This study assessed injection–related HIV risk behavioral changes among opioid users 6 months after enrollment in low-threshold (harm reduction based) methadone maintenance treatment (MMT) programs within needle exchange services in Kingston and Toronto, Ontario, Canada. Changes were assessed for all participants (whole cohort), participants who continued to use illicit drugs by any route (drug–using subcohort); and those who continued to inject drugs (injecting subcohort). In this prospective observational cohort study, an interviewer–administered questionnaire examining injection–related HIV risk behaviors was administered to 183 study participants at entry to treatment and 6 months later. Changes in risk behaviors were analyzed using conditional logistic regression which took into account the paired nature of the data. We found that the proportion of participants injecting drugs, sharing needles, sharing drug equipment, indirectly sharing and using shooting galleries declined with follow–up for the whole cohort. Within the drug–using subcohort, there was a decrease in the proportion of individuals who injected drugs, while within the injecting subcohort the sharing of injection equipment and the use of shooting galleries declined. Our findings suggest that low-threshold MMT programs can reduce the risk of HIV without the enforcement of abstinence–based policies.
Since the 1980s, HIV transmission among injection drug users (IDUs) has been a public health concern. For IDUs the use of HIV–contaminated needles and other injection equipment can lead to HIV transmission and has fuelled explosive epidemics of HIV in diverse locales where prevention efforts have either been absent or insufficient (Burns, Brettle, Gore, Peutherer, & Robertson, 1996; Poshyachinda, 1993; Strathdee et al., 1997).

Interventions, such as needle exchange programs (NEPs) and peer outreach can reduce the prevalence of injection–related risk behaviors (Gibson, Flynn, & Perales, 2001; Ksobiech, 2003; Latkin, Sherman, & Knowlton, 2003). However, treatment of drug use also has the potential to reduce HIV transmission through eliciting abstinence or by reducing risky needle use practices. Methadone maintenance treatment (MMT) was introduced in Canada in the early 1960s (Fischer, 2000). Methadone is a prescription opioid agonist, which can eliminate opioid cravings and withdrawal symptoms (National Institute of Health National Consensus Panel on Effective Medical Treatment of Opioid Addiction, 1998). In 1996 modifications to the provincial methadone system in Ontario, Canada, gave methadone prescribing physicians greater discretion in terms of dosing, urinalysis and consequences following positive urine tests for illicit drugs, counseling requirements, and the handling of “take-home” doses (Brands, Brands & Marsh, 2000; College of Physicians and Surgeons of Ontario, 2001). These policy changes paved the way for dramatic increases in patient registrations (Strike, Urbanoski, Fischer, Marsh, & Millson, 2005) and the introduction of low-threshold (harm reduction-based) MMT programming.

There are different approaches to low-threshold MMT (Finch, Groves, Feinnmann, & Farmer, 1995; Hartgers, van den Hoek, Krijnen, & Coutinho, 1992; Klingemann, 1996; Ryrie, Dickson, Maclean, & Climpson, 1997; Torrens, Castillo & Perez–Sola, 1996; van Ameijden, Langendam, & Coutinho, 1999; Yancovitz et al., 1991). Unlike low-threshold programs described for other countries where doses are quite low (e.g., the Netherlands with an average dose of 35 mg per day; Hartgers et al., 1992), the average dose prescribed by the clinics in this study is approximately 88 mg per day. These programs seek to break down barriers to the treatment of opioid dependence by reducing entry and retention criteria and by accepting individuals who continue to use drugs without threat of expulsion from the program. Unlike higher threshold programs, the primary aim of these programs is not necessarily to eliminate illicit drug use but to establish and maintain contact with opioid users to reduce some of the health and social risks associated with drug use. For some clients of the program, the aim is to develop the trust needed to address other health concerns. These programs are targeted at a population of opioid users most in need of drug treatment and other health and social services. The programs are client centered; that is, clients establish their own goals and in consultation with their physicians their dose is tailored to their specific goals. Within the programs under study, physicians, nurses, and counselors offer medical and social support services to the clients. As part of their participation in these programs, clients are offered counseling, assistance with issues such as housing and social support programs (e.g., welfare), testing for HIV and hepatitis C, and referral to other services such as primary health care. These low-threshold programs are offered within the confines of a NEP, which also gives clients access to clean needles, supplies, and harm reduction counseling. The majority of clients for these programs are drawn from NEP clientele (88% of study participants reported using a NEP in the past month at treatment entry).
Numerous studies have documented the positive effect of MMT on HIV risk behaviors. Comprehensive reviews of this research detail positive effects of MMT on illicit opioid use, HIV risk behaviors and HIV seroconversion (Gibson, Flynn, & McCarthy, 1999; Marsh, 1998; Prendergast, Urada, & Podus, 2001; Sorensen & Copeland, 2000). However, most of the literature is based on high-threshold MMT programs that cater to, and benefit, those drug users who are willing and able to conform to a goal of abstinence from all illicit drugs. Therefore, the findings from these studies are not readily generalizable to low-threshold MMT programs.

