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Comparison of injection drug users accessing syringes from pharmacies, syringe exchange programs, and other syringe sources to inform targeted HIV prevention and intervention strategies

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Abstract

Objective—In New York, syringe exchange programs (SEPs) and pharmacies provide syringe access for IDUs but may be unable to meet the needs of all IDUs. This analysis aims to describe IDUs who access syringes through different outlets to help inform the prevention needs of IDUs who under-utilize safe syringe sources in a city where syringe availability is high relative to other U.S. cities.

Design—Cross-sectional study

Setting—New York City (2005–2007)

Participants—285 IDUs recruited using street-intercept sampling

Intervention(s)—Not Applicable

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Main outcome measure(s)—IDUs using SEPs, pharmacies, or other outlets as a primary syringe source were compared by sociodemographic characteristics, injection practices and medical service utilization.

Results—Chi-square tests and polytomous logistic regression were used to compare IDUs with different self-reported primary syringe sources used 6 months prior to study entry. Compared with IDUs using other syringe sources, those using primarily SEPs were less likely to be Black (AOR: 0.26 95%CI:0.11–0.57), more likely to inject daily (AOR:3.32; 95%CI:1.58–6.98), and more likely to inject with a new syringe (AOR:2.68; 95%CI:1.30–5.54). Compared with IDUs using other syringe sources, those using primarily pharmacies were less likely to be Black (AOR:0.39; 95%CI0.17–0.90).

Conclusion—These data suggest that pharmacies and SEPs may be reaching different populations of IDUs and highlight a sub-population of highly marginalized IDUs (Black and infrequent injectors) who are under-utilizing safe syringe sources in New York City. Targeted interventions are needed to reduce racial disparities and increase utilization of safe syringe outlets.

Keywords

Syringe access; pharmacies; HIV prevention; racial disparities

Introduction

Injection drug use has been a driving force of the HIV epidemic in the United States since the mid-1980s and contributes significantly to the current HIV burden in the United States.¹ Although the number of newly diagnosed cases of HIV in New York City that can be attributed to injection drug use is on the decline (50% in the early 1990s², 26.7% in 2001³, and 10% in 2006⁴), HIV remains a public health burden for injection drug users (IDUs) and their sexual partners, particularly within Black and Hispanic communities³. While drug treatment is recommended for all IDUs, public health officials and research agencies recognize that many IDUs face significant barriers to treatment. Thus, beyond drug treatment, several other public health strategies have been used to try to reduce the disease burden among IDUs. Federal public health agencies recommend the once-only use of sterile syringes to prepare and inject drugs for IDUs who are unable to stop injecting^{5, 6}. Since there are approximately 116,000 IDUs in New York City⁷ and the average IDU injects about 1,000 times a year⁸, there is a need for increased availability of sterile syringes to make this recommendation feasible.

Syringe Exchange Programs (SEPs)

Syringe Exchange Programs (SEPs) are among the most successful HIV prevention interventions for IDUs. Numerous studies have evaluated changes in HIV risk behavior among IDUs before and after the introduction of SEPs and consistently report reductions in the number of new cases of HIV and other blood-borne infections, decreases in the amount of drug use, reductions in syringe sharing and other high risk injecting behaviors^{9, 10}, and greater entry into and retention in drug treatment and detoxification programs^{11–13}. Similar conclusions were drawn from studies that assessed changes in neighborhood indicators of drug use before and following the introduction of SEPs (e.g. reductions in the number of discarded syringes on the street, the number of syringes relative to drug vials and bottles discarded on the streets)¹⁴ and from cross-sectional studies that showed significantly less syringe sharing and other high risk injection behaviors among IDUs that report using SEPs.¹⁵ Similarly, a majority (18/26) of prospective cohort studies showed that SEP participation was associated with a reduction in self-reported syringe sharing.¹⁶

Collectively, the findings from these and other studies show large reductions in both risk behaviors ($\leq 80\%$) and HIV ($> 30\%$) among IDUs that use SEPs and suggest that SEPs are an effective public health intervention to reduce HIV transmission among IDUs.¹⁷ However, laws and regulations that permit syringe possession are absent in some settings and fear of being arrested for violating state laws that prohibit syringe possession deter IDUs from carrying their own syringes and hinder the success of such programs^{18–22}. For example, the majority of US states have drug paraphernalia laws that make the possession or sale of anything intended for drug use illegal²³. Furthermore, Congress has prohibited federal funding for programs that provide IDUs with access to sterile syringes since 1998, so SEPs rely on financial support from local governments and private funders. Due to limited funding, SEPs have restricted hours of operation and too few are located in urban centers. Because of their sparse locations, long travel distances present another barrier to syringe access. Although many states and municipalities in the United States have taken steps towards improving access to sterile syringes, legal and funding impediments restrict widespread utilization of these programs in the United States.

