Elicitation of Salient Beliefs Related to High-Risk Drug Preparation Practices among Injection Drug Users in Puerto Rico

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Introduction

In the process of preparing drug solutions, injection drug users (IDUs) engage in a number of behaviors that can result in exposure to the human immunodeficiency virus (HIV) and other blood-borne pathogens. These risk behaviors can take place even when IDUs are injecting with their own syringe. High-risk drug preparation practices (DPPs) consist of the common use of drug preparation materials such as water and drug mixing containers and cotton filters (Koester et al., 1990; Samuels et al., 1991; Grund et al., 1991; Inciardi and Page, 1991; Zule, 1992; Colon et al., 2001). Joint preparation of the drug solution often also includes the additional DPP of using a single syringe to measure the amount of water to be used in dissolving the drug and to divide and distribute the drug solution (Grund et al., 1991; Koester and Hoffer, 1994; Carlson et al., 1996; Needle et al., 1998; Colon et al., 2001).

Notwithstanding the accumulated evidence about the role of DPPs in the transmission of HIV and other blood-borne pathogens, the factors that lead IDUs to engage in DPPs have remained understudied (Koester et al., 1999; Clatts, 1999). Apart from the evidence linking the pooling of money to buy drugs to DPPs, there is very little information on which to base the design of preventive interventions. Needle sharing has remained the focus of most prevention efforts and few prevention strategies have been specifically designed to modify DPPs. To our knowledge, there have been no previous studies examining the beliefs held by IDUs about DPPs. We have conducted 80 semi-structured interviews to elicit salient beliefs about the practice of DPPs among IDUs in Puerto Rico.

Methods

Participants and Recruitment

Data for this study were collected in two neighborhoods of the Municipality of Bayamon in the San Juan Metropolitan Area during June and July of 2001. Study participants were screened and recruited by an ethnographer after a period of six months conducting participant observation in the study neighborhoods. Potential participants were deemed eligible if they were at least 18 years of age and reported drug injection during the seven days prior to being interviewed. The sample for this study consisted of 80 IDUs. Of these, 53 were male and 27 were female. Participants ranged in age from 18 to 53, having a mean age of 33.7 years. Seventeen participants (21.3%) reported knowing they were HIV seropositive. The number of years participants had injected drugs ranged from less than one year to 36 years, with a mean number of 11.5 years. Participants reported injecting drugs an average of six times a day, ranging from one injection a day to 18.

Interview Guides and Data Collection

Participants were interviewed using a semi-structured interview guide developed for this study. Interview guides were based on behavioral constructs detailed in the social cognitive model, the transtheoretical model of behavior change, and the theory of reasoned action (Middlestadt et al. 1996). Areas of inquiry covered three protective practices that could eventually become intervention targets: 1) the use of water from a personal container to prepare drug solutions; 2) the use of new cotton filters to filter the drug solution; and 3) the use of new syringes to measure the water and distribute drug shares. Respondents were asked to mention advantages and disadvantages of each behavior, the types of persons that would approve or disapprove of them always practicing each behavior, and the things that made it easy or difficult to practice each behavior.

Content Analyses

All the verbatim statements made by the respondents were entered into an electronic database and classified according to the behavior referred to in the statement. Keywords and phrases were derived from the textual database and used to develop a list of topics. Topics were categorized as expressing consequences, social referents, or barriers/facilitators. A relational database was developed where each verbatim statement was matched to one or more topic. Topics were then grouped into general themes and variables representing the enumeration of topics by three or more respondents were created in an SPSS data file. Counts and percents for each topic and general theme were calculated.