Evaluations of the impact of low-threshold MMT on injection-related HIV risk behaviors have produced mixed results (Finch et al., 1995; Grella, Anglin, & Annon, 1996; Hartgers et al., 1992; Ryrie et al., 1997; van Ameijden, van den Hoek & Coutinho, 1994; van Ameijden, van den Hoek, van Haastrecht & Coutinho, 1992). Three studies reported reductions in injection-related HIV risk behavior through 2 to 12 months of follow-up, depending on the study (Finch et al., 1995; Grella et al., 1996; Ryrie et al., 1997). The remaining three studies pertain to harm reduction programs typified by low methadone dose and irregular attendance and do not resemble the programs described in this article, which were designed to provide full drug substitution doses of methadone. The three studies providing only intermittent low doses of methadone to reduce acute withdrawal symptoms did not document risk reduction or protective effect on seroconversion (Hartgers et al., 1992; van Ameijden et al., 1992; van Ameijden et al., 1994).

The objective of this article was to determine the impact of low-threshold MMT administered through NEPs on needle-related HIV risk behaviors 6 months posttreatment entry. Given that individuals within these low-threshold MMT programs can continue to use drugs without fear of reprisals, it is important to investigate whether needle use behaviors change in participants who continue to use illicit drugs/continue to inject illicit drugs. Therefore, we examined changes in self-reported injection-related HIV risk behaviors following 6 months of treatment in a low-threshold MMT program among all participants (whole cohort), in the subset of users who continued to use illicit drugs (drug-using subcohort), and in the subset of users who continued to inject drugs (injecting subcohort) depending on the variable of interest. These analyses were then extended to evaluate whether the methadone dose received modified changes in risky behaviors. Such information will provide valuable insight that can be used to tailor MMT programs to achieve maximal benefits for the patients.

METHODS
The MMT programs under study are located within well-established NEPs in the cities of Kingston and Toronto, Ontario, Canada; these centers are separated by approximately 200 kilometers. The two treatment programs are very comparable. Both programs operate with a harm reduction approach within the confines of a NEP with similar additional services available to the clients. These two programs were chosen because of the similarity in philosophies and services offered. Moreover, the use of the two centers provides a reasonable sample size to improve statistical power for our research objectives.

