Published in final edited form as:
J Subst Abuse Treat. 2015 January ; 48(1): 13–20. doi:10.1016/j.jsat.2014.07.002.

Injection and Sexual HIV/HCV Risk Behaviors Associated with Nonmedical Use of Prescription Opioids among Young Adults in New York City

Pedro Mateu-Gelabert, Ph.D.[1], **Honoria Guarino, Ph.D.**[1], **Lauren Jessell, L.S.W.**[1], and **Anastasia Teper, M.A.**[1]

[1]National Development and Research Institutes, Inc., New York, NY, USA

Abstract

Prevalence of nonmedical prescription opioid (PO) use has increased markedly in the U.S. This qualitative study explores the drug-use and sexual experiences of nonmedical PO users as they relate to risk for HIV and HCV transmission. Forty-six New York City young adult nonmedical PO users (ages 18–32) completed in-depth, semi-structured interviews. Despite initial perceptions of POs as less addictive and safer than illegal drugs, PO misuse often led to long-term opioid dependence and transition to heroin use and drug injection. Injectors in the sample reported sporadic syringe-sharing, frequent sharing of non-syringe injection paraphernalia and selective sharing with fellow injectors who are presumed "clean" (uninfected). Participants reported little knowledge of HCV injection-related risks and safer injection practices. They also reported engaging in unprotected sex with casual partners, exchange sex and group sex, and that PO misuse increases the risk of sexual violence. Prevention efforts addressing HIV/HCV risk should be targeted to young nonmedical PO users.

Introduction

The prevalence and incidence of nonmedical prescription opioid (PO) use[1] have increased markedly in the U.S. during the past 20 years, particularly among young adults (SAMHSA, 2013). Rates in New York City, the location of this study, mirror this nationwide trend, with self-reported nonmedical use of POs increasing by 33.3% from 2002/2003 to 2010/2011 (NYC Mayor's Task Force on Prescription Painkiller Abuse, 2013) POs have the highest prevalence of nonmedical use among all classes of prescription drugs, and the rise in such use is linked to concomitant increases in opioid dependence, accidental overdose and death

Corresponding Author Contact Information: Pedro Mateu-Gelabert, Ph.D., National Development and Research Institutes, Inc., 71 West 23rd Street, 4th Floor, New York, NY 10010, Tel: 212-845-4572, Fax: 917-438-0894, mateu-gelabert@ndri.org.

[1]Nonmedical use of prescription drugs is defined by SAMHSA as the "use of prescription drugs not prescribed for the respondent or the use of these drugs only for the experience or feeling they cause" (SAMHSA, 2013). In this paper, "nonmedical use" is considered to be synonymous with "misuse" with regard to prescription drug-taking.

(SAMHSA, 2013; Dhalla, Persaud, Juurlink, 2011). Despite this, evidence suggests that nonmedical PO users tend to view their use as safer and more socially acceptable than illicit drug use, and that initiation of opioid use often begins with POs (Daniulaityte, Falck & Carlson, 2012; Quintero, Peterson & Young, 2006; Mars, Bourgois, Karandinos, Montero & Ciccarone, 2013).

The prevalence of heroin use has also been rising steadily in the U.S in recent years. According to the National Survey on Drug Use and Health, the number of individuals reporting past year heroin use almost doubled between 2007 (373,000) and 2012 (669,000) (SAMHSA, 2013). Emerging evidence suggests this may be linked to PO users who transition from oral and/or intranasal PO use to heroin use, with POs providing the entryway to regular opioid use, and ultimately, heroin injection (Mars, et al., 2013). This drug-use trajectory appears to have become increasingly common over the past ten years; in one study, 77.4% of participants in a 2008–2010 cohort reported using POs nonmedically prior to initiating heroin use, as compared to 66.8% in the 2002–2004 cohort (Jones, 2013). While oral intake of POs is most common, recent findings also suggest that a significant minority of nonmedical users administer POs via injection (e.g., Rosenblum et al., 2007; Surratt, Kurtz & Cicero, 2011).

Drug injection can be especially risky for young, newly-initiated injectors such as those who have recently transitioned from oral or intranasal PO or heroin use to injection. Research conducted with heroin users has consistently shown that new injectors (generally in the 16–30 year-old age range) have especially high rates of risky injection-related behaviors (Thorpe et al., 2002; Garfein et al., 2007). Recent research documents similar patterns among injecting PO misusers (Surratt, Kurtz and Cicero, 2011; Lankenau et al., 2012; Johnson et al., 2013). Behaviors such as sharing syringes and other drug-injection equipment, use of shooting galleries and communal sharing of drug solution in group-injection situations have been well-documented among young heroin injection initiates and may place them at high risk for HIV and/or HCV transmission (Fuller et al., 2003; Goldsamt, Harocopos, Kobrak, Jost & Clatts, 2010; Harocopos, Goldsamt, Kobrak, Jost & Clatts, 2009; Guarino, Moore, Marsch & Florio, 2012).

While research on the sex-related disease risk of nonmedical PO users is scarce, there is some emerging evidence that various groups of nonmedical PO users, including MSM (men who have sex with men), college students and 18–21 year-olds in treatment for opioid dependence, may engage in high levels of sexual risk behaviors (e.g., multiple sex partners, unprotected sex) that increase their vulnerability to HIV and other STIs (Buttram et al., 2013; Benotsch, Koester, Luckman, Martin & Cejka, 2011; Meade et al., 2010). Notably, two new studies conducted with PO misusers in treatment for opioid dependence found that certain subgroups – specifically, polydrug users and younger, White individuals –were more likely to report engaging in sexual risk behavior (Meade et al., 2014; O'Grady, Surratt, Kurtz & Levi-Minzi, 2014).

These emerging findings on the sexual risk behavior of PO misusers are supported by older research indicating that drug use in general is associated with high levels of sexual behavior that may present risk for HIV and other STI transmission (Kral et al., 2009, Strathdee &

Sherman, 2003, Friedman et al., 2003). Young IDUs (aged 18–30) have been found to report higher rates of risky sexual behavior, such as concurrent partnerships, short-duration sexual relationships and group sex participation, than older IDUs (Latka et al., 2001; DiClemente, Salazar, Crosby & Rosenthal, 2005; Krieger, 2001; Friedman et al., 2008).