Table 2. Beliefs elicited among 60 IDUs about always filtering drug with a new cotton filter

Consequences	%	Social Referents	%	Barriers	%
1: Avoids Infections/Diseases	***90.0***	**Would Approve**		***1: Accessibility/Availability, Scarcity***	***100.0***
Avoids diseases, infections	83.3	***1: Sex Partner/Family***	***78.3***	More services in the community	83.3
It's clean	13.3	My partner, my spouse	33.3	More service in the shooting gallery	45.0
It's not contaminated	6.7	My mother, my father	33.3	Not having cigarettes	38.3
I take better care of myself	6.7	Family, a close uncle	30.0	Not at hand when needed	30.0
I take better care of my health	6.7	My brothers	26.7	Hard to find when needed	28.3
It's more hygienic	5.0	My children	26.7	Need money	25.0
2: Preparation and Injection Process	***53.3***	***2: Friends***	***45.0***	More services in the copping area	25.0
Prevents the syringe from clogging	38.3	Friends	25.0	NEPs should distribute cotton filters	11.7
Drug pulling works better	15.0	Friends who do not use drugs	15.0	Hospitals should give out cottons	8.3
The cotton filters the drug better	8.3	Close friends	5.0	Drug stores should give out cottons	6.7
It collects all the dirt in the cooker	5.0	Neighbors	5.0	People steal them	6.7
3: Avoids Pain/Discomfort	***41.7***	***3: Friend Drug Users***	***26.7***	Hygienic kits with all the materials	5.0
Prevents pulling up fibers, 'pajas'	25.0	Friends who use drugs	15.0	A shirt to pull off a thread	5.0
Avoids the chills, 'escalofrios'	23.3	Friends whom I share drugs with	11.7	***2: Having to Carry on Oneself***	***30.0***
		4: Community Prevention Personnel	***23.3***	Police find it and harass us	21.7
		Outreach workers	23.3	Don't like to carry cottons on me	5.0
		Would Disapprove		Cottons get dirty while carrying them	5.0
		5: Other Drug Users	83.3	***3: Carelessness/Hurry***	***21.7***
		Those with whom I pool drugs with	***35.0***	Carelessness, losing my materials	15.0
		The other drug users	30.0	The rush and anxiety of getting a fix	8.3
		Shooting gallery managers	26.7	***4: Distrust of/from Others***	***6.7***
		The user who loans the cooker	8.3	Others think I distrust them	6.7
				5: Others Prefer Theirs/Used	***70.0***
				Sharing partner prefers to prepare with a used cotton	45.0
				Sharing partner wants to prepare with his own cotton, even it is used	28.3

Table 1. Beliefs elicited among 60 IDUs about always using water from a personal container

Consequences	%	Social Referents	%	Barriers	%
1: Avoids Infections/Diseases	***100.0***	**Would Approve**		***1: Accessibility/Availability, Scarcity***	***100.0***
Avoids diseases, infections	83.3	***1: Sex Partner/Family***	***80.0***	More services in the community	98.3
I am sure it's clean, uncontaminated	41.7	My mother, my father	38.3	Clean water in the shooting gallery	33.3
Nobody else has inserted a syringe	18.3	My partner, my spouse	35.0	They don't let me use their tap	28.3
Avoids infecting somebody else	8.3	My brothers, my sister	31.7	Not having clean water at hand	25.0
Avoids reinfection	6.7	Family, my cousin	30.0	More hours of the NEP	15.0
I am more aware of my health	6.7	My children	26.7	Need to have money	10.0
2: Preparation and Injection Process	***23.3***	***2: Friends***	***53.3***	Others ask for it	10.0
Don't have to ask for water	16.7	Friends	28.3	No running water close by	6.7
The process is faster	11.7	Close friends	15.0	Stuff gets stolen	6.7
3: Reduces Pain/Discomfort	***11.7***	Friends who do not use drugs	15.0	I run out of it	5.0
Avoids the chills, 'escalofrios'	11.7	Neighbors	6.7	***2: Having to Carry on Oneself***	***75.0***
		3: Friend Drug Users	***18.3***	Police finds it and harasses us	58.3
		Friends who use drugs	10.0	Don't feel comfortable with it on me	26.7
		Friends with whom I share drugs	8.3	It lets other people know I'm a user	20.0
		4: Community Prevention Personnel	***28.3***	***3: Carelessness/Hurry***	***23.3***
		Outreach workers	28.3	I am careless, I forget	15.0
		Would Disapprove		The rush to get a fix	10.0
		5: Other Drug Users	***71.7***	***4: Distrust of/from Others***	***25.0***
		Shooting gallery managers	31.7	Distrust that my water is clean	***18.3***
		Those with whom I pool drugs	30.0	Others believe I distrust them	6.7
		The other drug users	28.3		

