Ontario Harm Reduction Distribution Program

Final Outcome Evaluation

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Lynne Leonard PhD
Andree Germain MSW

HIV and HCV Prevention Research Team

Department of Epidemiology and Community Medicine

University of Ottawa

lleonard@uottawa.ca

The purpose of the OHRDP is to increase the capacity of Ontario's Needle Exchange Programs to deliver additional harm reduction equipment beyond the distribution of needles and syringes to people in Ontario who inject drugs.

This report details the methods used and the resultant findings of an evaluative analysis comparing data collected concurrent with the implementation of the OHRDP at 26 sites associated with 27 Public Health Units in Ontario with data collected nine to twelve months post-implementation.

In addition, the data represent the first provincial profile of drug use and associated HIV- and HCV-related risk behaviours and practices across Ontario.

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ACKNOWLEDGEMENTS

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1.0 INTRODUCTION

1.1 Ontario's Harm Reduction Distribution Program

The Ontario Harm Reduction Distribution Program (OHRDP) was implemented to assist in the reduction of the transmission of the hepatitis C virus (HCV), the human immunodeficiency virus (HIV) and other blood-borne pathogens among people who inject drugs (IDUs) in Ontario. The purpose of the OHRDP is to increase the capacity of Ontario's Needle Exchange Programs (NEPs) to deliver additional harm reduction equipment beyond the distribution of needles and syringes to IDUs across Ontario. In January 2006, the Oasis Program of the Sandy Hill Community Health Centre in Ottawa, Ontario accepted the responsibility from the Hepatitis C Secretariat of the Ontario Ministry of Health and Long–Term Care to deliver the new Ontario Harm Reduction Distribution Program. Due to logistic difficulties, the program was subsequently relocated in July 2006 to Kingston Community Health Centres. The Kingston-based program was fully operational by September 2006 with sterile water, alcohol swabs, tourniquets, ascorbic acid, cookers, filters and promotional material available for distribution, at no cost and on request, to Ontario NEPs.

Scientific Basis of the Program

IDUs are at direct risk of acquiring and transmitting HCV and HIV infection through sharing needles and other injection equipment contaminated with HCV and/or HIV. The HCV- and HIV-related risks associated with the multi-person use of needles (sharing) have been well documented in the scientific literature. Recently, emerging virologic and epidemiologic evidence documents HCV- and HIV-related risks and negative health impacts associated with sharing other injection equipment such as mixing and rinse water, alcohol swabs, tourniquets, ascorbic acid, cookers and filters used in the process of drug preparation and injection. In research studies examining injection practices among IDUs, approximately 25-60% of IDUs continue to report using needles previously used by someone else [(1-4)]. A recent review of the literature relating to the HCV and HIV risks associated with sharing other injection equipment (i.e., water, alcohol swabs, tourniquets, ascorbic acid, cookers and filters) showed that IDUs share these items more frequently than needles [(5-15)]. For example, in international studies 50–94% of IDUs reported sharing other injection equipment, 32–54% of IDUs reported sharing other injection equipment in the Canadian I-Track pilot study while 55–80% of IDUs from nine Ontario NEPs reported sharing other injection equipment [(8-10; 15-18)].

Mixing and rinse water is used to dissolve drugs and flush needles. Sharing mixing and rinse water was found to double the risk of HCV seroconversion (ARH = 2.2, 95% CI: 1.1, 4.6) among a group of Chicago IDUs [19]. HIV DNA was detected in 67% of waters from shooting galleries in Miami, Florida while HCV RNA was detected in 33% of waters from Australian injection settings [20-21]. Providing sufficient amounts of sterile water may discourage sharing water. In addition, the unavailability of sterile water frequently results in IDUs using non-sterile fluids such as tap water, rain or puddle water, toilet water, saliva or urine which elevate the risk of local or systemic infection [22-23].

Alcohol swabs are used to clean injection sites and remove blood from fingers and surfaces. Abscesses and endocarditis were less common among IDUs who always cleaned their skin prior to injecting [24-25]. HCV RNA was detected in 67% of swabs from Australian injection settings [20]. Providing sufficient quantities of alcohol swabs may discourage sharing swabs and the use of aftershave lotion or soap and water to clean injection sites as these are not effective in reducing the risk of abscesses [26].

Tourniquets are used to increase blood flow to the vein at the injection site. Blood-smeared tourniquets may be a potential source of exposure to blood-borne viruses [27-28]. Five percent of tourniquets in one UK hospital were found to be contaminated with Staphylococcus, a bacterium known to cause abscesses [29]. In another UK hospital, 50% of tourniquets had visible bloodstains, while 34% cultured bacterial organisms [30]. The provision of clean tourniquets may encourage single-use, reduce the risk of exposure to potential abscess-forming bacteria and discourage the use of rope, belts or bandanas as these are hard to clean, hard to release and may damage the skin or vein [26].

Acidifiers (acetic, citric and ascorbic acid) are added to non water-soluble drugs such as brown heroin and crack or crystal methamphetamine which come in the form of "rocks" or "crystals". Adding acidifiers makes these drugs water-soluble and they can then be used for injection. Many IDUs use lemon juice, vinegar or kettle de-scalers to break down these drugs. Lemon juice and vinegar are growth media for bacteria and fungi. The use of lemon juice has also been associated with fungal infections causing heart (endocarditis) and eye (candidal endophthalmitis) infections which can lead to loss of vision and blindness [31-32]. Among 360 Glasgow IDUs, 38% reported eye problems associated with the use of lemon juice or vinegar [31, 33]. Other adverse health effects include citric acid burns and local vein damage [33]. Providing sufficient quantities of individual packets of citric or ascorbic acid may encourage single-use and thus discourage sharing and reduce the risk of infection, abscesses and damage to the skin or vein [26].

