Secondary Syringe Exchange Among Users of 23 California Syringe Exchange Programs

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This article describes the secondary syringe exchange (SSE) practices of injection drug users (IDUs) attending 23 syringe exchange programs (SEPs) in the state of California during 2002 (n = 539). The sample was primarily heroin injecting, about two thirds male, half White and half other racial/ethnic groups. Participants were interviewed with a structured questionnaire that included items on sociodemographic factors, drug use practices, sexual practices, use of SEP and other social services, and satisfaction with SEP services. Interviews lasted about 30 minutes. SSE was highly prevalent: 75% of IDUs reported participating in SSE in the 6 months before interview. Program characteristics, such as legal status, SSE policy, and exchange policy, did not affect the prevalence of SSE among SEP clients. Infectious disease risk behaviors were significantly more common among SSE participants than nonparticipants. SSE participants were more likely to share syringes (p < .001) and cookers (p < .001) in the previous 6 months. SSE was significantly associated with being stuck with another person’s syringe (needle-stick), a little-discussed “occupational hazard” of this practice. In multivariate analysis, the adjusted odds ratio of needle-stick among SSE participants was 2.8 (95% confidence interval, 1.3, 6.0). The high prevalence of SSE and the infectious disease risk associated with it warrant additional research to determine the causality of these associations. In the interim, SEPs should consider reinforcing HIV prevention education messages and training IDUs who engage in SSE in safe handling of biohazardous materials.

Keywords: biohazardous materials; HIV; injection drug user; Needle-stick; satellite syringe exchange; secondary syringe exchange; syringe exchange program

Introduction

More than a decade of research documents that injection drug users (IDUs) who use syringe exchange programs (SEPs) have reduced risk of HIV infection and are less likely to share...
injection paraphernalia than non-SEP users (Hartgers et al., 1989; Watters et al., 1994; Des Jarlais et al., 1996; Bluthenthal et al., 2000; Monterroso et al., 2000; Longshore et al., 2001). Although a small number of studies have found that HIV incidence and risk is higher among SEP users than nonusers, there is no evidence of a causal link between SEP use and HIV risk (Latkin and Forman, 2001). Ecological models show that SEPs, by increasing the number of sterile syringes in circulation and/or reducing the number of infected ones, reduce HIV infection and risk at the community level and result in significant cost savings to society (Kaplan et al., 1994; Kaplan and Heimer, 1995; Holtgrave et al., 1998; Raboud et al., 2003). For example, it was estimated that SEPs averted 87 infections and saved U.S.$1.82 million in HIV treatment costs in New York state in 1996 (Laufer, 2001). Conversely, lack of comprehensive national SEPs in the United State is estimated to have resulted in 4,000 to 9,000 new HIV infections and a cost to society of $240–$500 million between 1987 and 1995 (Lurie and Drucker, 1997).

An important mechanism for increasing the supply of sterile syringes in IDU communities is a practice referred to as “satellite exchange” or “secondary syringe exchange” (SSE). SSE is a mostly informal user-driven phenomenon in which IDUs give or sell syringes from SEPs to other IDUs or exchange needles at SEPs on behalf of others (Grund et al., 1992; Snead et al., 2003; Murphy et al., 2004; Riehman et al., 2004). SSE extends the reach of SEPs by making sterile syringes available to IDUs in a greater diversity of locales and time frames. It also makes clean syringes available in situations to which SEPs are typically not privy, such as the time of drug purchase or injection (Lorvick et al., 2000). In addition, SSE addresses barriers to SEP use, such as disability, fear of police, fear of disclosure of drug use, and inability to attend programs during their hours of service (Snead et al., 2003; Murphy et al., in press).

Some SEPs rely on SSE as their primary mechanism to reach IDU communities (Sears et al., 2001; Anderson et al., 2003). Advantages of SSE at a programmatic level include greater ease in serving large geographical areas, lower operating costs, and, for illegal programs, lower risk of detection by police. Disadvantages can include lack of a permanent well-established location for IDUs to access syringes, lack of ancillary services, and difficulty obtaining funding (Anderson et al., 2003).

Of 127 SEPs surveyed nationally in 2000, the vast majority allowed SSE (91%) and most (82%) actively encouraged it. Thirty-nine programs (31%) estimated that half or more of the syringes exchanged were further distributed through SSE (Des Jarlais et al., 2002). A handful of SEPs discourage SSE because they want clients to have direct contact with the program. This can ensure, from a programmatic perspective, that syringe recipients receive the full benefits of program attendance. For example, SEP sites have successfully provided ancillary services such as hepatitis B vaccination (Des Jarlais et al., 2001) and abscess care (Grau et al., 2002). They have also been shown to be an effective “bridge” to drug use treatment (Brooner et al., 1998; Heimer, 1998; Stratddee et al., 1999). Ultimately, however, programs that discourage SSE cannot truly prevent it. For example, in a comparison of two Canada SEPs with opposing SSE policies, rates of SSE were virtually identical (Tyndall et al., 2002).

