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Heroin Use and Injection Risk Behaviors in Colombia: Implications for HIV/AIDS Prevention

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Abstract

Background—Heroin production in Colombia has increased dramatically in recent decades, and some studies point to an increase in local heroin use since the mid-1990s. Despite this rapid increase, little is known about the effects of these activities on heroin injection within Colombia. One of the biggest concerns surrounding heroin injection is the potential spread of HIV through drug user networks.

Objectives—This article examines injection risk behaviors among heroin injectors in the Colombian cities of Medellín and Pereira to explore the implications for possible increased HIV transmission within this group.

Methods—A cross-sectional study used respondent-driving sampling to recruit a sample of 540 people who inject drugs (PWID) over 18 years of age (Medellín: $n = 242$, Pereira: $n = 298$). Structured interviews with each participant were conducted using the World Health Organization Drug Injection Study Phase II Survey. An HIV test was also administered.

Results—Information regarding the socio-demographics, injection drug use, HIV risk and transmission behaviors, injection risk management, and HIV knowledge and prevalence of participants are reported. The study identified many young, newly initiated injectors who engage in risky injection practices. The study also found that HIV prevalence is fairly low among participants (2.7%).

Conclusions/Importance—Findings indicate a potential risk for the spread of HIV among PWID in Colombia given their widespread sharing practices, high rate of new injector initiation, and unsafe syringe cleaning practices. Colombia has a possibly time-limited opportunity to

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Declaration of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

prevent an HIV epidemic by implementing harm reduction interventions among young, newly initiated PWID.

Keywords

Colombia; HIV/AIDS; HIV prevention; harm reduction; heroin; injection risk behaviors

Introduction

Colombia's role in the heroin trade has increased dramatically in recent decades. While heroin production in Colombia was considered "insignificant" in comparison to that of major opium producing areas such as southeast and southwest Asia in the early 1990s (United States Drug Enforcement Administration Intelligence Division, 1996), this situation changed in subsequent decades. In the early 1990s, drug production in Colombia diversified to include heroin as well as cocaine (Ciccarone, 2009). The United Nations Office on Drugs and Crime reported that 70–100 metric tons of Colombian heroin was produced between 1998 and 2004 (United Nations Office on Drugs and Crime, 2005).

Despite this rapid increase in heroin production, little is known about the effects of these activities on heroin use within Colombia itself. Some studies point to both the availability of heroin in Colombia's internal market and the widespread prevalence of local heroin use since the mid-1990s (Hacker, Malta, Enriquez, & Bastos, 2005; Mejía Motta, 2003). Epidemiological studies confirm an increase in local heroin use in recent decades (Gobierno Nacional de la República de Colombia, 2004, 2009; Pérez Gómez, 1989, 1999; Pérez Gómez, Scoppetta, & Peña, 2002; Rumbos, 2001). This parallels research from other regions indicating that local heroin use eventually increases in geographic areas where it is produced. The escalation of heroin production and distribution in Asia, for instance, fostered heroin use among many Asian populations (e.g. China, Thailand, Myanmar, Malaysia, Indonesia, Iran, and Vietnam) (Bergstrom & Abdul-Quader, 2010; Crofts, 2003; Sharma, Oppenheimer, Saidel, Loo, & Garg, 2009; Zhou et al., 2012).

As the prevalence of heroin use in Colombia increased, so too did the incidence of heroin injection. Since at least the 1980s, local populations injected substances such as cocaine and alcohol (Mejía Motta, 2003; Miguez, Page, & Baum, 1997), but evidence suggests that the practice was not widespread (Magis Rodríguez, Fernando Marques, & Touzé, 2002). The expansion of drug injection is the product of several factors, particularly the greater availability of cheap, low-quality, water-soluble heroin (Miguez et al., 1997). There are indications that heroin injection in Colombia is on the rise and more common than previously assumed (Castaño Pérez & Calderón Vallejo, 2010, 2012; Miguez et al., 1997). The 2002 World Health Organization Drug Injection Study Phase II (WHO-II) among people who inject drugs (PWID) in the capital city of Bogotá, for example, showed that heroin was the primary injected drug for 71.8% of injectors (Mejía Motta, 2003). Yet, in the decade since this study was conducted, drug injection in Colombia remains a largely understudied practice (Mejía & Pérez Gómez, 2005).