Use of Water from Personal Containers

Water to prepare drug solutions and rinse syringes can be obtained from several sources. Water provided in shooting galleries is frequently found in either wide-mouth receptacles or in narrow-mouth plastic soda bottles. Water from the common receptacle is poured into a smaller container, usually a bottle cap or cooker, from where IDUs pull it up by inserting the tip of their syringes. IDUs can also be observed using water from their own container, most frequently small plastic bottles distributed by HIV prevention programs. Occasionally, IDUs with their own containers of water will share the water with other IDUs by pouring water into the container's top and allowing others to pull water with the tip of their syringes.

Consequences: Table 1 shows the beliefs elicited about always using water from a personal container. Positive consequences fell under three general themes: avoiding infections, improving the efficiency of the preparation and injection process, and reducing the chances of pain or discomfort while injecting. No negative consequences about always using a personal container of water were elicited. Close to one fourth (23.3%) of the respondents also believed that having a personal container with water helped the preparation and injection process by making it faster and simpler. Respondents also considered it an advantage to reduce the chances of the intense pain and chills ('escalofrios') that result from injecting solid particles ('pajas'). Using water from a personal container was believed by 11.7% of the respondents to imply that the water did not contain any solid particles.

Relevant Social Referents: The majority of referents mentioned as approving the behavior consisted of sexual partners, family members, non drug-using friends, and the personnel of community HIV prevention programs. Respondents made a clear distinction between drug-using friends and the 'other' drug users. The former (mentioned by 18.3% of respondents) were seen as encouraging the use of a personal container to protect oneself against infections, while the latter (mentioned by 71.7% of respondents) were mentioned as opposing the use of personal containers. Other drug users, especially those with whom respondents had shared drugs, were described as insisting that their own water be used. Operators of shooting galleries were also mentioned as opposing the use of personal containers, the rationale being that provision of water is part of the service for which they get paid.

Barriers: All respondents referred to problems of access and availability to clean water as a barrier. Three quarters of respondents believed having to carry water bottles on oneself to be a barrier. Police searching them and finding water bottles and relatives finding out about their injection behaviors were the two major concerns with carrying water bottles. Carelessness and the hurry and anxiety to get a 'fix' were also mentioned as barriers by 23.3% of respondents. Several respondents (10%) argued that whenever they were feeling 'drug sick' all they could think of was preparing the injection solution with whatever was readily available. At such times, other concerns were secondary. Fifteen percent said they sometimes forgot to carry their own bottles and used water from whatever source was available. Distrust among IDUs was also mentioned as a barrier by 25.0% of respondents.

Use of New Cottons to Filter Drug Solutions

After mixing the drug with water, a small piece of cotton or a cigarette filter is placed in the cooker. The tip of the syringe needle is then placed on the cotton and the solution is pulled into the syringe. The cotton or cigarette filter is intended to filter any solid particles and allow only dissolved solution to enter the syringe barrel. Used cotton filters are commonly observed in shooting galleries inside cookers lying on tables and available for IDUs to use them. After using them, IDUs seldom discard the filters. They are either returned to the shooting gallery operator or, if owned by the IDUs, saved together with the cooker, presumably to be used later. Sometimes the payment made to the shooting gallery operator is in the form of a small amount of drug solution left in the cooker and filter.

Consequences: Table 2 shows the beliefs elicited about always using new, previously unused, cotton filters. As was the case with the source of water, no salient negative consequences were elicited. Only one respondent expressed the believe that used filters worked better than new filters. Helping to avoid infections was the most frequently (90%) mentioned positive consequence of using a new filter. More than half of respondents (53.3%) believe that new filters improved the preparation process. The majority of these beliefs (38.3%) were concerned with a new filter helping to avoid the clogging of the syringe. Consistent with this belief, 25 (41.7%) respondents argued that new filters helped to avoid the chills and pain of injecting solid particles.

