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## Pharmacy staff characteristics associated with support for pharmacy-based HIV-testing in pharmacies participating in the New York State Expanded Access Syringe Exchange Program

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### Abstract

**Objective**—To determine support of in-pharmacy HIV-testing among pharmacy staff and the individual-level characteristics associated with in-pharmacy HIV testing support.

**Design**—Descriptive, nonexperimental, cross-sectional study.

**Setting**—New York City (NYC) during January 2008 to March 2009.

**Intervention**—131 pharmacies registered in the Expanded Syringe Access Program (ESAP) completed a survey.

**Participants**—480 pharmacy staff, including pharmacists, owners/managers, and technicians/clerks.

**Main outcome measures**—Support of in-pharmacy HIV testing.

**Results**—Support of in-pharmacy HIV testing is high among pharmacy staff (79.4%). Pharmacy staff that supported in-pharmacy vaccinations were significantly more likely to support in-pharmacy HIV testing. Pharmacy staff that think that selling syringes to IDUs causes the

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community to be littered with dirty syringes were significantly less likely to support in-pharmacy HIV testing.

**Conclusion**—Support for in-pharmacy HIV testing is high among our sample of ESAP pharmacy staff actively involved in non-prescription syringe sales. These findings suggest that active ESAP pharmacy staff may be amenable to providing HIV counseling and testing to injection drug users and warrants further investigation.

### Keywords

Injection drug users; HIV testing; pharmacy services; New York City

## Introduction

New York State (NYS) legalized non-prescription pharmacy syringe sales in 2000 with the explicit aim of curbing transmission of HIV and other blood-borne infectious diseases among injection drug users (IDUs) through the Expanded Syringe Access Program (ESAP)<sup>1</sup>. This law was implemented in January 2001 and since, ESAP-registered pharmacies have become an increasingly common source of syringes for many IDUs<sup>2,3</sup> with studies suggesting an increase in access to sterile syringes, a decrease in injection risk behavior, and potential decrease in HIV and HCV transmission, both in NYS and elsewhere<sup>4–11</sup>. The only requirements for this law is that pharmacies must register with the NYS Department of Health and Mental Hygiene to participate in the program, and that each syringe sale transaction include a mandatory insert that provides information to syringe customers on the ESAP law, safe syringe use, and safe syringe disposal.<sup>12</sup> With ESAP-registered pharmacies becoming an increasingly common source of sterile syringes for IDUs<sup>13</sup> coupled with the large number of ESAP participating pharmacies (over 2000 in New York City alone), the potential role of pharmacy staff as public health providers has come to the forefront of pharmacy research, public health, and practice. Through participation in nonprescription syringe sales, pharmacies are optimal points for intervention, where additional services such as referrals and services for other public health needs can be offered to IDU syringe customers.<sup>14</sup> Furthermore, pharmacy syringe access programs may provide increased contact with IDUs in disadvantaged neighborhoods and could potentially reach those at highest risk for HIV, who lack access to care, namely racial and ethnic minorities. For these reasons, pharmacies participating in syringe access programs may be uniquely positioned to take the next step in HIV prevention efforts and offer in-pharmacy HIV testing services to their nonprescription syringe customers who may be at high risk for HIV.

In 2003, 1–1.2 million people were estimated to be living with HIV in the US<sup>15,16</sup>, however 20% of those were unaware of their HIV infection<sup>16,17</sup>, and may be unknowingly transmitting HIV<sup>18–20</sup>. HIV continues to excessively burden Black and Hispanic subgroups and in the U.S., New York City (NYC) has one of the highest AIDS case rates being more than three times the US average with 1.2% of the population in NYC living with HIV/AIDS<sup>21</sup>. There has been a decline in new HIV cases in NYC since 2001, however this decline has reached a plateau between 2004 and 2006 and a higher number of those newly diagnosed with HIV are being concurrently diagnosed with AIDS. Blacks and Hispanics in NYC account for 81% of new HIV/AIDS cases and among IDUs newly diagnosed with HIV, 87% were among blacks and Hispanics<sup>21</sup>. Recent data shows that a large proportion of HIV positive IDUs receive their diagnosis late, which results in decreased survival after HIV diagnosis.<sup>22</sup> This also tends to result in delayed antiretroviral therapy (ART) treatment leading to a persistent “high” viral load in the community and thus, higher transmissibility of HIV. For IDUs who are at higher risk of acquiring HIV infection through injecting drugs and using contaminated needles, HIV testing may not be readily accessible. Studies suggest