The emergence of heroin injection in Colombia is worrisome for many reasons. One of the most unsettling is the potential spread of HIV through drug user networks and eventually to

the general public. Between 1983 and 1995, there were no recorded cases of HIV/AIDS among PWID in the country (Hacker et al., 2005; Miguez et al., 1997). The Colombian Ministry of Health first confirmed cases of HIV among PWID in 1999 (Ross, 2002), and the WHO-II Study reported a 1% HIV prevalence rate among PWID who injected cocaine, alcohol, and heroin in Bogotá (Mejía Motta, 2003). Elsewhere, we report an estimated 2% HIV prevalence for the population of PWID in two cities (Medellín and Pereira) located in areas of poppy cultivation known as the Colombian coffee-growing axis (Eje Cafetero) (Berbesi, Segura-Cardona, Montoya-Vélez, & Mateu-Gelabert, 2013).

This article examines injection risk behaviors among heroin injectors in the cities of Medellín and Pereira to explore the implications for possible increased HIV transmission within this group. It presents the most current data available on heroin use patterns, specifically heroin injection, in Colombia. It further highlights the need for concerted HIV prevention among PWID since HIV epidemics related to drug injection can be prevented, slowed, halted, and reversed (Des Jarlais et al., 1995; Stimson, 1996). Therefore, this article argues that there is presently a window of opportunity for preventing a possible HIV/AIDS epidemic among heroin injectors in Colombia through the promotion and application of effective harm reduction interventions among PWID.

Methods

Data were collected during a 2010 cross-sectional study of HIV risk behaviors among PWID in Pereira and Medellín (Berbesi et al., 2013; Berbesi Fernández, Montoya Vélez, Segura Cardona, & Mateu-Gelabert, 2012). These cities were chosen for two reasons: (1) they are epicenters for street level drug sales; and (2) preliminary research indicated a sizeable number of PWID in both cities (Castaño Pérez & Calderón Vallejo, 2010; Isaza, Suarez, Henao, & Gonzalez, 2010). Wilcoxon rank-sum (WRS) tests were used to compare differences in key demographic characteristics and injection risk behaviors between the Medellín and Pereira samples. No significant differences were found. For this reason, data from both cities were pooled in the analyses to focus on heroin injection and associated risk behaviors in Colombia in general and to provide a foundation for future comparative research within the country.

Recruitment of the sample

This study used respondent-driven sampling (RDS) to recruit 540 people over 18 years of age who injected drugs in Medellín ($n = 242$) and Pereira ($n = 298$). RDS is a chain-referral sampling method used to access hard-to-reach populations, such as PWID, using study participants' existing social network ties to obtain a sample that approximates the study population (Heckathorn, 1997; Heckathorn, Semaan, Broadhead, & Hughes, 2002; McKnight et al., 2006). Recruitment started with a group of six nonrandomly selected participants from the target population, or "seeds." Three seeds for each city, including one female seed per city, who varied according to socioeconomic background and age, served as the beginning of the recruitment chains. Each participant received two types of modest monetary incentives: a primary incentive (US \$5) for participating in the study and a secondary incentive (US \$10) for the successful recruitment of up to three new participants.

An explanation of the recruitment process was provided to interviewed participants, including the inclusion criteria (i.e. being at least 18 years of age and a person who injects drugs in either Medellín or Pereira, as appropriate). This recruitment process and incentive structure was repeated iteratively over an 8-week period, with each participant's recruits recruiting up to three other persons for the study until the target sample size was reached.

It took six waves to recruit 242 participants in Medellín and seven waves to recruit 298 participants in Pereira. The sample reached equilibrium for the key demographics and HIV prevalence at the following waves: age (Medellín: wave 3, Pereira: wave 3), gender (Medellín: wave 2, Pereira: wave 3), education (Medellín: wave 3, Pereira: wave 4), socioeconomic status (Medellín: wave 4, Pereira: wave 2), and HIV prevalence (Medellín: 2, Pereira: wave 2). For Medellín, the median network size was 20 while the range was 3–200 network members. For Pereira, the median network size was 10 while the range was 4–70 network members. No biases were found with regard to recruitment patterns by key demographic characteristics and injection risk behaviors. RDS-adjusted estimates for key demographics and HIV prevalence were similar to reported sample prevalence rates. RDS-adjusted estimates were calculated for Medellín and Pereira separately but not reported in order to present data on Colombia as a whole.

Measures

Field researchers familiar with groups of local PWID conducted a structured interview with each participant that lasted for an average of 60 minutes. The instrument used was the WHO-II survey, which has been widely used to study PWID in multiple international settings (World Health Organization Drug Injecting Study, 2000). Among other topics, the survey included questions on demographics, drug use during the previous 6 months, drug injection and injection equipment sharing behaviors in the previous 6 months, last injection event, and HIV knowledge.

