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## High risk and little knowledge: Overdose experiences and knowledge among young adult nonmedical prescription opioid users

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### Abstract

**Background**—Opioid-involved overdoses in the United States have dramatically increased in the last 15 years, largely due to a rise in prescription opioid (PO) use. Yet few studies have examined the overdose knowledge and experience of nonmedical PO users.

**Methods**—In depth, semi-structured, audio-recorded interviews were conducted with 46 New York City young adults (ages 18–32) who reported using POs nonmedically within the past 30 days. Verbatim interview transcripts were coded for key themes in an analytic process informed by grounded theory.

**Results**—Despite significant experience with overdose (including overdose deaths), either personally or within opioid-using networks, participants were relatively uninformed about overdose awareness, avoidance and response strategies, in particular the use of naloxone. Overdose experiences typically occurred when multiple pharmaceuticals were used (often in combination with alcohol) or after participants had transitioned to heroin injection. Participants tended to see themselves as distinct from traditional heroin users, and were often outside of the networks reached by traditional opioid safety/overdose prevention services. Consequently, they were unlikely to utilize harm reduction services, such as syringe exchange programs (SEPs), that address drug users' health and safety.

**Conclusions**—These findings suggest that many young adult nonmedical PO users are at high risk of both fatal and non-fatal overdose. There is a pressing need to develop innovative outreach strategies and overdose prevention programs to better reach and serve young PO users and their network contacts. Prevention efforts addressing risk for accidental overdose, including opioid

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safety/overdose reversal education and naloxone distribution, should be tailored for and targeted to this vulnerable group.

## Keywords

Nonmedical prescription opioid use; Overdose; Naloxone; Harm reduction; Transition to heroin

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## Introduction

Opioid-involved overdoses have become an increasing concern as their incidence has risen markedly in the past 20 years (Calcaterra, Glanz, & Binswanger, 2013; Jones, Roux, Stancliff, Matthews, & Comer, 2014; Paulozzi, 2012). During the most recent decade, drug overdose deaths in the United States increased from approximately 4000 in 1999 to 14,800 in 2008 (Warner et al., 2011). Overdose rates have especially increased among young adults (ages 18–24) who experienced a greater increase in rates of death from opioid analgesics than any other age group from 1999 to 2006 (Blending Initiative, 2009). In New York City, the location of this study, unintentional opioid-involved overdose deaths increased by 267% between 2000 and 2011 (59 deaths vs. 220 deaths) (New York City Department of Health and Mental Hygiene, 2013). Much of the rise has been attributed to a dramatic increase in overdose among nonmedical prescription opioid (PO) users (Green, Black, Serrano, Budman, & Butler, 2011; Katz, El-Gabalawy, Keyes, Martins, & Sareen, 2013; Silva, Schragger, Kecojevic, & Lankenau, 2013) or recently initiated heroin users who transitioned to heroin from POs (Lankenau et al., 2012a, 2012b; Nielsen et al., 2011). Non-medical prescription opioid use is particularly high among students and young adults in the United States as well as internationally (Brands, Paglia-Boak, Sproule, Leslie, & Adlaf, 2010; Ghandour, El Sayed, & Martins, 2012; National Institute on Drug Abuse, 2013).

Previous research has found that many nonmedical PO users are unaware of potential overdose risks, particularly in regard to polysubstance use (Lankenau et al., 2012a), and that while PO users are concerned about overdose, most believe the risk only applies to others who “use too much” or are “not careful enough” (Daniulaityte, Falck, & Carlson, 2012). Yet overdose was not the focus of these studies, and, to our knowledge, there are no studies examining nonmedical PO users' overdose knowledge and experience (apart from studies evaluating the effectiveness of naloxone distribution programs; see, for example, Strang et al., 2008; Williams, Strang, & Marsden, 2013).

Organized responses to the rising rate of overdose in the U.S. began to form in the mid 1990s with community-based programs that provided opioid overdose prevention services to persons who use drugs, as well as their family members and friends (CDC, 2012). Since 1996, increasing numbers of programs have offered naloxone, a specific opioid receptor antagonist used to reverse an opioid overdose or the effects of opioid analgesia (CDC, 2012; Galea et al., 2006). However, the United States Food and Drug Administration (FDA) regulations that designate naloxone as a prescription medication have made access difficult, and until recently, Syringe Exchange Programs (SEPs) and harm reduction organizations were among the few places where drug users and their families and friends were able to acquire naloxone and training in its proper use (NASADAD, 2013). The rise in opioid-

involved overdoses has led to increased efforts by government and community organizations to make overdose prevention and response education (including naloxone) available outside of the SEP/harm reduction model (Albert et al., 2011; Doe-Simkins, Walley, Epstein, & Moyer, 2009; NASADAD, 2013). Over the last decade, 17 U.S. States have passed laws intended to expand the availability of naloxone (NASADAD, 2013) to community organizations and family or friends of opioid users.

In 2006, New York State established the Opioid Overdose Prevention program which enables non-medical persons to administer naloxone in case of an opioid-involved overdose (New York City Department of Health and Mental Hygiene, 2014; New York Society of Addiction Medicine, 2011). Additionally, New York City recently began a pilot program supplying police officers in Staten Island (an area with particularly high rates of opioid-involved overdose) with naloxone and requisite training, leading to the first police officer-reversed overdose in January 2014 (New York City Department of Health and Mental Hygiene, 2014). Although such programs reflect increasing awareness of the role of POs in overdose and the importance of community-based responses, they are still relatively new and only available in select localities.

This exploratory study aims to elucidate the high overdose rates among young adults by providing a description of the overdose-related knowledge and experiences of young adult nonmedical PO users. Using a qualitative approach based on in-depth interviews with 46 young adults (ages 18–32) in New York City who reported nonmedical PO use within the past month, we sought to better understand how PO use relates to the likelihood and experience of overdose. Additionally, we aim to describe this group's knowledge of and experience with existing opioid safety/overdose prevention services and practices and how this impacts their experience with overdose.