Mitigating the positive effects of SSE are growing indications that IDUs who engage in SSE are more risky than IDUs who acquire syringes at SEP for themselves only. Some studies have found that sharing of syringes and other injection equipment occurred more often among SSE participants than nonparticipants. (Kral and Bluthenthal, 1997; Edlin et al., 2000; Wood et al., 2002). Most strikingly, Valente et al. (2001) found that among women, providing syringes to other IDUs was associated with HIV serocon-version.
In addition, a seldom-addressed risk of SSE is needle-stick. SSE participants may handle syringes belonging to others and risk being stuck with potentially infected needles (Kral et al., 2000). Although needle-stick has been extensively examined as an occupational hazard for health care workers (Dillman, 1999; Forst and Fletcher, 1997), it is rarely recognized as a risk for infectious disease among IDUs.

Previous studies of SSE have been limited to examining clients of one or two SEPs. Thus there is a possibility that results are due to particular program, community, or individual characteristics. In this article, we examine SSE prevalence, practices, and infectious disease risks among attendees of 23 SEPs throughout the state of California. The primary aim of the present study is to increase our understanding of SSE by examining factors associated with this practice among SEP users in California. Of particular interest is whether elevated HIV risks are observed among SSE participants and whether program attributes impact SSE practices.

Background: Syringe Access in California

California is the most populous state in the United States and, in 2000, was the eighth-ranking economy in the world (California Department of Finance, 2000). As of 2003, there were over 133,000 cumulative AIDS cases in the state, about 20% of them related to injection drug use (California Department of Health Services, 2003). Since the 1970s, state law has criminalized the possession of syringes and other drug paraphernalia. In addition, California is one of only five states in the country that require a physician’s prescription to obtain syringes from a pharmacy (Burris et al., 2002).

Despite these restrictions, SEPs have existed in California since 1988. Until 2000, most programs operated illegally, although some, like Prevention Point in San Francisco, were supported by local government in defiance of state law as early as 1993. As of 2000, California had the greatest number of SEPs of any state in the nation (24), including 14 large (50,000 or more syringes exchanged per year) and 4 extra-large (half-million syringes per year) programs (Des Jarlais et al., 2002).

A decade of legislative activism by AIDS activists, health care organizations, AIDS researchers, and progressive politicians led to three bills to legalize syringe exchange being crafted and passed in the California state legislature during the 1990s. All three were vetoed by then governor Pete Wilson. Finally, in 1999, a compromise was reached between syringe exchange advocates and the new Governor, Democrat Gray Davis. The new law created an exemption in the state Health and Safety Code (where drug paraphernalia laws are codified) stipulating that SEP programs and their staff are not subject to criminal prosecution if they have support of their local (city or county) government. To confer protection to SEP programs and staff, the local governing body must declare a “local emergency,” stating “existence of conditions of disaster or of extreme peril to the safety of persons or property within the state caused by such conditions as epidemic” (California Emergency Services Act, Cal. Gov. Code Sections 8550–68). The state of emergency must be renewed every 14 to 21 days. Thus, SEPs are legal in counties with sufficient political will to act on this exemption and illegal in all others. Laws still stand prohibiting the possession of drug paraphernalia and requiring a physician’s prescription to obtain and legally possess syringes. * Even in localities where a local emergency has been declared, individual IDUs continue to be subject to paraphernalia and syringe prescription laws. At the time of the

*Since this paper went to press, a law was passed in California authorizing the purchase of ten or fewer syringes without a prescription. Like the SEP law, it must be approved at the country level.
study (2002), 13 of the SEPs surveyed were operating under a local state of emergency (legal) and 10 were illegal.

**Methods**

**Data Collection**

As part of a study assessing the impact of new SEP-related legislation in California, we conducted a statewide survey of SEP clients and program directors. The survey includes 23 SEPs in 16 different California counties (Alameda, Contra Costa, Fresno, Humboldt, Los Angeles, Marin, Mendocino, Monterey, Sacramento, San Francisco, San Diego, San Mateo, Santa Barbara, Santa Clara, Santa Cruz, and Sonoma). These represent 23 of the 24 SEPs that existed in the state before 2000. This article reports on cross-sectional data collected in 2002. During this period, quantitative and serological data were collected from an average of 23 clients (range, 7–25) at 23 SEPs (n = 539).

Study subjects were recruited directly from SEPs during each program’s regular operating hours. Potential subjects were approached by research staff, briefly informed of the purpose of the study, and asked to participate in an interview at that time. Due to program considerations, recruitment was not formally randomized. Most SEPs had more than one exchange site. Subjects were recruited from each site in equal proportion to the site’s client census relative to the overall SEP.