In addition, a small blood sample was obtained from each participant via finger prick to administer laboratory based HIV testing. Initial tests used ELISA (enzyme-linked immunosorbent assay). Confirmatory tests employed a Western Blot. This study received Institutional Review Board approval from Universidad CES in Medellín, Colombia. All study participants provided written consent to participate in the study. All data presented are sample results (not weighted population estimates) calculated utilizing SPSS (version 21).

Results

Background

Table 1 presents participants' socio-demographic background and information regarding drug use prior to injection initiation. Notably, almost all participants were male, and the sample was relatively young. Participants reported a mean age of 25 years (SD = 6). The median age of participants was 24 years (IQR = 6).

Drug use prior to injection initiation—Thirty days prior to initiating injection, there was a high prevalence of drug use among participants. The most commonly noninjection drugs used were marijuana (87%), heroin (68%), alcohol (58%), and cocaine (50%). Poly-

drug use was also reported, with 35% of participants using heroin mixed with other drugs and 26% using both heroin and cocaine together.

Injection drug use

Table 2 presents information regarding injection drug use including the social contexts of injection initiation; duration and frequency of injection drug use; syringe (combination syringe and needle) access and scarcity; injection venues; and initiation of other injectors.

Injection initiation—Participants reported a mean age of 21 years ($SD = 6$) at first injection. The median age at injection initiation was 20 years ($IQR = 7$). When injecting for the first time, 60% of participants were helped by a close friend, 17% self-injected, and 12% were helped by other known people. First injection took place mostly in public spaces (e.g. streets, parks, abandoned buildings) (49%), participants' homes (14%), the homes of close friends (12%), or communal drug-using spaces called *ollas*, or “pots,” similar to shooting galleries (12%).

Duration of injection drug use—At the time of the interview, participants had injected for various lengths of time. The mode was 5 or more years (30%), followed by 1 year or less (26%), 2 years (17%), 3 years (16%), and 4 years (11%). The mean was 4 years ($SD = 4$). The median was three years ($IQR = 3$).

Injection frequency—By sample design, all participants injected heroin. When asked how many times per day they injected any drug in the previous 6 months, participants reported a mean of 3.2 times. Seventy-three percent of participants injected one to three times per day, and 27% of participants injected four or more times per day.

Syringe access—In the previous 6 months, 61% percent of participants reported purchasing a syringe at a pharmacy while 39% did not. Sixteen percent of participants injected at least once with a homemade syringe in the previous 6 months. Notably, most participants (55%) reported that the police or another authority confiscated their injection equipment at least once in the previous 6 months.

Injection venue—In the previous 6 months, 76% of participants injected in an open-air drug-using space. Also, 59% injected in a communal drug-using space such as an *olla* or another enclosed injection site.

Initiating others into drug injection—In the previous 6 months, 63% of participants did not initiate another person into drug injection. However, the remaining participants initiated the following number of people into injection: one to two people (23%), three to four people (9%), and five or more people (6%).

HIV risk and transmission behaviors

Table 3 presents information regarding various risk and transmission behaviors associated with injection in the previous 6 months.

Sharing of injection equipment and drugs—Sharing of injection equipment was common among participants. Forty-two percent reported using previously used syringes provided by other PWID. Of those who reported injecting with previously used syringes, 24% reported doing so one to three times a month, 9% one to three times per week, 3% four to seven times per week, and 7% two or more times per day. Forty-nine percent of participants also reported sharing cookers, filters, or rinse water.

Twenty-two percent of participants injected with syringes that were purchased pre-filled with drugs. In such instances, pre-filled syringes may have been previously used. Thirty-two percent of participants backloaded (shared drugs by transferring the drug from one syringe into the back of another opened syringe) with another PWID.

Number of PWID with whom syringes were shared (receptive sharing)—Fifty-two percent of participants reported not sharing syringes. However, among the remaining 48% of participants, 18% shared syringes with one person, 14% with two to three people, 7% with four to five people, and 10% with six or more people. The mean was three people (SD = 8). The median was one person (IQR = 3).

Provision of used syringes (distributive sharing)—Sixty-two percent of participants reported giving his or her own used syringe to a close friend for injection. Many participants also reported giving their used syringe to a stranger (27%), an associate (25%), a primary sex partner (11%), someone who paid them for help injecting (10%), or a first time injector (7%).