While there is, to our knowledge, no research on the relationship between sexual assault and nonmedical PO use specifically, substance use in general has been associated with sexual violence and victimization (e.g., Resnick et al., 2012; Abbey, 2011). For example, in a study of male and female college students who reported experiencing sexual violence, most incidents occurred after a party in which both the victim and the perpetrator had been drinking and/or using drugs, and "being too intoxicated to consent" was the most common context in which an assault was reported to have occurred (Hines, Armstrong, Palm Reed & Cameron, 2012).

Despite indications that young PO misusers are at considerable risk of acquiring HCV and/or HIV through injection and sexual risk behaviors associated with drug use, little research has explored the social pathways by which PO misuse may lead to a heightened risk of infection. Thus, the purpose of the present study is to begin filling this gap by exploring the drug-use and sexual experiences of young adult (ages 18–32) nonmedical PO users as they relate to risk for HIV and HCV transmission.

Methods

In this qualitative study, 46 New York City young adults (ages 18–32) who engaged in nonmedical prescription opioid use were recruited for individual interviews. Twenty-three participants were referred by service providers (drug treatment programs, an outreach program for young injectors, key informants, or other research projects). The remaining 23 participants were recruited via chain-referral from other participants. In order to be eligible, study participants had to: report using POs for nonmedical reasons at least once in the past 30 days; live in one of the 5 boroughs of New York City; speak English or Spanish; and be able to comprehend study procedures and provide informed consent. Eligibility was determined through self-report, using a brief verbal screening protocol. Each participant was compensated $40 at the conclusion of the interview. All study activities were approved by the Institutional Review Board of the National Development and Research Institutes, Inc., and all participants provided written informed consent prior to being interviewed.

In-depth, semi-structured interviews (~90 minutes in length) inquired about key domains directly related to our research aims. This interview format is flexible; the exact sequence in which topical domains and open-ended probes are presented can vary to let interviewees introduce or elaborate on topics of particular relevance to their experience. Topical domains addressed in the interview protocol included: drug use trajectories (including concurrent or intermittent use of other substances, patterns of escalation in opioid use, and drug-use transitions – that is, transitions among different POs, from POs to heroin and to new routes of administration); contexts of initial and later PO misuse; evolving perceptions of POs vs. heroin; sexual and drug-use networks and practices, with a focus on behaviors that may present risk for HIV/HCV transmission; and HIV/HCV knowledge and perceptions of risk.

Interviews were digitally audio-recorded and transcribed verbatim, and the resulting transcripts were entered into the software program *Atlas.ti* to facilitate coding and data analysis. The content-based data analysis was informed by the tenets and procedures of grounded theory (Charmaz, 2006; Glaser & Strauss, 1967), an inductive approach for coding textual data to identify key themes and patterns. An initial code list, based on the research aims, was elaborated and refined in an iterative process using a small subset of transcripts; the final code list was then used to code the remainder of the dataset. Theoretical interpretations resulted from a multifaceted comparative analysis that attended to both the most commonly voiced themes and inconsistencies among interviewees' accounts, explored emergent ideas, and aimed to create connections between key themes and individuals' lived experiences. All participant names have been replaced with pseudonyms; additionally, any names referenced in interview quotes are represented with a first initial only.

In addition to the thematic analysis, key variables (e.g., the mean age at which participants initiated nonmedical PO use and heroin use; the number of participants who reported ever injecting any drug) were quantified in order to more precisely characterize dominant patterns within the sample. As part of this analysis, interview data were reviewed to make a posthoc, qualitative assessment of each participant's socioeconomic status (SES). Each participant was assigned to one of three SES categories – lower/lower-middle class, middle class or upper middle/upper-class – based on a composite of their parent(s)' vocation and annual income, presence of childhood experiences of homelessness, and the type of high school they attended (i.e., public vs. private). This SES index was intended to characterize participants' SES while they were growing up; participants' current employment (or homelessness) was not used to determine SES as this was likely to be heavily influenced by their (in many cases) years-long history of serious drug use.

Results

The sociodemographic characteristics of the 46 study participants are listed in Table 1.

Interviews revealed a range of sexual and injection risk behaviors related to nonmedical PO use and participants' perceptions of these risks. 1) At the time of initiating PO misuse, participants perceived POs as safer, less harmful and less addictive than illicit drugs, a perception which eased potential concerns regarding opioid experimentation. 2) The majority (32/46; 70%) of participants reported a pattern of escalating PO use over time, and eventually transitioned from nonmedical PO use to heroin use in response. 3) Most participants (29/46; 63%) reported changing their primary route of opioid administration over time, in particular, transitioning from oral/intranasal use of POs to injection use of heroin and/or POs. 4) Injection risk behavior was accompanied by limited injection-related HIV and, particularly, HCV knowledge. 5) About one-half of the heroin injectors in the sample (17/29; 59%) began occasionally injecting POs after they had progressed to heroin injection. 5) Some participants reported using POs to facilitate and enhance sexual experiences, a practice that frequently led to casual sex with fellow PO users and riskier sexual practices (e.g., unprotected sex with multiple partners, group sex). 6) Nonmedical PO use was described as placing female users at heightened risk of sexual violence (e.g., rape,

attempted rape, unwanted sexual contact and/or threats). Participants' basic drug-use characteristics are summarized in Table 2.

Initiation of Nonmedical PO Use and Early Perceptions of POs

Most sample members (34/46; 74%) initiated nonmedical PO use in their teens (mean age of initiation 17.9 years; range: 12–27 years) in a social context with junior high or high school peers. For most participants, first PO misuse was via the oral route of administration; eventually, all participants transitioned to crushing and snorting the pills. At the beginning of their use, participants described having easy, cost-free access to POs from household sources, such as their own relatives' or their friends' relatives' stored medications.

> I first used opiate painkillers when I was 17. It was very simple. Basically somebody [stepfather] in my household had a massive back surgery. He didn't really like the way they made him feel, so they were just sitting, you know, sort of around the house. He would get it filled and never take them and never seemed to notice they were missing. I just kind of … I was taking them. (Alice, age 25, White, Female)

Early PO misuse was typically described as taking place within a normative peer context in which poly-drug and poly-pharmaceutical use was widely accepted. Some participants spoke of attending "pill parties" where POs were used concurrently with benzodiazepines, prescription stimulants and marijuana.