Eligibility criteria for the study were (1) injection drug use in past 30 days and (2) having used the SEP in the past 30 days. Participants gave informed consent and were interviewed by trained research staff one-on-one in private yet convenient spaces, including SEP program offices, cars, storefronts, and participants’ homes (for delivery programs). Interviewers used a structured questionnaire that included items on sociodemographics, drug use practices, sexual practices, use of SEP and other social services, HIV/hepatitis knowledge, and satisfaction with SEP services. Interviews lasted about 30 minutes. Answers were entered by interviewers into a software program (QDS, NOVA Research Inc. Bethesda, MD, USA) on lap-top computers. The computer-assisted personal interviews helped reduce the likelihood of data entry errors by coordinating skip patterns and running consistency and range checks (Bateson and Hunter, 1991; Costigan and Thomson, 1992).

Respondents also received risk reduction and HIV pretest counseling and HIV testing with Orasure. They were referred to medical and social services as needed. Study participants were paid U.S.$10 for their contribution to the study and were asked to return for HIV test results disclosure and counseling 1 to 2 weeks after the interview. All study methods were approved by Human Subjects Protection Committees at RAND, University of California, San Francisco and University of California, Davis.

**Outcome Measures**

For this article, subjects who reported giving sterile syringes to and/or receiving sterile syringes from other IDUs in the 6 months before interview were defined as SSE participants (n = 406). “Distributive” SSE was defined as an affirmative response to the item, “In the last 6 months, have you supplied other people with syringes you received from this needle exchange?” “Receptive” SSE was defined as an affirmative response to the item, “In the last 6 months, have you received needles from someone who went to the needle exchange?” “Reciprocal” SSE was defined as an affirmative response to both items, meaning the participant both gave and received sterile syringes in the 6 months before interview.
The main outcome variables used to assess risk in this analysis were receptive syringe sharing, distributive syringe sharing, and needle-stick injury, all by self-report for the 6 months before interview. Receptive syringe sharing was determined from the question “In the last 6 months, how many times did you inject using syringes/needles that you know had been used by someone else (including a close friend or lover)?” Distributive syringe sharing was determined from the question “In the last 6 months, how many times did you give or loan syringes/needles that you had used to someone else (including a close friend or lover) who then used them.” Answers for these items were dichotomized. The item regarding needle-stick was “Have you been stuck while handling syringes that were not your own in the last 6 months?”

Additional outcome variables related to the impact of police action on SEP clients. Fear of arrest was determined by the question, “Are you currently concerned about being stopped, cited, or arrested while carrying drug paraphernalia (syringes or supplies)”? Questions regarding police intervention were “Have you been cited or arrested for carrying drug paraphernalia (syringes or supplies) in the last 6 months?” and “Have police taken or confiscated your syringes or supplies in the last 6 months without arresting you?”

To describe factors associated with SSE, we examined bivariate associations among any SSE practice (distributive or receptive), sociodemographic characteristics, HIV risk behaviors, and drug paraphernalia–related police contact. Because previous research has indicated that HIV risk is higher among SSE participants, we present descriptive data on risk behaviors between givers and receivers of SSE. In addition, because handling other IDU’s syringes presents a unique risk to SSE participants, we conducted analyses to determine factors associated with needle-stick injuries in this sample. Finally, we examined whether HIV risk behaviors vary by type of SSE practice as compared with SEP clients who do not engage in SSE.

**Statistical Analysis**

Mantel Haenszel chi-square and Fisher’s exact tests were used to determine statistical significance in bivariate analysis, and logistic regression was conducted for multivariate analyses using Statistical Analysis System software, release 8.02 (SAS Institute Inc., Cary, NC, USA). All variables that were associated with outcome variables in bivariate analysis (p < .10) were considered for inclusion in multivariate analysis. Pairwise interactions among main effects were considered in each model. Only statistically significant (p < .05) main effects and interactions were retained in final multivariate models.

**Results**

**Participation in SSE**

Seventy-five percent of SEP clients reported participating in SSE in the 6 months before interview. Comparing SSE participants to nonparticipants, we found that SSE participants were significantly more likely to be White, younger than 30, and gay or bisexual (Table 1). In addition, a greater proportion of SSE participants reported having a steady sex partner who was also an IDU. SSE participants were no more likely than nonparticipants to report having legal access to sterile syringes from a source other than the SEP. Overall, only 3% of study subjects reported having a physician’s prescription for syringes (Table 1).
Table 1
Characteristics of SSE and non-SSE participants (n = 539)