Other drug-related activities—Forty-four percent of participants sold or were involved in selling drugs in exchange for money, drugs, material objects, or services. Moreover, 12% of participants sold syringes. Seventeen percent of participants were paid to inject someone else (a service that did not necessarily include provision of a syringe).

Reasons for sharing syringes—Participants who used syringes that others had previously used indicated several reasons for doing so. Some thought it was safe to share because they reported being careful in choosing with whom to share syringes (43%) or they cleaned the syringe before using it (33%). However, most participants (59%) who shared syringes did so because they did not have their own.

Injection risk management

Table 4 presents information regarding injection risk management practices among participants in the previous 6 months.

Frequency of cleaning used syringes—Participants reported different frequencies of cleaning used syringes before injection. Of those who reported injecting with previously used syringes, 40% always cleaned used syringes, 6% cleaned used syringes most of the time, 3% cleaned used syringes half of the time, and 19% rarely cleaned used syringes. Notably, 31% of these participants reported never cleaning used syringes.

Agents used to clean syringes—Of those participants who cleaned used syringes, 72% usually cleaned them with only water, 18% with alcohol, and 7% with another cleaning agent (e.g. bleach or soap/detergent).

HIV knowledge and prevalence

Table 5 presents information regarding HIV knowledge and prevalence among participants.

HIV prevalence—Based on test results, HIV prevalence among participants was 2.7%. This figure is similar to the previously reported 2% estimated prevalence rate for the population of PWID in Medellín and Pereira (Berbesi et al., 2013) that was calculated using RDSAT software (version 6.01) based on the same dataset.

Discussion

These results indicate a high prevalence of injection risk behavior among heroin injectors in both Medellín and Pereira. Findings demonstrate a high frequency of syringe sharing, sharing of other injection equipment with multiple PWID, injection with pre-filled syringes, syringe cleaning practices of limited efficacy in preventing HIV transmission (e.g. many participants reported cleaning syringes with only water), and limited knowledge about HIV. Findings also indicate a secondary market for syringes as well as syringe scarcity in both cities. This may be due to the lack of syringe exchange programs in either city, the cost limitation of purchasing syringes at pharmacies, and possible stigma faced by PWID when attempting to purchase syringes at pharmacies.

These results also suggest the existence of substantial numbers of newly initiated injectors in these Colombian cities, since 40% of participants injected for two or fewer years. This claim is further supported by testimony from local public health officials, peer educators, and researchers who work with drug users in Colombia; these local experts attest that injection drug use was very limited and never witnessed to such an extent prior to 2000. Also, a large proportion of participants were male (93%) and young (56% were 18–24 years old). This supports research showing similar demographic trends among PWID in Colombia (Mejía & Pérez Gómez, 2005; Mejía Motta, 2003).

Furthermore, a considerable number of participants initiated new injectors, and these recently initiated injectors engage in risky injection practices. While HIV prevalence is still low (2.7%) among PWID in Medellín and Pereira, this low prevalence may be time-limited. It is important to note that HIV prevalence among PWID in these cities may remain low, as has been the case in other low seroprevalence areas, some of which also have had high rates of risk behavior (Siegal, Carlson, & Falck, 1993). However, our findings indicate a potential risk for the spread of HIV among PWID given their widespread sharing practices, high rate of new injector initiation, and unsafe syringe cleaning practices.

While these results focus on injection-related practices of PWID in Medellín and Pereira, similar high-risk practices among PWID may be present in other parts of Colombia. Colombia has an opportunity to prevent an HIV epidemic before it occurs by intervening among these young, newly initiated PWID. As the Pan American Health Organization and

Joint United Nations Programme on HIV/AIDS (2001) point out, “Where equipment sharing is common, HIV can race through drug injecting populations with unparalleled speed. In some countries, HIV prevalence among injecting drug users has been known to explode from nothing to over 50% in under a year” (p. 28). Thus the timely introduction of harm reduction interventions could prevent an explosion in HIV prevalence, as has occurred in other countries (Mathers et al., 2008). Preventing a widespread epidemic among PWID has been accomplished in many locations, including Australia and parts of the United Kingdom, where interventions were implemented before or at an early stage of viral diffusion (Iversen, Wand, Topp, Kaldor, & Maher, 2014; Stimson, 1995, 1996; Wodak & Maher, 2010). These examples illustrate that early prevention can be effective in both keeping HIV prevalence low among PWID and preventing the rapid spread of HIV within injection networks.