## Methods

### Participant recruitment

This qualitative study is based on interviews with 46 New York City young adults (ages 18–32) who had engaged in nonmedical PO use in the 30 days preceding the interview. Participants were recruited via a combination of purposive and chain-referral sampling. The goal of the sampling strategy was to include a broad array of participants from a variety of racial, ethnic, gender, and socioeconomic status (SES) groups, and different geographic areas of New York City, as well as those with a range of service-related experience. Twenty-three participants were referred to the study from various sources, including service providers (i.e., outpatient drug treatment programs [ $n = 7$ ] and an outreach program for young injectors [ $n = 10$ ]), key informants ( $n = 4$ ) and other research projects ( $n = 2$ ). Potential participants at referring service organizations were approached directly by the Principal Investigator who provided a brief explanation of study goals and procedures, while those recruited via key informants and other research studies were advised to contact the investigator if interested in participating. Notably, at the time of recruitment, none of the organizations that served as referral sources provided overdose prevention and response training or naloxone. The remaining 23 participants were recruited through chain-referral

from other participants. Interviews were conducted until theoretical saturation on the study's key topics of interest was reached.

To be eligible, participants had to: (1) report using POs for nonmedical reasons at least once in the past 30 days; (2) live in one of the 5 boroughs of New York City; (3) speak English or Spanish; (4) be able to comprehend study procedures; and (5) provide informed consent. Eligibility was established through self-report, using a brief verbal screening protocol.

All study activities were approved by the Institutional Review Board of the National Development and Research Institutes, Inc. Prior to interviews, all participants provided written informed consent. Participants were compensated \$40 at the conclusion of the interview.

### Interview procedures

In-depth, semi-structured interviews (lasting approximately 90 min) included questions asking about key domains directly related to our research aims. The interview format was flexible; the exact sequence in which topical domains and open-ended questions were presented varied, to allow interviewees to introduce or elaborate on topics of particular relevance to their experience. Topical domains included: contexts of initial and later PO use; drug-use trajectories (including concurrent or intermittent use of other substances, patterns of escalation in opioid use, and transitions among different POs, from POs to heroin, and to new routes of administration); perceptions of POs vs. heroin; drug-use networks and practices, with a focus on behaviors that may present risk for overdose; overdose knowledge, experience, and perceptions of risk; and familiarity with and use of naloxone and other harm reduction services.

### Data analysis

Interviews were digitally audio-recorded and transcribed verbatim. 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 approach for developing concepts and theory through coding and analysis of textual data. An initial code list, based on the research aims, was established 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 multi-faceted comparative analysis that included both the most frequently voiced themes and inconsistencies among interviewees' accounts, explored emergent ideas, and aimed to describe connections between key themes and individuals' lived experiences. Additionally, 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. All participant names have been replaced with pseudonyms.

In keeping with our qualitative approach, our general principle in interviews was to let participants define what counted as an “overdose” from their own point of view. Although there was some variability among participants, all were in agreement that any episode

requiring intervention qualified as an overdose, e.g. anything from informal revival methods administered by peers, to administration of naloxone, to intervention by emergency personnel.

## Results

### Participant characteristics

Our study involved 46 participants. Within that group there were: 32 Whites; 9 Latinos; 3 African Americans; and 2 Asians. Twenty-seven participants were male, 18 female, and 1 trans-gender. Participants' mean age was 25.3 years (SD = 3.9 years; range = 18–32 years), with 24 participants between the ages of 18–25 and 22 participants age 26 years or older. Participants' level of education was as follows: 14 attended some high school; 9 received a high school diploma or GED; 14 attended some college; and 9 were either college graduates or had some post-graduate education.

### Initiation of nonmedical prescription opioid use

Most participants described their initial PO use as occurring during their early to mid-teenage years while they also experimented with other substances such as alcohol and cannabis (mean age of PO initiation was 17.9 years). Participants' reported early impressions of POs as being relatively harmless and believed that POs were far less likely than heroin to produce an overdose. This was due in part to the widespread availability of POs and their common use for medical purposes. The everyday, household setting in which POs were frequently first accessed, as well as the status of POs as “medication”, allowed participants to view them as less addictive and less likely to produce overdose. Similarly, most participants described their initiation to PO use as occurring within social situations, either with a close friend or in group settings where PO use (as well as other forms of substance use) was widely accepted:

When I first got to high school I started smoking weed and doing pills... Like all different kinds of pills, it was painkillers, you know, we [my friends and I] would do like too much Ritalin, like a lot of Ritalin. We would do Oxys [OxyContin] and just everything, anything we could get our hands on.

(Veronica, age 25, white, female)

Most participants reported having no knowledge of naloxone or other overdose prevention/response techniques at the time of their initiation to PO use. Consequently, many participants began experiencing overdose, either personally or within their drug-using networks, early in their drug-use careers, including one participant who reported knowing five friends who died from overdose while still in high school.

### Transition from POs to heroin

Although not all of our participants had used heroin, the majority (32/46) had. Among that group, nearly all had used POs *before* trying heroin. Overdose experiences were common in both groups (those who had transitioned to heroin and those who had not). Participants' transition to heroin could increase their likelihood of overdose in two related ways. First,

heroin's lack of standardization in dosage and purity makes it more difficult to determine safe-use thresholds. One participant attributed his three heroin overdoses to this problem:

With heroin, one minute you wind up with something that looks exactly the same and you think.... you've been doing it awhile and you know how much you can put in a cooker to get high. And then all of a sudden, the next day you get something that looks exactly the same.... And it's twice as strong and it puts you on the floor.

(William, age 28, white, male)

Secondly, participants' transition to heroin is closely associated in our sample with a transition to injection as the preferred route of administration. Kevin, a 28 year-old, Asian male, abandoned injecting and returned to sniffing after overdosing the first time he attempted injecting heroin:

I remember I wanted to try the needle because that's what everybody was talking about, so I had this friend do it for me....He found a vein for me, and then he did the whole thing...all I remember was waking up in the ambulance.