Candidates for enrollment in the study were opioid users recruited at the time of entry into one of the two low-threshold MMT programs. Clients of these methadone programs were required to be opioid dependent as set out in the Diagnostic and Statistical Manual of Mental Disorders (DSM–IV), assessed through urinalysis and intake examination performed by clinic staff. A small number of participants were using drugs by routes other than injection at the time of enrollment.
Potential candidates for this study were approached at treatment entry at both programs and were asked to participate in a series of three interviewer–administered interviews over a 1-year period. Informed consent was obtained from all participants. A standardized study protocol and questionnaire was administered to each participant. The survey contained the Addiction Severity Index (McLellan, Luborsky, Woddy, & O'Brien, 1980); a modified version of the World Health Organization (WHO) questionnaire, which collected information on HIV risk behaviors and drug use (Des Jarlais et al., 1994; Des Jarlais, Friedmann, Hagan, & Friedman, 1996); and a health–related quality of life instrument, the Medical Outcomes Study Short–Form 36 (SF–36; Ware, & Sherbourne, 1992). The results presented in this article pertain to questions from the modified WHO questionnaire.

During the baseline interview, participants were asked about their drug use, needle use, and other issues before entering treatment; follow–up interviews asked the same questions for in–treatment data. Recruitment began in 2001 and ended in 2003; follow–up ended in 2004. For the analysis presented here, data from the baseline and 6-month follow–up interviews were used. An “intent to treat” methodology was employed in which every effort was made to follow up all participants regardless of treatment status every 6 months.

The study interviewers were not members of the methadone program staff, and therefore the study operated at arm’s length from the programs. Interviews were conducted in private offices at the MMT programs and lasted approximately 1 hour. Participants were paid $20 for each interview. The research ethics board at the University of Toronto approved this project.

STATISTICAL ANALYSES

DESCRIPTIVE ANALYSES

Descriptive analyses were first undertaken to characterize the demographic profile of the study participants. This was performed for the three cohorts: the whole cohort, the drug-using subcohort, and the injecting subcohort. Chi–squared tests were performed to compare the age and gender of participants (whole cohort) to those who refused to participate to determine whether they differed.

To examine baseline differences between participants followed to 6 months and those who were lost to follow–up (n = 20) the Fisher’s exact test was used to investigate the following categorical variables; gender, age, educational attainment, race, duration of drug use, and duration of injecting. A two–tailed alpha value of .05 was used to assess statistical significance for all analyses conducted in this paper.

CHANGES IN INJECTION-RELATED HIV RISK BEHAVIORS

Statistical analyses were first performed using data from participants who completed both the baseline and 6–month follow–up interviews, hereafter referred to as the whole cohort. In this cohort we evaluated changes in needle use, sharing of needles, sharing of drug-injecting equipment, use of shooting galleries, and participation in indirect sharing (through methods of sharing drugs, variously called frontloading, backloading, splitting).

Formally, we evaluated changes in behaviors between baseline and 6 months using conditional logistic regression, which allowed us to take into account the paired nature of the data. In the simplest case, conditional logistic regression is an extension of the McNemar’s test for matched studies. Although McNemar’s test can indicate whether or not there are statistically significant changes in the proportion, it provides
no information about the direction or magnitude of the change. On the other hand, conditional logistic regression provides an estimate of this change with the Mantel-Haenszel odds ratio (OR\textsubscript{MH}), which is a ratio of two sets of discordant pairs. In this study, this ratio was expressed as:

\[
\text{OR}_{\text{MH}} = \frac{\text{Number of individuals who did not have the risk behavior at baseline but had it at follow-up}}{\text{Number of individuals who had the behavior at baseline but did not at follow-up}}
\]

An odds ratio of less than 1 indicates that the program produces a reduction in the risk behavior, whereas an odds ratio higher than 1 represents an increase in the prevalence of the risk behavior. Statistical significance was determined by calculating the 95% confidence interval for this odds ratio, a result equivalent to the value of McNemar’s test. Confidence intervals that did not include unity represented findings that were statistically significant.

Further analysis was undertaken to assess whether the change in the proportion of participants injecting was due to the cessation of drug use by some. This analysis also used conditional logistic regression analysis as outlined above to investigate the change in the proportion of participants injecting in the drug–using subcohort (i.e., the subset of individuals who were still using illicit drugs by any route at 6 months posttreatment entry).