Cookers are used for mixing drugs with water and for heating the liquefied drug solution to further dissolve the drug. Spoons and bottle caps are used as cookers by many IDUs. Sharing cookers is a common practice among IDUs. In 2005, Huo and colleagues found that 65% of street-recruited Chicago IDUs reported sharing cookers [12] while Needle and colleagues found that IDUs in 54 networks selected from six American cities and Puerto Rico shared cookers 84% of the time [34]. Among 503 IDUs in Ottawa, the majority of both men (82%) and women (76%) reported sharing another person's cooker [35]. Sharing cookers was found to elevate the risk of HCV seroconversion in several studies. Hagan and colleagues found that among 123 HCV-negative IDUs who did not share syringes but shared cookers and filters, the risk of HCV was elevated six-fold (ARR = 5.9; 95% CI: 1.1, 31.7) [37] while Thorpe and colleagues (2002) found the risk of HCV seroconversion was elevated three-fold (ARH = 3.5; 95% CI: 1.3, 9.9) among 353 HCV-negative, younger Chicago IDUs who shared cookers [19]. The presence of HCV RNA was detected on 25% of spoons (cookers) tested from 10 Australian injection settings [20] while HIV DNA was detected on 54% of the cookers examined from shooting galleries in Miami, Florida [21]. Providing clean cookers may encourage single-use and discourage the use of spoons or bottle caps which are difficult to clean [26].

Filters are placed on the tips of needles to prevent any undissolved fragments of a drug, other particles and/or bacteria from being injected. Cotton balls, tampons, cigarette filters and cigarette rolling papers are some of the items commonly used as filters by IDUs. After using a filter there is some drug residue left in the filter. Many IDUs will combine several filters with water to make a "wash" which is then injected. Injecting washes from filters previously used by someone else is a common practice particularly to prevent withdrawal symptoms. Sharing filters has been found to be a common practice among IDUs in many studies. Needle and colleagues found that IDUs in 54 networks selected from six American cities and Puerto Rico shared filters 77% of the time [34]. Among 2,062 IDUs from London, U.K., over 50% reported sharing filters and/or spoons and 33% who had reported that they had not shared needles had shared filters and spoons [15]. Among 503 IDUs in Ottawa, the majority of both men (68%) and women (72%) reported sharing another person's filter [35]. Epidemiologic studies have documented an increased HCV risk associated with the sharing of filters. Among 165 HCV-negative IDUs in France, the risk of HCV infection was elevated more than 16 fold (ARH = 16.4; 95% CI: 1.4-190.6) through injection with a used filter [36]. Hagan and colleagues found that among 123 HCV-negative IDUs who did not share syringes but shared cookers and filters the risk of HCV was elevated six-fold (ARR = 5.9; 95% CI: 1.1-31.7) [37] while Thorpe and colleagues found the risk of HCV seroconversion was

doubled (ARH = 2.4; 95% CI: 1.1-5.0) among 353 HCV-negative, younger Chicago IDUs who shared filters [19]. HCV RNA was detected on 40% of filters tested from 10 Australian injection settings [20] while HIV DNA was detected on 36% of filters examined from shooting galleries in Miami, Florida [21].

In addition to the increased risk of HCV transmission through sharing filters, the use of cigarette filters or large pore filters has been associated with the formation of abscesses and deep vein thrombosis. Cigarette filters are unable to prevent bacterial contamination of syringes or the passage of foreign particles [38-39]. The distribution of small-pore filters may encourage single-use and discourage the use of alternatives such as cigarette filters or tampons which allow for the passage of abscess-forming bacteria and foreign particles [26].

1.2 Objectives of the Evaluation

Overall Evaluation Objective

The overall objective of the OHRDP evaluation was to provide rigorous scientific data to the Hepatitis C Secretariat of the Ontario Ministry of Health and Long-Term Care on which to base recommendations for the operation of the OHRDP.

In addition, the evaluation process provided local and provincial data relating to drug use, injection practices, drug smoking practices, access to injection and drug smoking equipment, access and use of NEPs, self–reported HCV and HIV status and documented evidence to support advocacy efforts locally and provincially.

Specific Evaluation Objectives

The evaluation consists of two components: the OHRDP outcome evaluation and the OHRDP process evaluation.

The objective of the **OHRDP Outcome Evaluation** was to describe the impact of the distribution of additional harm reduction supplies (water, alcohol swabs, filters, cookers, acidifiers and tourniquets) on the HCV- and HIV-related risk practice of sharing drug preparation equipment.

The objective of the **OHRDP Process Evaluation** was to document the effectiveness of the OHRDP to increase the capacity of Ontario NEPs to deliver evidence-based harm reduction resources including equipment and education to people who use drugs in Ontario.

Hypotheses

- That the implementation of the distribution of harm reduction materials will reduce the proportion of people injecting with previously-used injection and drug preparation equipment.
- That the capacity of Ontario NEPs to deliver evidence-based harm reduction resources including equipment and education to people who use drugs in Ontario will increase.

Research Questions Related to Objectives

- What is the impact of a province-wide harm reduction distribution program on the HCV- and HIV-related risk practices and behaviours of Ontario IDUs?
- To what extent has the implementation of a province-wide harm reduction program enabled Ontario NEPs to increase their capacity to deliver harm reduction resources?

2.0 METHODS

2.1 Outcome Evaluation Time Points

To meet the objectives of the Outcome Evaluation, personal structured interviews with women and men in Ontario who inject drugs (IDUs) were undertaken at three time points.

Interviews undertaken at the first time point, $T_{0,}$ were to obtain an approximation of a baseline measure, carried out as close as possible to the date of commencement of distribution of OHRDP materials by each individual NEP in Ontario. Interviews undertaken at the second time point, $T_{1,}$ were to obtain data on the medium-range effect of the distribution of OHRDP supplies and took place approximately six months after the first wave of interviews.

Interviews undertaken at the third time point, $T_{2,}$ were to obtain data on the more long-term effect of the distribution of OHRDP supplies and took place six months after the second wave of interviews, approximately one year after the commencement of distribution of OHRDP supplies by each NEP.

This report details the methods used and the resultant findings of an analysis comparing data from T_0 (Wave 1) of the Outcome Evaluation from 26 sites associated with 27 Public Health Units in Ontario with data from the latest round of evaluation interviews completed at each of 26 sites associated with 27 Public Health Units in Ontario.

