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Correlates of Risky Injection Practices among Past-Year Injection Drug Users among the US General Population

Lauren R. Ropelewski,
Johns Hopkins University Bloomberg School of Public Health, Department of Mental Health, 2213 McElderry Street, Suite 437, Baltimore, MD, 21205 USA. Tel: [410] 502-9501; Fax: [410] 955-0237

Brent E. Mancha,
Johns Hopkins University Bloomberg School of Public Health, Department of Mental Health, 2213 McElderry Street, Suite 413, Baltimore, MD, 21205 USA

Alicia Hulbert,
Johns Hopkins University School of Medicine, Department of Oncology, 1650 Orleans St., Suite 541, Baltimore, MD, 21231 USA

Abby E. Rudolph, and
Johns Hopkins University Bloomberg School of Public Health, Department of Epidemiology, 2213 McElderry Street, Suite M435, Baltimore, MD, 21205 USA

Silvia S. Martins
Johns Hopkins University Bloomberg School of Public Health, Department of Mental Health, 624 N. Broadway, 8th Floor, Suite 896, Baltimore, MD, 21205 USA

Lauren R. Ropelewski: lropelew@jhsph.edu

Abstract

Background—With an estimated 1 million active injection drug users (IDUs), injection drug use continues to be a public health concern in the United States. Risky injection practices have been associated with the transmission of HIV, Hepatitis B and C, as well as other skin and soft tissue infections.

Methods—We used data from 463 respondents, aged 18 and older, who were past-year IDUs in the 2005–2008 National Survey of Drug Use and Health (NSDUH). We investigated correlates of risky injection behavior among these recent IDUs.

Results—Older age (≥35 versus 18–25) was associated with reusing one's own needle at last injection (aOR=1.80 [1.02–3.17], as were past year heroin (aOR=2.59 [1.18–5.66]) and cocaine injection (aOR=2.17 [1.13–4.15]). Past year crack cocaine use was positively associated with not cleaning needles with bleach (aOR=2.18 [1.10–4.33]). Past year cocaine injection was associated with obtaining needles in a risky manner (aOR=2.29 [1.23–4.25]). Methamphetamine injection was associated with obtaining needles in less risky ways (aOR=0.41 [0.20–0.84]).

Correspondence to: Lauren R. Ropelewski, lropelew@jhsph.edu.

Conclusion—Our findings indicate that some IDUs are continuing to engage in high risk injection behaviors. The identification of potential at-risk populations of IDUs may have implications for harm reduction interventions and HIV prevention programs.

Keywords

Injection drug users; injection risk behaviors; HIV risk behaviors; NSDUH

1. Introduction

Approximately 1 million people in the United States are active injection drug users (IDUs) (Centers for Disease Control and Prevention, 2001a; Gibbs et al., 1991). Oftentimes injection drug use comes with many serious health risks. One of the most prominent and well-recognized health risks is the transmission of human immunodeficiency virus (HIV), which is transmitted via injection when IDUs share needles and injection equipment (i.e., cookers, cotton, tourniquets, etc.) contaminated with infected blood (Centers for Disease Control and Prevention, 1987). Since the 1980s, injection drug use has accounted for 36% of the acquired immunodeficiency syndrome (AIDS) cases in the United States (Centers for Disease Control and Prevention, 2002a). Despite evidence that the incidence of HIV among IDUs has declined since the 1980s (Centers for Disease Control and Prevention, 2009), a significant proportion of HIV cases can still be attributed to injection drug use. Of the 56,300 new cases of HIV reported in the United States annually, 12% are related to injection drug use (Centers for Disease Control and Prevention, 2008; Centers for Disease Control and Prevention, 2010).

In addition to HIV/AIDS, other infectious diseases are associated with and transmitted by injection drug use. Due to shared routes of transmission, Hepatitis B virus (HBV) and Hepatitis C virus (HCV) are common among IDUs (Homann et al., 1991; Sherman et al., 2002), with 50–70% and 50–80% of IDUs becoming infected with HBV and HCV, respectively, within the first 5 years of initiating injection drug use (Centers for Disease Control and Prevention, 2002b). The prevalence of HCV among IDUs has been estimated to be between 50–90% (Centers for Disease Control and Prevention, 2005; Hahn et al., 2002; Des Jarlais et al., 2009). Similarly, persistent risk behaviors in IDUs, like sharing injection equipment, can at least partly account for HCV transmission among IDU populations (Hagan and Des Jarlais, 2000).

Sex differences in risky injection behaviors have been reported among both established and novice IDU populations. In some studies, females were more likely to report needle-borrowing at some point in their lifetime (Montgomery et al., 2002), even after controlling for number of years injecting (Evans et al., 2003). Frajzyngier et al. (2007) found that, at the time of first injection episode, females were more likely than males to share a needle or other drug preparation equipment. Conversely, other studies found that females exhibit more protective behaviors, for example, obtaining needles from safe sources such as needle exchange programs), carrying their own needles with them less frequent needle sharing, less frequent shooting gallery attendance, and fewer injection equipment-lending behaviors (Montgomery et al., 2002; Latkin and Forman, 2001; Bennett et al., 2000).