Relevant Social Referents: The types and distribution of social referents listed on Table 2 are very similar to that of Table 1. Respondents believed that family relatives, non-drug using friends, and the personnel of the HIV prevention programs were the main types of persons approving of them always using a new cotton filter. The belief that other non-friend drug users disapprove of the use of a new cotton filter was mentioned by 83.3% of the respondents. Respondents' accounts included frequent mentions of the person preparing the drug not willing to use any other cotton filter but his/her own as a way of keeping control of the preparation process.

Barriers: Problems with lack of access and availability were mentioned by all respondents. Problems associated with carrying cotton filters on oneself was frequently mentioned (30.0%), but it was less frequently mentioned than problems with having to carry water containers (75.0%). Carelessness, losing one's own materials (21.7%) and distrust of others that one's own filter is new (6.7%) were also mentioned as barriers against the use of new cotton filters. A large number of respondents (70.0%) expressed the belief that other IDUs prefer to use their own filters. The most frequent expression (45.0%) was that other IDUs preferred used filters because the filters had been already cured ('curados') through repetitive use. This expression seemed to contradict the fact that only one respondent had expressed a personal preference for used filters.

We asked the last 20 respondents about the advantages of using used cotton filters. Table 3 lists the responses obtained from the 20 respondents. In contrast to the responses of the initial 60 respondents who were asked about the advantages of using new filters and only one respondent expressed a preference for used filters, 13 of the 20 IDUs (65.0%) asked about the advantages of using used filters expressed some preference for them. The remaining 7 respondents (35.0%) explicitly said there was no advantage to filtering with a used filter. The salient rationale for using a used filter was that the filter retained drug from previous uses and rendered a higher potency solution when re-used. Consistent with the responses of the initial 60 respondents, 95.0% of the last 20 respondents expressed the belief that used filters can cause infections, and 55.0% believed used filters fail to remove solid particles which cause chills and pain.

Table 3. Beliefs elicited among 20 IDUs about consequences of filtering drug solution with a used cotton

Consequences	%
Positive	
1: Retains Drug from Previous Use	***65.0***
Retains drug from previous use	45.0
The solution is stronger	30.0
More drug is pulled	10.0
I can prepare another shot	10.0
2: Preparation and Injection Process	***10.0***
Drug pulling works better	10.0
Doesn't clog the syringe	5.0
Negative	
1: May Cause Infections/Diseases	***95.0***
May cause diseases, infections	85.0
There may be blood in the filter	15.0
I can infect somebody else	5.0
2: Preparation and Injection Process	***20.0***
Drug pulling doesn't work well	10.0
Can clog the syringe	10.0
3: Increases Pain/Discomfort	***55.0***
Can pull up fibers, 'pajas'	35.0
Can cause the chills, 'escalofrios'	30.0
Nicotine in used cigarette filters can cause harm, give a headache	10.0

Table 4. Beliefs elicited among 60 IDUs about always using a new syringe to measure and distribute drug shares