For two-thirds of sites (65%) the "latest round of interviews" referred to interviews undertaken at the third time point, $T_{2.}$ For the remaining sites, joining the evaluation process at a later date primarily consequent on implementing the OHRDP at a later date, the latest round referred to interviews undertaken at the second time point, $T_{1.}$

2.2 Sample Size

I-Track is an enhanced surveillance project documenting HCV- and HIV-related risk behaviours among IDUs in Canada. In calculating the sample size needed for each data collection wave for any centre joining the surveillance project, the *I-Track* Investigators worked on the assumption that the proportion of IDUs who report sharing other injection equipment to be 40% (44).[1] This same proportion, 40%, was used to calculate the sample size required for each NEP participating in the evaluation of the Ontario Harm Reduction Distribution Program.

[1] As two of the Ontario centres in the I-Track pilot survey, Sudbury reported 40% of IDUs sharing other injection equipment and Toronto 32%. Among 728 IDUs in Ottawa interviewed between 1996 and 2000, 45% reported injecting with previously-used equipment.

Results of the *I-Track/SurvIDU* study in Ottawa in 2004 indicate that 77% of crack-smoking IDUs reported sharing drug-smoking equipment (pipes, glass stems) before the implementation of Ottawa's Safer Crack-smoking Initiative. [45]. In order to calculate the sample size required for any NEP participating in the evaluation of the Ontario Harm Reduction Distribution Program it was assumed that 75% of crack-smoking IDUs will report sharing drug smoking equipment.

Using Hassard's formula [46] for the comparison of two proportions, it was calculated that a sample of 70 individuals would provide 80 percent power at a = 0.05 (one-sided) for detecting a minimally important clinical difference of 0.2 in the proportion of people who inject with previously-used injection equipment and/or people who share drug smoking equipment. That is, a sample size of 70 injection drug users per NEP is required to be 80% certain of detecting a 20% reduction in the proportion of people who report injecting with previously-used drug preparation and injection preparation equipment and/or smoking with used drug smoking equipment.

2.3 Criteria for Inclusion in the Outcome Evaluation

IDUs had to meet the following criteria in order to participate in each round of interviews of the evaluation study:

- To be capable of informed consent; and
- To have injected drugs in the previous six months.

2.4 Recruitment

A convenience sample of IDUs was recruited using methods based on previous successful experiences with other studies among IDUs in Ottawa and elsewhere. The OHRDP evaluation team provided the site administrators of each participating site with distinctive recruitment posters and business cards. Site administrators were encouraged to implement the project's agreed recruitment plan but to tailor it to their region. Depending on the size of the catchment area of each public health unit and the unit's experience in primary research with people who use drugs in their community, recruitment posters were displayed anywhere from two weeks before commencement of interviews for each round of interviewers to the same day as interviews were to begin. Posters were placed in a variety of locations: the fixed site NEP – reported by 89% of participating sites; health clinic offices and waiting areas - reported by 52%; addictions services facilities – reported by 48%; as well as several other locations including hospitals, AIDS service organizations, housing facilities, laundry mats, Ontario Works and other income support offices, soup kitchens, food banks and on the street.

Frontline staff from many of these locations was engaged in participant recruitment and IDUs were also recruited by word of mouth from other IDUs who had completed an interview. Participant recruitment continued in each public health region until the target of 70 interviews per interview round was reached. The majority of interviews took place throughout the weekday mornings and afternoons; however a minority of sites also offered interviews in the evenings and on weekends. Interviews were held in various locations, including: clinic and/or meeting rooms at public health units and needle exchange programs; in mobile NEP units; at addictions service centres; in private rooms at housing shelters and soup kitchens; as well as other locations that were desirable for the participant.

Depending on demand, some sites chose to schedule appointments for interviews in advance while other sites chose to advertise a time and location and interviews were completed on a first-come, first-served basis. In areas where a phone number was provided for appointment booking or other information, participants were made aware of eligibility criteria over the phone. As potential participants arrived, they were screened in accordance with the eligibility criteria confirming status as an IDU and were then interviewed. Such screening questions were considered a less intrusive method of determining injection drug use status than requesting to verify track marks.

Interviewers welcomed all potential participants and explained the voluntary nature of the interview, the parameters of the study and subsequent use of the data. At the commencement of each interview, the interviewer read the information and consent form to participants emphasising the confidential nature of the interview, the fact that participants could choose not to answer questions, could terminate the interview at any time, and that their right to services or treatment would not be affected by their decision to participate in the interview. The interviewer recorded the participant's verbal consent to participate. Participants were offered a copy of the signed information and consent form for their own use.

Debriefing after the interview was an essential feature of the interview process and was conducted to counsel on a variety of services available within each public health region. Issues covered in the debriefing included: information regarding NEP services and hours of operation – reported by all sites; safer drug injection and smoking practices – reported by 93% of sites; HIV and HCV testing information – reported by 93% of sites; safer sexual and reproductive health information – reported by three-quarters of participating sites (74%); and whenever appropriate participants were referred to addiction treatment services, housing shelters, soup kitchen and food banks, or AIDS service organizations.

On average, the interview process, including debriefing, took between twenty and forty minutes. Participating IDUs were compensated $20 for their time spent away from their other activities and several sites also provided coffee, tea or other beverages and/or transportation support in the form of taxi vouchers or bus tickets.

2.5 Research Instrument

The outcome evaluation questionnaire used in each round of evaluation interviews at all sites participating in the OHRDP Evaluation comprised questions focusing on: socio-demographic variables including the participant's use of needle exchange services; drug use patterns; patterns of drug preparation and drug-smoking equipment use; access and barriers to collection of OHRDP supplies; and patterns of disposal of used drug injection and drug-smoking equipment. Questions documenting the participant's engagement in the practices of sharing other people's needles for injection, sharing drug preparation and injection preparation equipment including cotton filters, cookers and spoons and sharing equipment to smoke drugs were included to document behaviours and practices associated with HIV and HCV transmission. Questions investigating the uptake of testing for the presence of HIV and HCV antibodies were also included as was self-report of HIV and HCV status.