Pharmacies

In areas where non-prescription pharmacy syringe sales are legal, pharmacies act as a vital supplementary source of new, sterile syringes. Since pharmacies have access to syringes, are already established in most communities, have longer and more convenient hours of operation than SEPs, and can potentially offer greater anonymity for syringe customers, they may be able to attract different types of IDUs and potentially those not using SEPs. In January 2001, the Expanded Syringe Access Demonstration Program (ESAP) was implemented in New York to prevent syringe sharing or reuse and reduce the transmission of blood-borne diseases including HIV and Hepatitis C virus among IDUs. The ESAP legislation required an independent evaluation to be conducted to determine its continuance beyond the authorized period through March 31, 2003. Our research group led this evaluation and found that ESAP was not associated with increases in substance use, criminal activity, accidental needle sticks or improper disposal of syringes. While our evaluation of ESAP revealed an increased utilization of pharmacies early on in the program, black and Hispanic IDUs were less likely to use pharmacies than white IDUs. There was no evidence of racial discrimination during the syringe transaction, however, there was some evidence that fear of being denied the sale or being mistreated by the pharmacy staff may have prevented some IDUs from entering a pharmacy and asking about syringe sales^{24, 25}. We also found a slight decline in syringe sharing after ESAP's inception.²⁶ On the strength of these findings, the ESAP law was renewed through 2007 and subsequently renewed through 2011.

Similar to published data on SEPs, there have been several reports suggesting a positive impact of pharmacy syringe sales on reducing high risk injection practices.^{27,28} Although increased access to syringes via legalized, non-prescription syringe sales in pharmacies has been associated with reductions in HIV risk behavior among IDUs, pharmacies remain underutilized because of 1) trepidation among IDUs who are uncertain about whether a pharmacist will sell a syringe without a prescription in a given situation^{26, 29}, 2) pharmacy regulations or practice guidelines that limit pharmacy sales of sterile syringes to IDUs³⁰, 3) individual pharmacy policies that restrict or prohibit sales, and 4) pharmacy managers or pharmacists may be reluctant to sell IDUs syringes in some instances²⁶. Additionally, carrying syringes is criminalized in New York State and although individuals that can prove SEP-registration or syringe purchases through ESAP are exempt from prosecution, many IDUs are not aware of this or have been hassled by police even when proof of legal possession was shown²⁴.

While SEPs and pharmacies have increased the availability of clean syringes for IDUs, mounting evidence suggests that neither can meet this need alone. The purpose of this analysis is to describe the characteristics of IDUs who access syringes through different outlets and to assess the prevention needs of IDUs who are still not utilizing safe syringe sources in New York City, where safe syringe sources are more prevalent than in most other U.S. cities. There have been several studies across the U.S. and abroad describing differences between SEP users and non-users and a few studies describing differences between IDUs who purchase syringes in pharmacies and those who do not, many of which are described above. There is one study comparing IDUs in Estonia who use primarily SEPs, primarily pharmacies, and primarily other syringe sources³¹, however, no reports comparing IDU syringe sources have been published in the United States to date. This analytic approach of comparing IDUs within the same sample that use different syringe sources reduces the potential for bias that may arise from comparing samples of IDUs recruited over different time periods, and with different sampling strategies and/or from different geographic regions.

We hypothesize that those using pharmacies, SEPs, and other sources will have different sociodemographic and behavioral risk profiles, and varying levels of medical service utilization. Results indicating a significant difference in the characteristics of those using each syringe source would provide support for the ability of each source to reach different populations which, in turn, provides support for the expansion of legal syringe access through multiple venues, including pharmacies. Furthermore, we will be able to characterize those who are not accessing syringes from either SEPs or pharmacies to help inform better targeted prevention and intervention efforts.