that IDUs have limited or no access to health care<sup>23</sup> and a high percentage of IDUs lack health insurance<sup>24</sup>. Access to care and HIV testing is particularly relevant, since the majority of HIV testing takes place in private physician's offices and clinics<sup>25</sup>. In addition, other perceived barriers to health care by IDUs, such as fear of stigmatization and discrimination, compound the problem of access to regular HIV testing and information.<sup>24,25</sup> Recent CDC recommendations stress the importance of routine HIV testing.<sup>25,26</sup> Thus, it is imperative to find creative ways to eliminate barriers to HIV testing by providing convenient access to testing, to identify persons with HIV infection, and to link them to medical and social services. Testing for HIV early in the course of the infection is important because it may prevent subsequent HIV transmission once an individual has become aware of their status and begins to practice safer sexual/injection behaviors. Early HIV diagnosis may also facilitate access to HIV treatment that prolongs life, preserves health, and prevents transmission by decreasing viral load. Using the ESAP infrastructure, pharmacies could be excellent venues where HIV prevention could reach IDUs at high risk for HIV who generally have a long history of poor access to healthcare.

We recently expanded our pharmacy-based research in NYC to further explore the impact of expanding public health prevention services, namely support for HIV testing services. In this analysis, we investigated pharmacy demographics, attitudes and opinions about ESAP and other pharmacy-based public health services associated with support for in-pharmacy HIV testing services among ESAP-registered pharmacy staff in New York City.

## Methods

### Study Design

The data for this analysis was obtained from the Pharmacists as Resources Making Links (PHARM-Link) to Community Services study which methods have been described in more detail elsewhere.<sup>27</sup> In brief, we targeted ESAP-registered pharmacies in neighborhoods with high drug activity in four boroughs of NYC: Manhattan, Bronx, Queens, and Brooklyn. A list of ESAP-registered pharmacies was obtained from the NYS Department of Health. The PHARM-Link study utilized a community-based participatory research (CBPR) approach to conduct a pharmacy randomized intervention trial which aims to evaluate the delivery of risk reduction, and medical and social service referral information to IDU syringe customers in ESAP-registered pharmacies by pharmacy staff. Pharmacy data was collected at baseline, 6-months (midway through intervention activities), and 12-months. For this analysis we used baseline data from all pharmacy staff collected between January 2008 and March 2009. The PHARM-Link study was approved by the Institutional Review Boards at the New York Academy of Medicine and Columbia University.

### Recruitment

High drug activity neighborhoods in Upper Manhattan (above 96th street East of Central Park and above 110th street West of Central Park), Lower Manhattan (below 14th street), the Bronx, Brooklyn, and Queens were ethnographically mapped to identify ESAP-registered pharmacies. All pharmacies were randomly ordered on a list to be screened for eligibility and once determined eligible, were visited and offered enrollment. Pharmacies were eligible to participate in the study if they had: 1) at least one non-prescription syringe customer a month; 2) a least one new non-prescription syringe customer a month that becomes a regular customer; 3) no requirements of additional documentation from customers during syringe transactions; and 4) willingness to sell syringes to IDUs. Three hundred and twenty-five pharmacies were screened for study participation, 172 were eligible and visited by research staff, and 131 agreed to participate.