An Interviewer's Manual and Interviewer's Handbook were produced for use with the questionnaire. These materials were produced to maximise accuracy and uniformity in administering the questionnaire. The questionnaire was administered by interviewers, all of whom had received extensive training on the interviewing protocol from the OHRDP Evaluation Team at the University of Ottawa and who had knowledge and experience in working with IDUs.

2.6 Statistical Analysis

The statistical analysis of the collected data was performed using the structured computer database SPSS 15.0. Specific procedures were followed to ensure the integrity of the data entered. These included the use of a data coding manual and verification of coding and data input through comparing a 10% random sample of questionnaire responses with the entered data. Validating of the data included: the performance of range checks to ensure all values for each variable fell within the expected range; consistency edits to ensure that responses to questions were consistent with those to other questions; and examination of missing data.

Descriptive statistics (frequencies, ranges, means) were computed for this baseline wave of interviews. For open-ended questions, categories were determined post-hoc.

2.7 Ethical Approval

Ethical approval for the overall OHRDP Evaluation was granted by the Ottawa Hospital Research Ethics Board and reviewed and renewed on an annual basis.

Twenty-eight of the 30 participating regional Public Health Units accepted the ethical approval granted by this board and gave administrative approval for the activities associated with the evaluation of the OHRDP to be carried out in their jurisdictions. Two Public Health Units requested minor revisions to the Participant Consent and Information Sheet. Two Public Health Units, Ottawa and Toronto, obtained ethical approval from their own Research Ethics Committees.

3.0 RESULTS

3.1 Sample Size

Baseline interviews

Baseline interviews were completed during the period 1st September 2006 to 16th August 2007 with 1,622 women and men in Ontario who inject drugs. These participants originated from 26 sites representing 27 Public Health Units in Ontario[2]. Ten of the 26 sites started data collection in September 2006; while 12 of the 26 sites completed data collection by the end of 2006.

Final interviews

Final interviews were completed during the period 11th May 2007 to 11th May 2008 with 1,643 women and men in Ontario who inject drugs. Recruitment at the majority of sites (77%) commenced during the months of September, October and November 2007 and was finalised at the majority of sites (77%) during the months of October, November and December 2007.

[2] Data from Exchange Works NEP, Halton Regional Health Department; Northern Points Exchange, North Bay and Parry Sound District Health Unit; and Mackay Manor, Renfrew County & District Health Unit were not complete at the time of development of the Baseline Report.

Table 1 Participants in Baseline and Final Interviews by Site and Public Health Unit

REGIONAL PUBLIC HEALTH UNIT	SITE NAME	BASELINE	FINAL
Algoma	Algoma PHU NEP	60	66 (W2)
Chatham-Kent	Chatham-Kent PHU NEP	70	70 (W3)
County of Lambton	County of Lambton PHU NEP	70	70 (W2)
Durham	John Howard Society (Durham Region) – Project X-change	71	70 (W3)
Eastern Ontario	Change Health Care Inc (formerly OATC)	56	29 (W3)
Hamilton	The AIDS Network, Van Needle Exchange and Street Health Program	70	71 (W3)
Hastings & Prince Edward Counties	Hastings & Prince Edward Counties PHU NEP	70	70(W3)
Kingston	Kingston Street Health Centre	70	70 (W3)
Leeds, Grenville, Lanark District	Leeds, Grenville, Lanark District PHU NEP	34	18 (W3)
Middlesex-London	AIDS Committee of London – Counterpoint NEP	70	70 (W3)
Niagara Region	AIDS Niagara – Streetworks NEP	70	70 (W2)
Northwestern	Northwest Points NEP	42	71 (W2)
Ottawa	The Site NEP	70	69 (W3)
Oxford County	Oxford County PHU NEP	70	70 (W3)
Haliburton, Kawartha, Pine Ridge & Peterborough City County	Peterborough AIDS Resource Network	58	70 (W2)
Peel Regional	Peel Works NEP	17	15 (W2)
Perth District	Perth District PHU NEP	70	70 (W3)
Porcupine	The Quill NEP	22	70 (W3)
Simcoe Muskoka District	Simcoe Muskoka District PHU & David Busby Street Centre	70	70 (W3)
Sudbury District	Sudbury Action Centre for Youth	70	68 (W2)
Thunder Bay	AIDS Thunder Bay & Superior Points NEP	70	70 (W2)
Toronto	The Works NEP	70	69 (W3)
Waterloo	Waterloo PHU NEP & AIDS Committee of Cambridge, Kitchener and Waterloo Area (ACCKWA)	71	70 (W3)
Wellington-Dufferin-Guelph	WDGHU NEP & AIDS Committee of Guelph – Stay Sharp NEP	72	70(W3)
Windsor-Essex	AIDS Committee of Windsor – New Points NEP	70	67 (W3)
York Region Health Services Dept.	York Region Health Services Department	69	50 (W2)
TOTAL		**1,622**	**1,643**

W2 Indicates 2 waves of data collection completed; final refers to second round of data collection

W3 Indicates all 3 waves of data collection completed; final refers to third round of data collection

3.2 Demographic Characteristics of Participants

Gender

There were no significant gender differences between participants in the baseline interviews and the final interviews; two-thirds of participants in both the baseline (69%) and the final interviews (66%) were men (Table 2).

Table 2 Socio-demographic Profile: Gender

		Baseline N=1622		Final N=1643	
		N	(%)	N	(%)
Gender		n=1620		n=1642	
	Male	1113	(68.7)	1083	(66.0)
	Female	503	(31.0)	557	(33.9)
	Trans	4	(0.2)	2	(0.1)

Age

The average age of participants in both the baseline and final interviews was 37 years old and in both interviews the youngest participant was aged 14. In the final interviews, the oldest participant was 70 years old compared with 74 years in the baseline interviews (Table 3).

Table 3 Socio-demographic Profile: Age

		Baseline N=1622	Final N=1643
Age		n=1610	n=1632
	Mean(standard deviation)	37.0 (10.9)	36.8 (10.7)
	Range	14 to 74	14 to 70

Level of education

Education has been shown to be an important factor, or determinant, that affects a person's ability to enjoy good health. It is strongly related to other determinants of health as it can increase opportunities for income and job security.