Colombia might avoid an HIV epidemic in these areas by implementing effective interventions for PWID (e.g. widespread syringe exchange programs). Interventions to train PWID in safer injection practices are likely to be facilitated by the fact that many participants in this study were already engaging in some efforts to clean their injection equipment, albeit with water. Although these practices are not fully effective in preventing HIV, they suggest a willingness to engage in safe injection practices. These PWID may be receptive to intervention because some are already taking steps to reduce harms, indicating a positive environment for bringing in harm reduction services that could quickly turn otherwise unsafe injection practices into much safer ones. Other harm reduction measures that have been effective in international settings in reducing the spread of HIV among PWID, including opioid substitution therapy, routine HIV testing for drug users, and knowledge dissemination about virus survival in contaminated injection equipment, could also prove useful in Colombia (World Health Organization, 2014). If financial, political, or other obstacles prevent the implementation of such widespread interventions, another consideration, beyond humanitarian reasons, is the much lower cost of preventing HIV among PWID than treating infected individuals.

The World Health Organization (2012) has defined a comprehensive package of effective interventions to reduce HIV among PWID: needle and syringe programs (NSP), medication-assisted therapy, antiretroviral therapy, and HIV counseling and testing. Evidence suggests that such interventions can be effective in reducing HIV incidence in low and middle countries (Dutta, Wirtz, Baral, Beyrer, & Cleghorn, 2012). A meta-analysis study supports NSP as a structural-level intervention to reduce population-level infection and the implementation of NSP for HIV prevention (Abdul-Quader et al., 2013; Des Jarlais, Feelemyer, Modi, Abdul-Quader, & Hagan, 2013). Such efforts in Colombia are urgently needed, especially given this population’s limited access to clean syringes. Syringe exchanges could be key points of intervention by introducing sterile syringes to newly initiated injectors, thereby reducing the need for PWID to share and reuse nonsterile equipment.

Some efforts to combat the spread of HIV among PWID in Colombia have already begun. The city government of Bogotá, for example, launched an intervention in 2012 called the Medical Care Centre for Drug Addicts (CAMAD). As a street healthcare unit, CAMAD aimed to provide services to PWID by utilizing a harm reduction approach (Quintero, 2012).

Pilot syringe exchange programs were also established in Pereira in 2014 with the support of the Ministry of Health and Justice and Open Society Foundations. The expansion of such programs is essential if they are to be effective in combating a potential HIV epidemic in Colombia.

This article is based on research conducted among PWID in Medellín and Pereira. There are limits to the generalizability of the results from these two cities regarding PWID in other parts of Colombia. Research is needed in other Colombian cities and departments to understand the extent and nature of risk behaviors and HIV prevalence among heroin and other injectors across the country. Such research will demonstrate whether or not the results presented in this article apply more widely than these two cities.

Other limitations include the fact that it is unclear from present data whether the syringes sold in exchange for money, drugs, material objects, or services, as well as the syringes purchased pre-filled with drugs, were used or sterile. More detailed information about these practices will help determine the degree of risk associated with them.

The fact that the present study used respondent-driven sampling, which is considered to be nonrandom sample selection that must meet a number of assumptions to be considered a representative sample of the social network, could also be considered a limitation. However, it should be noted that this study is not using weighted RDS estimates to represent the characteristics of the larger PWID population in Medellín and Pereira.

Despite these limitations, this article presents the most current available data on heroin injection and HIV prevalence among PWID in these two Colombian cities, and illustrates the wisdom of implementing prevention efforts aimed to keep HIV prevalence among PWID low and to stave off a potential injection-driven HIV/AIDS epidemic.

Conclusions

Findings indicate a potential risk for the spread of HIV among PWID in the Colombian cities of Medellín and Pereira given their high rates of injection-related risk behaviors. Findings also suggest the existence of newly initiated injectors with limited knowledge of HIV prevention techniques in these cities. Colombia has an opportunity to prevent an HIV epidemic by implementing harm reduction interventions among PWID. By highlighting the importance of such interventions in Colombia, this article underscores issues that may have important public health implications for other countries and regions faced with similar emerging heroin markets. Further research on heroin consumption in Colombia and heroin distribution routes to neighboring countries could serve as an early warning regarding the spread of heroin-related HIV epidemics elsewhere in Latin America.