<table>
<thead>
<tr>
<th></th>
<th>SSE (n = 406) (%)</th>
<th>Non-SSE (n = 133) (%)</th>
<th>Total (n = 539) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>31</td>
<td>28</td>
<td>30</td>
</tr>
<tr>
<td>Male</td>
<td>69</td>
<td>72</td>
<td>70</td>
</tr>
<tr>
<td>White*</td>
<td>56</td>
<td>37</td>
<td>51</td>
</tr>
<tr>
<td>Black</td>
<td>18</td>
<td>32</td>
<td>22</td>
</tr>
<tr>
<td>Latino</td>
<td>19</td>
<td>26</td>
<td>21</td>
</tr>
<tr>
<td>Native American</td>
<td>5</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Under 30 years old*</td>
<td>17</td>
<td>11</td>
<td>15</td>
</tr>
<tr>
<td>30–49</td>
<td>60</td>
<td>52</td>
<td>58</td>
</tr>
<tr>
<td>50 or older</td>
<td>23</td>
<td>37</td>
<td>27</td>
</tr>
<tr>
<td>HIV positive</td>
<td>5</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Sexually transmitted disease past 5 years</td>
<td>9</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>Injection-related abscess past Year</td>
<td>45</td>
<td>36</td>
<td>43</td>
</tr>
<tr>
<td>Homeless</td>
<td>44</td>
<td>46</td>
<td>44</td>
</tr>
<tr>
<td>Injected heroin past 30 days</td>
<td>76</td>
<td>84</td>
<td>78</td>
</tr>
<tr>
<td>Injected amphetamine past 30 days*</td>
<td>41</td>
<td>21</td>
<td>36</td>
</tr>
<tr>
<td>Injected cocaine past 30 days</td>
<td>25</td>
<td>20</td>
<td>23</td>
</tr>
<tr>
<td>Has physician’s prescription for syringes</td>
<td>2</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Gay or bisexual*</td>
<td>17</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>Steady IDU sexual partner*</td>
<td>35</td>
<td>24</td>
<td>32</td>
</tr>
<tr>
<td>Concerned re: paraphernalia arrest*</td>
<td>61</td>
<td>44</td>
<td>56</td>
</tr>
<tr>
<td>Police confiscated syringes past 6 months*</td>
<td>13</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>Paraphernalia arrest past 6 months</td>
<td>15</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>Distributive syringe sharing past 6 months*</td>
<td>33</td>
<td>17</td>
<td>22</td>
</tr>
<tr>
<td>Receptive syringe sharing past 6 months*</td>
<td>30</td>
<td>16</td>
<td>27</td>
</tr>
<tr>
<td>Any syringe sharing past 6 months*</td>
<td>43</td>
<td>22</td>
<td>37</td>
</tr>
<tr>
<td>Cooker sharing past 6 months*</td>
<td>60</td>
<td>39</td>
<td>55</td>
</tr>
<tr>
<td>Injected another IDU past 6 months*</td>
<td>50</td>
<td>27</td>
<td>45</td>
</tr>
<tr>
<td>Needle-stick past 6 months*</td>
<td>17</td>
<td>6</td>
<td>15</td>
</tr>
</tbody>
</table>

*p < .05; Mantel Haenszel chi-square test.

In all but 1 of the 23 SEP programs surveyed, more than half of subjects reported SSE. Prevalence of SSE did not vary significantly by region. Exchange programs were divided into six operational types: storefront, clinic-based, street-based with van, street-based with no van, delivery, and roving. Delivery programs bring syringes to IDUs upon request, usually within 24 hours. Roving programs move throughout neighborhoods where IDUs congregate rather than remain stationed in a single location. Prevalence of SSE was highest in delivery programs (89%) and lowest in street-based van programs (67%).

Syringe selling was fairly uncommon in this sample. Participants were asked how many of the syringes received at their last SEP encounter they planned on selling. Only 6% planned to sell syringes at all, and only 2% planned to sell more than 10 syringes.
Effects of Program Policies and Legal Status on SSE

We examined the influence of three policies on rates of SSE participation:

1. SEP program exchange policy;
2. SEP program policy on SSE;
3. Local legal status of SEP program.

During the study period, eight programs exchanged syringes on a strict one-for-one basis (one sterile needle for each dirty one brought in). Eight programs operated on a “one-for-one plus” basis, providing a minimum number of syringes (typically 10) to all clients, and exchanging syringes one-for-one above that number. Seven programs provided sterile syringes according to stated need, regardless of the number of used needles brought in (often referred to as “distribution” programs). SEP exchange policies are influenced by many factors, including political climate, requirements of funders, and program resources. For example, many state and local government entities require a strict one-for-one exchange policy to mitigate the perception that SEPs promote drug use. At one-for-one programs, 72% reported SSE; at one-for-one plus programs, 75% reported SSE; and at distribution programs, 85% reported SSE.

Among the 23 California SEPs surveyed, 3 had policies prohibiting or discouraging SSE. Despite this policy, SSE was reported by 70% of clients from these programs. This did not differ statistically from the percentage of SSE participants (78%) at programs that were positively disposed toward SSE.