Similarly, additional analyses were performed to assess if changes in the proportion of participants sharing needles, sharing drug-injecting equipment, using shooting galleries, and indirectly sharing were due solely to the cessation of injection drug use. These analyses investigated changes in the above–mentioned behaviors in the injecting subcohort: the further subset of the drug–using subcohort still injecting drugs at 6 months post treatment entry.

We also examined whether methadone dose modified risk behavior changes among participants. Participants were divided into two groups of equal numbers based on their methadone dose at 6 months. The median value for this dichotomy was 88 mg and was used to improve statistical power by ensuring the maximum number of participants in the two groups. Conditional logistic regression was used to examine changes in each of these two groups.

Statistical analyses were conducted using SAS, Version 8.

RESULTS

Between December 2000 and January 2004, 307 opioid users enrolled in the MMT programs and 203 (66%) agreed to participate in the study. The 104 eligible methadone clients who did not participate in the study included those who were unable to make appointments within the first 6 weeks of treatment (\(n = 43\)), those who left treatment prior to interview (\(n = 4\)), those hospitalized or incarcerated (\(n = 7\)), those who died prior to interview (\(n = 2\)), and individuals who were not interested in study participation (\(n = 48\)).

Of the original 203 baseline participants, 183 (90.1%) provided data at the 6 month follow-up, 19 (9.4%) were lost to follow-up, and one died. Our analysis of changes in HIV risk behaviors over the 6–month follow–up period is based on the 183 participants for whom data were available at baseline and 6 months. Table 1 shows select demographic variables for all the cohorts and subcohorts used in these analyses. There were no statistically significant differences between these participants and refusers in terms of age and sex (\(p > 0.15\)).
The study population was predominantly male (63%) and Caucasian (87%) (Table 2). At baseline, individuals ranged between the ages of 18 to 54 with a median age of 33 years. Approximately half (53%) of the individuals had less than a high school education. Mean age at first drug use was 13 (range = 7-32 years) with an average duration of use of 20 years (range = 1-41 years). Ninety-three percent ($n = 171$) of participants were injectors; average duration of injection drug use was 13 years (range = <1 year-37 years). Chi–square analyses revealed no statistically significant differences in terms of demographic characteristics or selected drug use characteristics between participants who completed their 6–month interview and those lost to follow–up.

Among the 183 participants with data at baseline and 6 months later, 138 (75.4%) were still enrolled in the original methadone program, 21 (11.5%) were enrolled in a different methadone program, 5 (2.7%) were incarcerated but still receiving methadone, 2 (1.1%) were in another form of drug treatment, and 17 (9.3%) were no longer in any form of drug treatment (Table 3). The average methadone dose, for those still receiving MMT at 6–month follow–up, was 88 mg (range = 1-240 mg); this did not differ significantly between those who were still in one of the study programs (mean dose 88 = mg) and those who had transferred to another methadone program (mean dose 86 mg; Table 3). It should be noted that clients in the study programs may taper off methadone if they choose and that methadone doses are determined by clients in consultation with their physicians; this explains why some individuals may be on what would be considered a suboptimal dose of methadone for maintenance.