Methods

Population and Study Design

The data used for this analysis were collected as part of the IMPACT Studies, a series of cross-sectional studies conducted at the New York Academy of Medicine (NYAM) to determine the association between features of the urban environment and several health outcomes. Participants were recruited using random street-intercept sampling in 36 socioeconomically disadvantaged neighborhoods as described elsewhere³². In brief, outreach workers approached every fifth person and using a prepared script, introduced him- or herself, described the study, and invited him/her to be screened. Walk-ins could also be screened for eligibility. Persons aged 18 and older who lived in or spent at least half of his/her time in one of the target neighborhoods were eligible for this study. Both English- and Spanish-speaking participants who reported no drug use, any drug use (i.e. alcohol, marijuana, heroin, cocaine, crack, methamphetamine, and club drugs in the past three months), and former drug use were enrolled. After obtaining written informed consent, interviewer-administered questionnaires approved by the institutional review board at NYAM were used to collect information about drug use, sex practices, social networks and supports, and psychosocial stress followed by \$20 remuneration. This analysis was restricted to include only participants who reported having injected illicit drugs in the past 6 months. Three individuals who reported being transgendered were also deleted from the analysis. Of the 1153 people enrolled between January 25, 2005 and August 30, 2007, 285 current IDUs were included in this analysis.

Data Collection

Participants were categorized according to their primary syringe source during the past 6 months prior to study entry (pharmacies, SEPs, or other sources). Those categorized as using “other sources” obtained the majority of their syringes from family members, relatives,

spouses, boy/girlfriends, sex partners, friends, acquaintances, diabetics, drug dealers, needle dealers, bodegas and smoke shops. The majority of these alternative syringe sources are potentially unsafe or of questionable safety since the syringes are not necessarily obtained in sterile packaging and could have been used prior. IDUs with different primary syringe sources were compared with respect to sociodemographic characteristics, injection practices in the past 6 months, drug use in the past 6 months, and medical service utilization in the past 6 months. The following sociodemographic variables were included: age (dichotomized at the median, 36 years), sex (male vs. female), race/ethnicity (black, Hispanic, white/other), education (at least high school or the equivalent vs. less than high school), total income (greater than \$10,000/year vs. less than or equal to \$10,000/year), current health insurance coverage and homelessness in the past six months. Injection practices over the past six months included using a new syringe at least half the time, shooting gallery use, injection frequency, dividing drugs, and sharing cotton, cookers, tourniquets, and rinse water. To measure drug use, we included measures of drug dependence (heroin, crack, and cocaine) and to measure medical service utilization, we included participation in a drug detoxification program in the past 6 months, doctor/clinic visits for medical care in the past 6 months, and having received care in an ER in the past 6 months. Finally, in order to better understand the injection risk among IDUs who reported not using a new syringe more than half the time, we conducted a sub-analysis of the likelihood of using syringes previously used by others vs. syringes that only he/she had previously used.

Statistical Analysis

Descriptive statistics were used to describe the demographics by outcome status. Chi-square tests were used to determine whether the frequency distributions differed for those with different primary sources of sterile syringes (IDUs using syringes from primarily pharmacies, primarily SEPs, and primarily other sources). A polytomous logistic regression model was used to examine the association between each covariate and syringe source (with other primary syringe source as the reference group). The Hosmer Lemeshow goodness of fit test was used to test the model fit for each of the two component logistic regression models of the final polytomous logistic regression model (pharmacy vs. other and SEP vs. other). Based on prior reports of differences in pharmacy use by race, age, and gender, we explored interactions between race and age and between race and gender²⁵.

Results

Of the 285 IDUs included in this analysis, the median age was 36 (range: 18–59), 73% were male, 16% were Black, 67% were Hispanic, 53% had at least a high school degree or the equivalent, 21% were married, 37% made greater than \$10,000 per year, 58% were homeless in the past 6 months, 55% used SEPs as their primary source of syringes over the past 6 months, 27% used pharmacies as their primary source of syringes over the past 6 months, and 18% used sources other than pharmacies and SEPs as their primary source of syringes over the past 6 months. (Table 1) As reported by Ompad and colleagues (2008), U.S. Census 2000 data show that in these neighborhoods, 42.3% identified as Hispanic, 37.2% as black, 9.1% as white, and 11.4% as some other race.³²

As seen in Table 1, primary syringe source differed significantly by race/ethnicity. Blacks reported syringe access primarily through sources other than SEPs and pharmacies (38%), whereas Hispanics and white/others most frequently reported using SEPs (59% and 63% respectively). IDUs using different syringe sources did not differ with respect to age, gender, education, marital status, income, or homeless status.