> We could be from like 4 to 15 people. There were all these pills on the table constantly. It was any pill that anyone had, we'd be like, "What do you have?" One of us would have weed and we would change it for, it would be like, "I'll give you an Ambien for a weed" or like "Here's some Vicodin, try that," and we would just make cocktails. (Veronica, age 22, White, Female)

At the time of initiation, POs and other prescription drugs such as benzodiazepines and stimulants were typically viewed as relatively harmless recreational drugs, akin to marijuana. The status of prescription drugs, including POs, as 'medication' lent their recreational use an aura of 'doctor-approved' safety. In comparison to illegal drugs such as heroin, POs were perceived as having less addictive potential, being more reliable in terms of dosage and potency, and as being "cleaner," meaning chemically pure and not cut with unknown adulterants.

> I was scared of heroin. I was scared. Prescription pills, I said, doctors give it out, it's not that bad. (JoAnn, 26, White, Female)

> One Roxy [Roxycodone], you know what you're getting, you're not getting some bag with God knows what in it, you're not getting ripped off, it's coming from a pharmacy, from some pharmaceutical company, so you know exactly what you're getting. (Bruce, age 26, White, Male)

This valence of safety and acceptability was also attached to prescription opioid *users* whom participants perceived to be more trustworthy, disease-free and less overtaken by addiction than heroin users. POs were free of the stigma associated with street drugs and those who use them.

> If you did heroin or you smoked crack, you were a dope fiend or a crack head. You know, those two things were strictly off limits socially to the kids in my neighborhood. (John, age 21, White, Male)

At the time of initiating PO misuse and during the period in which they exclusively used prescription drugs, many participants perceived the use of illegal drugs and drug injection as highly undesirable and considered them to be a form of drug use in which they did not anticipate ever engaging.

> Growing up, you never think you're going to do heroin, let alone like put a needle in your arm. We were like, how does this kid put a needle in his arm? That's disgusting. We didn't say it to his face, but like, "Yo, T is like really strung out. He's a junkie now. We don't even want to chill with him." (Mary, age 18, White, Female)

Those who had family members who had used heroin referred to those experiences as furthering their determination never to use heroin.

> I've seen like my uncle when he's on heroin, just like nodding off, not being present, and just like speaking gibberish, so I'm just like I would never, never touch it.
>
> (Latisha, age 23, Black, Female)

Increasing Opioid Intake and Transition to Heroin

Of the 46 participants sampled, 70% (32/46) eventually began using heroin. For these individuals, heroin typically became their primary drug, displacing POs as their opioid of choice. The difference between participants' mean age at first PO use and mean age at first heroin use is 1.3 years. For the majority of participants, PO misuse escalated over time; as physical dependence emerged, these participants increased their PO intake (either by consuming a larger number or milligram dosage of pills or by switching to a higher-potency PO) in order to feel the euphoric effects and/or avoid withdrawal.

> When Vicodin stopped hitting I'd take the Percocet. From the Percocet it went to more Percocets and it went to the Roxy, oxycodone. (Zeus, age 23, White, Male)

As tolerance to the pleasurable effects of opioids developed and PO intake increased, the cost of POs became difficult to maintain, even for those participants who had access to the money of high-income parents. The availability of POs also became challenging as the amount of the drug needed increased. With an elevated PO intake, traditional sources (e.g., relatives' prescribed medications, buying prescriptions from friends) were not able to provide a steady and sufficient flow of opioids to manage a high level of dependence. Some participants also reported an abrupt difficulty in accessing POs after 2010, when tamper-resistant forms of OxyContin and other POs (designed to deter misuse by "gelling" when a user attempts to crush the pill to allow for intranasal or injection administration) began to be introduced. In the following quote, Ethan describes how difficulty accessing non-tamper-resistant POs and increased police pressure on pill markets led him to switch to heroin.

> It's a lot harder to get pills now because they put the gel in it and you can't sniff them and they're more expensive…[And], you know, people robbing pharmacies, going nuts over pills, being so dope sick and they can't get nothing. Look at that guy in Long Island fucking shot the people over Vicodin. But that's one person and then everybody gets a fuckin' bad name and then they fuck it up for everyone. If you wanted to get heroin, it was easier to get than the pills. (Ethan, age 24, White, Male)

Although many participants were initially determined not to use heroin, when increased PO intake became very costly (some users report spending as much as $80–$100 daily on POs), heroin increasingly became a more cost-effective alternative to manage their opioid dependence. The street price of POs in New York City has been significantly higher than an equivalent amount of heroin for several years and almost all participants who transitioned from POs to heroin reported that the cost savings associated with heroin use was their primary motivation.

> Heroin was such a cheaper alternative. You take one 80mg pill that costs $50… whereas heroin you're paying half the price. (Alice, age 25, White, Female)

In response to difficulties obtaining and affording a sufficient supply of POs, many participants sought out new opioid sources, and began to meet heroin users. Through these new contacts, their perceptions of and interest in heroin began to change, as these new network connections provided them with information regarding the perceived advantages of a heroin high, where to obtain heroin and how to use it. Oftentimes, heroin was promoted by peers as a cost-effective alternative to POs. Heroin was also frequently preferred over POs because it was reported to provide a better and longer-lasting high.

> We all [participant, 17 at the time, and peers] quit taking the pills because everyone was like, if you could get dope for cheap and I can get twice as high. We walked through it logically, why go buy pills for sixty bucks when I could buy six bags of dope? (Ethan, age 24, White, Male)

In the following passage, Mary describes her progression to increased PO intake and eventual transition to heroin as occurring soon after her peers, with whom she initiated PO misuse, did so. This group-level pattern of behavior change was accompanied by a corresponding shift in group norms with heroin use becoming increasingly acceptable within the peer network. This type of network-wide change in drug use norms made it easier, on both a psychological and practical level, for some participants who had previously vowed never to use heroin to do so.