Of the SEP programs surveyed, 13 were legal (operating under a local state of emergency) and 10 were illegal in 2002. The legal status of SEP programs did not significantly affect rates of SSE. In the programs operating legally, 78% of clients reported SSE, and in the programs operating without legal authorization, 71% of clients reported SSE.

Concern about being arrested for carrying drug paraphernalia was cited by 61% of IDUs who took part in SSE, compared with 44% of their non-SSE counterparts ($p < .001$). In terms of actual encounters with police, 13% of SSE participants reported having syringes confiscated by police in the previous 6 months, versus 6% of non-SSE participants ($p < .036$). Actual arrests for carrying drug paraphernalia in the past 6 months were reported by 15% of SSE participants and 11% of non-SSE participants, a difference that was not statistically significant.

SSE Practices

The practices of SSE participants varied. Forty-four percent reported reciprocal SSE (both giving sterile syringes to and receiving sterile syringes from other IDUs) in the past 6 months. An additional 41% reported distributive SSE (giving sterile syringes only) and 15% reported receptive SSE (receiving sterile syringes only). The gender, race, and HIV status of these three subgroups did not vary significantly, nor did the type of SEP used or the percentage with steady IDU sexual partners. Distributive SSE participants were less likely to be homeless than other SSE participants (35% vs. 50%, $p < .007$). Otherwise, there appeared to be no “unique profile” associated with the various types of SSE roles.

Relationships among IDUs who participate in SSE extended beyond the giving and receiving of syringes. We collected detailed data from a subgroup of SSE participants—those who reported reciprocal or distributive SSE in the past 30 days ($n = 341$). They were asked about sexual and other drug-related activities in the past 30 days with the people to whom they gave syringes (Table 2). One third reported sexual contact with the people they
Table 2
Activities of distributive and reciprocal SSE participants with syringe recipients past 30 days (n = 341)

<table>
<thead>
<tr>
<th>Activity</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Had vaginal, anal, or oral sex</td>
<td>115</td>
<td>33</td>
</tr>
<tr>
<td>Used drugs with them</td>
<td>72</td>
<td>21</td>
</tr>
<tr>
<td>Purchased drugs with them</td>
<td>77</td>
<td>22</td>
</tr>
<tr>
<td>Shared syringes with them</td>
<td>55</td>
<td>16</td>
</tr>
<tr>
<td>Shared injection supplies with them</td>
<td>21</td>
<td>6</td>
</tr>
<tr>
<td>None of the above</td>
<td>1</td>
<td>0.3</td>
</tr>
</tbody>
</table>

gave syringes to, 21% reported using drugs with recipients, and 22% reported purchasing drugs with syringe recipients. Sixteen percent shared syringes and 6% shared injection supplies with syringe recipients. All but one person who provided syringes in the past 30 days reported engaging in some additional activity with recipients.

**Risks Associated With SSE Participation**

Seventeen percent of SSE participants reported needle-stick in the 6 months before interview, compared with 6% of non-SSE participants ($p < .002$). In bivariate analysis, the only other factor associated with needle-stick was having injected another person in the past 30 days ($p < .002$). In multivariate analysis, the adjusted odds ratio of needle-stick among secondary syringe exchangers was 2.8 (95% confidence interval, 1.3, 6.0) and among those who injected others, 1.9 (95% confidence interval, 1.2, 3.2).

In addition, IDUs who participated in SSE were significantly more likely than others to report syringe sharing in the past 6 months (Table 1). Distributive syringe sharing was reported by 33% of SSE participants versus 17% of non-SSE participants ($p < .001$). Receptive syringe sharing was reported by 30% of SSE participants versus 16% of non-SSE participants ($p < .001$). In all, some form of syringe sharing was reported by 43% of SSE participants and 22% of nonparticipants. SSE participants also reported higher levels of cooker sharing than nonparticipants (60% vs. 39%, $p < .001$) and were more likely to report injecting other IDUs (50% vs. 27%, $p < .001$). Syringe-mediated risk differed by type of SSE activity (Table 3). In general, IDUs who provided syringes only were less likely to engage in risk behaviors than those who received syringes only or those who both gave and received syringes.

We conducted a multivariate analysis to determine whether SSE was associated with syringe sharing (distributive or receptive), while controlling for multiple potential confounders (Table 4). Reciprocal and receptive SSE were independently associated with syringe sharing. Distributive SSE was not significantly associated with syringe sharing.

**Discussion**

These findings indicate that SSE is ubiquitous among clients of California SEPs. Regardless of program type, location, legal status, or exchange/distribution policy, most SEP clients engaged in some form of SSE. In this and other studies (Tyndall et al., 2002), SEP policies prohibiting SSE appeared to have no impact on its prevalence. Pooling of resources, division
of labor, and trading of favors are common survival strategies among IDUs, and SSE is one component of this (Lorvick et al., 2000; Snead et al., 2003). Syringe selling, by contrast, appeared to be fairly uncommon, perhaps because the heavy presence of SEPs in the state reduces the black market for syringes. Other studies show that street sales of syringes fluctuate depending on the availability of legal and free sources (Stopka et al., 2003).