As can be seen in Table 4, there was an almost equal split between participants with lower levels of educational attainment and those with higher levels in both the baseline and final interviews. Close to the majority of IDUs in both the baseline (49%) and final interviews (50%) had not completed high school; while approximately one-quarter (25%) had completed high school and one-quarter (25%) had completed some post secondary or had completed their post secondary studies.

Living situation

The ability to access stable housing is also an important influence on a person's health. In this study, unstable housing was defined as living in a shelter or welfare residence, in a rooming or boarding house, on the street, in an abandoned building or renting a hotel or motel room on a daily or weekly basis. As shown in Table 4, there was a significant reduction in the proportion of participants in the final interviews reporting recent unstable housing compared with participants in the baseline interviews. Forty-three percent of final participants were unstably housed in the six months prior to their interview compared with 54% of baseline participants ($p<0.001$) and 22% of final participants were unstably housed at the time of their interview compared with 29% of baseline participants ($p<0.001$).

Table 4 Socio-demographic Profile: Level of Education and Living Situation

	Baseline N=1622		Final N=1643		
	N	(%)	N	(%)	*p-value*
Highest level of education completed	**n=1620**		**n=1640**		
Less than high school	800	(49.4)	822	(50.1)	
Completed high school	412	(25.4)	407	(24.8)	
Completed or some post secondary	408	(25.2)	411	(25.1)	
Living in unstable housing in six months prior to interview	**n=1619**		**n=1642**		
Yes	879	(54.3)	712	(43.4)	***
No	740	(45.7)	930	(56.6)	
Living in unstable housing at time of interview	**n=1619**		**n=1642**		
Yes	465	(28.7)	354	(21.6)	***
No	1154	(71.3)	1288	(78.4)	

***** p≤0.001**

Needle exchange program use

As shown in Table 5, the vast majority of IDUs (90%) participating in the baseline evaluation interviews had at some point in their injecting career accessed the services of their local needle exchange program (NEP). Among participants in the final interviews, a significantly greater proportion (93%) reported a history of accessing NEP services ($p<0.001$).

Frequency of recent use of NEP services was not particularly high, however significant differences were observed in the proportion of participants in the baseline interviews compared with the final interviews reporting each frequency ($p<0.001$). As shown in Table

5, among those participants who had ever accessed the NEP, the majority in both the baseline (54%) and final interviews (56%) reported infrequent use in the six months prior to their interview - reporting less than weekly use of NEP services. Conversely, just over one-third of both baseline (36%) and final participants (35%) were more frequent users - visiting the NEP at least once a week in the six months prior to their interview, with a small proportion of both baseline (4%) and final participants (3%) reporting daily use.

Table 5 Socio-demographic Profile: Needle Exchange Program Use

	Baseline N=1622		Final N=1643		
	N	**(%)**	**N**	**(%)**	***p-value***
EVER used the services of the local NEP	**n=1618**		**n=1643**		
Yes	1450	(89.6)	1531	(93.2)	***
No	168	(10.4)	112	(6.8)	
Frequency of using NEP (past 6 months)	**n=1434**		**n=1517**		***
Never	137	(9.6)	132	(8.7)	
Once/First time today	212	(14.8)	156	(10.3)	
Not every week	562	(39.2)	694	(45.7)	
Once or twice/week	369	(25.7)	395	(26.0)	
Three to six times/week	92	(6.4)	90	(5.9)	
Daily	62	(4.3)	50	(3.3)	

***** p≤0.001**

Among participants who had accessed the NEP in the six months prior to their interview, the greatest proportion of both baseline (85%) and final participants reported that they had collected drug injection supplies during their visits to the NEP. (Data not shown.)

However, as shown in Table 6, a significant increase was observed in the proportion of final participants (69%) compared with baseline participants (66%) who reported collecting supplies both for themselves and for other people, with a corresponding decline in the proportion of final participants (31%) compared with baseline participants (34%) who reported collecting supplies just for themselves (p=0.05).

Table 6 Socio-demographic Profile: Collection of Drug Injection Supplies

	Baseline N=1622		Final N=1643		
	N	(%)	N	(%)	*p-value*
Collected drug injection supplies for	**n=1162**		**n=1271**		
Just myself	398	(34.3)	392	(30.8)	*
Myself and other people	764	(65.7)	876	(68.9)	
Just for other people	0	(0.0)	3	(0.2)	

*** p≤0.05**

3.3 Drug Use Patterns

3.3.1 Drugs injected

Frequency of injecting in the six months prior to interview

Frequency of injecting in the six months prior to their interview among participants in both the baseline and final interviews was high; three quarters of both baseline (75%) and final interview participants (78%) reported injecting at least once a week. As shown in Table 7, the greatest proportion of both baseline (36%) and final (39%) participants were frequent users, injecting daily.

Table 7 Drug Use Patterns: Frequency of Injecting Six Months Prior to Interview

	Baseline N=1622		Final N=1643		
	N	(%)	N	(%)	*p-value*
Frequency of injecting six months prior to interview	**n=1606**		**n=1637**		
Not every week	395	(24.6)	364	(22.2)	
Once or twice a week	310	(19.3)	301	(18.4)	
Three or more times per week	322	(20.0)	335	(20.5)	
Daily	579	(36.1)	637	(38.9)	

The average number of days that participants reported injecting drugs in the month prior to interview was 16 among baseline participants and 17 among participants in the final interviews, with a range at both time points from one to 31 days. On a day that participants injected, baseline participants reported injecting five times a day on average with a range from one to 70; participants in the final interviews also reported injecting on average five times a day with a slightly greater, but not statistically significant, range of from one to one hundred injections a day (Table 8).

