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Booting and Flushing:  
Needle Rituals and Risk for Bloodborne Viruses

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## Booting and Flushing: Needle Rituals and Risk for Bloodborne Viruses

### **ABSTRACT**

“Booting” and “flushing” are terms used to describe an injecting behaviour in which the plunger is pulled back and the fluid (mostly blood and perhaps blood only) is re-injected. The behaviour differs from “registering,” which occurs *before* the drug is injected. Booting/flushing can produce subcutaneous and venous damage, and increases the risk for the spread of blood-borne viruses when used equipment is passed on to other injectors. The purpose of the study was to explore the extent of flushing, the context of flushing and IDUs’ self-reported reasons for flushing. Data were collected through semi-structured interviews with 59 IDUs in Northern Ireland, who were recruited through various strategies. Respondents’ ages ranged from 22 to 50 years, and females comprised 34% of the sample. Mean length of injecting career was 8.3 years. A total of 46% reported flushing on a regular basis during some or most of the injecting career. The results showed that flushing occurs for different reasons, and in comparison to research conducted elsewhere, is not associated solely with cocaine or speedball injection. Interventions designed to reduce the extent of flushing must take into account the various reasons for the behaviour.

## INTRODUCTION

Injecting drugs is a process that involves a series of steps commencing with the preparation of drugs for injection (Grund, 1993), e.g., mixing the drug with water and at times other substances, such as citric acid. The process can differ depending on the particular drug that is injected (Bourgois and Bruneau, 2000), the form of the drug, e.g., Diamorphine, brown heroin (Strang et al., 2001), the amount of drug injected, subcultural and individual rituals associated with injection, and a host of other factors. Once the drug is prepared for injection, injecting drug users (IDUs) often engage in “registering” in which blood that fills the syringe is indicative that the individual has “found” a vein into which the drug will be injected. After the drug is injected, some IDUs will pull back the plunger again and then re-inject the fluid (Heimer and Abdala, 2000). Various terms are used in the literature to describe this behavior and in some studies, it is not clear whether the choice of term reflects the author’s preference or represents the vernacular of IDUs in the respective sample. The behavior has been referred to as “booting” in research conducted in parts of the US, Canada and Australia (Bourgois and Bruneau, 2000; Bruneau et al., 2004; Carruthers, 2003; Lamothe et al., 1993; Singer et al., 2000). US-based scholars also have used the term “kicking” (Greenfield et al., 1992) and “jacking” (Centers for Disease Control, 2004:2), although Caulkins et al. (1998) suggested that “jacking” refers to registering.

In various regions of the United Kingdom, IDUs often refer to the behavior as “flushing” (*Black Poppy*, 2004; McBride et al., 2001; Pates, 2001). Consistent with the vernacular used by IDUs interviewed for the present study, I also refer to the behavior as “flushing.” Registering and flushing occur for different reasons, and several if not most IDUs appear to engage in registering, i.e., the practice by which they ascertain that they have located a vein. In contrast, not all IDUs engage in flushing, which can produce venous and subcutaneous damage (Murphy et al., 2001). Flushing can contribute to the spread of bloodborne viruses, particularly when used injection equipment is passed to other IDUs. Flushing increases the likelihood that the needle and syringe will come into contact with infected blood (Abdala et al., 2004). In a simulated study of flushing (Heimer and Abdala, 2000), blood contaminated with HIV-1 was inserted into insulin syringes and then emptied. The syringes were stored for several days and the recovery of HIV-1 was assessed. The authors concluded that the high volume of blood associated with a simulated single flush, was one factor that contributed to the “survival” of HIV-1 in syringes over time.

Some researchers have suggested that flushing occurs because IDUs perceive that drug residue remains in the syringe after injecting (Carruthers, 2003; Heimer and Abdala, 2000). Others have noted that IDUs flush in order to inject the drug “in a series of small injections” (Caulkins et al., 1998:32). Few studies have explored the reasons for flushing from the perspective of IDUs. One exception is a study by Greenfield et al. (1992) who examined the reasons for flushing among

31 IDUs residing in the US, who had injected heroin, cocaine and speedball in the six months prior to the interview. Respondents in the study were asked to simulate injection of the three drugs. In general, respondents in that study reported that flushing served to “enhance feelings” of the drug’s effects, particularly when simulating the injection of cocaine and speedball. The authors noted that “booting is not universal, but occurs only in a subpopulation of cocaine and speedball users” (Greenfield et al., 1992:107). Similar findings were reported in a San Francisco study whereby IDUs suggested that flushing enhances the rush when injecting cocaine (in Bourgois and Bruneau, 2000). Taken together, these studies suggest that 1) flushing is associated largely with cocaine injection, and 2) the behavior is perceived to enhance the effects of cocaine.