Among the 32 participants who transitioned from POs to heroin, 5 first used heroin via injection; the remaining 27 first used heroin via sniffing, and significantly, all but three of these 27 participants began injecting heroin (on either a regular or occasional basis) within one year or less of their initiation to heroin use. Participants' relatively short transition periods between first PO use and first heroin use, and between initiation of intra-nasal heroin use (sniffing) and heroin injection, may have increased their risk of overdose inasmuch as they may have begun injecting heroin while still relatively inexperienced regarding the effects of various opioids (especially when used in combination with other psychoactive substances) and because the use of opioids via injection can intensify these effects.

### Experience with overdose

Participants using POs and/or heroin reported significant experience with both fatal and non-fatal overdose. Nearly everyone in the sample reported knowing multiple individuals within their drug-using networks who had overdosed either fatally or non-fatally, with some participants reporting knowing up to 30 individuals who had overdosed. Similarly, a large number of participants reported having overdosed themselves, sometimes reporting multiple overdose events.

Participants described overdoses occurring in multiple contexts, including parties, informal social gatherings at local hangouts such as parks or wooded areas, and at friends' houses, often during the day when parents were at work. In many cases, individuals would gather for the express purpose of using drugs, most commonly POs, along with alcohol and/or cannabis. Some participants also reported overdoses as occurring while using alone, but this was more the exception than the rule. Participants reported overdoses as resulting from use of either heroin or POs, usually in combination with benzodiazepines and/or alcohol. OxyContin (extended-release oxycodone), Roxicet/Roxicodone (immediate-release oxycodone) and Opana (oxymorphone) were the most frequently reported POs in accounts of overdose.

The most common themes to emerge regarding participants' experience with overdose were: polydrug/polysubstance use as a significant causative factor; a lack of knowledge regarding how to diagnose and respond to overdose; and a lack of contact with opioid safety/overdose prevention services such as SEPs/harm reduction organizations that provide training and, importantly, free prescriptions for naloxone.

### **Polydrug/polysubstance use**

Most members of the sample engaged in regular polydrug/polysubstance use, and, when queried about specific circumstances leading to overdose, described incidents in which multiple intoxicants were used. Yet participants rarely explicitly identified polysubstance use a risk factor for overdose, and those who did were often misinformed about the relative dangers of specific drug combinations. Mixing opioids (either heroin or POs) with benzodiazepines and/or alcohol were the most significant combinations reported as precipitants of overdose in our sample. Clonidine (Catapres), a blood pressure medication sometimes used to manage opioid withdrawal symptoms, was also mentioned in accounts of drug use leading to overdose.

Phillip, a 24 year-old white male, described overdosing early in his drug-use career and related the event to his lack of knowledge regarding the potential dangers of polysubstance use:

This was....at the very beginning of my use where I didn't really know how much I could use....I didn't realize how Xanax affected opiates, so I took two Xanax...and when they kicked in, I felt buzzed, really great, and then I went into a bathroom stall in college. I could have just done it in my room, but luckily I was in a bathroom stall at this...little supermarket on campus....I broke up an entire 40 mg. Oxy[Contin]....I just remember I did the whole line and the last thing I remember was...holding my head up in the air to sniff it all into my nose, and that's the last thing I remember...The next thing, EMT's were [asking] "What'd you take? What'd you take?"

Oftentimes, participants reported polysubstance use occurring in social situations with large numbers of people using a variety of substances. Mary, an 18 year-old, white female, reported using POs, benzodiazepines, and alcohol with a group of friends in her Staten Island neighborhood. Friends would gather at houses, a local deli, or in wooded areas that served as meeting points at which local teens would socialize and use drugs. Although Mary had never personally witnessed an overdose, she reported knowing approximately 20 individuals from her social network who overdosed during similar group gatherings.

John, a 21 year-old, white male, also linked overdose events to polysubstance use in social settings. He described a house party at which an acquaintance fatally overdosed:

The young kid... who had taken the cocaine, Xanax, and oxycodone was at a house party. I was young at this point, he was older, like twenty or twenty-one. He was at a house party and was sniffing coke and doing OxyContin, and no one knew he was taking Xanax. He stumbled outside and it was winter, and they actually had found him – they walked outside a few hours later and he was unconscious. I think he was

already dead. He was freezing cold and stiff. They called the ambulance and he was pronounced dead right away, I think on the ride to the hospital.

### **Lack of knowledge regarding how to recognize and respond to overdose situations**

Although most of our sample reported significant experience with overdose, either personally or within their drug-using networks, self-reported knowledge of proper responses was low (with a few notable exceptions). Some participants were familiar with naloxone, and a few had successfully used it to reverse an overdose, but the majority was unaware of its existence and had never been trained in how to avoid or respond to an overdose. Even among those who knew about naloxone, some believed that it was either difficult or expensive to acquire. (In New York State, naloxone is available for free at most SEPs/harm reduction organizations, but individuals are required to attend a training session before receiving it). Similarly, participants occasionally confused naloxone with other substances, and exhibited a general lack of knowledge about how to effectively respond to an overdose. PO users who had not transitioned to heroin were particularly unaware of proper responses.

In most cases, participants described utilizing various potentially ineffective folk methods, such as slapping the individual or placing them in a cold shower, to revive individuals who appeared to have experienced an overdose. Significantly, multiple participants mentioned the popular film *Pulp Fiction*, which includes a highly fictionalized and inaccurate overdose reversal scene, highlighting the extent to which mass media depictions often function as salient sources of drug-related knowledge for this population. Although Lynn, an 18 year-old white female, was able to revive her friend, her lack of overdose prevention knowledge and reliance on fictionalized accounts that bear little resemblance to actual safety practices could reinforce the use of incorrect and potentially dangerous practices:

I remember one night my friend and I were [using heroin]....And I got high that night, and the next morning I woke up and I was still throwing up, I was still high and she OD'd. Yeah, she OD'd. And I brought her back.... The only thing I could think that was running through my head... was *Pulp Fiction*.....I slapped the fuck out of her and I poured water on her and I kept slapping her and I sat her up. I just kept slapping her. She turned blue and then she came back.