## Data collection methods

Pharmacies that were eligible and agreed to participate were enrolled in the study and informed consent was obtained from all pharmacy staff. A 10-minute baseline survey was administered by trained interviewers using Computer Assisted Personal Interviews (CAPI) among pharmacists, pharmacy technicians, clerks, and non-pharmacists owners/managers during work pharmacist-specified hours when pharmacies were not so busy. The interviews were typically conducted behind the pharmacy counter. After enrollment and baseline surveys were completed, pharmacy staff went through trainings on study protocols (e.g. engaging IDU customers and setting up appointments for enrollment and delivering intervention activities among intervention pharmacies). There were a total of 131 eligible pharmacies that agreed to participate in the study, and a total of 480 pharmacy staff from these pharmacies completed the baseline survey and were included in the analysis.

## Dependent variable

Support for in-pharmacy HIV testing was the outcome of interest. The following question was used to measure support for in-pharmacy HIV testing: “How much do you support HIV testing being provided in your pharmacy?” Participants responded not supportive, somewhat supportive, or very supportive. In-pharmacy HIV testing support was dichotomized as supportive or somewhat supportive vs. not supportive.

## Independent variable

Demographic and pharmacy-related variables included sex (female and male), race/ethnicity (African-American or Black, non-Hispanic White, Hispanic, Asian or Pacific Islander, South Asian), years worked in pharmacies (continuous), number of ESAP customers/ month (continuous), number of ESAP syringes sold in the last week, pharmacy staff position (pharmacist, technician/clerk, non-pharmacist owner/manager), and the level of perceived drug activity in the neighborhood of the pharmacy (high, moderate, low, don't know). We assessed support of ESAP and other in-pharmacy services such as vaccination, referrals to HIV testing, referrals to medical, social services, and drug treatment programs, and provision of information on safe syringe use and safe disposal of syringes as yes/ no. We also dichotomously (yes/ no) assessed attitudes towards selling syringes to IDUs through ESAP, namely whether selling syringes to drug users: reduces the transmission of HIV/AIDS, gives the message that drug use is ok, make drug use increase, and makes community to be littered with dirty syringes.

## Statistical analysis

In order to identify pharmacy staff characteristics (demographics, attitudes and opinions about ESAP and other public health services) associated with support of in-pharmacy HIV-testing we calculated 1) descriptive statistics of the population using chi-square tests for categorical outcomes and t-tests for continuous outcomes to determine significant differences, and performed 2) multivariable logistic regression with in-pharmacy HIV testing and significant characteristics identified from bivariate analyses. Given that the prevalence of support for HIV testing was high, we estimated the prevalence ratios for the association between pharmacy staff characteristics and in-pharmacy HIV testing support in order to ensure that the relationship would not be over-estimated.<sup>28</sup> All data management and statistical analyses were performed using SAS version 9.1

## Results

Of 131 pharmacies, 30 were located in Bronx, 26 in Brooklyn, 15 in Queens, 33 in Upper Manhattan (Harlem) and 27 in Lower Manhattan. Of those participating, 58.0% were

independently owned and 42.0% were chain pharmacies. On average, pharmacy staff reported 22 ESAP customers/ month and 39 non-prescription syringes sold in the last week.

As shown in Table 1, there was a total of 480 pharmacy staff: 221 pharmacists, 20 non-pharmacist owners/ managers and 239 pharmacy technicians/ clerks. Of these pharmacy staff, 39.6% were male and 60.4% were female. Most pharmacy staff was Hispanic (33.8%) followed by Asian/ Pacific Islander (19.9%), African American (18.0%), White (13.6%), South Asian/ Indian/ Pakistani (9.9%) and Other race/ethnicity (4.8%). Pharmacy staff worked an average of 10.0 years in pharmacies.