Flushing brings more blood to the injection setting, thus the behaviour can increase the likelihood of transmission when blood is contaminated and other injectors are present. Transmission in these settings can occur when either flushers or non-flushers consciously or inadvertently pass on equipment to other IDUs, or when contaminated blood remains in the injection setting. A better understanding of the nature of flushing and the context in which it occurs can inform the development of effective interventions. In the present study, I explored 1) the extent of flushing among 59 current injectors residing in Northern Ireland, and 2) IDUs’ self-reported reasons for flushing.

## METHOD

### Local context

Research into injecting drug use in Northern Ireland commenced in the mid- to late-1990s. Prior to that decade, the limited data on heroin and injecting drug use suggest that there were very few heroin users or IDUs presenting for treatment to drug services or general practitioners. For example, a total of 35 persons were officially registered as “drug addicts” in 1985 and most of those persons were notified as heroin users (cited in Murray, 1994). It has been suggested that the wider political conflict in Northern Ireland contributed in part to the alleged low levels of heroin use and injecting drug use in the region during the 1970s and 1980s (McElrath, 2004). However, public health indicators of heroin and injecting drug use were limited during this time, and surveillance of blood borne viruses was limited to one source that reflected data collected through voluntary testing.

Increases in heroin use and IDU in Northern Ireland were first noted in the mid-1990s, and the estimated number of problem heroin users was between 695 and 1018 during the 12-month period, 1 November 2000 and 31 October 2001 (McElrath, 2002).<sup>1</sup> These figures are low in comparison to other regions in the United Kingdom and the Republic of Ireland, however, they represent a substantial increase from previous years.

Progressive changes in drug policy commenced approximately six years after the initial reports of an emerging heroin outbreak. Pharmacy-based needle exchange was introduced in 2001 and substitute prescribing (methadone and high-dose buprenorphine) was implemented in 2004. At this writing, there is one drug outreach team (four members) that addresses the needs of IDUs and the team is confined largely to one area of Belfast, the largest city in Northern Ireland. Thus, although some harm reduction initiatives (e.g., substitute prescribing, pharmacy-based exchange) have been introduced in Northern Ireland, implementation has been slow in comparison to other regions of the United Kingdom and the Republic of Ireland.

#### Procedures

Data presented here were collected as part of a larger research project that addressed risk behaviours for blood borne viruses among 90 IDUs residing in Northern Ireland (McElrath & Jordan, 2005). Data were collected through face-to-face, semi-structured interviews that addressed issues relating to first and last injection, loaning and borrowing of injection equipment, “risk” scenarios, experiences with drug treatment, general practitioners and pharmacists, access to and utilization of needle exchange schemes, and related issues. Data collection commenced in December 2003 and concluded in September 2004. Two female interviewers were used, one of whom was the author. The second interviewer had access to and knowledge of the local heroin “scene.” Prior to data collection, the second interviewer was trained in terms of the interview

guide, ethical issues pertaining to confidentiality and anonymity and other issues relating to qualitative fieldwork. The interview guide was developed, piloted on the first five respondents and minor revisions were made throughout the study when we learned that questions were inappropriate or worded improperly. Interviews were conducted in university offices that offered a great deal of privacy, private residences, and semi-public areas.

### Primary measures

#### Flushing

Although the larger project focused on risk, and despite numerous drafts of the interview guide, we neglected to ask about flushing during the initial interviews. The first stage of data collection revealed that some IDUs were describing flushing behaviours (unprompted) and that some respondents reported flushing with opiates (namely heroin). We then revised the interview guide by adding questions about flushing. In all, 59 of the 90 respondents were asked about flushing and the data reported in this paper are based on the sub-sample of these 59 IDUs.