Participants generally accounted for their lack of overdose knowledge with a belief that it 'would not happen to them'. Terry, a 19 year-old, white female, exclusive PO user, stated:

Well, I think it's like people know but they don't care. If you're using opiates, you just don't really care that much and they're like, 'Other people might OD, but not me 'cause I'm sly about my use' you know? I know, I know, that's not a good way to think.

Exclusive PO users (as compared to those who mostly used heroin, or who used both heroin and POs) were also more likely to perceive their drug use as safe. Alice, a 25 year-old, white female who exclusively used POs, associated overdose with heroin, but not PO use, after the fatal overdose of a friend who exclusively used heroin. When asked about her reluctance to use heroin, Alice relied upon a common, socially constructed symbolic dichotomy that positions heroin as a dangerous, overdose-producing substance, and POs as being largely



safe from the risk of overdose, stating that heroin was “just such a risk... It felt like it was crossing a line that I just wasn't meant to cross.”

Participants were also reluctant to contact emergency services in response to an overdose. Fear of arrest was mentioned multiple times as the primary reason for their apprehension. Although in 2011 New York passed a Good Samaritan law designed to encourage drug users to contact emergency services by providing “a limited shield from charge and prosecution of drug and alcohol possession for a victim or witness who seeks medical help during a drug or alcohol overdose” (DPA, 2013), most were either unfamiliar with the law or skeptical of its ability to protect them from legal prosecution. The account of Elizabeth, a 19 year-old, white, female from Brooklyn, is representative of participants' fears:

When my friend, my best friend [overdosed], I was scared because... it was in the bathroom of a restaurant and we had drugs and I'm like if the cops come, I don't want us to get arrested.

Ambiguities surrounding the term “overdose” also contributed to participants' confusion over proper responses. Behaviors such as vomiting or passing out were difficult for participants to classify and, combined with their fear of potentially serious legal consequences, most opted for the use of folk remedies, hoping that the individual would simply come out of it. When one participant who primarily sniffed heroin injected four bags of heroin, she began to vomit and lost consciousness, yet she was unsure whether or not to classify the event as an overdose. Her response to an interviewer's asking if she believed she had overdosed is reflective of the confusion participants displayed around classifying events as overdoses:

Yeah, [I was] close to it, but I was just like comatose for a long time....It took a really long time to finally get up without throwing up, and then he [a friend with whom she was using] eventually, he was like “Well, you know, could we get another bag of dope?” and I was making [money] at that point, I was like “Yeah, sure.”

(Veronica, age 25, white female)

### **Lack of contact with opioid safety/overdose prevention services**

Many of the overdose risks encountered by this group of nonmedical PO users, particularly their unfamiliarity with naloxone, are related to their lack of contact with overdose prevention/response services and education targeting drug users – services typically provided in New York City by SEPs/harm reduction organizations. These organizations traditionally serve as a primary source for obtaining sterile syringes, naloxone, and other injection materials, as well as reliable information on safer injection practices and techniques to prevent and/or respond to an overdose. Although the majority of participants had lifetime experience with drug injection (29/46), most had had no direct contact with SEPs/harm reduction organizations. Instead, they obtained sterile syringes either from local pharmacies (Since 2000, syringes have been available over the counter at participating New York City pharmacies under the Expanded Syringe Access Program (ESAP) (NYDOH (2010)), or from a more experienced friend who either sold unused syringes or gave them

out for free. The lack of direct contact with harm reduction services means that, while this group of injection drug users was often supplied with sterile syringes, they lacked naloxone and the important knowledge-based resources that SEPs/harm reduction organizations provide. Moreover, PO users who did not inject drugs and therefore had little motivation to visit an SEP, were almost universally ignorant of opioid safety/overdose prevention services and the use of naloxone:

Interviewer: Have you ever heard about Narcan [naloxone]?

Raymond: No. Is that like the adrenalin?

Interviewer: It's—

Raymond: Oh, Narcan? Yeah. What does that do? I'm not sure.

Interviewer: You don't know anything about anything that would stop an OD?

Raymond: No.

Among those participants who were familiar with SEPs/harm reduction organizations, some complained that such organizations were too focused on heroin and not enough on POs:

As far as needle exchanges go, I don't ever hear any exchanges talk about prescription opioids... It's all about heroin, cocaine, you know, it's all about the harder drugs.... I find a lot of pamphlets on injecting properly but... I've never really seen a pamphlet on injecting a pill – how to break down a pill correctly... I've never really heard people discuss injecting pills. It's mostly just the process of actually injecting... and using new supplies but not actually how to safely prepare. I think when people think about injecting opiates, they think about heroin. They don't really think about prescription pills as much.

(Linda, age 31 white, female)

Identity issues based on perceived distinctions between PO users (and those who began using in PO networks), and more traditional heroin-using populations also factored into participants' lack of contact with opioid safety/overdose prevention services. Referencing this, Bruce, a 26 year-old, white male who both sells drugs and provides sterile syringes to a group of less experienced drug users, drew a sharp distinction between “street” drug users who rely exclusively on heroin, and more middle-class, “college kids” who more often use POs and “look down on heroin users completely.” Bruce linked the perceived distinction between heroin users and PO users to PO users' avoidance of SEPs/harm reduction organizations:

Interviewer: Where do they get the needles?

Bruce: Pharmacy or they'll ask people like me.

Interviewer: Oh, because they don't go to needle exchanges?

Bruce: Yeah, they don't. They wouldn't.

Similarly, another participant described the potential reluctance of PO users (or those who began using opioids in PO networks) to visit SEPs/harm reduction organizations as an attempt to disassociate themselves from the more socially-stigmatized, heroin-using

“junkies”. As Ed's remarks demonstrate, even when PO users transition to heroin, in many cases, they perceive themselves as a distinct class:

I can certainly see situations where people with habits that aren't as severe kind of wanting to disassociate themselves with people who are more severe junkies. Especially if they're not really shooting up as much, maybe they see themselves as kind of in a different class.