Consequences	%	Social Referents	%	Barriers	%
1: Avoids Infections/Diseases	***93.3***	**Would Approve**		***1: Accessibility/Availability, Scarcity***	***100.0***
Avoids diseases, infections	88.3	***1: Sex Partner/Family***	86.7	More services in the community	73.3
I am safer	15.0	My mother, my father	45.0	Need money to purchase syringes	68.3
It's not infected	10.0	My partner, my spouse	35.0	Able to purchase them in drugstores	56.7
I can avoid infecting somebody else	6.7	Family, my cousin	35.0	Need more NEPs	43.3
I take better care of myself	5.0	My children	30.0	More services in shooting galleries	21.7
Avoids reinfection	5.0	My brothers	28.3	There's nowhere to buy one	18.3
2: Preparation and Injection Process	***66.7***	***2: Friends***	55.0	Need more selling of syringes	16.7
I can prick a vein more easily	33.3	Friends	38.3	Hard to find new ones	8.3
It doesn't leave tracks on my skin	25.0	Close friends	8.3	Not having one at time of injection	6.7
One injects faster	18.3	Neighbors	8.3	Hygienic kits should include syringes	5.0
It's new	16.7	Friends who do not use drugs	6.7	***2: Having to Carry on Oneself***	***63.3***
The syringe doesn't clogs	11.7	***3: Friend Drug Users***	18.3	Police make us throw it away, break it	58.3
Pulls up the drug better	8.3	Friends who use drugs	11.7	It lets others know I'm a drug user	13.3
I don't lose the shot 'tiro'	5.0	A friend with whom I share drugs	6.7	Don't like to carry syringes	11.7
Easier to see the numbers	5.0	***4: Community Prevention Personnel***	28.3	***3: Carelessness/Hurry***	***6.7***
Less risk of the needle breaking	5.0	Outreach workers	28.3	The rush to get a fix	6.7
3: Avoids Pain/Discomfort	***28.3***	**Would Disapprove**		***4: Distrust of/from Others***	***30.0***
Doesn't hurt the vein	13.3	***5: Other Drug Users***	70.0	Other users not trusting that it's new	25.0
The point is not blunt	8.3	Those with whom I pool drugs	58.3	Others believe I want a larger share	5.0
Avoids the chills, 'escalofrios'	8.3	The other drug users	18.3	***5: Others Prefer Theirs/Used***	***30.0***
There's no pain	6.7			Sharing partner wants to use his syringe, even if mine is new	30.0

Use of New Syringes to Measure and Distribute Drug Shares

Drug solutions are frequently prepared for two or more IDUs. In these cases, it is common to observe the use of a single syringe to measure the amount of water and measure the resulting solution using the calibrations printed on the syringe barrel. Distribution of dry cocaine powder is frequently observed. Distribution of dry heroin is only rarely observed, except when one of the sharing partners wishes to use the drug without injecting it, e.g., by snorting it.

Consequences:

Table 4 shows the beliefs elicited about always using a new syringe to measure and distribute drug shares. No salient negative consequences were elicited related to the use of new syringes to prepare drug solutions. The major positive consequence elicited was the concern with protection from infections. The vast majority of respondents (93.3%) mentioned avoidance of infections with either HIV or the hepatitis viruses as a positive consequence of using a new syringe. The responses grouped under improvements to the preparation and injection process suggests that respondents were thinking mainly of the injection step when responding to questions regarding the use of a new syringe. Mentions of the syringe registering the vein more easily (33.3%) and of the syringe not leaving track marks (25.0%), refer to the use of the syringe for injection, not for preparation. Similarly, the most frequently mentioned advantage about avoiding pain referred to a new syringe not hurting the veins (13.3%). Thus, apart from the reduction in the risks of infection, the use of a new syringe to measure and distribute drug shares did not appear to elicit any other positive consequences.

Relevant Social Referents: The types and distribution of social referents listed on Table 4 is very similar to those of Tables 1 and 2. Respondents believed that family relatives, non-drug using friends, and the personnel of the HIV prevention programs were the main types of persons approving of them always using a new syringe to prepare drug solutions. Respondents' main account as to the nature of the opposition by other drug users to the use of a new syringe referred to the person preparing the drug solution not willing to use any other syringe but his/her own as a way of maintaining control of the preparation process.

Barriers: Problems with lack of access and availability were mentioned by all respondents. Problems associated with carrying syringes on oneself were frequently mentioned (63.3%). The majority of comments about difficultues in carrying syringes referred to problems with Police (58.3%). Carelessness (6.7%), distrust of others that one's own syringe is new (25.0%), and the preference of the IDU doing the preparation to use his/her own used syringe (30.0%) were the other barriers mentioned against the use of new syringes for the preparation and distribution of the drug solution.

Conclusions

These results suggest that preventive interventions need to address the belief that used filters yield higher potency solutions, help develop skills to fend off pressures from peers, and increase the accessibility of materials in ways that do not require IDUs to carry them. Given that the risks of infection of the drug preparation materials are derived from materials coming into contact with contaminated syringes, an alternative strategy could consist of introducing equipment that can be easily and efficiently used to prepare and filter drug solutions but cannot be used to inject.

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