During some interviews, respondents described flushing during a particular injection episode (often the last time that they had injected) and we used that opportunity to explore their reasons for flushing. In other interviews, we began with a general question, e.g., “Does the word *flushing* mean anything to you?” Most respondents had knowledge of the term:



“You got your vein. You know you’re in [observe blood in the syringe; registering]. Inject, depress the plunger and pull back again. The blood comes back again and you inject again. Yeah, I flush every time.” (30, male, age 30)

Although the majority of respondents had knowledge of the term “flushing,” a few were unfamiliar with the word and some believed we were asking about “registering.” We then clarified to these respondents our meaning of the term, e.g., “Most people pull back the syringe to make sure they’ve found a vein. Other people pull back again and sometimes loads of times – that’s flushing.” Once we clarified our meaning of the term, we asked respondents the extent to which they flushed. Respondents who reported flushing were asked to explain why they flushed.

#### Loaning and borrowing injection equipment

The interview guide included several questions that attempted to measure the number of times that respondents had engaged in the loaning or borrowing<sup>2</sup> of injecting equipment in the past 30 days, e.g., injected with a needle that had been used by another IDU, provided a used filter to another IDU. We found that these questions generated confusion during the interviews, particularly for respondents who had injected with different people during the 30-day period. We concluded that these quantitative measures of risk had low levels of validity among respondents in our sample, thus we subsequently used a qualitative approach when asking about these behaviours. We found that in many

interviews we had to “tease out” whether respondents had loaned or borrowed used equipment by discussing various injection settings and episodes in the 30-day period prior to the interview, or by asking people to describe in detail their recent injection episodes. In the end, we concentrated solely on whether respondents had engaged in the loaning or borrowing behaviours during the 30-day period and abandoned our quest to determine the number of times that the behaviours had occurred.

#### Sample and recruitment

The criteria used for interview eligibility were 1) 18 years or older and 2) injection of one or more drug (excluding insulin or other substance that was prescribed for injection) within the 30 days prior to the interview. Several methods were used to recruit respondents for interviews. First, announcements of the study were distributed within pharmacies that offered needle exchange and placed on notice boards in venues where current injectors might frequent, e.g., health centres, in or near the offices of general practitioners. Second, information about the study was distributed by drug outreach workers, community workers and through “street sources” who had access to IDUs. Third, persons who completed an interview were asked to refer friends and acquaintances to the study. For ethical reasons we tended to avoid asking for referrals from persons who were attempting to “get clean” because some of these people wished to distance themselves from the wider injecting community. We monitored referrals carefully and generally did not permit more than three or four referrals from any one

respondent. Fourth, targeted sampling approaches were used to recruit females in particular and to ensure that interviews were conducted with respondents from each of the four health board areas in Northern Ireland. Finally, midway into the data collection stage we distributed copies of the study announcement to various drug treatment facilities in Northern Ireland. This strategy was not used until the latter stages of the study so to increase the likelihood of recruiting out-of-treatment IDUs (in the end, a total of 12% of study participants were recruited through drug treatment settings). The use of multiple sources of recruitment had two potential advantages. The procedure: 1) increased the probability of recruiting more people into the study, and 2) increased the potential for sample diversity.

#### Ethical procedures

Full ethical approval was granted by the Queen's University Medical Ethics Committee. Informed consent was obtained from participants before the interview commenced and the anonymity of respondents met that consent was obtained verbally. Respondents were paid £20 for a completed interview. About half of the interviews were taped and subsequently transcribed by the first author. Very detailed notes were taken during the remainder of the interviews. Audio tapes were secured outside the jurisdiction until they were transcribed,<sup>3</sup> and then they were destroyed.

#### Analyses

The author transcribed each interview and transcription generally occurred shortly after an interview was completed, i.e., within 24 hours. Analysis commenced with the first transcribed interview and generally relied on an integrated deductive and inductive approach. Transcripts were read several times in detail and themes were noted and discussed with the second interviewer who had extensive knowledge about selected social networks of IDUs and injecting generally. A coding scheme was developed from the themes and the concepts which emerged from the transcribed data. The author developed the coding scheme although several discussions were held with the second interviewer and drug outreach workers who worked exclusively with IDUs in Belfast. Patterns were noted and issues pertaining to “deviant” cases or “outliers” were explored further in subsequent interviews. Some quantitative data, e.g., age and other demographics, years of injecting, were analysed with SPSSPC, version 10.