A total of 381 (79.4%) of pharmacy staff supported in-pharmacy HIV testing (Table 2). Support of in-pharmacy HIV testing differed significantly by staff position and perception of neighborhood level of drug activity (Table 1) where pharmacists and those who did not know or reported low levels of perceived drug activity in the pharmacy neighborhood had lower support levels. Pharmacy staff who reported support of other public health-related pharmacy services including ESAP, in-pharmacy vaccination, provision of safe syringe disposal information, and provision of referrals to medical, social and drug treatment services were significantly more likely to support in-pharmacy HIV testing (Table 2). Those who report noticing improper disposal of syringes in/near store since registering for ESAP, and those who think that selling syringes to IDUs causes the community to be littered with dirty syringes are significantly less likely to support in-pharmacy HIV testing (Table 2).

In the adjusted multilevel model we found that persons who supported in-pharmacy vaccinations compared to those who did not support other services in the pharmacy were significantly more likely to support in-pharmacy HIV testing (PR: 2.37; 95% CI: 1.68–3.35) (Table 3). Among pharmacy staff, pharmacy technicians/clerks were significantly more likely to support in-pharmacy HIV testing compared to pharmacists (PR: 1.16; 95% CI: 1.07–1.27). Pharmacy staff who think that selling syringes to IDUs causes the community to be littered with dirty syringes were significantly less likely to support in-pharmacy HIV testing (PR: 0.89; 95% CI: 0.79–0.99).

## Discussion

The major finding in this study is the high level of support for in-pharmacy HIV testing among pharmacy personnel. These findings are consistent with existing literature on pharmacists support for provision of HIV prevention information to IDU syringe customers.<sup>14</sup> Those in support of in-pharmacy HIV testing were more likely to support other public health programs such as vaccination which suggests that pharmacy staff who support in-pharmacy HIV testing may be more public health-minded and have an understanding of the importance of and expanded public health role, namely offering on-site screening and prevention services. Conversely, negative attitudes such as ESAP contributing to an increase in dirty syringes in the community, were associated with a lack of support for in-pharmacy HIV testing. Although 43% of pharmacy staff had felt that ESAP may increase dirty syringes in the community, some of these same individuals still supported in-pharmacy HIV testing based on the high level of overall support. Previous reports suggest no increase in discarded syringes following ESAP implementation<sup>2</sup> and therefore, misperceptions such as this should be targeted with educational efforts that are factual and data driven.

This study also found technicians and clerks as being more supportive of in-pharmacy HIV testing. Previous reports have shown pharmacy support staff engaging in conversations with syringe customers including health counseling,<sup>28</sup> and importance of HIV testing.<sup>29</sup> With pharmacy clerks/technicians often being the main point of contact for IDU customers, these individuals could play a more impactful role in delivering public health information and

providing public health services. The frequent contact with IDU customers may explain their increased support for HIV testing however, further research is needed to explore factors that help explain their support and if these factors translate into extended public health practices in the pharmacy.

Our research team conducted a pilot study among thirteen NYC ESAP-registered pharmacies and assessed the feasibility of expanding pharmacy services to IDUs to include provision of medical/social service referrals. The use of pharmacies as a source of primary prevention was successful for a number of reasons. Very few pharmacies (3.7%) reported loss of business and most pharmacies (96.3%) felt that it was important to provide clean syringes to IDUs for HIV/AIDS prevention (unpublished data). The readiness of pharmacies to provide additional services calls attention to their ideal accessibility to reach both urban and rural communities, and hard to reach populations not integrated into the formal health care system. We also found in this pilot study that most pharmacists (100%) and technicians (93.8%) believed that selling non-prescription syringes helps decrease the spread of HIV. Among pharmacists (sample size), 75% reported willingness to provide HIV testing in pharmacies.<sup>30</sup> This pilot study and the results of the analysis presented in this manuscript suggests that pharmacies may be an accessible health resource for HIV testing and other preventive services for hard to reach populations including populations who face barriers to healthcare access.

