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Oxycodone abuse in New York City: Characteristics of intravenous and intranasal users

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Abstract

This pilot study sought to characterize typical non-medical oxycodone use in the New York Metropolitan area. Accordingly, a clinical interview was administered to 25 intranasal (IN) and 25 intravenous (IV) oxycodone abusers to capture demographics and patterns of use within the region. IN and IV abusers shared a number of similar characteristics including: age, proportion of men and women, criminal history, drug use history, and current recreational drug use. However, the two populations also differed in a number of aspects. IV oxycodone users had lower rates of employment, earlier onset of illicit drug use, and more current heroin use. Although IN users reported somewhat more frequent use of oxycodone weekly, IV users were more likely to supplement their oxycodone use with other opioid drugs, most notably heroin. Additional research is needed to confirm these observed differences, yet these data may assist treatment efforts by providing information to guide targeted treatment and population specific interventions.

Keywords

Prescription Opioid Abuse; Oxycodone

Introduction

The United States is observing a steep rise in the non-medical use of prescription opioid drugs. Data from epidemiological investigations, treatment admissions, and emergency room records all indicate an increased prevalence of prescription opioid abuse.^{1–4} The latest estimates suggest that the number of new initiates to non-medical use of pain relievers (2.15 million) exceeded that of marijuana (2.09 million) and cocaine (0.91 million).^{5, 6} Recent data from the National Survey on Drug Use and Health (NSDUH) also revealed that nearly 10 million Americans had abused prescription opioids within the past year.⁷ The economic cost of prescription opioid abuse has been estimated to be in the billions of dollars.^{8, 9}

Oxycodone is one of the most commonly abused opioid drugs in the country, and thought to be the drug of choice for 79% of non-medical prescription opioid users.^{10–13} The medical consequences of problematic oxycodone use are considerable: in a single year (2006) over 64,000 emergency department visits were attributed to oxycodone and/or oxycodone-

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Declaration on Interests

Data for this study was gathered as a part of another investigation sponsored by Johnson & Johnson Pharmaceutical Research & Development, L.L.C, however the authors alone are responsible for the content and writing of the paper.

combination product misuse.¹⁴ The prevalence of oxycodone abuse appears to be highest in non-urban, western parts of the U.S.^{15, 16} Less is known about the recreational use of oxycodone in areas like New York City (NYC), where heroin is the most commonly abused opioid drug.¹⁷

The New York Metropolitan Area is the most populous region in the United States with an estimated 18 million individuals.¹⁸ In New York City, drug abuse and dependence are a significant cause of morbidity and mortality, yet the prevalence of oxycodone abuse is significantly lower than that of many other U.S. metropolitan areas.^{19, 20} Nonetheless, with the number of prescriptions for oxycodone products and its street availability increasing each year, it could be expected that NYC will follow other urban areas where the use and illicit sales of oxycodone have increased exponentially in a relatively short period of time (Los Angeles, 2001–2005: 84%).^{21, 22}

Most investigations of recreational oxycodone use focus on regions where prescription pain medications are the primary opioid of abuse, or conversely, are conducted with national samples that do not include any specific regional data.^{14, 16, 19} Furthermore, these investigations are primarily epidemiological in nature, and report little individualized demographic information. Few studies have described the population of recreational oxycodone users in the New York City area. Consequently, little is known about prescription opioid abuse in a drug market where many opioids with high abuse potential are readily available. The current investigation sought to assess the demographics and patterns of use of intravenous (IV) and intranasal (IN) oxycodone users within this region.

Methods

Procedure

Data on demographics and drug-use history were gathered as part of a study, which will be presented elsewhere, on the abuse potential of a new tamper-resistant tablet formulation of tapentadol sponsored by Johnson & Johnson Pharmaceutical Research & Development, L.L.C. Data from all subjects who qualified for this investigation were analyzed for the current study. Data collected from participants for the purposes of this investigation were obtained during an interview with research psychologists using a standardized questionnaire. Recruitment of current intravenous and intranasal Oxycontin® (or generic oxycodone product) users began in February 2009 and ended in May 2009. Participants were recruited locally with newspaper advertisements, word of mouth referrals, and from other ongoing investigations. After an initial phone interview, qualified participants came to the New York State Psychiatric Institute for additional screening procedures and assessments.