> One day all my friends that were hanging out with me, they were like all my age, and they were all addicted to blues [oxycodone] too, they were like "Yeah, call J. We want, heroin." They did it and I'm like, "No!" And I didn't do it yet 'cause I was still kind of scared. And then the next day, I was like, "Yeah, I wanna do it. Like you guys look so fracked. I'm spending too much money on blues and I really don't have money." We went into the woods, and we just all—like I sniffed one. It was just like an indescribable feeling. (Mary, age 18, White, Female)

Transition to Injection Drug Use, Injecting Practices and HIV/HCV Risk

Sixty-three percent (29/46) of the total sample reported ever injecting any drug. For the majority of participants, initiation of injection drug use took place *after* initiation of heroin use. Of the 32 sample members who reported ever using heroin, 16% (5/32) initiated heroin use via injection, while 84% (27/32) did so intranasally. Eventually, all but three of the heroin users either transitioned to injection as their primary route of heroin administration or injected heroin on occasion. Transition to injection was fairly fast, taking place within a year or less of first heroin use for a majority of participants (62%; 18/29). Among those in the sample who had ever injected any drug, the mean age at first injection was 19.1 years (range 13–28 years).

Participants discussed a number of concurrent motivating factors which led to their transition to injection. Many discussed how heroin injection was a much more cost-effective option than sniffing. Due to increased opioid tolerance, injection – which was often described as producing a "better" and "more intense" high – appeared more attractive. Also, as participants' drug-using networks expanded to include more heroin users, injection tended to become normalized and encouraged by peers who were already utilizing this route of administration.

> I took the homeless kid that was on the street, and I knew that obviously the homeless kids are usually doing dope, so I said, "Do you want me to get some dope?" And he was like, "Yeah." So I had my dealer come over, and so he sees me like pouring it out trying to sniff it, and he goes, "I can't watch you do that, I can't watch you like waste heroin like that by sniffing it." And I was like, "Well, I'm really bad at shooting myself up." And he was like, "Well, let me shoot you up." (Veronica, age 25, White, Female)

Participants typically described their first injection experience as involving a sterile syringe, most often provided by a fellow user who injected the participant. Often, participants injected in the company of friends or sex partners whom they had known for some time and with whom they had used POs in the past.

> He [boyfriend] used a clean one the first time he shot me. He shot me up at first for a good 3 to 4 months, we shared [syringes] on and off, one time when we just had one, then we got sloppy and did not care anymore. (Alissa, age 22, White, Female)

These closer network members were perceived as "clean" (i.e., uninfected with HIV or HCV), and hence "acceptable to share with" in syringe shortage situations. Participants described instances of syringe shortages occurring when they had used all their clean syringes or when their customary sources of sterile syringes, such as pharmacies, were closed. In these instances, syringes were often shared among peers and sexual partners.

> I had a girlfriend I was using with when I first started shooting heroin. I've shared needles with her. One or two friends that weren't like junkies in the park. They lived in houses with their parents. M, I use with him, and I've used his needles before. He's been in the hospital recently. He told me he didn't have anything [HIV or HCV]. If I don't have one, I've used his needles once or twice. (Jeremy, age 27, White, Male)

Sample members (regardless of their SES) tended to perceive themselves to be at less risk of HIV and HCV infection than "street" drug users. Many participants reported engaging in "selective sharing" with friends and sexual partners based on feelings of similar social affiliation and background. Such practices leave these participants exposed to HIV/HCV risk associated with unsafe injection practices.

> People think, I know this person from high school, his mom and dad are middle class, wealthy. They think that that person will not get Hep C or HIV, and say, "Do you have anything [disease]? No, then it's okay for us to share needles?" (Linda, age 31, White, Female)

Sharing of other injection paraphernalia (e.g. cookers, filters, drug-diluting water) was a widespread practice when participants injected in the company of others. Such behaviors were more common than syringe sharing, due in part to participants' lack of awareness of the disease risk, particularly for HCV, associated with this practice.

Injection-related HIV and HCV Knowledge and Use of Harm Reduction Services

Participants uniformly described having had little knowledge of HCV when they first began injecting. Many participants indicated that they had received some limited education about the HIV risk associated with syringe sharing, generally from school-based health education programs, but this was not the case for HCV.

> They teach you in health class a lot about HIV. But they don't really talk much about Hep C, so I don't think a lot of people don't know how you get it….They need to teach more about that. There isn't enough information at all. (Alissa, age 22, White, Female)

Participants also reported having few, if any, discussions with their fellow opioid users about HCV, its high prevalence among drug injectors or the ways in which it is transmitted (e.g. through sharing syringes or injection equipment such as cookers, cotton filters, drug-dilution water, etc.).

> I don't think that anybody I have ever talked to about drugs has ever mentioned Hep C. So they wouldn't be aware of it. I don't think it's on their register at all. (Howard, age 29, White, Male)

A small proportion of the sample had learned about HCV through utilizing Syringe Exchange Programs (SEPs), and engaged in safer injection practices to avoid transmitting the virus. Yet, among those participants who were regular injectors, only a minority used SEPs/harm reduction services (31%, 9/29, of injectors) as a source of sterile syringes and other injection paraphernalia. Because the cost of purchasing sterile syringes at a pharmacy was not an impediment for most participants, many had little motivation to visit SEPs which function as the primary source of harm reduction education for drug users. These non-SEP-using participants were, therefore, unlikely to be informed about safer injection practices. In fact, many participants reported not knowing where harm reduction services in New York City that provide clean syringes and other services to drug users are located and some even reported not being aware of the existence of such services.

Some participants were unaware of the HCV risk associated with injection drug use at the time of their study interview. Others reported that they only learned about HCV after they had been diagnosed with the virus themselves, while others became aware of it after an individual in their drug-use network learned they were infected. Overall, participants were united in emphasizing the importance of young people being educated about HCV and the ways it can be transmitted.

PO Injection and HIV/HCV Risk

Forty-six percent (21/46) of the sample reported injecting POs, usually on an occasional basis. Only four of these participants injected POs prior to their first use of heroin (i.e., when intranasal or oral administration of POs was their primary form of opioid use), while the remainder did so after having been initiated into injection via heroin use. PO injection mainly took place when heroin was difficult to access, unavailable, or of poor quality.

> Injecting pills was probably because I was injecting the heroin and then, you realize you could just crush the pill, put it in water and you feel a rush. You could inject Dilaudid or you could do Roxy's, Oxy's. (Ethan, age 24, White, Male)

In addition to knowledge gained from fellow users in their networks, the internet was cited as an important source of information regarding which POs are best to inject and methods, such as cold-water filtering, to extract the opioid from the other medications (e.g., acetaminophen or aspirin) contained in certain pills.