(Ed, age 22, Latino male)

Since SEPs/harm reduction organizations are typically the most common – or only – source of opioid safety/overdose prevention services available to opioid users, PO users who do not inject are unlikely to be reached by these services. Moreover, in New York City, most SEPs/harm reduction organizations are located outside the areas where many PO users' drug-use habits and networks are established. Although all participants resided in one of the five boroughs of New York City at the time of their interview, some spent their teenage years and initiated their drug-use careers in suburban areas outside of the city, and remained outside of the networks typically reached by such organizations even after relocating to New York City. Ethan, a 24 year-old white male who knew five people who had died from overdose, linked the increased risk of death among this population to the lack of opioid safety/overdose prevention services in suburban areas. When asked about the availability of naloxone in the suburban New York City area of Long Island in which he grew up, he replied:

No, but I think they should have. They don't have it as much out there and I think that it [overdose] could be prevented. A lot of overdoses can be prevented if they had a harm reduction center in Long Island. They should have Narcan, they should have a lot of Narcan... I think it should be given out, just like needles are given out, or it should be bought over the counter.

Even those participants who grew up and began using drugs in urban locations evinced a reluctance to use traditional harm reduction services.

## Discussion

Although the rise in opioid-involved overdose deaths since 2000 has been widely reported in recent years (Centers for Disease Control, 2011; Green et al., 2011; Katz et al., 2013), there have been relatively few qualitative studies describing the social contexts and factors leading to overdose among young nonmedical PO users. Other studies have described the varying pathways to injection heroin use in light of recent increases in PO use (Mars, Bourgois, Karandinos, Montero, & Ciccarone, 2013), the use of prescription drugs including opioids, tranquilizers, and stimulants among young injection drug users (Lankenau et al., 2012a, 2012b), and the role of cultural sharing and intra-cultural variation in regards to perceptions of risk associated with pharmaceutical opioids (Daniulaityte et al., 2012). To the best of our knowledge, however, the present study is the first qualitative exploration of overdose experiences, risk factors for overdose, and overdose-related knowledge among young nonmedical PO users.

Participants' initiation to PO use usually began during their teenage years. The association of POs with legitimate medical authorities, as well as their status as legal, regulated substances, contributed to participants' perceptions of POs as relatively innocuous, especially when compared to illegal opiates such as heroin. Perceptions were also influenced by long-standing cultural narratives that associate heroin with the dangerous 'other' (Bergschmidt, 2004), narratives that do not construct POs in the same manner (Acker, 2002). Participants' discourse reflected widespread beliefs (among youth) that POs are safer than heroin and that non-injection routes of administration are less risky for overdose than injection drug use. Such distinctions may reflect the different symbolic values attached to, and the socially constructed borders separating, particular drugs and routes of administration that often guide individuals in their drug-using choices (Fraser, Hopwood, Treloar, & Brener, 2004; Manderson, 1995; Simmonds & Coomber, 2009).

This group's perceptions of POs as safer than heroin may contribute to their risk of overdose in two ways: first, individuals may underestimate the relative potency of POs such as OxyContin which, at some dosages, can be comparable in potency to heroin (Comer, Sullivan, Whittington, Vosburg, & Kowalczyk, 2008); second, since many participants viewed their drug use as categorically different from that of older, street-based heroin users, they were unlikely to seek out overdose prevention services. Likewise, their belief that non-injection drug use is much less likely to lead to overdose may reflect broader cultural models of how drugs work (see, for example Moerman, 2002) and may inure them to the real overdose risks of oral and intra-nasal administration of opioids (whether heroin or POs).

Findings also demonstrate that participants' overdose experiences were related to polydrug/polysubstance use (most frequently involving opioids, benzodiazepines, and alcohol). This aligns with research linking polydrug/polysubstance use to the likelihood of overdose (Jann, Kennedy, & Lopez, 2014; Kerr et al., 2007; Preti, Miotto, & De Coppi, 2002; Webster et al., 2011). Although poly-drug/polysubstance use was regularly mentioned by participants in their accounts of overdose events, it is possible that it factored in even more cases than reported by our sample. Since the dominant cultural narratives surrounding overdose (e.g., in mass-media accounts) focus overwhelmingly on opioids as causative agents, additional drug use that could have contributed is often forgotten about or simply not recognized as significant (Darke & Zador, 2006). This probably occurs most often in regard to consumption of alcohol due to its high level of social acceptance and common perceptions that distinguish it from other recreational substances.

Overdose in this group may be related to the relatively brief transition periods reported between initiation of nonmedical PO use and initiation of heroin use and injection drug use. Research indicates that recently-initiated injectors are at increased risk of overdose and exhibit higher frequencies of risky injection-related behavior, compared to older, more experienced injectors (Garfein et al., 2007; Gossop, Griffiths, Powis, Williamson, & Strang, 1996; Ochoa, Hahn, Seal, & Moss, 2001; Silva et al., 2013). Nearly all participants who transitioned to heroin began injecting within one year or less of their initial heroin use, thereby potentially increasing their risk of overdose and related negative health outcomes (Brugal et al., 2002; Darke & Hall, 2003; Werb et al., 2013). Moreover, once participants began injecting heroin, some adopted this practice for PO use as well.

Also, findings indicate that, despite significant experiences with overdose, this population has surprisingly little knowledge of factors likely to increase the risk of overdose, and techniques for preventing and responding to an overdose situation. Although some participants explicitly attributed overdose events they had experienced or witnessed to the concurrent use of multiple substances, often during social gatherings and/or parties, most were unaware of or misinformed about the overdose risk associated with polysubstance use. Similarly, with some notable exceptions, most participants were unfamiliar with naloxone, and those who knew about it often exhibited confusion regarding its availability and use. This is partially explained by the fact that, in the U.S., SEPs/harm reduction organizations are at present the most common source of overdose prevention/response education and materials for drug users. Many of our participants were opioid dependent, yet did not engage in injection drug use; therefore, despite being at risk for overdose, they were outside of the traditional purview of SEPs/harm reduction organizations. Moreover, even those who transitioned to injection drug use demonstrated a lack of knowledge of or willingness to visit SEPs/harm reduction organizations.