Participants

Participants were currently abusing oxycodone via intranasal or intravenous routes, and were 21 to 60 years of age. Applicants were excluded from participation if they were seeking treatment for their drug abuse, were a significant suicide risk, had a history of significant violent behavior, or a current major Axis I psychopathology, other than opioid abuse (e.g. mood disorder with functional impairment or suicide risk, schizophrenia), that might interfere with ability to participate. Three applicants were screened and did not qualify for participation; two were excluded for psychiatric reasons and one did not meet the inclusion criterion of current oxycodone use.

In total, 25 intranasal and 25 intravenous oxycodone abusers were enrolled in this investigation. Sixty-eight percent of intravenous users reported occasional intranasal use, but participants were categorized based upon their “preferred” method of use. Participants were compensated \$15 for the clinical interview which included closed and open-ended questions.

This study and all its procedures were approved by the Institutional Review Board of the New York State Psychiatric Institute.

Statistical Analyses

Continuous and categorical variables were initially summarized descriptively. T-tests were employed to examine differences between the intranasal and intravenous samples for continuous variables, whereas the Pearson χ^2 statistic was calculated to assess categorical differences between the groups. Given the small sample size and preliminary nature of the study, the significance level of α was set at 0.05 with an α of less than 0.10 considered as approaching statistical significance. Data analyses were performed using SPSS version 15.²³

Results

Socio-demographics

Table 1 presents the demographic data of the entire sample. Both IV and IN users were predominately male (IV: 84%, IN: 72%) and approximately 41 years of age. Among IV users, 56% self-identified themselves as White/Caucasian, 36% as Hispanic/Latino, 4% Black/African American and 4% Mix/Other. Within the IN sample, only 16% identified as White/Caucasian, 36% as Hispanic/Latino, 44% percent as Black/African American, and 4% as Mix/Other ($p=.003$).

Rates of unemployment among IV users were double that of IN users. Despite this difference, the level of education between the two groups was similar. Over 50% of both groups reported at least a year of college or having obtained a bachelor's degree.

Criminal Activity

Imprisonment was relatively common among all participants, with 36% of IV and 44% of IN users indicating they had been incarcerated (detention in prison for more than 24 hrs) at some point within their lifetimes. The amount of time incarcerated did not differ between the two groups (Table 1). Drug possession was the most commonly cited offence in both groups with 71% of IV users and 100% of IN users reporting one or more drug possession charges.

Early Drug Use

Table 2 presents the current and previous drug use of the samples. Recreational drug use typically began in the early to mid-teens, with IN users initiating recreational drug use later than IV users [$p=.05$]. The majority of both groups indicated that marijuana was their first drug of abuse (84%). Among IV users, marijuana was followed by alcohol (12%) with 1 participant (4%) identifying heroin as the first drug used recreationally. Among IN users, other drugs mentioned as the first used included cocaine (4%), heroin (4%), cigarettes (4%), and glue/solvents (4%).

Oxycodone Use and Abuse History

While recreational drug use began in the participants' early teenage years, recreational oxycodone use typically began a number of years later, in the mid- to late-30's (Table 2). It is notable that a somewhat larger proportion of IN than IV users reported that their first exposure to oxycodone was for pain management purposes (52% vs. 28%, respectively $p<.07$). Oral ingestion (swallowing and/or chewing) was the most common method of first use across both groups (IV: 60%, IN: 76%). Among IV users, snorting (20%) and injecting (20%) were the next most common methods of first use, whereas among IN users, oral ingestion was followed by intranasal (24%) administration as the most common route of use. Substantial proportions of both groups had experimented with multiple routes of

administration (IV= 72%, IN = 64%, $p = .21$) although there were nuanced differences between them. Of the entire intranasal sample, 16% indicated that the intranasal route was the only route by which they had ever administered drug, while only 16% reported having ever injected oxycodone. In contrast, 68% of intravenous users had previously snorted oxycodone, while only 8% had used solely via the intravenous route.