> I've tried injecting pills…I learned everything from the internet. I mean, cold water filtering, which is where you basically extracting all the binders. (Bruce, age 26, White, Male)

Given that opioid extraction can be a time-consuming and cumbersome process, most participants preferred POs, such as immediate-release oxycodone, that can be crushed, dissolved in water and injected without extraction. Even POs that do not contain acetaminophen or aspirin that must be filtered typically require more water to dissolve than heroin because of pill fillers. As a result, PO injection (in comparison to heroin injection) usually requires either bigger syringes or, if small syringes are used, a greater number of injections per dose, which in turn increases the potential for exposure to blood-borne viruses. Some participants also described reusing cotton filters that had been previously used by peers in order to access the PO-containing residue within them. Sharing used filters can result in HIV or HCV transmission.

I: Okay. Do you use bigger syringes then if you—for Oxys?

Brenda: Yes. You need more water just because you have to crush up the pill.

I: What about filters? Do you save the filters?

Brenda: You can so that you can push them down later and get some drug

I: Did you ever share filters with other people?

Brenda: Yes.

(Brenda, age 24, White, Female)

Sexual Risk Behavior and Nonmedical PO Use

Nonmedical PO use was also linked to risky sexual behavior which may increase the likelihood of HIV/HCV transmission. Many participants reported engaging in casual, unprotected sex while using POs.

> Well, when you're high, you're not thinking straight. I mean, like you're probably less likely to use a condom when you're on a substance. Especially opiates, I find a lot of people get really horny, for lack of a better word, on opiates. (Linda, age 31, White, Female)

As participants' PO use progressed, their network of drug-using peers expanded, often coming to include older drug users and injectors. Because drug-use and sexual networks typically overlapped among these young adults, the pool of individuals with whom participants had sex also tended to become riskier over time. The individuals who introduced participants to heroin were often older, more experienced heroin users, and many female participants described being initiated into heroin use by an older, injection drug-using male sexual partner.

Participants also reported using POs to enhance their sexual experiences. Several male sample members reported using POs to improve their sexual performance; they explained that PO use helped them sustain an erection for longer periods of time while delaying ejaculation. Some participants reported knowing of non-regular PO users who would take POs specifically to enhance their sexual experiences.

> Dope dick that is what they call it. They want opioids because they know they are going to last longer. They want to impress the girl. [It acts] like Viagra but they get high at the same time. Two in one: you get high and fuck. (Zeus, age 23, While Male)

Similarly, some female participants described POs as heightening sexual arousal, thus increasing their interest in engaging in sexual activity.

> Opiates just make you—if you're shooting heroin or especially Oxys or Dilaudid, you get that pins and needles and it makes you warm in your crotch area and it makes you, you know, just feel good. Like it warms your body but it especially warms that area.
>
> (Chrystal, age 30, White, Female)

Both male and female participants reported that POs ease social anxieties and produce physical and emotional feelings of well-being, thereby facilitating casual sexual encounters.

> Me and my friends would get pills, sniff them together. You know, I would do them with girls. We would sniff pills and have sex. (John, age 21, White, Male)

For several heterosexual and MSM users, PO misuse was also associated with engaging in group sex (two or more sex partners at a given time or in a given setting). These participants

reported attending parties in which POs were used, often in combination with other drugs, and individuals engaged in unprotected sex with multiple partners.

Some heterosexual female and MSM participants reported exchanging sex for POs and/or having PO-using peers who did so. Some participants also reported receiving sexual favors for providing drugs to PO-using peers. Some exchanges were explicit, whereas other exchanges were subtle and implicit. For example, one male participant who sold POs reported receiving frequent offers from prospective buyers requesting drugs in exchange for sexual favors.

> She tried to hit me with, “Sometimes, you know, I get paid every two weeks so I might need something and we could work something out.” And I’m like, “Work something out?” “Like yeah, you know,” and she kind of gave me the wink and everything. If a person’s addicted to a certain substance and doesn’t have the funding to obtain it, they will use other means.”
>
> (Joe, age 32, African American, Male)

Both male and female participants reported that it was often assumed that providing free POs to a female user in a date/party setting would lead to a sexual exchange. Such implicit, unspoken assumptions (“I give you drugs, we have sex”) often led to sexual intercourse while high.

> I think that there is an expectation that if a man gets a woman high, she’s supposed to sleep with him or give him pleasure, and…Yes, that’s definitely happened and honestly, I have had sex, I think, with a couple people that I didn’t really want to just to shut them up.
>
> (Karen, age 30, White, Female)

Exchanging sex for drugs or money could place participants at risk for HIV infection, as it may increase the overall frequency of sexual activity and/or the number of sexual partners.

Nonmedical PO Use and Sexual Violence

Both male and female participants reported that female PO users are commonly subjected to unwanted sexual advances and sexual violence while high. According to participants’ reports, PO use can place users at a heightened risk for sexual assault (e.g. any unwanted sexual contact up to and including attempted rape or rape). In the following quote, JoAnn describes how her friend was sexually assaulted when she did not fulfill a man’s expectation of sex in return for pills:

> They were going out together. They went to eat and he was giving her pills the whole time that they were hanging. When she wanted to leave, he was like telling her to suck his dick. She was like no, not even happening, and he was like, “No, you have to.” And he was like grabbing her head and putting it there. She was, “No, no, no.” He punched her in the face and he said, “You’re supposed to have sex with me.” And that was all because he was just supplying her with pills all night. (JoAnn, age 26, White, Female)

Some participants also described a common perception of female PO users as unworthy of respect. For example, one male participant explained that in his neighborhood, female PO users are often referred to as "crack heads," implying that they are asking to be victimized and would do anything for drugs including easily exchanging sexual favors for them. In the following excerpt, Zeus describes a sexual exchange between three men and a woman who is referred to as a "crack head."

Zeus: The girl was high. When she was high, she let him and the next day, "You raped me! I didn't let you." Like that.

I: One guy will have sex with her because she was passed out.

Zeus: Yeah. Or like two or three guys that had sex.

I: Oh, with two or three guys and the girl was high on pills.

Zeus: Yeah, and at that time, she let them because she was high and the next day, she said, No, I didn't let you," you know.

I: And the next day she will say what?

Zeus: No, I didn't let you. You guys raped me, and this and that.

I: And the guys what?

Zeus: Go fuck! [laughs].