Other factors have been associated with injection behaviors that increase risk for contraction of HIV/AIDS and other infectious diseases. In some instances, the specific type of drug that is injected has been associated with risky injection behaviors. The injection of cocaine, or forms of “speed” like methamphetamine, have been associated with increased frequency of injection and greater likelihood of using previously used or contaminated needles (Anthony et al., 1991). Additionally, Molitor et al. (1999) found that IDUs injecting methamphetamine

were more likely to borrow used needles and lend used needles to other injectors, and less likely to always disinfect used needles with bleach. Concurrent crack cocaine use has also been associated with increased HIV risk behaviors. IDUs who smoke crack are more likely to report injection risk behaviors than IDUs who inject only, such as unsafe needle acquisition (e.g., obtaining needles in shooting galleries, from someone selling needles on the street, etc.), needle sharing (Golub et al., 2005), and greater amounts of injection drug use, overall (Booth et al., 1993). McCoy et al. (2004) found that compared with those who neither injected nor smoked crack, individuals that smoked crack and injected were 5.27 times as likely to be HIV seropositive. Additionally, demographic factors like low socioeconomic status can increase exposure to risk conditions, as well as introduce individuals to risky drug-use behaviors, which place individuals at risk for contracting HIV and other infectious diseases (Blankenship et al., 2005).

A great deal of intervention work with high risk groups like IDUs has been conducted within the past few decades. Some studies show that risky injection behaviors have been decreasing over time within this population (Roy et al., 2007; Nelson et al., 2002; Des Jarlais et al., 2000), while others indicate that a steady decline in injection risk may not be a reality (Mehta et al., 2006; Burt et al., 2007). Other studies have highlighted sub-populations of highly marginalized IDUs who need more targeted interventions to promote risk reduction (Rudolph et al., 2010). Regardless, it is apparent that some IDUs are still engaging in high risk behaviors. A better understanding of the demographics of injectors that continue to engage in high risk injection practices can aid in the development of finer-tuned interventions directed at those individuals previously missed. The present paper aims to examine whether demographic and drug use characteristics are associated with high risk injection behaviors that consequently increase the risk for disease transmission and other health complications among a nationally representative sample of recent injectors.

2. Methods

2.1 Sample and measures

Data came from the 2005 (n = 55,905), 2006 (n = 55,279), 2007 (n = 55,435) and 2008 (n = 55,739) National Survey on Drug Use and Health (NSDUH) public use data files. Four consecutive years were combined to increase sample size. Of the 222,358 participants surveyed, 72,561 were excluded because they were younger than age 18, and an additional 149,334 participants were excluded because they were not past-year injection drug users, leaving 463 participants for this analysis. The NSDUH is sponsored by the Substance Abuse and Mental Health Services Administration (SAMHSA) and is designed to provide estimates of the prevalence of extra-medical use of legal drugs and illegal drugs in the household population of the United States, age 12 and older (Substance Abuse and Mental Health Services Administration, 2006–2009). The survey employs a 50 state design with an independent multistage area probability sample for each of the 50 states and the District of Columbia. To increase the precision of estimates, African-Americans, Hispanics, and young people were oversampled. Response rates for completed surveys were 76%, 74%, 74%, and 74.4% in 2005, 2006, 2007, and 2008, respectively.

Informed consent was obtained prior to the start of every interview. Participants were given a description of the study, then instructed to read a statement that described the legislation that assures the confidentiality of any information provided by the participant, and assured that participation in the study was strictly voluntary. To protect the confidentiality of respondents, the full analytic files were treated using a statistical disclosure limitation known as Micro Agglomeration, Substitution, Sub-sampling, and Calibration (MASSC). All directly identifying information on file was eliminated. Census, region, state, and other geographic identifiers were removed; allowing for protection of confidentiality, while still

allowing most variables to be available for analysts to use. Additional information on maintenance of data confidentiality has been reported elsewhere (Substance Abuse and Mental Health Services Administration, 2006–2009). Survey items were administered by computer-assisted personal interviewing conducted by an interviewer (CAPI) and audio computer-assisted self-interviewing (ACASI). Use of ACASI was designed to provide respondents with a highly private and confidential means of responding to questions and to increase the level of honest reporting of illegal drug use and other sensitive behaviors (Substance Abuse and Mental Health Services Administration, 2006–2009; Macalino et al., 2002). Respondents were offered a US $30 incentive payment for participation. All respondents provided information about their drug use, injecting practices and demographics. This secondary data analysis was approved by the Johns Hopkins University Institutional Review Board.