### Limitations and Strengths

It is important to note some limitations in the data presented here. Given the cross-sectional nature of the data, we are unable to determine temporality between our exposure variables of interest and outcome; however, this is less of an issue when measuring current beliefs and support. Our sample may not be representative of all pharmacies participating in ESAP and nonprescription syringe sales programs since there has been a sizable amount of research generated among NYC pharmacists over the past decade. Participation in annual surveys about ESAP and drug users can perhaps influence more positive attitudes and opinions. However, with more pharmacists moving into expanded services, we feel this concern is somewhat minimized. It is also possible that our findings may not be generalizable to pharmacies not participating in pharmacy-based syringe access programs such as ESAP. However, in NYC, the overwhelming majority of pharmacies, more than 75% (personal communication, Dr. Wesley Badillo, Coordinator of the ESAP, New York State Department of Health, September 7, 2010) are registered to participate in ESAP (due to involvement of all corporate chain pharmacies). Therefore, our estimates should closely represent NYC pharmacists.

It is important to note that the technician/clerk support may be an overestimation (or underestimation) of either “technician” or “clerk” support since the pharmacy position variable was combined as technician/clerk and not separately. It is possible that the background characteristics of clerks vs. technicians may be related to support and therefore, future studies should distinguish these staff positions. We also did not investigate whether or not technicians or clerks would be willing to administer HIV testing, and consequently we did not measure level of comfort with HIV counseling and testing. Since most prevention programs are conducted by pharmacist or health assistants, clerks/technicians may have assumed that they would not have the responsibility if in-pharmacy HIV testing were implemented; consequently these levels of support may be different if clerks/technicians were expected to do the HIV testing.

With limitations acknowledged, this study has key strengths that offset these drawbacks. Namely, this study highlights the potential for a new venue for HIV testing that could reach hard to reach populations with poor access to HIV testing. Given that pharmacies are located

virtually everywhere in NYC, have flexible hours of operation and new HIV testing technologies, the provision of HIV testing in pharmacies could provide a quick, easy and accessible point of access for IDUs as well as other populations.

## Conclusions

There was generally high support for in-pharmacy HIV testing among pharmacy staff targeted towards IDUs and other high-risk populations in our sample of pharmacies participating in ESAP and actively involved in non-prescription syringe sales to IDUs. Differences in support of HIV testing highlight the need to address negative misperceptions regarding ESAP (i.e. increase littering of dirty syringes) by regular dissemination of current information on the impact of ESAP in general among all pharmacy staff. There was currently absence of evidence supporting community harm or risk resulting from ESAP<sup>2</sup>, but there is growing evidence supporting the positive impact of ESAP<sup>2</sup>. The literature supports that ESAP has had a positive impact on HIV prevention, especially by curbing injection risk behaviors such as syringe sharing<sup>31</sup>, and reaching high risk IDUs.<sup>7</sup> The need for creative HIV prevention strategies in high-risk communities and the viability of pharmacies contributing to such strategies would be a logical next step to explore for the national HIV testing strategy, as HIV testing and early HIV diagnosis may facilitate access to HIV treatment that prolongs life, preserves health, and prevents transmission to others. These next steps should include research among pharmacy staff and IDU syringe customers that identify individual and structural barriers and facilitators of in-pharmacy HIV testing that can directly inform an HIV testing program in pharmacies.

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Pharmacy staff demographic and pharmacy characteristics associated with in-pharmacy HIV testing support among pharmacy staff in New York City, N=480 (2008–2009).