Current Oxycodone Use

As shown in Table 2, the IN sample used oxycodone somewhat more frequently (average: 10 times per week; range: 6 times per day to 3 times per month) than the IV sample (average: 6 times per week; range: 4 times per day to once a week, $p = .10$). With regard to the dose of oxycodone abused, 80 milligrams (mg) was the most commonly used tablet among IV users (60%), followed by 40 mg (28%), 20 mg (4%) and 10 mg (4%). The use of 80 and 40 mg tablets were almost equally common among the IN users (36%, 28%, respectively), followed by 20 mg (8%), 10 mg (8%), and 5 mg (4%). Three IN participants were unsure of their “typical” oxycodone dose and one participant each in the IN and IV groups reported equal use of 40 and 80 mg tablets.

Participants were “willing to pay” or “typically paid” between \$18 and \$21 for a 40 mg oxycodone tablet. The majority of users purchased oxycodone on the street (IV: 48%, IN: 60%) or from an individual with a prescription (IV: 48%, IN: 24%, note: participants were allowed to indicate more than one method as their primary method of obtaining oxycodone). Relatively few IV abusers indicated that they obtained oxycodone from a prescription that they themselves obtained from a physician (4%). Obtaining oxycodone using a prescription was always indicated along with one of the other previously mentioned methods, therefore none of the IV participants solely obtained oxycodone through the use of a legitimate prescription. In comparison, 16% of the IN population indicated that they regularly obtained oxycodone with a valid prescription, and 12% of these individuals indicated that this was their only means of acquiring the drug.

Concurrent Drug Use

In addition to their oxycodone use, 100% of the IV users endorsed current recreational use of another drug (excluding tobacco). Heroin was the most commonly used drug (96%, Table 2) followed by non-medical use of other prescription opioid drugs (morphine, Vicodin®, and Percocet®: 24%), cocaine (16%), marijuana and alcohol (both at 12%), and benzodiazepines (8%). One participant reported current recreational use of methamphetamine.

Similarly, 88% of the IN users reported additional recreational use of another drug. Like the IV population, heroin was the most commonly used (52%), followed by cocaine/crack (36%), marijuana (32%), benzodiazepines (32%), other prescription opioids (tramadol, Tylenol w/codeine, Vicodin®: 16% combined) and alcohol (8%). One participant reported current ecstasy/MDMA use. The concomitant use of heroin was less frequent among the IN than the IV users ($p < .001$). Despite these differences in current heroin use, previous heroin use was relatively common among both samples [IV: 92%, IN: 80%, $p = .08$]. Cocaine/crack use was relatively common among both samples yet the patterns of use did not differ between the two groups.

Opioid Withdrawal and Dependence

Following abstinence from oxycodone or other opioids, nearly all participants (92% of IV and 100% of IN participants) reported the development of one or more symptoms of opioid withdrawal. Withdrawal symptoms included stomach pain, muscle pain, insomnia, runny eyes/nose, nausea, vomiting, diarrhea, back ache, gooseflesh, sneezing, or hot/cold sweats.

Typically IV and IN users endorsed 2–3 symptoms in response to opioid abstinence (Table 2).

Combining Oxycodone w/Other Drugs

Approximately half of both samples “rarely” or “never” combined/simultaneously administered oxycodone with another drug, including alcohol (IV= 52%; IN = 60%). The drugs most frequently combined with oxycodone among the 32% of IV users who “always” and “more often than not” combined their oxycodone use with another drug, were heroin (50%), methadone (25%) and cocaine (25%). Of the 20% IN users who regularly (“always” and “more often than not”) combined their oxycodone use with another drug, the most frequent concomitantly used drugs were alcohol (40%), heroin (20%), marijuana (20%) and GHB (20%). The use of sedatives and benzodiazepines were noted among both user groups, but at substantially lower rates (Table 2).

Discussion

In assessing abuse patterns and trends among a sample of IV and IN oxycodone abusers in NYC, our investigation found that these two groups are, overall, quite similar. The samples were closely matched on a number of demographic variables such as age, criminal history, and ratio of males to females. The greater proportion of males to females in both samples is consistent with national data reports that 65–69% of recreational oxycodone and heroin users are male,^{8,15,24} although see Rosenblum et al., 2007¹² for contrasting results.