Sampling weights for the NSDUH were computed to control unit-level and individual-level non-response and were adjusted to ensure consistency with population estimates obtained from the US Census Bureau. In order to use data from the four years of combine data, a new weight was created upon aggregating the four datasets by dividing the original weight by the number of data sets combined. Further descriptions of the sampling methods and survey techniques for the 2005–2008 NSDUH are found elsewhere (Substance Abuse and Mental Health Services Administration, 2006–2009).

2.2 Demographic variables

Socio-demographic variables selected for this analysis were age, sex, race/ethnicity, educational attainment, population density, and marital status. We focused only on adult respondents (aged 18 and older). Age was categorized into approximate tertiles (18–25, 26–34, 35+). Race/ethnicity was dichotomized as “white” and “non-white” due to the small number of respondents reporting a race/ethnicity other than white (i.e., black/African American, Native American/Alaska Native, Native Hawaiian/other Pacific Islander, Asian, more than one race, Hispanic). Educational attainment was categorized as “less than a high school diploma” or “high school or more” (Latkin et al., 2009; Huo and Ouellet, 2007; Mitchell and Latimer, 2009). Population density was examined by looking at “large metropolitan areas”, or core-Based Statistical Classification Area (CBSA) with 1 million or more persons, “small metropolitan areas”, or CBSA with 1 million or fewer persons, and “non-metropolitan areas”, or areas not in a CBSA, as provided by the Office of Management and Budget (Office of Management and Budget, 2000). Marital status was dichotomized to compare individuals that were “married” and “single” (Mandell et al., 1994; Magura et al., 1989).

2.3 Injection drug use

Information on injection drug use was available for cocaine, heroin, methamphetamine, and other stimulants. Individuals who reported injection drug use either within the past 30 days or more than 30 days ago but within the past 12 months were classified as recent (past-year) injection drug users and were included in this analysis. The types of drugs injected (cocaine, heroin, methamphetamine, and other stimulants) and the number of different drug types injected within the past 12 months (1 vs. 2+) were also assessed.

2.4 Other drug use: Crack cocaine use

Individuals were dichotomized based on self-reported use of crack cocaine within the past 12 months.

2.5 Risky injection behavior variables (outcome variables)

Respondents were asked about whether or not they had engaged in several high risk injection practices at last injection. The following risky injection practices were assessed: borrowing a used needle, not cleaning their needle with bleach prior to use, lending a used needle, reusing a personal needle, (response options for these variables were yes/no) and obtaining a needle in a risky manner (response option allowed for multiple answers). For the purposes of this paper, reusing personal needles was classified as a risky injection behavior because such an act can result in a) infections from bacteria on the used needle, b) vein/soft tissue damage from needles that have become blunted through reuse, and c) possible confusion and inadvertent use of someone else's (potentially used and contaminated) needles (QuIHN, Ltd., 2010; Centers for Disease Control and Prevention, 2001b; Louria et al., 1967; Cherubin, 1967). Methods of needle acquisition were classified as "non-risky" or "risky" in accordance with previous literature pertaining to the unsafe acquisition of needles among injection drug users (Golub et al., 2005).

2.6 Statistical analyses

Data were weighted to reflect the complex design of the NSDUH sample and were analyzed with STATA 10.0 software (StataCorp, 2007). We used Taylor series estimation methods (STATA "svy" commands) to obtain proper standard error estimates for the cross-tabulations and logistic regressions. Following basic contingency table analyses, we conducted a series of weighted logistic regressions, both unadjusted and adjusted for demographics (age, sex, race/ethnicity, education attainment) and survey year. Demographics and survey year were included as potential confounders in the adjusted models. Outcome variables of interest were risky injection behaviors, including: borrowing used needles, not using bleach to clean needles prior to use, lending used needles to other injectors, reusing personal needles, and obtaining needles in a risky manner. Results are presented via weighted proportions (wgt%), Odds Ratios (ORs), adjusted Odds Ratios (aORs), 95% confidence intervals (CIs) and p-values. For all analyses, the alpha level was set at 0.05.

3. Results

3.1 Study Sample

Roughly two-thirds of past year IDUs were male (67%). With respect to age, (26%) were between the ages of 18–25, a quarter (27%) between 26–34 years of age, and the remainder (47%) were age 35 and older. The majority of IDUs were white (73%), 8% were black/African American, 1% were Native American/Alaska native, 2% endorsed more than one race, 15% were Hispanic, and less than 1% reported native Hawaiian/other Pacific Islander and Asian race/ethnicity, comprising the remaining 27% of non-white participants. Approximately two-thirds had completed high school or more (68%). The majority of the sample lived within a CBSA containing 1 million people or more (48%), while 43% resided in a CBSA with less than 1 million people. The remainder (9%) lived in areas not included in a CBSA. Additionally, a majority of individuals (84%) were not married. Demographic characteristics for IDUs age 18+ can be found in Table 1.