Our participants seem to represent a different subpopulation from those traditionally served by SEPs/harm reduction organizations. Many participants drew clear distinctions between nonmedical PO use and heroin use, and even those who transitioned to heroin tended to maintain identity-based distinctions between themselves and those they perceived as “junkies” (i.e., heroin users perceived to be of very low income with a more severe addiction) – distinctions that affected their knowledge of and willingness to utilize harm reduction services. This supports similar findings reported in recent research literature, such as the study by Mars et al. (2013), which found significant differences between younger heroin users who transitioned to heroin from POs and older “straight-to-heroin users.” Some of these identity-based distinctions could be related to geographic, racial and class factors. Many of the present study's participants, the majority of whom were white, began using POs with neighborhood/school friends from similar socioeconomic and racial backgrounds (either in suburban high school networks or in middle-class New York City neighborhoods); the norms and values guiding their drug-using identities reflect class, race and cultural boundaries that were made manifest in interviews as a distinction between “PO users” and “junkies” and that continue to shape participants' drug-use behaviors.

Effective overdose prevention and response interventions for this emerging cohort of drug users may require nuanced understandings of the characteristics of their target population(s) in order to facilitate population-specific tailoring and new forms of outreach (Kim, Irwin, & Khoshnood, 2009). Although harm reduction services such as SEPs have been successful in providing education and life-saving materials such as naloxone to heroin users (Bennett, Bell, Tomedi, Hulsey, & Kral, 2011; Heller & Stancliff, 2007; Sherman et al., 2008), our data suggest that nonmedical PO users (and those who have recently transitioned to heroin from POs) may be outside of the networks typically reached by these organizations (Kim et al., 2009; Mars et al., 2013).

Greater efforts should be made to target overdose prevention and response education to groups of young nonmedical PO users and young injectors who initiated opioid use with POs. Examples could include expansion of overdose prevention and response services

outside of urban centres and targeted outreach to less marginalized/stigmatized drug users. Similarly, greater support should be given to community-based programs which have demonstrated the benefits of providing naloxone and overdose prevention/response education outside of medical models and settings. Institutional efforts also need to be made to ensure that opioid safety/overdose prevention resources are readily available within the networks typically accessed by PO users. The development of high school and college education programs that offer harm reduction training and distribute naloxone could contribute to overdose prevention efforts. Similarly, overdose training programs could be included within the array of services offered by drug treatment programs.

Nonmedical PO use and its relationship to overdose should also be framed within a wider context. Current discussions in the popular press and emerging science that frame the overdose issue as strictly a PO- or heroin-based problem oversimplify the reality of polysubstance use described by this study's participants. Outreach efforts and educational programs should focus on polysubstance use patterns that appear to be the norm among many groups of youth, rather than relying on overly simplistic accounts of drug-using behavior. Finally, policies such as New York State's Good Samaritan Act need to be expanded and strengthened to reduce drug users' fear of seeking help from emergency personnel in overdose situations.

It is important to note that this study's data should be interpreted in light of some limitations. These data were obtained from a relatively small number of qualitative interviews conducted with a specific population of drug users sampled via non-probabilistic methods. Although efforts were made to interview individuals from different racial, ethnic, and cultural backgrounds, and with varying levels of connection to drug-related services, the results of this study are not generalizable to the larger population of young adult nonmedical PO users in New York City or the U.S. as a whole. Instead, our aim was to provide a nuanced, socially contextualized description of this population of PO users' knowledge of and experience with opioid-involved overdose. Additionally, the participant-based interpretation of events considered to be "overdoses" used in this study could be seen as a limitation. Overdose events are notoriously difficult to categorize and we felt that using participants' interpretations best served the purpose of the study; however, a clearer articulation within drug scholarship of the specific features that qualify a drug-related event as an "overdose" would help advance future study of this issue by facilitating comparative research. Finally, the small size of this study's sample that included limited representation of certain demographic categories did not allow us to investigate the extent to which differences in participants' overdose experiences may be connected to differences in race/ethnicity, gender, socioeconomic status and other aspects of social identity. A larger study with more balanced representation of different subgroups might potentially uncover systematic variation regarding overdose experience.

In conclusion, our findings suggest that, despite significant experience with overdose, young adult nonmedical PO users are often unaware of how to effectively prevent and respond to an overdose event, and are often unfamiliar with the use naloxone. This sample of drug users maintains conceptual distinctions between POs and heroin that may reduce their likelihood to utilize SEPs/harm reduction services. Although such organizations have been successful

in reaching traditional populations of heroin users, young nonmedical PO users' potential lack of awareness of and/or reluctance to use these services needs to be considered. It is recommended that intensive outreach efforts to this group of drug users be widely implemented, and that naloxone be made more readily available in communities in which nonmedical PO use is occurring.