## RESULTS

### Sample characteristics and patterns of injecting

Of the 59 IDUs, females comprised 34% of the sample (males=66%) and respondents' ages ranged from 22 to 50 years (mean=32, median=31). A total of 25% of respondents were employed at the time of the interview, and several others had worked in full- or part-time employment previously.

The mean age at first injection was 23 years (range=13 to 40 years). At initiation, most respondents had injected heroin (71%). Others had initiated injection with other opiates (e.g., Morphine Sulphate Tablets, Palfium, nalbuphine (Nubain), cocaine hydrochloride (powder) or crack cocaine, amphetamine, MDMA, LSD, barbiturates or steroids. The length of time since initiation into injection ranged from less than one year (i.e., respondents who had initiated injection within 11 months of the interview) to 30 years. Respondents had injected an average of 8.3 years (median=7 years) and approximately 36% of the sample had been injecting for five years or less. At the time of the interview, 37% were receiving high-dose buprenorphine or methadone substitution.

A total of 63% of the sample had injected during the 24-hour period before the interview and during that episode, most had injected heroin. In the 30 days prior to the interview, 44% had injected at least once a day. The majority of respondents reported that they had injected more than one drug over the injecting career. A total of 98% had injected heroin ("brown" or Diamorphine) at some point. Additionally, 71% had injected powder cocaine and 35% had injected crack cocaine. Other drugs injected over the lifetime included amphetamine (52%), MDMA (25%), Morphine Sulphate Tablets (55%), high-dose buprenorphine (Subutex®, 28%) and a host of other opiates. Relatively small percentages had borrowed a needle (21%) or syringe (21%) during the 30-day period prior to the interview. Considerably higher numbers had borrowed filters (57%), cookers/spoons (60%), or water (58%).

## Flushing

Of the 59 respondents, 46% reported that they flushed on a regular basis, i.e., every time or most of the time that they injected, at some point during the injecting career. Among those respondents with a history of flushing, many reported that they flushed *several* times during the same injection episode. Although 55% of experienced injectors (i.e., injected for six years or more) had flushed, 28% of new injectors also reported flushing. A total of 35% of the females and 51% of the males reported a history of flushing. Females were more likely than males to report that they were unable to flush because of small veins or because they depended on another person to inject them. For example, some females reported that they regularly “skin popped,” i.e., engaged in subcutaneous rather than intravenous injections. A female had been injecting heroin for four years. Although she had never flushed, her male sex partner and one with whom she regularly swapped injection equipment engaged in flushing frequently. She recalled an early experience where she attempted to inject herself:

“I was shitting myself and even now I don’t feel confident shooting up. That’s why I normally get somebody else to do it. I would skin pop when I’m on my own. It’s such a pain getting a vein. I lie under the sun bed to heat my body up...It’s hard for me to get a vein, never mind flush. He [male sex partner] does it [flushes] all the time.” (122, age 25)

### Flushing and drug residue

Some respondents reported that drug residue remained in the barrel after injecting and perceived that flushing ensured that the remaining residue was injected. A respondent reported flushing three or four times each time he injected:

“Just out of habit. Watch it, fill it. I just really did it to get every bit of heroin out of that needle.” (136, male, age 26)

A respondent who preferred to inject crack cocaine but also injected heroin reported:

“I must flush six times [per injection episode]. I just have to make sure it [the drug] all goes in. I love to flush. He [male partner] doesn't, but I do...The needles. I just love to see one coming.” (034, female, age 38)

These perceptions are consistent with respondents interviewed by McBride et al. (2001: 1053). Those authors noted that, “The idea that there may be “drug” left in the syringe may then become a reason for flushing with blood, without removing the needle.” A few respondents in the present study reported that flushing was conducted only when a 2 ml needle/syringe was used to inject.