With respect to injecting practices, there were significant differences for injection frequency and syringe sharing. IDUs who reported using primarily SEPs for syringes were more likely

to inject daily than any other group and this difference was statistically significant. For example, more than half (56%) of IDUs using primarily SEPs reported injecting every day, compared with 38% of IDUs using mostly pharmacies and 26% of IDUs using mostly other sources. While the majority of all participants reported using new syringes to inject more than half the time (73%), IDUs obtaining the majority of their syringes from sources other than SEPs and pharmacies were less likely than those using primarily pharmacies or primarily SEPs to use a new syringe when injecting. There were no significant differences across groups with respect to sharing of injection equipment. It is interesting to note that while the majority of IDUs reported using new syringes, most also reported other high risk injection practices. For example, about half reported sharing cotton (47%), dividing drugs (46%), and sharing cookers (52%) in the past 6 months (Table 1).

IDUs who obtained syringes from different sources did not differ with respect to dependence on cocaine or crack, but were significantly different with respect to heroin dependence. Dependence on heroin was high in all groups, but was highest among those who reported using primarily SEPs. IDUs using primarily SEPs were the most likely to be dependent on heroin (83%), followed by those using primarily pharmacies (73%) and those using other sources (neither pharmacies nor SEPs) (62%) as a primary syringe source. Less than one-third of participants in all groups reported entry into detoxification programs in the past 6 months and this was not significantly different by primary syringe source (Table 1). IDUs using different primary syringe sources did not differ with respect to medical service utilization in the past 6 months.

Before adjustment (Table 2), IDUs using primarily SEPs and primarily pharmacies were significantly less likely to be black ($OR_{SEP}:0.15$; 95%CI:0.05–0.47 and $OR_{pharm}:0.28$; 95%CI:0.08–0.97). Additionally, IDUs obtaining the majority of their syringes from SEPs were more likely than those who obtained the majority of their syringes from other sources to report injecting daily ($OR:3.67$; 95%CI:1.81–7.44), to report using new syringes more than half the time when injecting ($OR:2.34$; 95%CI:1.19–4.62) and to report heroin dependence ($OR:2.97$; 95%CI:1.47–6.02). Compared with IDUs who obtained the majority of their syringes from other sources, those using predominately pharmacies were more likely to report sharing rinse water ($OR:2.37$; 95%CI:1.09–5.15). Interestingly, there was no significant difference with respect to syringe sharing and primary syringe source.

Final Polytomous Regression Model

While race was initially examined as a three level variable, the significance of its association with primary syringe source in Table 1 was primarily driven by the difference between black IDUs and white/other IDUs and not by a significant difference between Hispanic IDUs and white/other IDUs. For this reason, white/other and Hispanic IDUs were combined and treated as the reference group for the race variable in the final model in order to optimize power. Compared with IDUs who obtained most of their new syringes from sources other than pharmacies and SEPs in the past 6 months, those using SEPs as a primary syringe source were less likely to be Black ($AOR:0.26$ 95%CI:0.11–0.57), more likely to inject daily ($AOR:3.32$; 95%CI:1.58–6.98) and more likely to use a new syringe when injecting ($AOR:2.68$; 95%CI:1.30–5.54) after adjustment. Compared with IDUs who obtained most of their new syringes from sources other than pharmacies and SEPs in the past 6 months, those using pharmacies as a primary source of syringes were less likely to be Black ($AOR:0.39$; 95%CI:0.17–0.90) after adjustment.

Discussion

These data suggest that both SEPs and pharmacies are reaching most IDUs in New York City, and that different sub-populations of IDUs access syringes via different venues (e.g.

SEPs, pharmacies, other sources) which underscores the importance of providing multiple outlets for syringe access to achieve more frequent and widespread use of sterile injecting equipment among IDUs. Unfortunately, these data also highlight that black IDUs are disproportionately represented among those using other syringe sources. While previous studies noted significant reductions in high risk injecting practices and greater entry and retention in drug treatment programs associated with both SEP^{9-13, 15, 17, 33} and pharmacy utilization^{26-28, 34, 35}, our analysis revealed no significant differences with respect to enrollment in drug detoxification programs or health care utilization. Instead, our analysis revealed different risk profiles for IDUs using different syringe sources, which could be used to design targeted interventions.