3.2 Drug Use Behaviors

Within the past 12 months, 53% percent of IDUs reported having injected heroin, 39% reported injecting cocaine, 38% reported injecting methamphetamine, and 21% reported having injected other stimulants. Since some IDUs reported injecting more than 1 type of drug (40% reported injecting 2 or more different types of drugs within the past year), the aforementioned percentages do not sum to 100%. Crack cocaine use was reported by 38% of

the individuals. Additionally, 42% of IDUs reported injecting at least one of the aforementioned drugs within the past 30 days, while 68% reported injecting at least one type of drug more than 30 days ago, but within the past 12 months. Forty-three percent of the IDUs reported utilizing some form of drug treatment within the past 12 months. Drug use behavior is summarized in Table 2.

3.3 Risky Injection Behaviors

Fifty-four percent of IDUs reused a personal needle at last injection, 69% did not use bleach to clean their needle, 35% obtained their needle in a "risky" manner, 17% borrowed and injected with a used needle, and 21% lent a used needle to another injector. Since many IDUs reported engaging in multiple risky injection behaviors, these percentages do not sum to 100%. Injection behavior is summarized in Table 2.

3.3.1 Reusing needles—Older age (i.e., individuals age 35+ compared to 18–25) was associated with reusing one's own needles at last injection in the unadjusted model (OR = 1.74 [1.00–3.02]), and after adjusting for demographic factors and survey year (aOR = 1.80 [1.02–3.17]). Having injected heroin within the past year was associated with reusing one's own needle at last injection in the unadjusted (OR = 2.13 [1.02–4.46]), and in the adjusted models (aOR = 2.59 [1.18–5.66]). Having injected cocaine within the past year was also statistically significantly associated with reusing one's own needles at last injection in the adjusted model (aOR = 2.17 [1.13–4.15]). Table 3 summarizes results regarding reusing one's own needles at last injection.

3.3.2 Cleaning needles with bleach—Past year crack cocaine use was associated with not cleaning needles with bleach (OR = 2.14 [1.07–4.31]) in the univariate model, and in the adjusted model (aOR = 2.18 [1.10 – 4.33]), with crack cocaine users being more than twice as likely to report not cleaning needles with bleach prior to use. Table 4 summarizes the results pertaining to cleaning needles with bleach at last injection.

3.3.3 Obtaining needles—Injecting cocaine (OR = 2.17 [1.14–4.11]) and methamphetamine (OR = 0.47 [0.24–0.92]), within the past year were associated with obtaining needles in a risky manner at last injection in univariate models. The significant effect for cocaine persisted in the adjusted model (aOR = 2.29 [1.23 – 4.25]). Compared with those not injecting cocaine, those who did were more than 2 times as likely to obtain needles in a risky manner at last injection. Conversely, past-year methamphetamine injectors were less likely to report obtaining needles in a risky manner, even after model adjustment (aOR = 0.41 [0.20 – 0.84]). Results regarding acquiring needles in a risky manner can be found in Table 5.

3.3.4 Borrowing used needles or lending used needles—None of the factors under investigation were significantly associated with either borrowing or lending used needles. These results can be found in Tables 6 and 7, respectively.

4. Discussion

A great deal of intervention work has been performed with IDU populations, and some evidence, though mixed, shows that risky injection practices are on the decline (Roy et al., 2007; Nelson et al., 2002; Des Jarlais et al., 2000). The results of the present analyses indicate that some proportion of IDUs continue to engage in high risk injection behaviors. Among past-year injectors in this national sample, reusing personal needles, failing to clean needles with bleach prior to use, and obtaining needles from unsafe sources were all behaviors significantly associated with various socio-demographic and drug use factors.

Inconsistent with prior evidence (Huo and Oullet, 2007), older IDUs in this sample were more likely to reuse their own needles at last injection than younger IDUs. As IDUs age, and presumably become more experienced and have been injecting for longer periods of time, it is possible that adherence to safer injecting practices may become more relaxed. Also, individuals in this age group might have decreased access to clean needles (i.e., lack of availability, lack of money for purchasing needles). As a result, these IDUs may resort to reusing personal needles out of necessity. Greater awareness of and increased access to needle exchange programs, as well as information on the health risks inherent to reusing personal needles (QuIHN, Ltd., 2010; Centers for Disease Control and Prevention, 2001b; Louria et al., 1967; Cherubin, 1967), among this subset of IDUs could be beneficial. These same interventions would likely be of some utility to IDUs in general, but also to those who inject heroin and/or cocaine, as both groups were also significantly more likely to reuse personal needles than non-heroin and non-cocaine injectors in this sample.

Past-year crack cocaine use was associated with a decreased likelihood of cleaning needles with bleach prior to use. This finding is consistent with prior literature, where crack cocaine use among IDUs has been known to be a risk factor for contracting HIV, as well as for risky drug use behaviors (McCoy et al., 2004; Golub et al., 2005). This finding would indicate that interventions targeted at IDUs who also smoke crack cocaine are necessary to promote safer injecting practices, specifically sterilization of needles, particularly when new needles are unavailable.