However, the two groups differ on a number of intriguing socio-demographic aspects. The most notable of these differences was found in the racial/ethnic composition of the samples. Both groups were comprised of equal proportions of Latinos/Hispanic participants, yet the IV sample contained more Caucasians and relatively few African-Americans, while inverse occurred among the IN sample, which had a high percentage of African-Americans, and a low percentage of Caucasians.

Little research has been performed specifically on the ethnic/racial breakdown of oxycodone abusers. A nationwide investigation by SAMHSA found that approximately 90% of recreational oxycodone users were Caucasian.⁸ Similarly, the majority of investigations into prescription opioid abuse report a significant majority (74%–85%) of non-Hispanic, Caucasian participants.^{25,26} Yet a similar proportion of Caucasians and African-Americans have been observed among heroin users in New York City (IV: 31% Caucasian vs. 12% African-American, IN: 21% Caucasian vs. 34% African-American).¹⁷ Thus, the data presented herein suggest that the ethnic diversity observed in the current study reflects a distinctive feature of the oxycodone abusers in NYC.

Despite a lack of significant difference with regard to level of education, the IN sample appeared to be better functioning with respect to current employment. This effect is most likely due to the confluence of a number of factors, including the considerable degree of heroin use among the IV sample. Both groups admitted notable criminal histories and did not differ significantly in the amount of time they had been incarcerated. The proportion of IN (44%) and IV (36%) users reporting arrest histories resembled that reported among national samples of oxycodone users (34%).²⁵

Interestingly, IN abusers were somewhat more likely to have first been exposed to oxycodone for the treatment of pain, yet like the IV population, they currently obtained oxycodone through street vendors or from a friend/relative. Consistent with other studies, obtaining oxycodone via the internet or through manipulation of the healthcare system (multiple doctors, spurious emergency room/doctor visits, and fake prescriptions) was

relatively uncommon among this sample.^{25, 27} Moreover, it appears that the per milligram street price of oxycodone in NYC, estimated from these data (\$17 – \$21 per 40 mg tablet, or 0.45–0.53¢ per mg), is slightly higher than estimates across NY state. The New York State Office of Alcoholism and Substance Abuse Services (OASAS) estimates the standard street price for a 40 mg tablet of oxycodone to be \$10 (0.25¢ per mg).²⁸ In contrast, the price estimates for NYC and across NY State are both substantially lower than what is thought to be the standard or average U.S. street price of \$1.00 per mg.²⁹ Because oxycodone is highly regulated, illegally acquired oxycodone is typically much more expensive than legal oxycodone (.09¢–.13¢ per mg).^{4, 30} Practical issues such as increased access to pharmacists/physicians, and increased number of alternative opioids, almost certainly keep the cost of street oxycodone in NYC below the national average.

When considering the severity of opioid use between the two groups, a comparison is problematic. Within this sample, IN users tended to have more frequent episodes of oxycodone use than IV users. However, IV users were more likely to use heroin concurrently, with both groups showing behavior (frequent opioid use, withdrawal following abstinence) indicative of opioid dependence.

A significant proportion of both groups reported either current or a history of heroin abuse/dependence. In NYC, oxycodone is commonly used to cut heroin.²⁹ In the current study, participants often reported that since the quality of heroin fluctuated significantly, they often used oxycodone because they knew the quality of the drug effect was consistent. Taken together, these findings suggest that the abuse of oxycodone alone in NYC may be rare. Oxycodone may be used primarily to supplement a primary dependence upon heroin, particularly among IV users. The study inclusion criteria only stipulated that participants be “regular intranasal or intravenous users of oxycodone or oxycodone-combination products.” Though it is interesting that such a high percentage of individuals with current/previous heroin use were recruited, unfortunately this investigation did not inquire as to their opioid drug of choice. One could infer a preference based on the question of which drug would be purchased if money were given to buy drugs. In this case, 76% of the IV users chose heroin. Regardless, heroin use appears to be strongly associated with prescription opioid abuse.