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Glossary

Drug user networks	A group of socially interconnected people who use drugs. Drug users in these networks might have social relationships with each other and may use and/or inject drugs together. The influence of a drug user's network on behavior and perceptions is well established in the research
Harm reduction interventions	Harm reduction refers to policies and practices intended to reduce the harms associated with drug use. Examples of harm reduction interventions include syringe exchange programs to help prevent the spread of HIV and HCV through the use of contaminated syringes and the provision of the opioid overdose reversal medication naloxone to drug users and their peers to help prevent death from opioid-associated overdose
PWID	People who inject drugs
Respondent-driven sampling (RDS)	A research sampling methodology that is particularly useful in accessing hard-to-reach populations, such as those who use illicit drugs. RDS combines chain-referral recruitment (in which participants refer peers they know to the study) with mathematical modeling in order to make unbiased estimates about the characteristics of hidden populations
Seroprevalence	The number or percent of individuals in a population who test positive for a disease (in this paper, HIV) at a given point in time, as measured by serology (blood tests)

Biographies



Pedro Mateu-Gelabert, Ph.D., is a principal investigator at NDRI and a sociologist with over 15 years of research experience in New York City and internationally. His research spans the epidemiology of drug use, urban studies, crime, immigration, social networks, and HIV/HCV prevention. He has more than 50 peer-reviewed publications and has given numerous scientific presentations throughout the world. He was a visiting professor at Hunter College School of Public Health and has collaborated with various interdisciplinary research teams, including the New York City Department of Health and Mental Hygiene (NYCDOHMH), Weill Cornell Medical College, and Beth Israel Medical Center. Internationally, he has worked on projects in Colombia (Emerging heroin markets leading to HIV epidemics among young injectors), Spain (HIV and HCV prevention among injection

drug users) and the Ukraine (HIV treatment access and care cascade for people who inject drugs, DP1 DA034989). Dr. Mateu-Gelabert is an affiliated investigator with the Center for Drug Use and HIV Research (CDUHR) and is currently principal investigator at NDRI of the ongoing research project titled HIV, HCV, and STI Risk Associated with Nonmedical Use of Prescription Opioids (NIDA R01DA035146). He received his Ph.D. in Sociology from New York University.



Shana Harris, Ph.D., is a medical anthropologist and Visiting Lecturer in the Department of Anthropology at the University of Central Florida. She received her doctorate from the University of California, Berkeley and the University of California, San Francisco, and was a Postdoctoral Fellow in the Behavioral Science Training in Drug Abuse Research Program at the National Development and Research Institutes in New York City. Dr. Harris specializes in ethnographic and qualitative research on drug use and abuse, global and public health, and science, technology, and medicine in Latin America and the United States. She has conducted research on such topics as harm reduction in Argentina, the utilization of buprenorphine in opiate addiction treatment in the San Francisco Bay Area, and recreational gamma hydroxybutyrate (GHB) use in Northern California. Her research has received funding from the National Institute on Drug Abuse and the Wenner-Gren Foundation for Anthropological Research. Dr. Harris is currently conducting research on medical travel and the use of ibogaine for drug treatment in Mexico.



Dedsy Berbesi, Ph.D., is a research coordinator at the Faculty of Medicine at CES University in Medellín, Colombia. Her research spans the epidemiology of drug use, social networks, and HIV/HCV prevention, and she has extensive experience in population studies in Colombia. She was Principal Investigator on several studies, including the 2010 study of HIV prevalence among injecting drug users in Medellín and Pereira funded by UNODC and the Ministry of Health; the study of HIV prevalence among injecting drug users in Cali; the study of HIV prevalence among the homeless of Medellín; the 2013 study of risk behavior among IDUs in the cities of Armenia, Cúcuta, and Bogotá funded by the Ministry of Justice; and the 2014 prevalence study of HIV and HCV among injecting drug users in Medellín and Pereira funded by PAHO and the Ministry of Health. She also coordinated the study of HIV prevalence among Colombian veterans and worked on projects on HIV prevalence in prisons in Colombia funded by the Global Fund for HIV and the Director of the National Observatory of Mental Health in 2013–2014. She received her Ph.D. in epidemiology and biostatistics from CES University.



Ángela María Segura Cardona, Ph.D., is Coordinator of the Ph.D. program in Epidemiology and Biostatistics, Faculty of Medicine, CES University, and leads the Research Group on Epidemiology and Biostatistics at CES University. Her areas of work are infectious diseases such as tuberculosis, pneumonia and HIV as well as the use of psychoactive substances in school and university. In addition, for several years, she has been working with the injection drug using population and homeless people with measured prevalences of HIV and Hepatitis C in different cities of Colombia.