Table 8 Drug Use Patterns: Frequency of Injecting Month Prior to Interview

	Baseline N=1622	Final N=1643	*p-value*
Days injected in month prior to interview	**n=1415**	**N=1479**	
Mean (standard deviation)	16.4 (11.3)	17.2 (11.3)	
Range	1 to 31	1 to 31	
Number of times a day injected	**n=1588**	**n=1613**	
Mean (standard deviation)	5.2 (6.8)	4.7 (6.1)	
Range	1 to 70	1 to 100	

Drugs injected in the six months prior to interview

As shown in Table 9, participants in both the baseline and final interviews had injected a variety of drugs on at least one occasion in the six months prior to their interview. Among both final and baseline participants the top five drugs injected on at least one occasion by the greatest proportion of participants prior to interview were the same: cocaine (71% baseline, 69% final); oxycontin/oxycodone (53% baseline, 56% final); non-prescribed morphine (53% baseline, 53% final); dilaudid (45% baseline, 45% final); and crack (43% baseline, 39% final).

Table 9 Drug Use Patterns: Drugs Injected at Least Once Six Months Prior to Interview

	Baseline N=1622		Final N=1643		
	N	(%)	N	(%)	*p-value*
	n=1622		n=1643		***
Amphetamines	375	(23.1)	358	(21.8)	
Cocaine	1149	(70.8)	1138	(69.3)	
Crack	691	(42.6)	633	(38.5)	
Dilaudid	727	(44.8)	737	(44.9)	
Heroin	321	(19.8)	300	(18.3)	
Speedballs (Heroin+Cocaine)	151	(9.3)	124	(7.5)	
Methadone (prescribed)	71	(4.4)	38	(2.3)	
Methadone (non-prescribed)	112	(6.9)	81	(4.9)	
Methamphetamine	293	(18.1)	296	(18.0)	
Morphine (prescribed)	145	(8.9)	113	(6.9)	
Morphine (non-prescribed)	861	(53.1)	866	(52.7)	
Oxycontin/Oxycodone	863	(53.2)	913	(55.6)	
Percocet	166	(10.2)	176	(10.7)	
Tylenol #3's	71	(4.4)	66	(4.0)	
Other drugs[1]	183	(11.3)	221	(13.5)	

1 Other includes: depressants (n=32); dissociative anaesthetics (n=12); hallucinogens (n=2); opioids/morphine derivatives (n=56); stimulants (n=78); steroids (n=9); other drugs or combination of two drugs (n=45).

***** p≤0.001**

While the ranking of the top five drugs remained the same among participants in both the baseline and final interviews, there were some significant changes in the proportions reporting injecting each drug. For example, the proportion reporting injecting crack declined from 43% to 39%, the proportion reporting injecting prescribed morphine declined from 9% to 7%, and the proportion reporting injecting non-prescribed methadone from 7% to 5%. Conversely, increases were seen among participants in the final interviews in terms of injecting oxycontin/oxycodone, the proportion increasing from 53% among baseline

participants to 56% among final interview participants. These differences in proportions were statistically significant (p=0.001).

Interestingly, in contrast to the injection use of non-prescribed morphine, injection use of prescribed morphine was low – reported by only 9% of baseline participants and 7% of final interview participants suggesting substantial diversion of this drug at both time points. Injection use of crystal meth was moderate – reported by 18% of participants in both the baseline and final interviews.

Drugs injected most often in the six months prior to interview

These same five drugs were reported to be those injected **MOST** often by the greatest proportions of participants in both the baseline and final interviews. As shown in Table 10, cocaine was the drug injected most often by the greatest proportion of participants (29% in baseline interviews, 28% in final interviews), followed by non-prescribed morphine (19% in baseline interviews, 21% in final interviews), oxycontin/oxycodone (13% in baseline interviews, 16% in final interviews), dilaudid (10% in baseline interviews, 9% in final interviews) and crack (10% in baseline interviews, 9% in final interviews).

Again, in contrast to the proportion of participants who reported injecting non-prescribed morphine the most, only 3% of participants in the baseline interviews and 2% in the final interviews reported injecting prescribed morphine the most. Similarly, few participants in both rounds of interviews – less than one percent - reported injecting prescribed and non-prescribed methadone the most and only 5% of baseline participants and 6% of final interview participants reported injecting crystal meth the most in the six months prior to their interview.

While the top five drugs injected the most remained the same among participants in both the baseline and final interviews, there were some changes in the proportions reporting injecting each drug. Most changes in proportions were plus or minus 1%, however the proportion injecting non-prescribed morphine the most increased from 19% among baseline participants to 21% among final interview participants and the proportion injecting oxycontin/oxycodone the most increased from 13% among baseline participants to 16% among final interview participants, however these differences were only marginally statistically significant (p<0.07).

Table 10 Drug Use Patterns:
Drugs INJECTED Most Often Six Months Prior to Interview

	Baseline N=1622		Final N=1643		
	N	(%)	N	(%)	*p-value*
	n=1605		n=1622		
Amphetamines	50	(3.1)	44	(2.7)	
Cocaine	463	(28.8)	454	(28.0)	
Crack	157	(9.8)	141	(8.7)	
Dilaudid	167	(10.4)	145	(8.9)	
Heroin	69	(4.3)	44	(2.7)	
Speedballs (Heroin+Cocaine)	6	(0.4)	4	(0.2)	
Methadone (prescribed)	3	(0.2)	2	(0.1)	
Methadone (non-prescribed)	2	(0.1)	1	(0.1)	
Methamphetamine	75	(4.7)	102	(6.3)	
Morphine (prescribed)	45	(2.8)	35	(2.2)	
Morphine (non-prescribed)	303	(18.9)	333	(20.5)	
Oxycontin/Oxycodone	203	(12.6)	257	(15.8)	
Percocet	4	(0.2)	3	(0.2)	
Tylenol #3's	3	(0.2)	3	(0.2)	
Other drugs[1]	55	(3.4)	54	(3.3)	

1 Includes other: dissociative anaesthetics (n=1); opioids/morphine derivatives (n=5); stimulants (n=22); steroids (n=6); other drugs or combination of two drugs (n=20).