The most notable limitation of this investigation was the small sample size. However, although small, the sample was wide-ranging due to the broad criteria for inclusion. The differences observed among those few individuals assessed are provocative and deserve more in-depth study. In addition to sampling a greater number of individuals, future investigations should seek to confirm assessments that rely on self-report using background checks, urine toxicology, and/or naloxone challenge. Although brief mental and physical exams were administered in the present study, the primary goal of these evaluations was to ensure that participants met inclusion criteria. A more in-depth psychological and physical evaluation would have enabled assessment and comparison of multiple characteristics among these populations. Subsequent studies should also examine individuals who solely abuse oxycodone orally. Although intravenous and intranasal routes are more often associated with abuse, oral abusers may constitute a distinct population of users differing from IV and IN populations.³¹

Despite its limitations, this research has significant scientific, public health, and policy implications. Despite multiple similarities on a number of socio-demographic variables, IV oxycodone users were found to have lower rates of employment, an earlier age of onset of illicit drug use, and a greater rate of ongoing heroin use. This less-functional group may need multiple levels of social support to address their increased risk-taking behavior and multiple drug dependencies. That a somewhat larger proportion of IN users began using prescription opioids for pain is troublesome. These data imply that medical practitioners

must balance the medical needs of pain management with an eye towards a history of drug abuse, as this combination may be associated with the transition from medicinal to recreational oxycodone use. Improved physician vigilance and better education concerning the relationship between the necessity to treat pain, and risk factors for abuse are necessary to curtail prescription opioid abuse.³²

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References

1. Gilson AM, Ryan KM, Joranson DE, Dahl JL. A reassessment of trends in the medical use and abuse of opioid analgesics and implications for diversion control: 1997–2002. *J Pain Symptom Manage.* 2004; 28(2):176–188. [PubMed: 15276196]
2. SAMHSA (Substance Abuse and Mental Health Services Administration). DHHS Publication No SMA 05–4062, NSDUH Series H-28. Office of Applied Studies; Rockville, MD: 2005. Results from the 2004 National Survey on Drug Use and Health: National findings. <http://www.oas.samhsa.gov/NSDUH/2k4NSDUH/2k4results/2k4results.htm>
3. [SAMHSA] Substance Abuse and Mental Health Services Administration. The New DAWN Report: Emergency Department Visits Involving Nonmedical Use of Selected Pharmaceuticals. Office of Applied Studies Office of Applied Studies; Rockville, MD: 2006a. <https://dawninfo.samhsa.gov/files/TNDR07EDvisitsNonmedicalUse.htm>
4. Cicero TJ, Inciardi JA, Munoz A. Trends in abuse of Oxycontin and other opioid analgesics in the United States: 2002–2004. *J Pain.* 2005; 6:662–672. [PubMed: 16202959]
5. SAMHSA. Federal Report Shows New Nonmedical Users of Prescription Pain Relievers Outnumbered New Marijuana Users between 2002 and 2004. 2006b. <http://www.samhsa.gov/newsroom/advisories/061102misuse5701.aspx>
6. SAMHSA, Office of Applied Studies. NSDUH Series H-34, DHHS Publication No SMA 08–4343. Rockville, MD: 2008. Results from the 2007 National Survey on Drug Use and Health: National Findings.
7. Becker WC, Sullivan LE, Tetrault JM, et al. Non-medical use, abuse and dependence on prescription opioids among US adults: psychiatric, medical and substance use correlates. *Drug Alcohol Depend.* 2008; 94:38–47. [PubMed: 18063321]
8. [US DHHS] US Department of Health and Human Services. [Accessed 11 Feb 2008] The NSDUH report: nonmedical oxycodone users: a comparison with heroin [online]. 2005. <http://www.oas.samhsa.gov/2k4/oxycodoneH/oxycodoneH.htm>
9. Birnbaum HG, White AG, Reynolds JL, Greenberg PE, Chang M, Vallow S, et al. Estimated costs of prescription opioid analgesic abuse in the united states in 2001: a societal perspective. *Clin J Pain.* 2006; 22(8):667–676. [PubMed: 16988561]
10. Davis MP, Varga J, Dickerson D, Walsh D, LeGrand SB, Lagman R. Normal-release and controlled-release oxycodone: pharmacokinetics, pharmacodynamics, and controversy. *Support Care Cancer.* 2003; 11(2):84–92. [PubMed: 12560936]
11. Katz N, Fernandez K, Chang A, Benoit C, Butler SF. Internet-based survey of nonmedical prescription opioid use in the United States. *Clin J Pain.* 2008; 24:528–535. [PubMed: 18574362]
12. Rosenblum A, Parrino M, Schnoll SH, Fong C, Maxwell C, Cleland CM, Magura S, Haddox JD. Prescription opioid abuse among enrollees into methadone maintenance treatment. *Drug and Alcohol Depend.* 2007; 90:64–71.
13. Sproule B, Brands B, Li S, Catz-Biro L. Changing patterns in opioid addiction: Characterizing users of oxycodone and other opioids. *Can Fam Physician.* 2009; 55:68–69. [PubMed: 19155373]
14. [DAWN] Drug Abuse Warning Network Substance Abuse and Mental Health Services Administration, Office of Applied Studies. DAWN Series D-30, DHHS Publication No (SMA)