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## References

- Acker, CJ. *Creating the American junkie: Addiction research in the classic era of narcotic control*. John Hopkins University Press; Baltimore/London: 2002.
- Albert S, Brason F, Sanford C, Dasgupta N, Graham J, Lovette B. Project Lazarus: Community-based overdose prevention in rural North Carolina. *Pain Medicine*. 2011; 12:577–585. [PubMed: 21463472]
- Bennett AS, Bell A, Tomedi L, Hulsey EG, Kral AH. Characteristics of an overdose prevention, response, and naloxone distribution program in Pittsburgh and Allegheny County, Pennsylvania. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*. 2011; 88(6):1020–1030. [PubMed: 21773877]
- Bergschmidt VB. Power, pleasure and dangerous substances: Applying Foucault to the study of 'heroin dependence' in Germany. *Anthropology and Medicine*. 2004; 11(1):59–73.
- Blending Initiative. Buprenorphine treatment for young adults. 2009. Retrieved June 17, 2014 from [http://www.drugabuse.gov/sites/default/files/files/BupTx\\_YngAdlts\\_Factsheet.pdf](http://www.drugabuse.gov/sites/default/files/files/BupTx_YngAdlts_Factsheet.pdf)
- Brands B, Paglia-Boak A, Sproule BA, Leslie K, Adlaf EM. Nonmedical use of opioid analgesics among Ontario students. *Canadian Family Physician*. 2010; 56(3):256–262. [PubMed: 20228312]
- Brugal T, Barrio G, de la Fuente L, Regidor E, Royuela L, Suelves J. Factors associated with non-fatal heroin overdose: Assessing the effects of frequency and route of administration. *Addiction*. 2002; 97(3):319–327. [PubMed: 11964108]
- Calcaterra S, Glanz J, Binswanger IA. National trends in pharmaceutical opioid related overdose deaths compared to other substance related overdose deaths: 1999–2009. *Drug and Alcohol Dependence*. 2013; 131:263–270. [PubMed: 23294765]
- Centers for Disease Control and Prevention. NCHS data brief number 81, drug poisoning deaths in the United States, 1980–2008. 2011. Retrieved December 6, 2013, from: <http://www.cdc.gov/nchs/data/databriefs/db81.htm>
- Centers for Disease Control and Prevention (CDC). Community-based opioid overdose prevention programs providing naloxone—United States, 2010. *MMWR. Morbidity and Mortality Weekly Report*. 2012; 61(6):101. [PubMed: 22337174]
- Charmaz, K. *Constructing grounded theory: A practical guide through qualitative analysis*. Sage; London: 2006.
- Comer S, Sullivan M, Whittington R, Vosburg S, Kowalczyk W. Relative abuse liability of prescription opioids compared to heroin in morphine-maintained heroin abusers. *Neuropsychopharmacology*. 2008; 33(5):1179–1191. [PubMed: 17581533]
- Darke S, Zador D. Fatal heroin 'overdose': A review. *Addiction*. 2006; 91(12):1765–1772. [PubMed: 8997759]

- Darke S, Hall W. Heroin overdose: Research and evidence-based intervention. *Journal of Urban Health*. 2003; 80(2):189–200. [PubMed: 12791795]
- Doe-Simkins M, Walley AY, Epstein A, Moyer P. Saved by the nose: Bystander-administered intranasal naloxone hydrochloride for opioid overdose. *American Journal of Public Health*. 2009; 99(5):788. [PubMed: 19363214]
- Drug Policy Alliance. Implementing New York's 911 Good Samaritan Law. 2013. Retrieved October 11, 2013, from: <http://www.drugpolicy.org/departments-and-state-offices/new-york/implementing-new-yorks-911-good-samaritan-law>
- Daniulaityte R, Falck R, Carlson RG. I'm not afraid of those ones just 'cause they've been prescribed. *International Journal of Drug Policy*. 2012; 23(5):374–384. [PubMed: 22417823]
- Fraser S, Hopwood M, Treloar C, Brener L. Needle fictions: Medical constructions of needle fixation and the injecting drug user. *Addiction Research & Theory*. 2004; 12(1):67–76.
- Galea S, Worthington N, Piper TM, Nandi VV, Curtis M, Rosenthal DM. Provision of naloxone to injection drug users as an overdose prevention strategy: Early evidence from a pilot study in New York City. *Addictive Behaviors*. 2006; 31:907–912. [PubMed: 16139434]
- Garfein R, Golub E, Greenberg A, Hagan H, Hanson D, Hudson S, et al. A peer-education intervention to reduce injection risk behaviors for HIV and hepatitis C infection in young injection drug users. *AIDS*. 2007; 21(14):1923–1932. [PubMed: 17721100]
- Ghandour LA, El Sayed DS, Martins SS. Prevalence and patterns of commonly abused psychoactive prescription drugs in a sample of university students from Lebanon: An opportunity for cross-cultural comparisons. *Drug and Alcohol Dependence*. 2012; 121(1):110–117. [PubMed: 21924844]
- Glaser, BG.; Strauss, AL. *The discovery of grounded theory: Strategies for qualitative research*. Aldine; Chicago: 1967.
- Gossop M, Griffiths P, Powis B, Williamson S, Strang J. Frequency of non-fatal heroin overdose: Survey of heroin users recruited in non-clinical settings. *British Medical Journal*. 1996; 313(7054): 402. [PubMed: 8761230]
- Green TC, Black R, Serrano JMG, Budman SH, Butler SF. Typologies of prescription opioid use in a large sample of adults assessed for substance abuse treatment. *PLoS ONE*. 2011; 6(11):e27244. [PubMed: 22087270]
- Heller DI, Stancliff S. Providing naloxone to substance users for secondary administration to reduce overdose mortality in New York City. *Public Health Reports*. 2007; 122(3):393. [PubMed: 17518311]
- Jann M, Kennedy WK, Lopez G. Benzodiazepines a major component in unintentional prescription drug overdoses with opioid analgesics. *Journal of Pharmacy Practice*. 2014; 27(1):5–16. [PubMed: 24436437]
- Jones JD, Roux P, Stancliff S, Matthews W, Comer SD. Brief overdose education can significantly increase accurate recognition of opioid overdose among heroin users. *International Journal of Drug Policy*. 2014; 25(1):166–170. [PubMed: 23773683]
- Katz C, El-Gabalawy R, Keyes KM, Martins SS, Sareen J. Risk factors for incident nonmedical prescription opioid use and abuse and dependence: Results from a longitudinal nationally representative sample. *Drug and Alcohol Dependence*. 2013; 132(1):107–113. [PubMed: 23399466]
- Kerr T, Fairbairn N, Tyndall M, Marsh D, Li K, Montaner J, et al. Predictors of non-fatal overdose among a cohort of polysubstance using injection drug users. *Drug and Alcohol Dependence*. 2007; 87(1):39–45. [PubMed: 16959438]
- Kim D, Irwin KS, Khoshnood K. Expanded access to naloxone: Options for critical response to the epidemic of opioid overdose mortality. *American Journal of Public Health*. 2009; 99(3):402. [PubMed: 19150908]
- Lankenau SE, Teti M, Silva K, Bloom JJ, Harocopos A, Treese M. Patterns of prescription drug misuse among young injection drug users. *Journal of Urban Health*. 2012a; 89(6):1004–1016. [PubMed: 22684424]