The divergent findings regarding methamphetamine and cocaine injection, as they pertain to obtaining needles in an unsafe manner, could be at least partially explained by the half-life of both methamphetamine and cocaine. Cocaine is metabolized quickly, with a half-life of 1 hour, whereas methamphetamine is metabolized much more slowly, with a half-life of approximately 12 hours (National Institute on Drug Abuse, 2008). Since cocaine is metabolized more quickly, to maintain a high, individuals must inject cocaine much more frequently (Bux et al., 1995; Hudgins et al., 1995; Joe and Simpson, 1995) than methamphetamine. As a result, obtaining new needles in a safe manner for each injection may not always be possible for individuals who inject cocaine.

Previous research suggests that sex is significantly associated with needle sharing behaviors (Evans et al., 2003; Montgomery et al., 2002; Bennett et al., 2000); findings from the present study do not support this. While one study has shown male sex to be associated with injection equipment-lending behavior (Bennett et al., 2000), the present study was not able to replicate such findings. Furthermore, none of the factors under consideration were significantly associated with either needle-sharing or needle-lending. The lack of significant associations found for needle-lending or needle-borrowing may be at least partly due to interventions having successfully reduced the performance of these behaviors in the general population. Needle-lending and needle-borrowing were the least commonly reported risky injection behavior in the present study (21% and 17%, respectively).

Study limitations should be recognized. The NSDUH does not contain detailed information regarding HIV, HBV or HCV statuses, or any information on sexual risk behaviors (e.g., prostitution, number of sexual partners, unprotected sex, etc.). This is particularly limiting given that such behaviors are often responsible for the transmission of HIV and infectious disease among IDU populations (Strathdee and Sherman, 2003; Kral et al., 2001; Solomon et al., 1993; Moss et al., 1994). NSDUH questions pertaining to frequency of drug use do not discriminate between routes of transmission. As a result, we are unable to assess frequency of drug injection, and thereby gauge the severity of drug use in this sample. However, we are able to ascertain that 43% of our sample participated in some sort of drug treatment within the past year, which may serve as a surrogate measure of the severity of

drug use. Additional limitations arise due to NSDUH's focus on IDU's most recent injection. Behavior at last injection may not be indicative of typical injection behavior for the IDUs in question. Therefore, it would be helpful and interesting to collect additional information on IDUs' "standard" injecting behaviors. Also, NSDUH is a cross-sectional survey, so causal relationships cannot be inferred from the findings of the present study. Additionally, it is possible that the findings from this study have implications for IDUs worldwide, though we are unable to make that claim with any certainty, since data from only the United States has been examined. Therefore, the findings may not generalize to IDU populations outside of the United States.

Despite the identified limitations, the present study has several strengths that should be highlighted, as well. This study contributes valuable epidemiologic information about potential correlates of risky injection behavior in a nationally representative sample. Moreover, it contributes to a better understanding of the demographics and characteristics of injectors that are continuing to engage in risky injection practices, and can aid in the development of finer-tuned interventions directed at these individuals. It draws its strength from a relatively large sample of IDUs that can be generalized to the US household population, allowing for the examination of potentially less frequent and lower risk injectors, as compared to samples of IDUs recruited via different methods such as Respondent Driven Sampling (RDS) or Targeted Sampling (TS). When comparing IDUs recruited via different methods, demographic characteristics of IDUs recruited via RDS or TS varied widely depending upon the area of the country in which recruitment took place (Des Jarlais et al., 2007; Kral et al., 2010; Robinson et al., 2006; Burt et al., 2010), making comparisons to our sample difficult. Comparison of injection risk behaviors between the present study and other samples indicates uniformly higher rates of injection risk among the community samples (Thorpe et al., 2001; Rudolph et al., in press). These differences in risk behaviors are likely due to the differing methods of recruitment. RDS and TS sampling methods specifically target marginalized and higher risk IDUs. In looking at the lower risk injectors in our sample, we are potentially examining individuals who are missed by the studies and interventions that target IDUs based on their high-risk status. Additionally, the NSDUH uses ACASI to increase reporting of sensitive topics and thus reduce the possibility of social desirability bias (Substance Abuse and Mental Health Services Administration, 2006–2009; Macalino et al., 2002).

These findings have several implications for harm reduction interventions and HIV prevention programs. The identification of several subgroups of IDUs who continue to engage in risky injection practices should help identify possible at-risk groups to be targeted by programs attempting to address those issues. Though a great deal of effective intervention work has been performed with IDUs, until we begin to address the subgroups of injectors that have been previously missed, or not targeted heavily enough, we will continue to omit critical components affecting the spread of HIV and other infectious diseases.