“I do a wee bit sometimes...Maybe with a 2 ml I'd flush. I don't really bother. If you got a 2 ml works with the orange top, whenever you push the black thing down, there's still a little left in the wee plastic thing that you put on. And even though it's blood red, there's still a little heroin in there. So if you draw back maybe 4 units or so, you're diluting that tiny bit of heroin that's left in there and maybe pushing it back in. Now that's only

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using the 2 ml or 5 ml...wouldn't feel any difference [with a 1 ml]." (103, male, age 32)

These persons perceived that drug residue was more likely to remain in the larger 2 ml barrels. However, other IDUs disputed the belief that drug residue remained after the initial injection, regardless of the size of the barrel. They argued, for example, that flushing "doesn't do anything for me" (116, male, age 30):

"People think it would give you a bigger hit. There's no point in flushing. All the gear's [heroin] already in." (140, male, age 28)

A female had recently observed another IDU who had flushed:

"Done it a few times, but don't get anything from it. So I don't do it. Plus I don't have the veins to do it. Seen someone do it the other day. Nearly made me sick, sitting there with the needle hanging out of their arm. I said, 'Would you please take that out?' They said, 'No, because there's still some left.' I said, 'No, there's nothing there because you've been flushing for two minutes.'" (133, female, age 34)

## Flushing and type of drug

Greenfield et al. (1992) found that flushing occurred more often during simulated injections of cocaine or speedball than with simulated injections of heroin.

Consistent with their finding, some respondents in the present study flushed more frequently when injecting amphetamine or cocaine than when injecting



heroin. For example, a respondent reported that he rarely flushed when injecting heroin:

“Just with coke. See the coke rush is one of the main reasons...Flushing coke, it makes it go through your bloodstream quicker.” (108, male, age 33)

This comment is consistent the findings from earlier studies (i.e., Bourgois and Bruneau, 2000) who found that flushing served to enhance the rush associated with cocaine injection. In the present study, 29% had never injected cocaine. Of this group, 7 (41%) reported a history of flushing. Moreover, claims about a “greater rush” when flushing with cocaine, were disputed during interviews with some respondents:

I: “What does the term flushing mean to you?”

R: “Push it in a few times to make sure you got all the gear [heroin] into your arm.”

I: “Would you flush?”

R: “Yeah.”

I: “About how many times would you pull back?”

R: “Gear [heroin] – three to four.”

I: “Would it change if you were injecting a different drug?”

R: “Oh yes, speed – I’d flush until the cows come home.”

I: “And do you reckon it pumps the drug around your body more?”

R: “Not particularly, I just like doing it. I’ve always been a needle junkie.”

(115, male, aged 36)

### Flushing and fascination with needles and injecting

In the quote above, the respondent alluded to his fascination with needles as being a fundamental reason for flushing. The data reveal that some respondents flushed regularly, regardless of the type of drug that was injected. For these individuals, the behavior was firmly embedded as ritual during the injection process. A female reported that she flushed frequently when injecting heroin, morphine sulphate tablets or amphetamine (107, age 26). Another female had been injecting heroin and morphine for 24 years. She reported that she enjoyed watching herself flush, however, she did *not* mention that she flushed in order to inject any remaining drug residue. Here she describes that her desire to flush led to the injection of water:

I: "Flushing – have you...?"

R: "I love flushing. I do it deliberately. I'd do it with water. I'd sit with the needle in my leg and watch blood coming in. Shoooh."

I: "How many times would you draw back?"

R: "All depends on the vein. Loads of times. I love it."

I: "Like 10 times?"

R: "Oh God, aye [yes]...I know the anticipation's there. It's not the hit, it's the anticipation, the thrill. It's like teasing a bloke [male]. You know the whole thrill is the chase." (128, female, age 40)

### Flushing and risk for blood-borne viruses

Flushing increases the amount of blood that comes into contact with the syringe, which appears to contribute to the survival rate of HIV-1 (Heimer and Abdala, 2000), however, the degree to which flushing affects the survival rate of Hepatitis C virus is currently unknown. Nevertheless, when flushers' used syringes or used equipment is passed on to other IDUs, or when other IDUs are present during flushing episodes, the risk for transmission of blood-borne viruses is enhanced.