(Zeus, age 23, White Male)

The accounts of both male and female participants revealed a normative expectation that each individual PO user should be able to "handle their high." Implicit in this norm is the assumption that each PO user is ultimately responsible for their drug intake and should be able to gauge how much they can handle without losing their ability to protect themselves and remain aware of their surroundings. As such, the assumption is that when a user passes out due to PO or poly-substance use, they have wittingly placed themselves in a vulnerable position. In such circumstances, users can be perceived as legitimate "targets" for sexual abuse when passed out.

> Opioids increases the risk of rape. 100%. If they are girls and use drugs it is easier to take advantage of them. You touch them, they are not going to know, they are out. (Zeus, age 23, While Male)

Additionally, polysubstance use, particularly the use of opioids in conjunction with other CNS depressants such as benzodiazepines or alcohol, can place users at increased risk for sexual assault. The concurrent use of these substances can induce a semi-conscious state in which individuals may be unable to fend off unwanted sexual advances and, hence, vulnerable to sexual violence.

Discussion

The above findings suggest that nonmedical PO use is associated with several vectors of risk for HIV and HCV among young adults. Similar to the findings of Daniulaityte, Falck & Carlson (2012), many youth perceived POs as relatively benign compared to illegal drugs at the time they initiated nonmedical PO use. While seemingly innocuous, our results reveal that PO misuse can lead to long-term opioid dependence, as well as transition to heroin use and drug injection. Participants' accounts indicate that in New York City, as in many locations in the U.S., heroin is cheaper and more readily available than POs, especially as new restrictions on PO access, such as New York State's I-STOP program (a mandatory electronic prescription drug monitoring program implemented in August 2013) have been instituted. While emerging research has begun to document the association between recent dramatic increases in PO misuse and rising rates of heroin use (Jones, 2013; Mars, Bourgois, Karandinos, Montero & Ciccarone, 2013; Lankenau et al., 2012), there has to date been very little qualitative research exploring the reasons motivating this transition and the social processes and network norms anchoring this trajectory. Drug treatment programs should target young nonmedical PO users so that they can address their opioid dependence prior to transitioning to heroin use.

Participants' relatively rapid transition to injection as a primary or occasional route of opioid administration after transitioning to heroin use seems to indicate that, among young adult nonmedical PO users, heroin intake is strongly associated with injection. Participants' self-reported motivations for shifting to injection as a route of drug administration were similar as for the transition from PO use to heroin use (i.e., more cost-effective, stronger/longer-lasting high); but also, participants' accounts suggest that the strong link between heroin and injection seems to be in part a social norm that is naturalized and reinforced by peers' behavior. This link is naturalized to such an extent that several heroin-using participants reported that they had not ever considered sniffing heroin instead of injecting it. These findings echo those of several recent studies, most notably Mars, Bourgois, Karandinos, Montero & Ciccarone, (2013) and Lankenau et al. (2012); however, those studies are based on samples of street-based, often homeless, injection drug users, while the present study presents a wider spectrum of nonmedical PO use, based on a diverse sample that includes non-injectors, as well as many middle-class, college-educated young adults.

Previous research conducted mainly among heroin users indicates that young, newly-initiated injectors engage in high levels of injection-related risk behavior. Emerging research has begun to document similar patterns among PO-using drug injectors (Surratt, Kurtz and Cicero, 2011; Lankenau et al., 2012; Johnson et al., 2013), findings that are supported by the present study. Injectors in our sample reported engaging in sporadic instances of syringe-sharing, particularly in syringe-shortage situations, frequent sharing of non-syringe injection paraphernalia, and selective sharing of injection equipment with network members and sex partners who are presumed to be "clean" based on feelings of social affiliation and similarity. Compounding their vulnerability to blood-borne disease, participants reported having very little knowledge of the HIV/HCV risk associated with the sharing of non-syringe injection paraphernalia and little access to information on harm reduction practices.

Another notable finding is that the vast majority of participants who reported injecting POs did so only after having first experimented with heroin injection. As reported by Roy, Arruda and Bourgois (2011) among drug injectors Montreal, PO injection may present additional risks for viral transmission, as compared to heroin injection, because this practice typically requires larger syringes and/or multiple injections per dose, thereby increasing the potential for exposure to blood-borne viruses that may be present in non-sterile injection equipment. Larger needles with more “dead-space” (space between the syringe hub and needle) can retain more fluid, including diluted blood, thus increasing the risk of HIV and/or HCV infection if shared (Vickerman et. al., 2013).

These results suggest that prevention efforts targeting young nonmedical PO users should aim to prevent escalation of opioid use – in particular to transition to injection – and for those who do inject, increase awareness of safer injection practices and the HCV risk associated with the sharing of injection paraphernalia other than syringes. Harm reduction services need to make concerted efforts to reach young, middle-class PO users who, our data suggest, are often unaware of SEPs. Network-based prevention approaches may be especially effective for this population of young adults in spreading knowledge regarding the HCV and HIV risk associated with the sharing of non-syringe injection equipment.

Findings indicate that nonmedical PO use is also associated with risky sexual behavior that may place participants at risk for HIV infection. PO misuse was described as facilitating unprotected sex with casual partners, sexual commodification (i.e., exchanges of sex for drugs between friends or acquaintances, professional sex work), group sex and sexual violence. Similar findings have been reported for samples of PO-using MSM (Buttram, Kurtz, Surratt & Levi-Minzi, 2013) and street-based drug injectors who reported nonmedical PO use (Johnson et. al., 2013). Additionally, as participants’ opioid dependence progressed, their drug-using networks typically expanded to include older injectors; because their drug-use and sexual networks tended to overlap, the likelihood of participants having sex with HIV-infected individuals may likewise increase over time. These findings suggest that nonmedical PO use is similar to the use of illicit drugs such as heroin or crack in being associated with a wide array of risky sexual behaviors that can place individuals at risk of sexually transmitted infections including HIV (Booth, Kwiatkowski, & Chitwood, 2000). There is a need for comprehensive HIV prevention programs to reach nonmedical PO users with the understanding that they may be a group at increased risk for the sexual transmission of HIV.