### Table 1. Descriptive Characteristics of Participants and Refusals

<table>
<thead>
<tr>
<th>All Participants (whole cohort) ($n = 183$)</th>
<th>Refusals ($n = 104$)</th>
<th>Drug using sub-cohort* ($n = 147$)</th>
<th>Injecting Sub-cohort* ($n = 120$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>115 (62.8)</td>
<td>74 (71.2)</td>
<td>96 (65.3)</td>
</tr>
<tr>
<td>Female</td>
<td>67 (36.6)</td>
<td>30 (28.8)</td>
<td>51 (34.7)</td>
</tr>
<tr>
<td>Transgendered</td>
<td>1 (0.5)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Age Group (years)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18–24</td>
<td>40 (21.9)</td>
<td>16 (15.4)</td>
<td>32 (21.8)</td>
</tr>
<tr>
<td>25–34</td>
<td>59 (32.2)</td>
<td>27 (26.0)</td>
<td>53 (36.1)</td>
</tr>
<tr>
<td>35–44</td>
<td>58 (31.7)</td>
<td>44 (42.3)</td>
<td>42 (28.6)</td>
</tr>
<tr>
<td>45–54</td>
<td>26 (14.2)</td>
<td>17 (16.3)</td>
<td>20 (13.6)</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>160 (87.4)</td>
<td>126 (85.7)</td>
<td>104 (86.7)</td>
</tr>
<tr>
<td>First Nations or Metis*</td>
<td>10 (5.5)</td>
<td>8 (5.4)</td>
<td>7 (5.8)</td>
</tr>
<tr>
<td>Other</td>
<td>13 (7.1)</td>
<td>13 (8.8)</td>
<td>9 (7.5)</td>
</tr>
<tr>
<td>Highest level of educational attainment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>97 (53.0)</td>
<td>80 (54.4)</td>
<td>63 (52.5)</td>
</tr>
<tr>
<td>Completed high school</td>
<td>64 (35.0)</td>
<td>49 (33.3)</td>
<td>41 (34.2)</td>
</tr>
<tr>
<td>Postsecondary</td>
<td>22 (12.0)</td>
<td>18 (12.2)</td>
<td>16 (13.3)</td>
</tr>
<tr>
<td>Dose (mg)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤50</td>
<td>41 (22.4)</td>
<td>38 (25.9)</td>
<td>32 (26.7)</td>
</tr>
<tr>
<td>50–99</td>
<td>66 (36.1)</td>
<td>50 (34.0)</td>
<td>45 (37.5)</td>
</tr>
<tr>
<td>100–149</td>
<td>58 (31.7)</td>
<td>46 (31.3)</td>
<td>33 (27.5)</td>
</tr>
<tr>
<td>150–199</td>
<td>16 (8.7)</td>
<td>11 (7.5)</td>
<td>8 (6.7)</td>
</tr>
<tr>
<td>200–240</td>
<td>2 (1.1)</td>
<td>2 (1.4)</td>
<td>2 (1.7)</td>
</tr>
</tbody>
</table>

*aDrug-using subcohort included those participants that used drugs at any time between enrollment and 6-month follow–up. *Injecting subcohort included those participants that had injected drugs at any time between enrollment and 6-month follow–up. *First Nations or Metis refers to persons with North American Aboriginal ancestry.
therapy—for example, the individual receiving 1 mg daily was withdrawing from methadone and seeking to become drug free.

The whole cohort comprised the 183 participants who had completed a 6-month follow–up interview. The drug–using subcohort comprised 147 participants who had used drugs in the past 6 months and the injecting subcohort comprised 120 individuals who had injected in the past 6 months (at 6-month follow–up interview).

REDUCTIONS IN INJECTING

As shown in Table 4, in the whole cohort, the overall proportion of participants injecting drugs decreased significantly from 83% at treatment entry to 66% 6 months posttreatment entry. Among those who changed injection practices between baseline and follow–up, uptake of injecting was 0.16 (95% confidence interval [CI] = 0.07–0.38) times as likely to occur as cessation of injecting. That is, among participants who changed injection practices during the first 6 months, they were 6.25 times more likely to quit injecting than to begin. Within the drug–using subcohort there was also a decline in the overall proportion of participants injecting from 88% to 82%. Uptake of injection practices was 0.38 (95% CI = 0.15–0.96) times as likely to occur as cessation (p < 0.05).

REDUCTIONS IN SHARED USE OF NEEDLES/SYRINGES

Among the whole cohort, 16% shared needles at baseline, but 9% reported sharing at 6 months post treatment entry (odds ratio [OR] = 0.43, 95% CI = 0.20–0.94).
The proportion of the injecting subcohort sharing needles dropped from 22% to 14% however, the associated Mantel-Haenszel odds ratio was not statistically significant (OR = 0.50, 95% CI = 0.23–1.11; Table 4).