SSE participants bore a significantly higher risk for needle-stick than non-SSE participants. This serves as an important reminder that infectious disease risk among IDUs can occur accidentally as well as directly through drug use. IDUs are arguably at higher risk of infection from needle-stick than health care workers, given the uncontrolled settings in which injection occurs and the high rates of HIV and viral hepatitis in the population to which they are exposed. Some movement has been made toward addressing accidental exposure to HIV beyond the realm of occupational health. San Francisco and other cities have launched postexposure prophylaxis programs aimed at gay men who recently (past 24 hours) had unsafe sex with a potentially HIV-infected partner (Kahn et al., 2001; Bamberger, 2003). Similar programs should be developed and oriented to IDUs so that postexposure prophylaxis is available after an incident of needle sharing or needle-stick. Legislation was passed in California in late 2003 that mandates the development of postexposure treatment guidelines in cases of inadvertent exposure among people other than health care workers (Assembly Bill 879). Inclusion of IDUs in these guidelines is vital.

### Table 3
Risk behavior by type of SSE activity, past 6 months (*n* = 406)

<table>
<thead>
<tr>
<th></th>
<th>Distributive (n = 164) (%)</th>
<th>Receptive (n = 57) (%)</th>
<th>Reciprocal (n = 176) (%)</th>
<th><em>p</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Distributive syringe sharing</td>
<td>23</td>
<td>37</td>
<td>42</td>
<td>.001</td>
</tr>
<tr>
<td>Receptive syringe sharing</td>
<td>16</td>
<td>42</td>
<td>41</td>
<td>.000</td>
</tr>
<tr>
<td>Shared cookers/bags</td>
<td>54</td>
<td>54</td>
<td>68</td>
<td>.018</td>
</tr>
<tr>
<td>Injected other IDUs</td>
<td>39</td>
<td>44</td>
<td>63</td>
<td>.000</td>
</tr>
<tr>
<td>Reused syringes</td>
<td>43</td>
<td>72</td>
<td>55</td>
<td>.000</td>
</tr>
</tbody>
</table>

*Mantel Haenszel chi-square test.

### Table 4
Association between SSE and syringe sharing in logistic regression (*n* = 539)

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Adjusted odds ratio</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reciprocal SSE (gave and received)</td>
<td>3.1</td>
<td>1.61, 5.33</td>
</tr>
<tr>
<td>Receptive SSE (received only)</td>
<td>4.1</td>
<td>2.10, 9.53</td>
</tr>
<tr>
<td>Distributive SSE (gave only)</td>
<td>1.2</td>
<td>0.60, 2.03</td>
</tr>
<tr>
<td>No SSE</td>
<td>1.0</td>
<td>Referent</td>
</tr>
</tbody>
</table>

*This model controlled for race, age, injected other IDUs, IDU steady partner, homelessness, fear of arrest, and participation in a distribution-based SEP program, each of which was independently associated with syringe sharing (*p* < .05).
In addition, SEPs should provide training to reduce the risk of accidental exposures through needle-stick. IDUs who “doctor” (inject) other IDUs should receive training in safe injection similar to that received by nurses, phlebotomists, and paramedics (Kral et al., 1999). IDUs who participate in SSE should receive instruction in the same safety protocols that needle exchange staff use and should be given materials for safer syringe handling (biohazardous waste containers, gloves, etc.). Programs that exchange syringes on a strict one-for-one basis may need to relax syringe-counting policies so that IDUs who bring in other people’s syringes do not have to handle them. Although this may create logistical problems for exchange programs, putting clients at risk of needle-stick contradicts the overall goal of SEPs, which is to stop needle-borne infection.

This article surfaces some rather puzzling results regarding participation in SSE and risk behavior. For example, why do IDUs who participate in SSE share injection equipment more often than those who do not? The answer may be that SSE participants are more engaged with other IDUs and experience more “opportunities” to share drugs and paraphernalia. This article’s findings regarding the range of shared activities among givers and recipients of syringes indirectly support this idea. Paone et al. (1997) found that SEP clients who acquired syringes from sources in addition to SEP (including other IDUs) were more likely than other SEP users to continue risk behavior. Other research has shown that IDUs who take on specific “drug-scene roles,” such as purchasing drugs for other IDUs or “doctoring” (injecting others), engage in more risk behavior than those who do not take on these roles (Friedman et al., 1998; Kral et al., 1999). People who provide syringes through SSE may be taking on a “drug-scene role”—along with its attendant risks. In addition, research regarding the social networks of SSE participants may help explain the association of SSE with risk behavior. In the meantime, SEP programs should emphasize to SSE participants the importance of not sharing paraphernalia.