These results should be interpreted with caution in light of several limitations. Because this is a qualitative study based on interviews conducted with a relatively small number of participants who were sampled via non-probabilistic methods, the results are not intended to be generalizable to all young adult nonmedical PO users. Instead, our aim is to present nonmedical PO users’ views on their drug-use and sexual experiences within a social context, based on the self-reports of the participants in this study. We used quantitative data to precisely characterize our data, not to make statistical inferences about a larger population. Data also may not be generalizable to other locations or ages, as this study only sampled young adult PO misusers in New York City; nonmedical PO users in other age groups and geographical locations could display different patterns of drug use and sexual

behavior. Similarly, since the majority of study participants engaged in regular (daily or near-daily) PO use, the behaviors and experiences of more casual, sporadic PO misusers may be under-represented.

This study demonstrates the importance of understanding nonmedical PO use among young adults and its role as a pathway to heroin use, injection drug use and increased vulnerability to HIV and HCV. Our qualitative research provides insight into the social contexts in which nonmedical PO use occurs and will hopefully provide a useful platform upon which future quantitative studies and intervention efforts can build.

Acknowledgments

The project described was supported by Award Number R01DA035146 from the National Institute on Drug Abuse. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute on Drug Abuse or the National Institutes of Health.

References

Abbey A, McAuslan P, Ross LT. Sexual assault perpetration by college men: The role of alcohol, misperception of sexual intent, and sexual beliefs and experiences. Journal of Social and Clinical Psychology. 1998; 17(2):167–195.

Benotsch EG, Koester S, Luckman D, Martin AM, Cejka A. Nonmedical use of prescription drugs and sexual risk behavior in young adults. Addictive Behaviors. 2011; 36(1):152–155. [PubMed: 20863626]

Booth RE, Kwiatkowski CF, Chitwood DD. Sex related HIV risk behaviors: differential risks among injection drug users, crack smokers, and injection drug users who smoke crack. Drug and alcohol dependence. 2000; 58(3):219–226. [PubMed: 10759032]

Bruneau J, Roy É, Arruda N, Zang G, Jutras-Aswad D. The rising prevalence of prescription opioid injection and its association with hepatitis C incidence among street-drug users. Addiction. 2012; 107(7):1318–1327. [PubMed: 22248184]

Buttram ME, Kurtz SP, Surratt HL, Levi-Minzi MA. Health and social problems associated with prescription opioid misuse among a diverse sample of substance-ssing MSM. Substance Use & Misuse. 2013; 49(3):277–284. [PubMed: 23971894]

Charmaz, K. Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis. London: Sage Publications; 2006.

Daniulaityte R, Falck R, Carlson RG. “I’m not afraid of those ones just ‘cause they‘ve been prescribed”: Perceptions of risk among illicit users of pharmaceutical opioids. International Journal of Drug Policy. 2012; 23(5):374–384. [PubMed: 22417823]

Dhalla IA, Persaud N, Juurlink DN. Facing up to the prescription opioid crisis. BMJ. 2011; 343:d5142. [PubMed: 21862533]

DiClemente RJ, Salazar LF, Crosby RA, Rosenthal SL. Prevention and control of sexually transmitted infections among adolescents: the importance of a socio-ecological perspective—a commentary. Public Health. 2005; 119(9):825–836. [PubMed: 15913678]

Friedman SR, Bolyard M, Khan M, Maslow C, Sandoval M, Mateu-Gelabert P, Aral SO. Group sex events and HIV/STI risk in an urban network. Journal of Acquired Immune Deficiency Syndromes. 2008; 49(4):440. [PubMed: 19186355]

Friedman SR, Neaigus A, Abdul-Quader A, Sotheran JL, Sufian M, Goldsmith D, Tross S. AIDS and the new drug injector. 1989

Friedman SR, Flom PL, Kottiri BJ, Zenilman J, Curtis R, Neaigus A, Sandoval M, Quinn T, DesJarlais DC. Drug use patterns and infection with sexually transmissible agents among young adults in a high-risk neighbourhood in New York City. Addiction. 2003; 98(2):159–169. [PubMed: 12534420]

Fuller CM, Vlahov D, Latkin CA, Ompad DC, Celentano DD, Strathdee SA. Social circumstances of initiation of injection drug use and early shooting gallery attendance: implications for HIV intervention among adolescent and young adult injection drug users. Journal of Acquired Immune Deficiency Syndromes. 2003; 32(1):86–93. [PubMed: 12514419]

Garfein RS, Golub ET, Greenberg AE, Hagan H, Hanson DL, Hudson SM. DUIT Study Team. A peer-education intervention to reduce injection risk behaviors for HIV and hepatitis C virus infection in young injection drug users. Aids. 2007; 21(14):1923–1932. [PubMed: 17721100]

Glaser, BG.; Strauss, AL. The Discovery of Grounded Theory: Strategies for Qualitative Research. New Brunswick, NJ: Aldine Transaction; 1967.

Goldsamt LA, Harocopos A, Kobrak P, Jost JJ, Clatts MC. Circumstances, pedagogy and rationales for injection initiation among new drug injectors. Journal of Community Health. 2010; 35(3):258–267. [PubMed: 20127155]

Guarino H, Moore SK, Marsch LA, Florio S. The social production of substance abuse and HIV/HCV risk: an exploratory study of opioid-using immigrants from the former Soviet Union living in New York City. Substance Abuse Treatment, Prevention, and Policy. 2012; 7(2):1–14.

Harocopos A, Goldsamt LA, Kobrak P, Jost JJ, Clatts MC. New injectors and the social context of injection initiation. International Journal of Drug Policy. 2009; 20(4):317–323. [PubMed: 18790623]

Hines DA, Armstrong JL, Reed KP, Cameron AY. Gender differences in sexual assault victimization among college students. Violence and victims. 2012; 27(6):922–940. [PubMed: 23393954]

Johnson KM, Fibbi M, Langer D, Silva K, Lankenau SE. Prescription drug misuse and risk behaviors among young injection drug users. Journal of Psychoactive Drugs. 2013; 45(2):112–121. [PubMed: 23908999]

Jones C. Heroin use and heroin use risk behaviors among nonmedical users of prescription opioid pain relievers—United States, 2002–2004 and 2008–2010. Drug and Alcohol Dependence. 2013; 132:95–100. [PubMed: 23410617]

Krieger N. Theories for social epidemiology in the 21st century: an ecosocial perspective. International Journal of Epidemiology. 2001; 30(4):668–677. [PubMed: 11511581]

Kral AH, Bluthenthal RN, Lorvick J, Gee L, Bacchetti P, Edlin BR. Sexual transmission of HIV-1 among injection drug users in San Francisco, USA: risk-factor analysis. The Lancet. 2001; 357(9266):1397–1401.