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Table 1

Sociodemographic characteristics of past year injection drug users aged 18 and older: data from the 2005–2008 National Survey on Drug Use and Health

Characteristic	*N*	wt% (95% CI)
Total	463	0.19 (0.16, 0.23)
Sex		
Male	262	66.77 (60.20, 72.74)
Female	201	33.23 (27.26, 39.80)
Age (years)		
18–25	282	26.09 (21.11, 31.78)
26–34	81	26.56 (19.68, 34.79)
35+	100	47.35 (38.99, 55.86)
Race		
White	365	73.49 (63.91, 81.27)
Non-White	98	26.51 (18.73, 36.09)
Education		
< High school	144	32.32 (25.30, 40.24)
High school+	319	67.68 (59.76, 74.70)
Population Density		
Not in a CBSA	50	8.56 (5.99, 12.10)
< 1 million people	249	42.95 (35.75, 50.45)
1 million people+	164	48.49 (40.14, 56.92)
Income		
<$19,999	195	49.63 (40.61, 58.66)
$20,000+	268	50.37 (41.34, 59.39)
Marital Status		
Single	405	83.64 (76.26, 89.06)
Married	58	16.36 (10.94, 23.74)
Year		
2005	137	27.34 (20.47, 35.48)
2006	110	27.78 (20.86, 35.95)
2007	111	19.86 (15.66, 24.85)
2008	105	25.02 (18.60, 32.77)

Table 2

Prevalence of drug use and risky injection behaviors among past-year injection drug users: data from the 2005–2008 National Survey on Drug Use and Health

Characteristic	*N*	wt% (95% CI)
Type of drug injected in past year[a]		
Heroin	244	52.90 (44.59, 61.05)
Cocaine	190	38.55 (30.79, 46.94)
Methamphetamine	187	37.67 (30.26, 45.72)
Other stimulants	101	21.26 (15.24, 28.84)
Number of different drug types injected in past year		
1	275	60.33 (53.76, 66.54)
2+	128	39.67 (33.46, 46.24)
Recent injection drug use		
Within the past 30 days	192	42.00 (33.87, 50.59)
More than 30 days ago but within the past 12 months	313	67.79 (59.76, 74.90)
Other drug use in past year		
Crack cocaine	177	38.24 (30.68, 46.42)
Risky injection behavior[b]		
Reusing needles	231	54.21 (46.46, 61.77)
Not cleaning needles	332	68.58 (61.90, 74.57)
Unsafe acquisition	153	34.70 (28.38, 46.61)
Borrowing needles	72	16.75 (12.20, 22.55)
Lending needles	96	21.43 (15.98, 28.11)
Utilization of past-year drug treatment		
Yes	185	42.93 (36.05, 50.09)
No	278	57.07 (49.91, 63.95)

[a]Type of drug injected in the past year percentages do not sum to 100% because some IDUs reported injecting more than 1 type of drug in the past year.

[b]Risky injection behavior percentages do not sum to 100% because some IDUs reported engaging in multiple risky injection behaviors in the past year.

Table 3

Odds ratio estimates of correlates of reusing personal needles at last injection among past-year IDUs: data from the 2005–2008 National Survey on Drug Use and Health

Covariate	Unadjusted odds ratio		Adjusted odds ratio[a]	
	OR	95% CI	aOR	95% CI
Age				
18–25	1.0		1.0	
26–34	0.76	(0.42, 1.35)	0.72	(0.39, 1.32)
35+	1.74	(1.00, 3.02)	1.80	(1.02, 3.17)
Sex				
Male	1.0		1.0	
Female	1.07	(0.57, 2.03)	1.30	(0.73, 2.29)
Race				
White	1.0		1.0	
Non-White	1.28	(0.59, 2.79)	1.15	(0.54, 2.41)
Education Attainment				
HS or greater	1.0		1.0	
< HS	1.70	(0.74, 3.87)	1.70	(0.70, 4.11)
Population Density				
Not in a CBSA	1.0		1.0	
<1 million people	0.56	(0.26, 1.17)	0.54	(0.24, 1.23)
1 million people+	0.65	(0.31, 0.36)	0.63	(0.27, 1.49)
Marital Status				
Single	1.0		1.0	
Married	1.06	(0.47, 2.42)	0.97	(0.41, 2.33)
Injecting Heroin in the Past Year				
No	1.0		1.0	
Yes	2.13	(1.02, 4.46)	2.59	(1.18, 5.66)
Injecting Cocaine in the Past Year				
No	1.0		1.0	
Yes	1.74	(0.90, 3.36)	2.17	(1.13, 4.15)
Injecting Methamphetamine in the Past Year				
No	1.0		1.0	
Yes	0.65	(0.31, 1.36)	0.51	(0.25, 1.06)
Injecting Other Stimulants in the Past Year				
No	1.0		1.0	
Yes	0.98	(0.39, 2.44)	0.89	(0.35, 2.27)
Number of Drugs Injected in the Past Year				
1	1.0		1.0	
2+	1.59	(0.77, 3.26)	1.61	(0.78, 3.32)
Crack Cocaine Use in the Past Year				
No	1.0		1.0	

Covariate	Unadjusted odds ratio		Adjusted odds ratio[a]	
	OR	95% CI	aOR	95% CI
Yes	0.61	(0.33, 1.14)	0.66	(0.34, 1.26)

[a] Odds ratio is adjusted for age, sex, race/ethnicity, education attainment, and survey year.