3.3.2 Non-injection drug use

Drugs USED, not injected, in the six months prior to interview

Nearly all participating IDUs (97%) in both the baseline and final interviews had also used drugs without injecting on at least one occasion in the six months prior to their interview. As shown in Table 11, the top four drugs used on at least one occasion without injecting in the six months prior to interview were the same top four for participants in both the baseline and final interviews: marijuana (74% baseline, 75% final); alcohol (70% baseline, 68% final); crack (67% baseline, 62% final); cocaine (58% baseline, 56% final). While the top four drugs remained the same among participants in both the baseline and final interviews, there were significant changes in the proportions reporting injecting each drug. The proportion of participants reporting using each drug in the final interviews was lower than the proportions reporting using the same drugs in the baseline interviews with the exception of marijuana and solvents which increased. These differences in proportions were statistically significant ($p < 0.001$).

Table 11 Drug Use Patterns:
Drugs USED at Least Once Six Months Prior to Interview

	Baseline N=1622		Final N=1643		
	N	(%)	N	(%)	*p-value*
	n = 1575		n = 1586		***
Alcohol	1104	(70.1)	1082	(68.2)	
Amphetamines	343	(21.8)	294	(18.5)	
Benzodiazepines	737	(46.8)	637	(40.2)	
Cocaine	920	(58.4)	880	(55.5)	
Crack	1051	(66.7)	982	(61.9)	
Dilaudid	402	(25.5)	378	(23.8)	
Ecstasy	372	(23.6)	305	(19.2)	
Heroin	139	(8.8)	145	(9.1)	
Marijuana	1168	(74.2)	1185	(74.7)	
Methadone (prescribed)	375	(23.8)	375	(23.6)	
Methadone (non-prescribed)	249	(15.8)	158	(10.0)	
Methamphetamine	231	(14.7)	226	(14.2)	
Morphine (prescribed)	130	(8.3)	67	(4.2)	
Morphine (non-prescribed)	546	(34.7)	484	(30.5)	
Mushrooms	300	(19.0)	236	(14.9)	
Oxycontin/Oxycodone	702	(44.6)	698	(44.0)	
Percocet	731	(46.4)	711	(44.8)	
Solvents	16	(1.0)	25	(1.6)	
Tylenol #3's	601	(38.2)	538	(33.9)	
Other drugs[1]	203	(12.9)	162	(10.2)	

1 Other includes: cannabinoids (n=21); depressants (n=6); dissociative anaesthetics (n=27); hallucinogens (n=20); opioids/morphine derivatives (n=27); stimulants (n=48); inhalants (n=2); Tylenol #1 or #2 or #4 (n=34); other drugs or combination of two drugs (n=65).

***** p≤0.001**

The use of crystal meth was low; its use on at least one occasion in the six months prior to interview was reported by 15% of participants in the baseline interviews and by 14% of participants in the final interviews.

Drugs USED most often in the six months prior to interview

In terms of drugs used **MOST** often by the greatest proportions of participants in both the baseline and final interviews, while the ranking of the top four drugs remained the same - crack, marijuana, alcohol and prescribed methadone - a non-significant change in the proportions using each was observed. As shown in Table 12, while crack was the drug used by the greatest proportion of participants at both baseline and at the final time-point, a smaller proportion of final (23%) compared with baseline participants (26%) reported that it was the drug they used the most and a greater proportion of final (23%) compared with

baseline participants (20%) reported that marijuana was the drug they used the most. Similarly, a greater proportion of final (11%) compared with baseline participants (10%) reported using alcohol the most and a smaller proportion of final (8%) compared with baseline participants (9%) reported that prescribed methadone was the drug they had used the most in the six months prior to their interview (p=0.06).

Table 12 Drug Use Patterns:
Drugs USED MOST Often Six Months Prior to Interview

	Baseline N=1622 N (%)		Final N=1643 N (%)	
	n = 1563		n = 1579	
Alcohol	150	(9.6)	169	(10.7)
Amphetamines	5	(0.3)	4	(0.3)
Benzodiazepines	56	(3.6)	39	(2.5)
Cocaine	123	(7.9)	112	(7.1)
Crack	404	(25.8)	369	(23.4)
Dilaudid	32	(2.0)	27	(1.7)
Ecstasy	6	(0.4)	6	(0.4)
Heroin	6	(0.4)	3	(0.2)
Marijuana	309	(19.8)	369	(23.4)
Methadone (prescribed)	140	(9.0)	133	(8.4)
Methadone (non-prescribed)	4	(0.3)	4	(0.3)
Methamphetamine	20	(1.3)	25	(1.6)
Morphine (prescribed)	24	(1.5)	11	(0.7)
Morphine (non-prescribed)	51	(3.3)	54	(3.4)
Mushrooms	1	(0.1)	3	(0.2)
Oxycontin/Oxycodone	112	(7.2)	125	(7.9)
Percocet	47	(3.0)	60	(3.8)
Solvents	2	(0.1)	0	(0.0)
Tylenol #3's	25	(1.6)	36	(2.3)
Other drugs	46	(2.9)	30	(1.9)

1 Other includes: hallucinogens (n=3); opioids/morphine derivatives (n=1); stimulants (n=8); Tylenol #1 or #2 or #4 (n=3); other drugs or combination of two drugs (n=31).

3.3.3 Engagement in smoking crack

As previously shown in Table 11, approximately two-thirds of participating IDUs in both the baseline (67%) and final interviews (62%) had also smoked crack in the six months prior to their interview and among these crack-smoking IDUs frequency of engagement in smoking crack was high. As shown in Table 13, close to two-thirds of both baseline (64%) and final participants (64%) reported smoking crack on a regular basis at least once a week; one-quarter of both baseline (26%) and final participants (24%) participants were frequent crack smokers, smoking crack on a daily basis, while just over one-third of both baseline (36%) and final participants (36%) reported less frequent engagement, smoking crack once in a while not every week.