Liliana Patricia Montoya Vélez received her Master's in Epidemiology from CES University in Medellín, Colombia. She is a public health coordinator at the Faculty of Medicine at CES University and a Senior Investigator in Colombia. She has worked as a research associate on several projects related to substance use and health mental. Her current research and teaching interests are on HIV. She has worked on projects in Colombia (Emerging heroin markets leading to HIV epidemics among young injectors and prevalence HIV/HCV among injectors). She has several publications on these topics.



Inés Elvira Mejía Motta is a psychologist at the University of the Andes with a specialty in drug and alcohol policy and intervention from the University of London and a Master's in political science from the Javeriana University. She has 20 years of experience working in the fields of drugs and HIV and worked for eight years with the La Casa Program of the University of the Andes dealing with topics such as drug use, HIV, and suicide where she trained and practiced in educational, clinical, preventative, and investigative fields. Subsequently, she coordinated national studies on sexual and reproductive health, such as the study in Bogotá that was part of the WHO multi-center study on injection drug use and associated health risks, 2001 rapid assessment and response, and 2002 seroprevalence survey. Since 2004, she has assessed the Ministry of Health and Social Protection in the terms of public policy on health and social protection topics and in different phases of the construction, strengthening, and operationalization of harm reduction policy in Colombia at the national and sub-national levels. She has been a consultant for PAHO, UNICEF, UNDP,

OIM, and MAYU. She is a reference for harm reduction in Colombia for WHO and Harm Reduction International and was a board member of RELARD (Latin American Harm Reduction Network).



Lauren Jessell, LMSW, is a licensed social worker with experience spanning the areas of substance use and mental health policy, research, and clinical practice. She has worked as a project director at Rutgers University and as a research consultant at Columbia University, School of Social Work on several studies related to substance use, mental health, and HIV/HCV prevention. She is an affiliated investigator with the Center for Drug Use and HIV Research (CDUHR) and currently works at the National Development and Research Institutes (NDRI) on a 5-year, NIDA-funded study on nonmedical prescription opioid use and associated patterns of HIV/HCV/STI risk.



Honoria Guarino, Ph.D., is a Principal Investigator at National Development and Research Institutes, Inc. in New York City who specializes in qualitative and mixed-methods research on the social aspects of substance misuse, particularly injection drug use, and HIV and HCV. She is currently Principal Investigator of a NIDA-funded study examining the social contexts of drug use and HIV/HCV risk among young, opioid-using immigrants from the former Soviet Union and Co-Investigator for a NIDA-funded study of nonmedical prescription opioid use and associated patterns of HIV/HCV/STI risk among young adults in New York City. Her other research interests and activities include technology based behavioural health interventions for substance-using populations including individuals in methadone maintenance treatment, chronic pain patients who are misusing opioid medications, and youth in drug treatment.



Samuel R. Friedman, Ph.D., is Director of Infectious Disease Research at National Development and Research Institutes, Inc. and the Associate Director of the Transdisciplinary Infectious Diseases Core in the Center for Drug Use and HIV Research, New York City. He also is associated with the Department of Epidemiology, Johns Hopkins University, and with the Dalla Lana School of Public Health, University of Toronto. Dr. Friedman is an author of about 450 publications on HIV, hepatitis C, hepatitis C, STI, and drug use epidemiology and prevention. Honors include a NIDA Avant Garde Award (2012), the International Rolleston Award of the International Harm Reduction Association (2009),

the first Sociology AIDS Network Award for Career Contributions to the Sociology of HIV/AIDS (2007), Senior Scholar Award of the Alcohol, Drugs, and Tobacco Section of the American Sociological Association (2010), and a Lifetime Contribution Award, Association of Black Sociologists (2005). He has published many poems in a variety of publications and a book of poetry (*Seeking to make the world anew: Poems of the Living Dialectic*. 2008. Lanham, Maryland: Hamilton Books). He has recently published a paper on “What happened in Ukraine” in *ZNet*.