- 08–4339. Rockville, MD: 2006. National Estimates of Drug-Related Emergency Department Visits. 2008
15. Cicero TJ, Surratt H, Inciardi JA, Munoz A. Relationship between therapeutic use and abuse of opioid analgesics in rural, suburban, and urban locations in the United States. *Pharmacoepidemiol Drug Saf.* 2007; 16(8):827–840. [PubMed: 17636553]
 16. SAMHSA. Treatment Admissions Involving Narcotic Pain Killers: 2002 Update. Office of Applied Studies; Rockville, MD: 2004. DASIS Report.
<http://www.oas.samhsa.gov/2k4/painTX/painTX.htm>
 17. Marel, R.; Galea, MA.; Smith, RB.; Rainone, G. Drug use trends in New York City. Proceedings of the Community Epidemiology Work Group; 2007.
 18. United States Census Bureau, Population Division. Annual Estimates of the Population of Combined Statistical Areas: April 1, 2000 to July 1, 2007 (CSV). 2007 Population Estimates. 2008.
http://www.census.gov/population/estimates/metro_general/2007/CSA-EST2007-alldata.csv
 19. Hughes, A.; Sathe, N. DHHS Publication No SMA-08–4311, NSDUH Series H-33. Rockville, MD: Substance Abuse and Mental Health Services Administration, Office of Applied Studies; 2008. State Estimates of Substance Use from the 2005–2006 National Surveys on Drug Use and Health.
 20. Office of Applied Studies. Substance estimates from the 2002–2004 National Surveys on Drug Use and Health. Rockville, MD: Substance Abuse and Mental Health Services Administration; 2006.
 21. Katz DA, Hays LR. Adolescent OxyContin abuse. *J Am Acad Child Adolesc Psychiatry.* 2004; 43:231–234. [PubMed: 14726731]
 22. Rutkowski, BA. Drug use trends in New York City. Proceedings of the Community Epidemiology Work Group; 2007.
 23. SPSS I. SPSS 15.0.0 for windows. Chicago, Illinois: 2006.
 24. Carise D, Dugosh KL, McLellan AT, et al. Prescription OxyContin abuse among patients entering addiction treatment. *Am J Psychiatry.* 2007; 164:1750–1756. [PubMed: 17974941]
 25. Back SE, Payne RA, Waldrop AE, Arthur Smith A, Reeves S, Brady KT. Prescription Opioid Aberrant Behaviors: A Pilot Study of Sex Differences. *Clin J Pain.* 2009; 25(6):477–484. [PubMed: 19542794]
 26. Martins SS, Storr CL, Zhuc H, Chilcoat HD. Correlates of extramedical use of OxyContin® versus other analgesic opioids among the US general population. *Drug and Alcohol Depend.* 2009; 99:58–67.
 27. Inciardi JA, Surratt HL, Kurtz SP, Cicero TJ. Mechanisms of prescription drug diversion among drug-involved club- and street-based populations. *Pain Med.* 2007; 8:171–183. [PubMed: 17305688]
 28. Office of Alcoholism and Substance Abuse Services. National illicit drug prices, a National Drug Intelligence Center (NDC) bulletin. Albany, NY: OASAS Street Studies Unit; 2006.
 29. Jayawant SS, Balkrishnan R. The controversy surrounding OxyContin abuse: issues and solutions. *Ther Clin Risk Manag.* 2005; 1(2):77–82. [PubMed: 18360547]
 30. Drug Enforcement Administration. OxyContin®: Pharmaceutical Diversion. 2002.
 31. Flugsrud-Breckenridge MR, Gevirtz C, Paul D, Gould HJ 3rd. Medications of abuse in pain management. *Curr Opin Anaesthesiol.* 2007; 20(4):319–324.
 32. Passik SD, Kirsh KL, Donaghy KB, Portenoy RK. Pain and aberrant drug-related behaviors in medically ill patients with and without histories of substance abuse. *Clin J Pain.* 2006; 22:173–181. [PubMed: 16428952]