Our data highlight a sub-population of highly marginalized IDUs (black IDUs and infrequent injectors) who are under-utilizing SEPs and pharmacies as a source of sterile syringes. IDUs reporting use of other syringe sources were also the least likely to use a new syringe when injecting, which suggests that they may re-use syringes or borrow previously used syringes. A sub-analysis revealed that of those who reported using a syringe that had previously been used, only 38% reported syringe re-use and 62% reported always borrowing from someone else or a combination of syringe re-use and borrowing someone else's syringe. These findings are consistent with prior research. In the absence of safe places to buy or obtain syringes IDUs are more likely to use syringes that others have used before them³⁴⁻³⁶ which suggests a need for additional efforts to increase utilization of safe syringe venues among these high risk groups.

As SEPs provide access to both clean syringes and injection equipment, we would expect to find an association between primary SEP use and less frequent syringe and injection equipment sharing, however, this was not the case. Our results show that although primary SEP users were significantly more likely to report using a new syringe, they were no less likely to report sharing injection equipment than those using pharmacies or other syringe sources. All groups of IDUs reported sharing injection equipment quite frequently and about half also reported indirect sharing practices (i.e., dividing drugs). Thus, even when safe syringe sources were primarily used, this community sample of IDUs continued to use unsafe injection practices, despite the availability of clean injection equipment through SEPs. These data strongly suggest that more public health efforts are needed to communicate the importance of using clean injection equipment (and not just sterile syringes), particularly among black IDUs where HIV burden is highest. Similar to SEPs, the practice of offering sterile injection equipment (i.e., cookers, cotton, and rinse water) along with the syringe sale should be explored in ESAP pharmacy venues. This could be feasible through linkages with local community-based HIV/AIDS service organizations. Such a model currently exists in Brooklyn, New York, where a local community-based organization has partnered with an independent pharmacy to offer HIV testing and other risk reduction services to pharmacy syringe customers.

There were no significant differences between syringe source and medical service utilization, namely drug treatment. Despite high levels of heroin dependence, particularly among primary SEP users, there were relatively low levels of drug detoxification program participation in this study sample. Previous research among a demographically similar sample of IDUs showed a significant improvement in the utilization of drug treatment referrals when case management and transportation services were coupled with referrals from SEPs.³⁷ Future research is needed to explore the potential for implementing a similar referral system in pharmacies that currently provide syringe access for IDUs. Such research should possibly consider the role of both pharmacists and pharmacy clerks or technicians, the prescription volume at the pharmacy, the time commitment required to provide these additional services, educational training on drug dependence and addiction for pharmacy

staff involved in syringe transactions, and space and/or privacy constraints in the pharmacy that might impede the delivery of sensitive information.³⁸

There are some limitations of this study that should be addressed. The cross-sectional study design does not allow us to assess a causal relationship or to determine the direction of a relationship. For example, it is unclear whether or not the identified safe injection practices associated with SEP use occurred before or as a result of SEP use (i.e., use of a new syringe to inject). However, previous research has shown evidence of lower risk associated with use of SEPs using prospective study designs.¹⁶ In addition, as with all studies involving hidden populations, random sampling was not possible due to lack of a sampling frame. Therefore, this IDU sample may not be representative of all IDUs in NYC. To help compensate for this potential selection bias, this study used random street-intercept sampling in neighborhoods of high drug use activity. However, this sampling strategy did not entirely overcome the issues related to external validity.

Other limitations include the use of an interviewer-administered questionnaire which may have resulted in participants providing more socially desirable responses (e.g., over-reporting safe injection practices and underreporting drug use). However, previous studies show that self-report data among IDUs is accurate and reliable^{39, 40}. Additionally, in an effort to maintain an optimal sample size, missing values were conservatively coded with the referent category which attenuates the measure of effect. Since this potential misclassification of exposure is independent of syringe source, the measures of association will all be biased towards the null underestimating the true associations. However, missing data was minimal and did not exceed 3% for any of the variables included in this analysis (i.e., 2.8% were missing for shooting gallery use, 2.5% were missing for using a new syringe to inject, 2.1% were missing for sharing rinse water and primary syringe source, 1.8% were missing for dividing drugs, sharing cotton and sharing cookers).