- 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*. 2012b; 23(1): 37–44. [PubMed: 21689917]
- Manderson D. Metamorphoses: Clashing symbols in the social construction of drugs. *Journal of Drug Issues*. 1995; 25:799–816.
- 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]
- Moerman, DE. Meaning, medicine, and the “placebo effect”. Vol. Vol. 28. Cambridge University Press; Cambridge: 2002.
- National Association of State Alcohol and Drug Abuse Directors. Overview of State Legislation to increase access to treatment for opioid overdose. 2013. Retrieved April 7, 2014, from: <http://nasadad.org/wp-content/uploads/2010/12/Opioid-Overdose-Policy-Brief-Final8.pdf>
- National Institute on Drug Abuse. Abuse of prescription (Rx) drugs affects young adults most. 2013. Retrieved June 17, 2014 from: <http://www.drugabuse.gov/related-topics/trends-statistics/infographics/abuse-prescription-rx-drugs-affects-young-adults-most>
- Nielsen S, Bruno R, Lintzeris N, Fischer J, Carruthers S, Stoove M. Pharmaceutical opioid analgesic and heroin dependence: How do treatment-seeking clients differ in Australia? *Drug and Alcohol Review*. 2011; 30(3):291–299. [PubMed: 21545560]
- New York City Department of Health and Mental Hygiene. Epi data brief: Unintentional drug poisoning (overdose) deaths in New York City 2000–2012. Sep. 2013 Retrieved on April 7, 2014, from: [http://www.nyc.gov/html/om/pdf/2013/edb\\_unintentional\\_drug\\_poisoning\\_overdose\\_deaths.pdf](http://www.nyc.gov/html/om/pdf/2013/edb_unintentional_drug_poisoning_overdose_deaths.pdf)
- New York City Department of Health and Mental Hygiene. Prescription painkiller and heroin overdose deaths continue to rise in New York City. 2014. Press release: 003-14. Retrieved March 11, 2014, from: <http://www.nyc.gov/html/doh/html/pr2014/pr003-14.shtml>
- New York Society of Addiction Medicine. Overview of opioid overdose prevention programs in New York State. 2011. Retrieved March 1, 2014, from: <http://nysam-asam.com/public-policy/2011/5/17/overview-of-opioid-overdose-prevention-programs-in-new-york.html>
- New York State Department of Health. Expanded Syringe Access Program (ESAP): Overview of the law and regulations. 2010. Retrieved December 1, 2013, from: [http://www.health.ny.gov/diseases/aids/harm\\_reduction/needles\\_syringes/esap/overview.htm](http://www.health.ny.gov/diseases/aids/harm_reduction/needles_syringes/esap/overview.htm)
- Ochoa KC, Hahn JA, Seal KH, Moss AR. Overdosing among young injection drug users in San Francisco. *Addictive Behaviors*. 2001; 26(3):453–460. [PubMed: 11436937]
- Paulozzi LJ. Prescription drug overdoses: A review. *Journal of Safety Research*. 2012; 43(4):283–289. [PubMed: 23127678]
- Preti A, Miotto P, De Coppi M. Deaths by unintentional illicit drug overdose in Italy, 1984–2000. *Drug and Alcohol Dependence*. 2002; 66(3):275–282. [PubMed: 12062462]
- Sherman SG, Gann DS, Scott G, Carlberg S, Bigg D, Heimer R. A qualitative study of overdose responses among Chicago IDUs. *Harm Reduction Journal*. 2008; 5(2):1–5. [PubMed: 18215317]
- Silva K, Schragger SM, Kecojevic A, Lankenau SE. Factors associated with history of non-fatal overdose among young non-medical users of prescription drugs. *Drug and Alcohol Dependence*. 2013; 128:104–110. [PubMed: 22974490]
- Simmonds L, Coomber R. Injecting drug users: A stigmatised and stigmatising population. *International Journal of Drug Policy*. 2009; 20(2):121–130. [PubMed: 17981451]
- Strang J, Manning V, Mayet S, Best D, Titherington E, Santana L, et al. Overdose training and take-home naloxone for opiate users: Prospective cohort study of impact on knowledge and attitudes and subsequent management of overdoses. *Addiction*. 2008; 103(10):1648–1657. [PubMed: 18821875]
- Warner, M.; Chen, LH.; Makuc, DM.; Anderson, RN.; Minino, AM. National Center for Health Statistics Data Brief #81. 2011. Retrieved February 12, 2014, from: <http://www.cdc.gov/nchs/data/databriefs/db81.pdf>

- Webster LR, Cochella S, Dasgupta N, Fakata KL, Fine PG, Fishman SM, et al. An analysis of the root causes for opioid-related overdose deaths in the United States. *Pain Medicine*. 2011; 12(s2):S26–S35. [PubMed: 21668754]
- Werb D, Buxton J, Shoveller J, Richardson C, Rowell G, Wood E. Interventions to prevent the initiation of injection drug use: A systematic review. *Drug and Alcohol Dependence*. 2013; 133(2):669–676. [PubMed: 24055187]
- Williams AV, Strang J, Marsden J. Development of opioid overdose knowledge (OOKS) and attitudes (OOAS) scales for take-home naloxone training evaluation. *Drug and Alcohol Dependence*. 2013; 132(1):383–386. [PubMed: 23453260]