We found that individual risk differed according to type of SSE activity, with those receiving syringes from other IDUs generally at highest risk. IDUs who are dependent on others for syringes may frequently end up lacking sterile syringes when they need them. Conversely, IDUs who provided syringes to others probably retain a sufficient supply for themselves. These intragroup differences among SSE participants probably reflect more directly on syringe scarcity than SSE.

SSE participants were more likely to have their syringes confiscated by police and, not surprisingly, were more concerned about being arrested for syringe possession than other IDUs. SSE participants who do not use SEPs directly may be attempting to avoid police action (Bluthenthal et al., 1997). Conversely, those who carry syringes for others take on this risk. At the community level, SSE is a logical way to contain the risk of arrest to a smaller number of people. The practice of exchanging syringes for others is unlikely to diminish given the paradoxical legal status of syringe exchange in California. Even though the state health code allows needle exchange programs to operate legally (with local government approval), individual IDUs carrying syringes are still subject to state paraphernalia laws. Only 3% of subjects in this study had truly legal access to syringes through a physician prescription. Present in only four other U.S. states, California’s prescription requirement eliminates an important potential source of sterile syringes (pharmacy sales) to IDUs and criminalizes the possession of syringes obtained from any SEP. Finally, many SEPs continue to operate at risk of criminal prosecution because a very high level of political will is required to obtain and maintain legal status. These contingencies virtually ensure that programs in socially conservative areas of the state will not become legal, that programs with local approval will remain vulnerable to the vicissitudes of
city and county politics, and that individual IDUs will continue to be subject to police action.\(^1\)

This study has several limitations that should be acknowledged when interpreting its findings. SEP use was one of the eligibility criteria for the study. Thus, all participants, including those receiving syringes through SSE, had at least some contact with SEP programs. Much research has shown that nonattenders of SEPs have different risk behaviors from attenders, with SEP attenders reporting less frequent sharing of syringe and other paraphernalia (Watters et al., 1994; Des Jarlais et al., 1996; Kral and Bluthenthal, 1997; Bluthenthal et al., 2000). The practices and risks of IDUs who receive syringes through SSE and never attend SEP are not reflected in this article. In addition, due to the exigencies of sampling at 23 separate SEPs, we were not able to randomize research subjects. Rather, sampling was conducted at each SEP site according to interviewer availability throughout the site’s operating hours. Another limitation pertains to the data presented regarding the mutual sexual and drug-using activities among reciprocal and distributive SSE participants (Table 2). These findings pertain to only a subset of SSE participants: those who gave syringes in the past 30 days. They may also be influenced by the fact that SSE participants were more likely to have steady IDU sexual partners. Participants may have been engaging in activities together because they were in intimate relationships rather than because they gave one another syringes. Finally, response bias and social desirability are always potential limitations of self-report data. However, there is a substantial body of work that supports the reliability and validity of self-report data in community-based studies of drug users (Dowling-Guyer et al., 1994; Weatherby et al., 1994; Darke, 1998).

This article points out some of the risks associated with SSE participation. These risks may mitigate, but do not eliminate, the important disease reduction benefits of SSE overall. SSE extends the benefits of needle exchange, making sterile syringes available to people, at times and in places beyond the purview of SEP programs. It should be accepted and incorporated as an integral ‘user-driven’ component of SEPs. Needed are strategies that enhance this organic form of community-level harm reduction. One strategy is to enhance the disease prevention role of IDUs who provide syringes to others by giving them the supplies and training to do more extensive harm reduction with their peers. Peer-based interventions, based in natural social networks and harnessing the abilities of “natural leaders,” have shown notable success in reducing risk behaviors among IDUs (Broadhead et al., 1998; Latkin, 1998). Similar interventions could be fielded using IDU needle providers as peer educators in SSE networks. Snead et al. (2003) found considerable interest among IDU needle providers in taking on an enhanced educational role with their peers. Such a strategy could extend further the disease prevention benefits of SSE and perhaps address the puzzling pattern of risk behavior among SSE participants.

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\(^1\)In October 2003, the outgoing governor of California vetoed a bill that would have removed the ‘state of emergency’ requirement (AB 946), and a bill that would have enabled adults to purchase up to 30 syringes at pharmacies without a prescription (SB 774). The official rationale for these vetoes was that expanded syringe access would lead to increases in crime.
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Glossary

**Biohazardous Materials**: Injection equipment or supplies, such as syringes or cotton, that have been previously used and are potentially infectious.

**Distributive Secondary Syringe Exchange**: An IDU obtains sterile syringes from a syringe exchange program and distributes them to other IDUs.

**Distributive Syringe Sharing**: An IDU gives a syringe he or she already used to another IDU for purposes of injection.