Finally, it is important to note that with respect to the outcome definition selected for this study individuals were classified based on their primary syringe source over the past 6 months. Thus, many of the IDUs who obtained the majority of their syringes from other sources may have, on rare occasions, obtained syringes from SEPs and/or pharmacies and vice versa. Previous reports suggest that this other “rare occasion use” does not significantly differ by primary syringe source (i.e., non-differential misclassification)⁴¹ and therefore, it is possible that many of the associations we detected are underestimates of the true effect. Since IDUs did not typically use one exclusive syringe source and given the likely known direction of this potential bias, alternative classifications of syringe access were less optimal. The outcome definition coupled with the conservative coding of missing data may likely explain the inability to detect significant differences with respect to injection practices and medical service utilization.

With limitations acknowledged, the findings of this study have important policy implications with regard to safe syringe access among IDUs in New York City. These findings provide support for 1) expanding syringe access via legalization of non-prescription syringe sales in pharmacies in other states, cities, and municipalities across the U.S. and 2) increased funding for SEPs to expand current services. To target sub-populations of high-risk IDUs who are harder to reach, several other countries have implemented additional programs to provide IDUs with sterile syringes and syringes, for example syringe vending machines which optimize anonymity for IDUs, and other services similar to SEPs that do not require “exchange”.^{31, 32, 34, 35} However, the impact of increasing syringe access on curbing the spread of HIV will only be optimally realized when black IDUs begin to access syringes from pharmacies and/or SEPs. Thus, prevention and intervention research specifically aimed at increasing sterile syringe access among black IDUs is warranted. These

study findings coupled with our previous work⁴² suggest that strategies should examine both the behavioral and socioenvironmental context of syringe acquisition to help ensure equity and effectiveness in eliminating racial disparities in HIV in the U.S.

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Sociodemographic Characteristics, Injection Practices, and Medical Service Utilization by Syringe Source in New York City, 2005–2007 (N=285)

Table 1

	Number and Percentage (%) with each Primary Syringe Source						P-value
	SEP (n=158)		Pharmacy (n=77)		Other (n=50)		
Sociodemographic Variables	N	%	N	%	N	%	
Age (>36 years of age)	74	46.8	30	39.0	27	54.0	0.24
Sex (Male)	112	70.9	63	81.8	34	68.0	0.13
Race							0.001
Black	16	10.1	13	16.9	18	36.0	
Hispanic	112	70.9	51	66.2	27	54.0	
White/Other	30	19.0	13	16.9	5	10.0	
Education (≥ HS diploma/GED)	75	47.5	48	62.3	27	54.0	0.1
Married	34	21.5	17	22.1	7	14.0	0.44
Total income > \$10,000	22	13.9	11	14.3	8	16.0	0.92
Health Insurance ^I	136	86.1	62	80.5	40	80.0	0.43
Homeless ^I	97	61.4	42	54.5	26	52.0	0.39
Injection practices							
Inject every day ^I	89	56.3	29	37.7	13	26.0	0.0002
Shooting gallery ^I	53	33.5	23	29.9	13	26.0	0.58
Share cooker ^I	84	53.2	39	50.6	25	50.0	0.9
Share tourniquet ^I	57	36.1	27	35.1	22	44.0	0.54
Share cotton ^I	72	45.6	36	46.8	26	52.0	0.73
Share rinse water ^I	54	34.2	35	45.5	13	26.0	0.07
Divide drugs ^I	75	47.5	33	42.9	22	44.0	0.78
Used a new syringe ≥ half the time ^I	123	77.8	56	72.7	30	60.0	0.04
Drug use							
Cocaine dependence	102	64.6	44	57.1	49	98.0	0.47
Crack dependence	71	44.9	36	46.8	24	48.0	0.92

	Number and Percentage (%) with each Primary Syringe Source						P-value
	SEP (n=158)		Pharmacy (n=77)		Other (n=50)		
<i>Sociodemographic Variables</i>	N	%	N	%	N	%	
Heroin dependence	131	82.9	56	72.7	31	62.0	0.01
<i>Medical service utilization</i>							
Been to a doctor ^I	116	73.4	57	74.0	38	76.0	0.94
Been to ER ^I	64	40.5	37	48.1	18	36.0	0.36
Detox program ^I	33	20.9	24	31.2	9	18.0	0.14