**REDUCTIONS IN THE SHARING OF INJECTION EQUIPMENT**

Table 4 highlights the significant reduction found for the whole cohort in the sharing of injection equipment (e.g., water, cookers/spoons, and cotton) 6 months posttreatment entry, from 28% to 14% (OR = 0.21, 95% CI = 0.09–0.48). There was also a reduction in this behavior from 37% to 21% in the injecting subcohort (OR = 0.27, 95% CI = 0.12–0.62).

**REDUCTIONS IN INDIRECT SHARING**

The prevalence of indirect sharing (e.g., backloading and frontloading) was low at treatment entry. Within the whole cohort, there was a decline in the prevalence of this behavior from 9% to 3% (OR = 0.29, 95% CI = 0.09–0.87). There was also a decline in the prevalence of this behavior from 10% to 5% within the injecting subcohort; the corresponding matched odds ratio was not statistically significant (OR = 0.40, 95% CI = 0.13–1.28; Table 4).

**REDUCTIONS IN THE USE OF SHOOTING GALLERIES**

There was a reduction in the use of shooting galleries from 43% to 20% (OR = 0.10, 95% CI = 0.04–0.26) within the whole cohort. There was also a decline in the prevalence of this behavior from 49% to 30% (OR = 0.18, 95% CI = 0.07–0.46) for the injecting subcohort (Table 4).

**ASSOCIATIONS BETWEEN METHADONE DOSE AT FOLLOW-UP AND BEHAVIOR CHANGE**

Both methadone dose groups showed significant reductions in injecting drug use, and in equipment sharing (Table 5). Neither group showed significant differences in needle sharing, possibly owing to reduced sample size, which is a reflection of the relatively low prevalence of this risk behavior at baseline. Indirect sharing remained significantly reduced for the group whose methadone dose was 88 mg or above but not for those whose dose was less than 88 mg. Use of shooting galleries remained significantly reduced for those whose dose was less than 88 mg; however, because of small cell sizes a model could not be fit for those whose dose was 88 mg or more.
DISCUSSION

Our results show that within 6 months of entry into low-threshold MMT programs delivered through NEPs, there were statistically significant declines in drug injection (21% reduction), in needle and paraphernalia sharing (44% and 50% reduction, respectively), in indirect sharing (67% reduction) and in the use of shooting galleries (39% reduction) among the study population of illicit opioid users. Among those who did not attain abstinence, injecting as a mode of delivery declined significantly (7%) and among continuing injectors, sharing paraphernalia and the use of shooting galleries declined (43% and 39%, respectively). Although needle sharing and indirect sharing were reduced among participants who continued to inject, these findings were not statistically significant. This may reflect the small sample size available for these analyses, or may reflect a need to focus attention on eliminating these residual risk behaviors.

Our results indicate participants in these low-threshold MMT programs reduced HIV risk behaviors while being supported by pragmatic harm reduction style programming, whether or not they achieved abstinence. The more flexible approach of these programs can encourage a greater number of drug users to engage in treatment and provides those who do not wish to seek abstinence with a means to reduce risky behaviors through the benefits of maintenance treatment. The goal of MMT programming should not just target abstinence from drug use; rather, the elimination or even partial reduction of injecting or shared needle and paraphernalia use are beneficial effects for public health. Increasing the array of treatment approaches available to drug users is critically important to reach more drug users for treatment and ensure maximized public health benefits. Low-threshold models of treatment, especially those that combine other public health or primary care services, can play an important role in achieving this goal.
STRENGTHS AND LIMITATIONS

The main strength of this study is that all participants were interviewed at the 6-month follow-up regardless of treatment status resulting in a very high follow-up rate of 90%. Substantive loss to follow-up of high-risk participants is a major shortcoming of many other studies because treatment outcomes are assessed only in those users who remain in the treatment (and typically indicate less risk behavior), creating substantial potential for biases in results.