Table 1

Participant demographics and population characteristics

	IV (n = 25)	IN (n = 25)	Statistic (df)	p
Gender, N males (%)	21 (84%)	18 (72%)	$\chi^2 (1) = 1.05$	ns
Age (SD)	41 (9)	42 (11)	$t (48) = .68$	ns
Ethnicity, N (%)			$\chi^2 (3) = 13.89$	.003
Black	1 (4%)	11 (44%)		
White	14 (56%)	4 (16%)		
Latino/Hispanic	9 (36%)	9 (36%)		
Mixed/Other	1 (4%)	1 (4%)		
Number Currently Unemployed, N (%)	18 (72%)	9 (36%)	$\chi^2 (1) = 8.29$	.004
Some College Education, N (%)	18 (72%)	13 (52%)	$\chi^2 (1) = 3.68$	ns
Months Jail Time, M (SD)	7 (16)	8 (18)	$t (47) = .12$	ns

Table 2

Participants' current and previous drug use

	IV (n = 25)	IN (n = 25)	Statistic (df)	p
Age of First Illicit Drug Use, M (SD)	13 (3)	16 (6)	$t(48) = 2.76$	0.05
Age of First Oxy Use in years, M (SD)	34 (10)	37 (11)	$t(48) = .237$	ns
Began Using Oxy for Pain, N (%)	7 (28%)	13 (52%)	$\chi^2(1) = 3.00$	0.07
Experimented w/Multiple Routes of Oxy Administration, N (%)	18 (72%)	16 (64%)	$\chi^2(1) = 1.59$	ns
Number of Episodes of Oxy Use Per Week, M (SD)	6 (7)	10 (11)	$t(48) = .588$	0.10
Amount Usually Spend on 40 mg Oxy tablet, M (SD)	\$18(11)	\$21 (15)	$t(46) = 1.58$	ns
How is Oxy Obtained N (%)			$\chi^2(2) = 4.13$	ns
Street Purchase	12 (48%)	15 (60%)		
Another Individual w/Rx	12 (48%)	6 (24%)		
Personal Rx	1 (4%)	4 (16%)		
History of Heroin Use, N (%)	23 (92%)	20 (80%)	$\chi^2(1) = 3.03$	0.08
Current Heroin Use, N (%)	24 (96%)	13 (52%)	$\chi^2(1) = 12.58$	.001
Would Buy Heroin if Given Money to Spend on Drugs, N (%)	19 (76%)	13 (52%)	$\chi^2(1) = 5.95$	.015
History of Cocaine Use, N (%)	17 (68%)	19 (76%)	$\chi^2(1) = .40$	ns
Current Cocaine Use, N (%)	4 (16%)	8 (32%)	$\chi^2(1) = 1.75$	ns
Would Buy Cocaine if Given Money to Spend on Drugs, N (%)	3 (12%)	2 (8%)	$\chi^2(1) = 1.38$	ns
Longest Opioid Abstinence Period in Hours, M (SD)	15.8 (11.3)	21.6 (13.4)	$t(48) = .94$	ns
Number of Opioid Withdrawal Symptoms Endorsed, M (SD)	3 (3)	2 (2)	$t(48) = 6.03$	ns
"Always" or "More Often than Not" Combine Oxy w/Another Drug, N (%)	8 (32%)	5 (20%)	$\chi^2(1) = 3.39$	ns