Lankenau SE, Teti M, Silva K, Bloom JJ, Harocopos A, Treese M. Initiation into prescription opioid misuse amongst young injection drug users. International Journal of Drug Policy. 2012; 23(1):37–44. [PubMed: 21689917]

Latka M, Ahern J, Garfein RS, Ouellet L, Kerndt P, Morse P, Vlahov D. Prevalence, incidence, and correlates of chlamydia and gonorrhea among young adult injection drug users. Journal of Substance Abuse. 2001; 13(1):73–88. [PubMed: 11547626]

Mars SG, Bourgois P, Karandinos G, Montero F, Ciccarone D. “Every ‘never’ I ever said came true”: transitions from opioid pills to heroin injecting. International Journal of Drug Policy. 2013; 25(2): 257–266. [PubMed: 24238956]

Meade CS, Weiss RD, Fitzmaurice GM, Poole SA, Subramaniam GA, Patkar AA, Woody GE. HIV risk behavior in treatment-seeking opioid-dependent youth: Results from a NIDA Clinical Trials Network multi-site study. Journal of Acquired Immune Deficiency Syndromes. 2010; 55(1):65. [PubMed: 20393347]

Meade CS, Bevilacqua BS, Moore ED, Griffin ML, Gardin JG, Potter JS, Hatch-Maillette M, Weiss RD. Concurrent substance abuse is associated with sexual risk behavior among adults seeking treatment for opioid dependence. The American Journal on Addictions. 2014; 23:27–33. [PubMed: 24313238]

NYC Mayor’s Task Force on Prescription Painkiller Abuse. [Retrieved June, 2014] 2013. from: http://www.nyc.gov/html/cjc/downloads/pdf/rx_stat_september_2013_report.pdf

O’Grady CL, Surratt HL, Kurtz SP, Levi-Minzi MA. Nonmedical prescription drug users in private vs. public substance abuse treatment: a cross sectional comparison of demographic and HIV risk behavior profiles. Substance Abuse Treatment, Prevention, and Policy. 2014; 9(9):1–8.

Resnick HS, Walsh K, McCauley JL, Schumacher JA, Kilpatrick DG, Acierno RE. Assault related substance use as a predictor of substance use over time within a sample of recent victims of sexual assault. Addictive behaviors. 2012; 37(8):914–921. [PubMed: 22521363]

Rosenblum A, Parrino M, Schnoll SH, Fong C, Maxwell C, Cleland CM, Haddox JD. Prescription opioid abuse among enrollees into methadone maintenance treatment. Drug and Alcohol Dependence. 2007; 90(1):64–71. [PubMed: 17386981]

Roy É, Arruda N, Bourgois P. The growing popularity of prescription opioid injection in downtown Montreal: new challenges for harm reduction. Substance use & misuse. 2011; 46(9):1142–1150. [PubMed: 21370963]

Substance Abuse and Mental Health Services Administration (SAMHSA). Rockville, MD: SAMHSA; 2013. Results from the 2012 National Survey on Drug Use and Health: Summary of National Findings. NSDUH Series H-46, HHS Publication No. (SMA) 13-4795.

Surratt H, Kurtz SP, Cicero TJ. Alternate routes of administration and risk for HIV among prescription opioid abusers. Journal of addictive diseases. 2011; 30(4):334–341. [PubMed: 22026525]

Sherman SG. The role of sexual transmission of HIV infection among injection and non-injection drug users. Journal of Urban Health. 2003; 80(3):iii7–iii14. [PubMed: 14713667]

Strathdee SA, Sherman SG. The role of sexual transmission of HIV infection among injection and non-injection drug users. Journal of Urban Health. 2003; 80:iii7–iii14. [PubMed: 14713667]

Thorpe LE, Ouellet LJ, Hershow R, Bailey SL, Williams IT, Williamson J, Monterroso ER, Garfein RS. Risk of hepatitis C virus infection among young adult injection drug users who share injection equipment. American journal of epidemiology. 2002; 155(7):645–653. [PubMed: 11914192]

Quintero G, Peterson J, Young B. An exploratory study of socio-cultural factors contributing to prescription drug misuse among college students. Journal of Drug Issues. 2006; 36(4):903–931.

Vickerman P, Martin NK, Hickman M. Could low dead-space syringes really reduce HIV transmission to low levels? International Journal of Drug Policy. 2013; 24(1):8–14. [PubMed: 23206493]

Highlights

- Nonmedical prescription opioid (PO) use can lead to heroin use and injection drug use.
- Young adults reported limited knowledge of HCV risk associated with drug injection.
- Sporadic syringe sharing and frequent sharing of injection equipment were reported.
- Participants reported engaging in sexual behaviors that may present risk for HIV.

Table 1

Participant Sociodemographics (N=46)

Characteristics	n (%)
Mean age: 25.3 years (SD:3.9)	
Age range	
18–25 years old	24 (52%)
26–32 years old	22 (48%)
Gender	
Male	27 (59%)
Female	18 (39%)
Transgender	1 (2%)
Race/Ethnicity	
White	32 (70%)
Hispanic/Latino	9 (20%)
African American	3 (6%)
Asian	2 (4%)
Educational Level	
Some high school	14 (30%)
High school graduate/GED	9 (20%)
Some college	14 (30%)
College graduate	7 (15%)
Some post-graduate education	2 (4%)
MSM behavior	8 (17%)
Ever homeless	24 (48%)
Socioeconomic Status (n, %)	
Lower/lower-middle class	24 (52%)
Middle-class	13 (28%)
Upper-middle/upper-class	9 (20%)

Table 2

Participant Drug-use Characteristics (N=46)

Characteristics	Mean (SD)	n	Percent	Range
Age at PO initiation, in years	17.9 (3.9)	46	--	12 – 27
Ever used heroin	-- --	32	70%	-- --
Age at heroin initiation, in years	18.8 (3.4)	32	--	13 – 27
Ever injected any drug	-- --	29	63%	-- --
Age at first drug injection, in years	19.1 (3.5)	29	--	13 – 28
Ever injected POs	-- --	21	46%	-- --
Age at first PO injection, in years	19.6 (3.3)	21	--	13 – 26
Initiated heroin via injection	-- --	5	--	-- --
Injected POs before injected heroin	-- --	4	--	-- --