The design of our study lacks an untreated opioid using population as a direct comparison group. However, a cross-sectional nationally based survey was administered to NEP clients at one of the sites under study in this article during the time of data collection for this study (Health Canada, 2004). This sample gives us the opportunity to compare prevalence of risk behaviors in a sample of untreated drug users to both our baseline and follow-up prevalence rates. The prevalence of sharing needles was 27.1% and the prevalence of sharing injecting equipment was 30.8% within this cross-sectional sample within one of the NEP programs. Compared with our results, this rate is somewhat higher than our cohort at treatment entry but substantially higher than our cohort after 6 months of treatment.

Our primary interest for this study was to assess whether safer needle use occurred within our patient population over time. The main question here was to determine if injection-related HIV risk behaviors could be modified in a treatment program where abstinence was not a primary goal, as numerous studies have already shown that this can be achieved by those who remain enrolled in abstinence-based MMT programs. We were unable to design a randomized trial comparing the programs studied here to high-threshold methadone programs because the clients enrolling in these programs were unable or unwilling to access such programs at the time of their initial enrollment. Although a study in which participants were randomly assigned to high- and low-threshold programs would be scientifically desirable, the inclusion of only participants willing to be randomized in this manner might in itself create issues of selection bias.

We employed self-report for risk behaviors, which may raise concerns about issues of patient recall and social desirability bias. Evidence shows that employing self-report within this population is reliable and valid (Darke, 1998). Validity of answers can be enhanced under certain conditions (Aquillo, 1997; Darke, 1998; Kilpatrick, Howlett, Sedgwick, & Ghandse, 2000) such as employing interviewers who were not part of the program staff and performing all interviews in private offices with assurance of confidentiality. Furthermore, because these are low-threshold programs, there would be no repercussions to the continuation of drug use, reducing pressure to conceal risk behaviors. Finally, we compared urinalysis data (when available) to self-reported drug use for the same cohort in a previous analysis and found a moderate level of agreement for opioids and a substantial level of agreement for cocaine (Strike et al., 2004). This analysis showed that 50% of discordant results for opiates and 67% of discordant results for cocaine were due to a reporting of use where the urinalysis returned a negative result, reflecting the time limitations of urinalysis measures, not the accuracy of self-reported behavior.

CONCLUSION

In Canada, the recognition that needle exchange by itself is not enough to fully control transmission of HIV and hepatitis C (Strathdee et al., 1997) has been coupled with the debate about the feasibility and acceptability of other harm reduction strategies such
as supervised injection facilities (SIFs) and heroin prescription (Health Canada, 2001; Kerr, Wood, Small, Palepu, & Tyndall, 2003; Schechter, 2002). Trials of both of these measures are currently under way in Canada (Schechter, 2002; Wood, Kerr, Montaner, et al., 2004; Wood, Kerr, Small, et al., 2004). It is essential that experimental evidence about the efficacy of such interventions be developed in the Canadian context; however, heroin-prescribing programs are highly complex and expensive and unlikely to be established on a broad scale even if trial results are positive. In addition, initial evaluation data from SIFs have shown that this intervention only reaches a partial population of IDUs (Wood et al., 2005), and therefore a broad range of complementary measures is required. The findings of our study highlight the opportunity to expand HIV prevention efforts by increasing the availability of low-threshold MMT, because Canadian needle exchanges have a long history of establishing trusting relationships with high-risk, marginalized drug users and providing practical assistance, equipment, education, counseling, and support/referral for other needs (Strike, O’Grady, Myers, & Millson, 2004). With sufficient resource investment, these programs are ideal sites to enhance HIV prevention by expanding the availability of low-threshold methadone.

REFERENCES