**Table 1**

	Total Population		In-pharmacy HIV testing support		
	n	%	N	%	p-value
<b>Demographic Characteristics</b>					
<b>Borough</b>					
The Bronx	132	27.5	107	81.1	0.6304
Brooklyn	75	15.63	63	84.0	
Queens	40	8.33	31	77.5	
Upper Manhattan (Harlem)	112	23.33	89	79.5	
Lower Manhattan	121	25.21	91	75.2	
<b>Pharmacy type</b>					
Independent	267	55.6	214	80.1	0.6386
Chain	213	44.4	167	78.4	
<b>Title</b>					
Pharmacist	221	46.0	164	74.2	0.0351
Owner/manager, non-pharmacist	20	4.2	17	85.0	
Technician/clerk	239	49.8	200	83.7	
<b>Gender</b>					
Male	190	39.6	150	78.9	0.8513
Female	290	60.4	231	79.7	
<b>Race/ethnicity</b>					
African American or Black	86	18.0	68	79.1	0.1123
White	65	13.6	51	78.5	
Hispanic or Latino/a	161	33.8	138	85.7	
Asian or Pacific Islander	95	19.9	67	70.5	
South Asian, Indian, or Pakistani	47	9.9	37	78.7	
Other	23	4.8	17	73.9	
<b>Level of perceived drug activity in pharmacy neighborhood</b>					
High	252	52.61	210	83.3	0.0447

	Total Population		In-pharmacy HIV testing support		p-value
	n	%	N	%	
Moderate	119	24.84	94	79.0	
Low	43	8.98	33	76.7	
Don't know	65	13.57	44	67.7	
	Median	Range	Mean		
Years worked in pharmacies	6.7	0 – 52	10.0		0.9451
ESAP customers/month	13	1 – 200	22.0		0.4588
ESAP syringes sold in the last week	22.5	0 – 600	39		0.7659

Pharmacy staff support for expanded public health services associated with in-pharmacy HIV testing support among pharmacy staff in New York City, N=480 (2008–2009).

**Table 2**

	Total Population			In-pharmacy HIV testing support		
	n	%		n	%	p-value
<b>In-pharmacy HIV testing</b>						
No	99	20.63	-	-	-	-
Yes	381	79.38	-	-	-	-
<b>ESAP</b>						
No	129	27.74	92	71.3	0.0048	
Yes	336	72.26	279	83.0		
<b>In-pharmacy vaccination</b>						
No	66	13.81	20	30.3	<.0001	
Yes	412	86.19	360	87.4		
<b>Free HIV testing referral</b>						
No	13	2.71	0	36.4	<.0001	
Yes	467	97.29	381	87.6		
<b>Safe syringe disposal information</b>						
No	8	1.67	4	50.0	0.0606	
Yes	472	98.33	377	79.9		
<b>Medical &amp; social services referrals</b>						
No	21	4.41	11	52.4	0.0042	
Yes	455	95.59	367	80.7		
<b>Drug treatment referrals</b>						
No	25	5.23	13	52.0	0.0005	
Yes	453	94.77	367	81.0		
<b>Notified improper disposal of syringes in/hear store since registering for ESAP</b>						
No	443	93.07	356	80.4	0.0033	
Yes	22	4.62	19	86.4		
Don't know	11	2.31	4	36.40.		
<b>Selling syringes to IDUs causes the community to be littered with dirty syringes</b>						

	Total Population		In-pharmacy HIV testing support		p-value
	n	%	n	%	
No	268	56.42	221	82.5	0.0256
Yes	157	33.05	114	72.6	
Don't know	50	10.53	43	86.0	

**Table 3**

Adjusted prevalence ratios (PR) for characteristics associated with in-pharmacy HIV testing support among pharmacy staff in New York City, N=480 (2008–2009).

	Adj. PR	95% CI		p-value
<b>Title of pharmacy staff</b>				
Pharmacist	Ref	--	--	
Owner/manager, non-pharmacist	1.06	0.88	1.27	
Technician/clerk	1.16	1.07	1.27	0.0005
<b>In-pharmacy vaccination</b>				
No	ref	--	--	
Yes	2.37	1.68	3.35	<0.0001
<b>Think that selling syringes to IDUs causes the community to be littered with dirty syringes</b>				
No	ref	ref	Ref	
Yes	0.89	0.79	0.99	0.0158
Don't know	0.99	0.87	1.12	