^I“Past six months”

Associations Between Syringe Source and Sociodemographic Characteristics, Injection Practices, and Medical Service Utilization in NYC, 2005–2007 (N=285)

Table 2

<i>Sociodemographic Variables</i>	Primarily SEP vs. Primarily Other				Primarily Pharmacy vs. Primarily Other				<i>P-value</i>
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	
Age (> 36 vs. ≤ 36 years of age)	0.75	0.40 – 1.42	0.54	0.27 – 1.12					0.24
Sex (Male vs. Female)	1.15	0.58 – 2.28	2.12	0.92 – 4.86					0.14
Race									0.002
Black vs. White/Other	0.15	0.05 – 0.47	0.28	0.08 – 0.97					
Hispanic vs. White/Other	0.69	0.25 – 1.95	0.73	0.23 – 2.25					
Education (≥ HS diploma/GED vs. < HS diploma/GED)	1.41	0.69 – 2.90	0.77	0.41 – 1.46					0.10
Married (yes vs. no)	1.70	0.70 – 4.11	1.80	0.69 – 4.72					0.45
Total income (> \$5,000 vs. ≤ \$5,000 per year)	0.85	0.32 – 2.30	0.83	0.34 – 2.00					0.92
Health Insurance ^I (yes vs. no)	1.55	0.68 – 3.53	1.03	0.42 – 2.53					0.43
Homeless ^I (yes vs. no)	1.11	0.54 – 2.26	1.47	0.77 – 2.79					0.40
<i>Injection practices</i>									
Inject every day ^I (yes vs. no)	3.67	1.81 – 7.44	1.72	0.79 – 3.76					0.0003
Shooting gallery ^I (yes vs. no)	1.44	0.70 – 2.93	1.21	0.55 – 2.69					0.58
Share cooker ^I (yes vs. no)	1.14	0.60 – 2.15	1.03	0.50 – 2.09					0.90
Share tourniquet ^I (yes vs. no)	0.72	0.38 – 1.37	0.69	0.33 – 1.42					0.54
Share cotton ^I (yes vs. no)	0.77	0.41 – 1.46	0.81	0.40 – 1.65					0.73
Share rinse water ^I (yes vs. no)	1.48	0.73 – 3.01	2.37	1.09 – 5.15					0.07
Divide drugs ^I (yes vs. no)	1.15	0.61 – 2.18	0.96	0.47 – 1.96					0.78
Used a new syringe ≥ half the time ^I (yes vs. no)	2.34	1.19 – 4.62	1.78	0.84 – 3.79					0.05
<i>Drug use</i>									
Cocaine dependence (yes vs. no)	1.32	0.69 – 2.53	0.97	0.47 – 1.99					0.47
Crack dependence (yes vs. no)	0.88	0.47 – 1.67	0.95	0.47 – 1.94					0.92
Heroin dependence (yes vs. no)	2.97	1.47 – 6.02	1.63	0.76 – 3.50					0.008

<i>Sociodemographic Variables</i>	Primarily SEP vs. Primarily Other		Primarily Pharmacy vs. Primarily Other		<i>P</i> -value
	OR	95% CI	OR	95% CI	
<i>Medical service utilization</i>					
Been to a doctor ^{<i>I</i>} (yes vs. no)	0.87	0.46 – 1.65	0.60	0.29 – 1.24	0.31
Been to ER ^{<i>I</i>} (yes vs. no)	1.21	0.63 – 2.34	1.64	0.79 – 3.41	0.36
Detox program ^{<i>I</i>} (yes vs. no)	1.20	0.53 – 2.72	2.06	0.87 – 4.92	0.14

^{*I*} “Past six months”

Table 3

Final Polytomous Logistic Regression Model for the Association between Syringe Source and Sociodemographic Characteristics, Injection Practices, and Medical Service Utilization in NYC, 2005–2007 (N=285)

	Primarily SEP vs. Primarily Other		Primarily Pharmacy vs. Primarily Other	
	AOR	95% CI	AOR	95% CI
Race (Black vs. all other races)	0.26	0.11–0.57	0.39	0.17–0.90
Inject every day ^I (yes vs. no)	3.32	1.58–6.98	1.59	0.71–3.57
Use a new syringe $\geq$ half the time ^I (yes vs. no)	2.68	1.30–5.54	1.89	0.87–4.11

^I“Past six months”