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Table 1**Background.**

	<i>N (%)</i>
Age	
Age 18–24	305 (56%)
Age 25–34	196 (36%)
Age 35 and over	39 (7%)
Gender	
Male	501 (93%)
Female	39 (7%)
Education	
Primary School (initiated or completed)	72 (13%)
Secondary School (initiated or completed)	406 (75%)
University (initiated or completed)	62 (11%)
Socioeconomic status (SES)	
Low SES	412 (77%)
Middle SES	114 (21%)
Upper SES	11 (2%)
Drug use prior to injection initiation (30 days prior to first injection)	
Heroin	369 (68%)
Cocaine	271 (50%)
Marijuana	472 (87%)
Alcohol	314 (58%)
Heroin mixed with cocaine	143 (26%)
Heroin mixed with other drugs	190 (35%)

Note. Percentage may not add up to 100% due to rounding. Not all participants responded to all items.

Table 2

Injection drug use.

	<i>N</i> (%)
Injection initiation ^a	
Assisted by close friend	325 (60%)
Self-injected	92 (17%)
Assisted by other known people	66 (12%)
Injection initiation venue ^a	
Public spaces (e.g. streets, parks)	263 (49%)
Close friend's home	63 (12%)
Own homes	77 (14%)
Communal drug-using areas (e.g. <i>ollas</i>)	16 (12%)
Duration of injection drug use	
One year or less	138 (26%)
Two years	92 (17%)
Three years	84 (16%)
Four years	57 (11%)
Five or more years	160 (30%)
Injection frequency (previous 6 months)	
1–3 times per day	388 (73%)
4 or more times per day	143 (27%)
Syringe access (previous 6 months)	
Purchased sterile syringe at pharmacy	315 (61%)
Injected with homemade syringe	87 (16%)
Police confiscated equipment	284 (55%)
Injection venue (previous 6 months) ^{a,b}	
Communal drug-using areas (e.g. <i>olla</i>)	320 (59%)
Open-air space	408 (76%)
Initiating others into injection (previous 6 months) ^c	
Helped no one inject for first time	280 (63%)
Helped 1–2 people inject for first time	104 (23%)
Helped 3–4 people inject for first time	38 (9%)
Helped 5 or more inject for first time	25 (6%)

Note. Percentage may not add up to 100% due to rounding. Not all participants responded to all items.

^aDue to limited space we report most frequently endorsed items.

^bParticipants could check multiple options.

^c93 participants did not respond to this item.

Table 3

HIV risk and transmission behaviors (previous 6 months).

	N(%)
Syringe sharing frequency (receptive sharing)	
Never	306 (58%)
1–3 times a month	125 (24%)
1–3 times a week	48 (9%)
4–7 times a week	14 (3%)
2 or more times daily	37 (7%)
Sharing other equipment	
Shared cookers, filters, or rinse water	263 (49%)
Injecting drug pre-filled syringes and backloading	
Injected with pre-filled syringes	115 (22%)
Offered to buy pre-filled syringes	162 (30%)
Backloaded	165 (32%)
Number of people with whom shared syringes (receptive sharing) ^a	
0	242 (52%)
1	83 (18%)
2–3	65 (14%)
4–5	33 (7%)
6 or more	46 (10%)
Provision of used syringes (distributive sharing) ^b	
Gave to close friend	194 (62%)
Gave to stranger	68 (27%)
Gave to associate	66 (25%)
Gave to primary sex partner	28 (11%)
Gave to client who needed help injecting	26 (10%)
Gave to first time injector	17 (7%)
Other drug-related activities	
Sold or were involved in selling drugs	237 (44%)
Sold syringes	62 (12%)
Paid to inject someone else	90 (17%)
Reasons for sharing syringes ^b	
Did not have their own syringe	154 (59%)
Careful choosing with whom to share	106 (43%)
Cleaned syringe prior to injection	81 (33%)

Note. Percentage may not add up to 100% due to rounding. Not all participants responded to all items.

^a71 participants did not respond to this item.

^bParticipants could check multiple options.

Table 4

Injection risk management (previous 6 months).

	N(%)
Frequency of cleaning used syringes	
Always	124 (40%)
Most of the time	20 (6%)
Half of the time	10 (3%)
Rarely	58 (19%)
Never	96 (31%)
Agents used to clean syringes ^a	
Cleaned syringes with only water	181 (72%)
Cleaned syringes with alcohol	46 (18%)
Cleaned syringes with other cleaning agents	18 (7%)

Note. Percentage may not add up to 100% due to rounding. Not all participants responded to all items.

^aDue to limited space we report most frequently endorsed items.

Table 5

HIV knowledge and prevalence.

	N(%)
HIV knowledge	
Had no knowledge of HIV/AIDS before injection initiation	138 (26%)
Did not know injection could lead to HIV infection	286 (58%)
HIV prevalence	
Positives	15 (2.7%)

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