generating and assessing evidence for nursing practice*. Lippincott Williams & Wilkins 10.1016/j.nepr.2013.04.001
- Rogers EM (1995). *Diffusion of innovations*. Free Press.
- Scott J, & Carrington PJ (2011). *The SAGE handbook of social network analysis*. SAGE.
- Seeman TE (1996). Social ties and health: The benefits of social integration. *Annals of Epidemiology*, 6(5), 442–451. 10.1016/S1047-2797(96)00095-6 [PubMed: 8915476]
- Shrestha R, & Copenhaver M. (2018). Exploring the use of pre-exposure prophylaxis (PrEP) for HIV prevention among high-risk people who use drugs in treatment. *Frontiers in Public Health*, 6, Article 195. 10.3389/fpubh.2018.00195
- Shrestha R, Karki P, & Altice FL (2017). Correlates of willingness to initiate pre-exposure prophylaxis and anticipation of practicing safer drug- and sex-related behaviors among high-risk drug users on methadone treatment. *Drug and Alcohol Dependence*, 173, 107–116. 10.1016/j.drugalcdep.2016.12.023 [PubMed: 28214391]
- Stein M, Thurmond P, & Bailey G. (2014). Willingness to use HIV pre-exposure prophylaxis among opiate users. *AIDS and Behavior*, 18(9), 1694–1700. 10.1007/s10461-014-0778-z [PubMed: 24752703]
- Theall KP, Sterk CE, Elifson KW, & Kidder D. (2003). Factors associated with positive HIV serostatus among women who use drugs: Continued evidence for expanding factors of influence. *Public Health Reports*, 118(5), 415–424. 10.1016/s0033-3549(04)50273-x [PubMed: 12941854]
- Tillema T, Dijst M, & Schwanen T. (2010). Face-to-face and electronic communications in maintaining social networks: The influence of geographical and relational distance and of information content. *New Media & Society*, 12(6), 965–983. 10.1177/1461444809353011
- Tobin KE, Kuramoto SJ, Davey-Rothwell MA, & Latkin CA (2011). The STEP into Action study: A peer-based, personal risk network-focused HIV prevention intervention with injection drug users in Baltimore, Maryland. *Addiction*, 106(2), 366–375. 10.1111/j.1360-0443.2010.03146.x [PubMed: 21054614]

- Tsai AC, Lucas M, & Kawachi I. (2015). Association between social integration and suicide among women in the United States. *JAMA Psychiatry*, 72(10), 987–993. 10.1001/jamapsychiatry.2015.1002 [PubMed: 26222043]
- U.S. Department of Health and Human Services. (2018). What is the U.S. opioid epidemic? <https://www.hhs.gov/opioids/about-the-epidemic/index.html>
- Van der Elst EM, Mbogua J, Operario D, Mutua G, Kuo C, Mugo P, . . . Sanders EJ (2013). High acceptability of HIV pre-exposure prophylaxis but challenges in adherence and use: Qualitative insights from a phase I trial of intermittent and daily PrEP in at-risk populations in Kenya. *AIDS and Behavior*, 17(6), 2162–2172. 10.1007/s10461-012-0317-8 [PubMed: 23080358]
- van der Straten A, Stadler J, Montgomery E, Hartmann M, Magazi B, Mathebula F, . . . Soto-Torres L. (2014). Women's experiences with oral and vaginal pre-exposure prophylaxis: The VOICE-C qualitative study in Johannesburg, South Africa. *PLoS ONE*, 9(2), Article e89118. 10.1371/journal.pone.0089118
- Walters SM, Reilly KH, Neaigus A, & Braunstein S. (2017). Awareness of pre-exposure prophylaxis (PrEP) among women who inject drugs in NYC: The importance of networks and syringe exchange programs for HIV prevention. *Harm Reduction Journal*, 14(1), Article 40. 10.1186/s12954-017-0166-x
- Ware NC, Wyatt MA, Haberer JE, Baeten JM, Kintu A, Psaros C, . . . Bangsberg DR (2012). What's love got to do with it? Explaining adherence to oral antiretroviral pre-exposure prophylaxis for HIV-serodiscordant couples. *JAIDS: Journal of Acquired Immune Deficiency Syndromes*, 59(5), 463–468. 10.1097/qai.0b013e31824a060b [PubMed: 22267018]
- World Health Organization. (2015). Policy brief: Pre-exposure prophylaxis (PrEP): WHO expands recommendation on oral pre-exposure prophylaxis of HIV infection (PrEP). <https://apps.who.int/iris/handle/10665/197906>
- Worth D. (1989). Sexual decision-making and AIDS: Why condom promotion among vulnerable women is likely to fail. *Studies in Family Planning*, 20(6), 297–307. 10.2307/1966433 [PubMed: 2623725]
- Zhou YR (2008). Endangered womanhood: Women's experiences with HIV/AIDS in China. *Qualitative Health Research*, 18(8), 1115–1126. 10.1177/1049732308319924 [PubMed: 18650566]

Figure 1.
Frequency of reported relationship type and whether or not PrEP was discussed.
Note. PrEP = pre-exposure prophylaxis; WWID = women who inject drugs

Figure 2.
Conceptual model of enabling factors and motivations for PrEP-related interpersonal communication.

Note. PrEP = pre-exposure prophylaxis.