**Drug-Scene Role**: A function or identity in a drug-using community, e.g., drug dealer, syringe seller, etc.

**Needle-Stick**: Accidental puncture of skin or tissue with a previously used syringe.

**Network-Based Intervention**: A program to change norms or behaviors within a naturally occurring social group of drug users

**Receptive Secondary Syringe Exchange**: An IDU receives sterile syringes from another IDU who obtained them at a syringe exchange program.

**Receptive Syringe Sharing**: An IDU injects with a needle used previously by another person.

**Reciprocal Secondary Syringe Exchange**: An IDU both gives sterile syringes to and receives sterile syringes from other IDUs.

**Satellite Syringe Exchange**: An IDU gives or sells syringes obtained from an SEP to other IDUs.

**Secondary Syringe Exchange**: Same as “satellite syringe exchange.”

**Syringe-Mediated Risk**: Infectious disease risk involving injection of drugs, such as syringe sharing, sharing of other injection equipment, or needle-stick.

RéSUMÉ

Cet article décrit les pratiques d’échange secondaire de seringues (ESS) chez les toxicomanes utilisateurs de drogues injectables (UDI) participant à 23 programmes d’échange de seringues (PES) dans l’état de Californie, aux États-Unis. Les participants (n = 539) aux programmes PES étaient essentiellement héroïnomanes et les deux tiers environ étaient de sexe masculin. L’information recueillie concernait des variables socio-démographiques, l’utilisation de drogue et l’utilisation de PES. La pratique de l’ESS présentait une forte prévalence: 75% des UDI ont signalé avoir participé à des ESS au cours des six mois précédant l’entretien. Les caractéristiques du programme, telles que le statut légal, la politique d’ESS et la politique d’échange, n’ont pas eu d’incidence sur la prévalence de l’ESS chez les clients des PES. Les comportements à risque vis-à-vis des maladies infectieuses étaient significativement plus courants chez les sujets participant à l’ESS que chez ceux n’y prenant pas part. Les participants à l’ESS étaient plus susceptibles d’échanger leurs seringues (p < 0,001) et récipients de chauffage (p < 0,001) lors des six mois précédents. Une association significative a été mise à jour entre l’ESS et le risque de piqûre par la seringue d’une autre personne (piqûre d’aiguille), un “risque du métier” lié à cette pratique et bien peu étudié. Lors de l’analyse multivariée, le rapport de cotes ajusté correspondant aux piqûres d’aiguille chez les participants était de 2,8 (IC: 1,3 à 6,0). Ces observations justifient la poursuite des recherches. L’association entre
ESS et comportements à risque justifient en effet que des recherches supplémentaires soient menées afin d’en déterminer les causes. En attendant, il serait bon, dans le cadre des PES, que soient consolidés les messages d’éducation à la prévention du VIH et que les UDI entreprénant l’ESS soient formés à la manipulation des instruments à risque biologique.

**RESUMEN**

En este artículo se describen las prácticas de intercambio secundario de jeringuillas (ISJ) de usuarios de drogas por vía parenteral (UDVP) que asistieron a 23 programas de intercambio de jeringuillas (PIJ) en el estado de California, EE.UU durante 2002. Los asistentes (N = 539) a los PIJ eran principalmente heroinómanos y alrededor de dos tercios eran varones. Los participantes fueron entrevistados con un cuestionario estructurado. El cuestionario incluyó temas como factores socio-demográficos, maneras de usar drogas, el uso del intercambio de jeringas y otros servicios sociales, y una escala de satisfacción con los servicios del intercambio de jeringas. Las entrevistas tardaron 30 minutos. El ISJ prevaleció en gran medida: El 75% de los UDVP indicaron que habían participado en ISJ en los seis meses anteriores a la entrevista. Las características del programa, como la situación legal, la política de ISJ y la política de intercambios no afectó al predominio de ISJ entre los usuarios del PIJ. Las conductas de riesgo de adquirir enfermedades infecciosas fueron significativamente más comunes entre los participantes en ISJ que en los no participantes. Los participantes en ISJ tenían mayor probabilidad de compartir jeringuillas (p < .001) y calentadores (p < .001) en los seis meses anteriores. El ISJ estaba asociado significativamente con pincharse con la jeringuilla de otra persona (pinchazo por aguja), un “riesgo profesional” poco comentado de esta práctica. En análisis multivariable, la razón de posibilidades ajustada de pinchazo por aguja entre los participantes en ISJ fue de 2.8 (CI 1.3; 6.0). Se recomienda una investigación adicional. La asociación entre el ISJ y los comportamientos de riesgo justifican una investigación adicional para determinar la causalidad. Mientras tanto, se recomienda que los PIJ refuerzen los mensajes educativos de prevención del VIH y formen a los UDVP involucrados en PIJ en la manipulación segura de materiales biológicos peligrosos.

**THE AUTHORS**

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References