Many flushers in the sample engaged in other behaviours that pose risk for blood-borne viruses. For example, a male flushed three to four times during each injection and recalled the last time that he injected and flushed. During this episode, he had injected heroin with five different people over a four-day period:

“Cooked up with them in the one room like. Sat there for four days. We all got needles out of the needle exchange, so everybody had a needle but we shared the spoon and filter. But we didn't share the needles. It's because it's a brand new needle and everybody's sticking their brand new needles into the filter, so there couldn't be anything on that needle.”

He then described the second injection with the same people during this episode:

I: “So even though everybody's gouching [nodding off, sleepy state], did you use a fresh filter when you cooked up that second hit?”

R: “No, we used the same one. New needles though.” (136, age 26)

The statement suggests that the respondent was aware of the risk of transmission of blood-borne viruses through used needles/syringes. In fact,

without prompting, he emphasised this awareness to the interviewer on two occasions in this section of the interview. However, he lacked knowledge about risk through other used injecting equipment and from the data reviewed earlier, a similar pattern was observed with the majority of other respondents, i.e., most had not injected with used needles or syringes in the past 30 days, while considerably more had injected with other used equipment. None of the respondents indicated to us their awareness that flushing posed risk for blood-borne viruses, although some mentioned the link between flushing and venous damage.

A female had been injecting for 25 years and tested positive for Hepatitis C antibodies several years before the interview. She reported being a regular flusher, preferring to inject Morphine Sulphate Tablets (MSTs).

I: "Has anyone used your syringe in the past 30 days?"

R: "No, but people have asked and I've told them about the Hep C. It's up to them. Just dying sick [withdrawal], even knowing I have it, people have used my syringes and needles."

I: "Has that happened in the last 30 days?"

R: "No...just previously."

She reported that she and her male partner would sometimes use the same needle and syringe:

R: "Sometimes we are too lazy to go down [to the exchange] and get it [new equipment]."

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I: "Would you clean them?"

R: "It all depends what mood I'm in. I could just leave them lying there."

I: "In the kitchen?"

R: "Yeah, or just hide them in the cupboard." (128, age 40)

Again, flushing represented one of several risk behaviours in which the respondent engaged. In addition to regular flushing, she acknowledged that she was inconsistent with regard to cleaning used equipment, and had passed on used equipment to other people. Knowing and informing other IDUs of her illness, she appeared to suggest that an altruistic desire to assist another IDU experiencing withdrawal took precedence over the need to reduce the risk of transmission.

Finally, although just over half of the sub-sample (i.e., 54%) reported that they had never flushed, several non-flushers were at risk for blood-borne viruses because they often injected with equipment that had been used by a partner or friend, many of whom flushed regularly. Injection settings that are characterised by more visible blood (e.g., flushing) could increase the risk of transmission among non-flushers.

## DISCUSSION

The purpose of the study was to explore the extent of flushing and IDUs' self-reported reasons for flushing. Nearly half (46%) of the 59 current IDUs reported a history of flushing, and in most instances, people flushed several times during

most injection episodes. Females were more likely than males to report that they were unable to flush because of small veins or because they depended on another person to inject them. Still, 35% of the females and 51% of the males reported a history of flushing.

The data suggest three primary reasons why IDUs in the sample engaged in flushing. First, some respondents flushed because they perceived that drug residue remained in the barrel after injecting. This explanation is consistent with observations of other investigators (McBride et al., 2001: 1053). Within this group, a few respondents reported that drug residue was more likely to remain in 2 or 5 ml syringes, and flushed for this reason. Other respondents disputed the idea that drug residue remained, regardless of the size of the barrel. It is possible that residue remains after the initial injection, and that flushing increases the likelihood that all of the drug will be injected. In these scenarios, however, it is likely that a single flush would allow for the remaining residue to be fully injected. Although data were not collected to test the hypothesis, it is probably unlikely that multiple flushes even with a 5 ml syringe would be needed to ensure that all of the substance is injected.

A second reason for flushing was that the behavior enhanced the effects of the drug. Respondents in this category were more likely to flush while injecting stimulants than when injecting opiates, such as heroin. This finding is consistent with research conducted elsewhere (Bourgois and Bruneau, 2000; Greenfield et

al., 1992). The effects from cocaine injection are brief compared to the injection of heroin (Bourgois and Bruneau, 2000), which might explain the possible reinforcing effects from flushing that accompanies cocaine injection. Moreover, there appear to be a multitude of risk behaviors in which cocaine injectors often engage. These behaviors include bingeing (Archibald et al., 1998), the use of larger syringes that can contain more blood and involvement in injecting scenarios characterised by the splattering of blood (Bourgois and Bruneau, 2000). All of these factors can increase the likelihood of blood contact.