Table 4

Odds ratio estimates of correlates of not cleaning needles with bleach at last injection among past-year IDUs: data from the 2005–2008 National Survey on Drug Use and Health

Covariate	Unadjusted odds ratio		Adjusted odds ratio[a]	
	OR	95% CI	aOR	95% CI
Age				
18–25	1.0		1.0	
26–34	0.74	(0.38, 1.45)	0.83	(0.41, 1.66)
35+	0.82	(0.41, 1.64)	0.70	(0.36, 1.36)
Sex				
Male	1.0		1.0	
Female	0.60	(0.31, 1.04)	0.57	(0.32, 1.01)
Race				
White	1.0		1.0	
Non-White	1.13	(0.44, 2.92)	1.18	(0.50, 2.78)
Education Attainment				
HS or greater	1.0		1.0	
< HS	0.50	(0.23, 1.08)	0.50	(0.24, 1.03)
Population Density				
Not in a CBSA	1.0		1.0	
<1 million people	1.76	(0.85, 3.63)	1.66	(0.74, 3.71)
1 million people+	1.28	(0.55, 2.95)	1.27	(0.53, 3.02)
Marital Status				
Single	1.0		1.0	
Married	0.43	(0.17, 1.08)	0.42	(0.17, 1.05)
Injecting Heroin in the Past Year				
No	1.0		1.0	
Yes	0.89	(0.43, 1.85)	0.75	(0.34, 1.63)
Injecting Cocaine in the Past Year				
No	1.0		1.0	
Yes	0.94	(0.47, 1.88)	0.94	(0.50, 1.78)
Injecting Methamphetamine in the Past Year				
No	1.0		1.0	
Yes	0.93	(0.46, 1.84)	1.08	(0.49, 2.37)
Injecting Other Stimulants in the Past Year				
No	1.0		1.0	
Yes	0.63	(0.26, 1.51)	0.61	(0.25, 1.51)
Number of Drugs Injected in the Past Year				
1	1.0		1.0	
2+	0.68	(0.35, 1.31)	0.68	(0.33, 1.38)
Crack Cocaine Use in the Past Year				
No	1.0		1.0	

Covariate	Unadjusted odds ratio		Adjusted odds ratio[a]	
	OR	95% CI	aOR	95% CI
Yes	2.14	(1.07, 4.31)	2.18	(1.10, 4.33)

[a]Odds ratio is adjusted for age, sex, race/ethnicity, education attainment, and survey year.

Table 5

Odds ratio estimates of correlates of obtaining needles in a risky manner at last injection among past-year IDUs: data from the 2005–2008 National Survey on Drug Use and Health

Covariate	Unadjusted odds ratio		Adjusted odds ratio[a]	
	OR	95% CI	aOR	95% CI
Age				
18–25	1.0		1.0	
26–34	1.54	(0.82, 2.91)	1.36	(0.71, 2.63)
35+	1.11	(0.56, 2.19)	1.15	(0.57, 2.30)
Sex				
Male	1.0		1.0	
Female	1.83	(0.98, 3.40)	1.61	(0.98, 2.65)
Race				
White	1.0		1.0	
Non-White	0.72	(0.28, 1.90)	0.73	(0.30, 1.82)
Education Attainment				
HS or greater	1.0		1.0	
< HS	1.29	(0.64, 2.60)	1.24	(0.63, 2.43)
Population Density				
Not in a CBSA	1.0		1.0	
<1 million people	1.12	(0.46, 2.76)	0.93	(0.31, 2.81)
1 million people+	1.39	(0.56, 3.41)	1.27	(0.38, 4.24)
Marital Status				
Single	1.0		1.0	
Married	0.68	(0.24, 1.88)	0.48	(0.17, 1.34)
Injecting Heroin in the Past Year				
No	1.0		1.0	
Yes	1.14	(0.54, 2.41)	1.29	(0.58, 2.88)
Injecting Cocaine in the Past Year				
No	1.0		1.0	
Yes	2.17	(1.14, 4.11)	2.29	(1.23, 4.25)
Injecting Methamphetamine in the Past Year				
No	1.0		1.0	
Yes	0.47	(0.24, 0.92)	0.41	(0.20, 0.84)
Injecting Other Stimulants in the Past Year				
No	1.0		1.0	
Yes	0.44	(0.19, 1.07)	0.44	(0.18, 1.10)
Number of Drugs Injected in the Past Year				
1	1.0		1.0	
2+	0.91	(0.45, 1.83)	0.93	(0.45, 1.94)
Crack Cocaine Use in the Past Year				
No	1.0		1.0	

Covariate	Unadjusted odds ratio		Adjusted odds ratio[a]	
	OR	95% CI	aOR	95% CI
Yes	1.11	(0.62, 1.97)	1.11	(0.61, 2.01)

[a]Odds ratio is adjusted for age, sex, race/ethnicity, education attainment, and survey year.

Table 6

Odds ratio estimates of correlates of borrowing used needles at last injection among past-year IDUs: data from the 2005–2008 National Survey on Drug Use and Health

Covariate	Unadjusted odds ratio		Adjusted odds ratio[a]	
	OR	95% CI	aOR	95% CI
Age				
18–25	1.0		1.0	
26–34	1.46	(0.65, 3.29)	1.24	(0.53, 2.89)
35+	1.27	(0.63, 2.56)	1.51	(0.67, 3.37)
Sex				
Male	1.0		1.0	
Female	1.34	(0.67, 2.66)	1.44	(0.75, 2.77)
Race				
White	1.0		1.0	
Non-White	1.02	(0.31, 3.32)	1.10	(0.35, 3.42)
Education Attainment				
HS or greater	1.0		1.0	
< HS	0.88	(0.38, 2.04)	0.87	(0.36, 2.09)
Population Density (vs. not in a CBSA)				
Not in a CBSA	1.0		1.0	
<1 million people	1.99	(0.60, 6.57)	2.09	(0.49, 8.83)
1 million people+	3.10	(0.98, 9.82)	2.72	(0.66, 11.23)
Marital Status				
Single	1.0		1.0	
Married	0.34	(0.06, 1.98)	0.31	(0.05, 1.94)
Injecting Heroin in the Past Year				
No	1.0		1.0	
Yes	0.91	(0.43, 1.96)	1.07	(0.51, 2.24)
Injecting Cocaine in the Past Year				
No	1.0		1.0	
Yes	1.38	(0.45, 4.21)	1.38	(0.53, 3.61)
Injecting Methamphetamine in the Past Year				
No	1.0		1.0	
Yes	0.99	(0.46, 2.09)	0.99	(0.46, 2.14)
Injecting Other Stimulants in the Past Year				
No	1.0		1.0	
Yes	0.53	(0.21, 1.30)	0.47	(0.17, 1.27)
Number of Drugs Injected in the Past Year				
1	1.0		1.0	
2+	1.00	(0.36, 2.80)	1.12	(0.52, 2.42)
Crack Cocaine Use in the Past Year				
No	1.0		1.0	

Covariate	Unadjusted odds ratio		Adjusted odds ratio[a]	
	OR	95% CI	aOR	95% CI
Yes	0.92	0.42, 2.02)	0.97	(0.44, 2.13)

[a]Odds ratio is adjusted for age, sex, race/ethnicity, education attainment, and survey year.

Table 7

Odds ratio estimates of correlates of lending used needles at last injection among past-year IDUs: data from the 2005–2008 National Survey on Drug Use and Health

Covariate	Unadjusted odds ratio		Adjusted odds ratio[a]	
	OR	95% CI	aOR	95% CI
Age				
18–25	1.0		1.0	
26–34	1.50	(0.67, 3.34)	1.38	(0.58, 3.27)
35+	0.74	(0.36, 1.51)	0.86	(0.38, 1.93)
Sex				
Male	1.0		1.0	
Female	1.46	(0.77, 2.76)	1.39	(0.80, 2.42)
Race				
White	1.0		1.0	
Non-White	0.78	(0.27, 2.30)	0.90	(0.31, 2.65)
Education Attainment				
HS or greater	1.0		1.0	
< HS	0.68	(0.35, 1.33)	0.67	(0.36, 1.24)
Population Density				
Not in a CBSA	1.0		1.0	
<1 million people	0.82	(0.20, 3.43)	0.88	(0.17, 4.50)
1 million people+	1.48	(0.35, 6.19)	1.48	(0.29, 7.54)
Marital Status				
Single	1.0		1.0	
Married	0.58	(0.18, 1.85)	0.58	(0.17, 1.90)
Injecting Heroin in the Past Year				
No	1.0		1.0	
Yes	1.20	(0.61, 2.37)	1.37	(0.68, 2.76)
Injecting Cocaine in the Past Year				
No	1.0		1.0	
Yes	1.81	(0.70, 4.68)	1.62	(0.67, 3.92)
Injecting Methamphetamine in the Past Year				
No	1.0		1.0	
Yes	0.88	(0.45, 1.72)	0.90	(0.43, 1.89)
Injecting Other Stimulants in the Past Year				
No	1.0		1.0	
Yes	0.93	(0.42, 2.07)	0.93	(0.40, 2.18)
Number of Drugs Injected in the Past Year				
1	1.0		1.0	
2+	1.49	(0.63, 3.49)	1.69	(0.82, 3.48)
Crack Cocaine Use in the Past Year				
No	1.0		1.0	

Covariate	Unadjusted odds ratio		Adjusted odds ratio[a]	
	OR	95% CI	aOR	95% CI
Yes	1.36	(0.68, 2.71)	1.32	(0.66, 2.67)

[a]Odds ratio is adjusted for age, sex, race/ethnicity, education attainment, and survey year.