The data suggest the presence of a third, albeit smaller group of respondents who reported that flushing was linked to what they described as a fascination with needles or injecting (see also, the case report described by Pates, 2001). These respondents tended to flush regardless of the drug injected (i.e., opiates and stimulants), and some reported that they had experienced cravings for injecting. These respondents did not flush because of the perception that drug residue remained in the barrel. Nor did they associate flushing with cocaine or other stimulant rushes. Rather, flushing *and* observing the flushing process were firmly embedded in the ritual of injecting.

The behavior of flushing occurs then for different reasons, and interventions need to be developed in light of these varied reasons. At a minimum, treatment staff should raise the issue of flushing with clients and distribute information regarding the implications of flushing. Needle exchange schemes, and drug and peer

outreach would also be important sources of distributing the relevant information. IDUs who flush because of a fascination with needles and injecting may be more resistant to change flushing behaviours, compared to IDUs who flush for other reasons.

Flushing probably produces little risk for the transmission of HIV and hepatitis B and C for IDUs who always inject alone and never loan or borrow injecting equipment. However, most respondents in this study had injected with at least one other person in the 30-day period prior to the interview and over half had used a filter, cooker/spoon and water that had been used previously by another IDU during the 30-day period. Because the syringe can come into contact with these other injecting tools, risk for transmission of blood-borne viruses is enhanced.

There is now an extensive body of research that has focused on risk behaviours among IDUs. However, several of these studies have tended to omit questions that address the extent and nature of flushing among IDUs, focusing more extensively on the frequency of injecting, the loaning and borrowing of injecting equipment, and to a lesser extent, frontloading and backloading. As a result, we know considerably less about flushing and its implications for the spread of blood-borne viruses, than we do about other injecting behaviours. Future research on risk among IDUs should include measures of flushing and explore its context. For example: Under what context and why do people initiate flushing?



Does the desire or perceived need to flush a) contribute to injecting frequency among persons who might otherwise reduce the frequency of injecting? b) contribute to continued injection, despite being prescribed an oral drug substitute? c) serve as a deterrent to treatment entry? Although funding restrictions prevented us from conducting antibody tests for HIV and Hepatitis C, longitudinal studies that incorporate antibody testing would be better suited to explore the effect of flushing as a contributing factor to transmission. It would be important, for example, to ascertain the extent to which transmission occurs among non-flushers who often inject with flushers.

This study was not based on a probability sample of IDUs, therefore generalizations to the wider injecting community in Northern Ireland cannot be made. The choice of sampling strategy, however, is an effective approach for understanding sensitive topics among a hard-to-reach population. I would encourage other researchers to explore the reasons for flushing with samples of other IDUs. In particular there is a need to more fully understand whether IDUs who reside elsewhere also offer varied explanations for flushing.

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funded by the (Northern Ireland) Department of Health, Social Services and Public Safety.

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<sup>1</sup> The population in Northern Ireland was approximately 1.5 million during this time.

<sup>2</sup> Although I use the term “borrowing” in this paper, the term is not technically correct; many IDUs who inject with equipment that has been previously used by another IDU, do not often return the equipment to the lender. We avoided using the terms “borrowing” and “sharing” during the interviews.

<sup>3</sup> Unlike other jurisdictions (e.g., United States), there is no government protection of confidentiality for persons who acknowledge the use of illicit drugs in research settings. Although the tapes did not contain the names of respondents, we were concerned that other data, e.g., voice, neighbourhood, could implicate respondents if the tapes were confiscated by police. We prepared for the “worst case” scenario by securing the tapes in a jurisdiction outside Northern Ireland.

<sup>4</sup> The availability of heroin in Northern Ireland is limited primarily to brown heroin, which generally must be converted from base to salt form to make it suitable for injecting (Strang et al., 2001). Converting to salt form is generally done by mixing the drug with citric acid or Vitamin C (Scott et al., 2000).

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