Table 13 Drug Use Patterns:
Frequency of Smoking Crack Six Months Prior to Interview

	Baseline N=1622 N (%)		Final N=1643 N (%)	
	n=1039		n=964	
Not every week	374	(36.0)	343	(35.6)
Once or twice a week	179	(17.2)	204	(21.2)
Three or more times a week	215	(20.7)	186	(19.3)
Daily	271	(26.1)	231	(24.0)

In the month prior to interview, participants in the final interviews reported a slightly reduced average number of days of smoking crack - 13 days compared to the 14 reported by baseline participants, although the range reported by both baseline and final participants was of one to 31 days. Although final participants reported slightly less days of smoking crack compared with baseline participants, final participants reported smoking more on the days they did smoke - 24 times a day compared with the 22 times reported by the baseline participants. However the range of the average number of times per day baseline and final participants smoked was the same - from one to 1,000 times (Table 14).

Table 14 Drug Use Patterns:
Frequency of Smoking Crack Month Prior to Interview

	Baseline	Final	
	N=1622	N=1643	*p-value*
Days smoked crack in month prior to interview	**n=925**	**N=882**	
Mean (standard deviation)	13.9 (10.7)	13.2 (10.7)	
Range	1 to 31	1 to 31	
Number of times a day smoked crack	**n=982**	**n=871**	
Mean (standard deviation)	21.9 (49.6)	23.5 (66.7)	
Range	1 to 1000	1 to 1000	

3.4 Use of Recommended Equipment

3.4.1 Drug preparation and injection preparation equipment

Breaking down non-dissolvable drugs prior to injection

Approximately half of all participants in both the baseline (52%) and final interviews (46%) reported breaking down non-dissolvable drugs prior to injection in the six months prior to their interview. The recommended material (acidifier) for this task is vitamin C powder from an individual packet[(26)].

As shown in Table 15, a significant decline was observed in the proportions of these participants reporting the use of ***only non-recommended materials*** for this task and a corresponding increase in the proportions of participants using ***only recommended materials*** between baseline and final interviews. The use of vinegar or lemon, lime, orange or pickle juice was reported by 53% of participants in the baseline interviews and by 47% of participants in the final interviews; whereas 11% of participants in the final interviews compared with 6% of participants in the baseline interviews reported the use of vitamin C powder from an individual packet (p = 0.001).

Table 15 Drug Preparation and Injection Preparation Equipment: Breaking Down Non-dissolvable Drugs Prior to Injection

	Baseline N=1622		Final N=1643		
	N	**(%)**	**N**	**(%)**	***p-value***
Broke down drugs prior to injection in six months prior to interview	**n=1601**		**n=1614**		
Yes	829	(51.8)	743	(46.0)	***
No	772	(48.2)	871	(54.0)	
Substance used, at least once, to break down drugs prior to injection	**n=829**		**n=743**		***
Used recommended only	50	(6.0)	82	(11.0)	
Used non-recommended only	441	(53.2)	347	(46.7)	
Used both recommended and non-recommended	338	(40.8)	314	(42.3)	
Substance used the MOST to break down drugs prior to injection	**n=825**		**n=739**		
Recommended	165	(20.0)	232	(31.4)	***
Non-recommended	660	(80.0)	507	(68.6)	

***** p≤0.001**

A similar significant decline was observed in relation to the material used **MOST** often as an acidifier. As shown in Table 15, there was a significant decline in the proportion of final participants (69%) reporting the use of ***only non-recommended materials*** the MOST to break down drugs compared with the proportion of baseline participants (80%) and a corresponding increase in the proportion of final participants (31%) reporting the use of ***only recommended materials*** the MOST to break down drugs compared with the proportion of baseline participants (20%) ($p<0.001$).

Dissolving drugs prior to injection

As shown in Table 16, the vast majority of participants (99%) in both the baseline and final interviews reported dissolving drugs prior to injection in the six months prior to their interview. Sterile water from an ampoule is the recommended source of water for this task as detailed in the Best Practice Recommendations [26].

A decline was observed in the proportions of these participants reporting the use of ***only non-recommended materials*** for this task and a corresponding increase in the proportions of participants using ***only recommended materials*** between baseline and final interviews. The use of vinegar, lime or lemon juice, alcohol, tap water, bottled water or water from an outside source such as from a river, water fountain or from snow on at least one occasion was reported by 36% of participants in the baseline interviews and by 33% of participants in the final interviews; whereas 14% of participants in the final interviews compared with 10% of participants in the baseline interviews reported the use of sterile water from an ampoule (p = 0.001).

Table 16 Drug Preparation and Injection Preparation Equipment: Dissolving Drugs Prior to Injection

	Baseline N=1622		Final N=1643		
	N	**(%)**	**N**	**(%)**	***p-value***
Dissolved drugs in six months prior to interview	**n=1620**		**n=1641**		
Yes	1605	(99.1)	1618	(98.6)	
No	15	(0.9)	23	(1.4)	
Liquid used, at least once, to dissolve drugs	**n=1605**		**n=1618**		***
Used recommended only	152	(9.5)	220	(13.6)	
Used non-recommended only	569	(35.5)	527	(32.6)	
Used both recommended and non-recommended	884	(55.1)	871	(53.8)	
Liquid used the MOST to dissolve drugs	**n=1596**		**n=1612**		
Recommended	525	(32.9)	654	(40.6)	***
Non-recommended	1071	(67.1)	958	(59.4)	

***** p≤0.001**

The majority of participants in both the baseline and final interviews reported ***only non-recommended materials*** as the **MOST** frequently accessed sources of water for dissolving drugs prior to injection. However, there was a statistically significant reduction in the proportion of participants reporting these sources as the **MOST** frequently accessed sources in the final interviews (59%) compared with the proportion of participants in the baseline interviews (67%) and a corresponding statistically significant increase in the proportion of participants in the final interviews (41%) who reported the sole use of ***recommended materials*** as the **MOST** frequently accessed source in comparison with the proportion in the baseline interviews (33%) ($p < 0.001$).

Use of mixing or heating container in the six months prior to interview

In the six months prior to their interview, nearly all participants in both the baseline (98%) and final interviews (99%) reported using a container to mix and/or heat drugs prior to injection. A single-use cooker is the recommended equipment for this task as detailed in the Best Practice Recommendations [26].

Among these participants, as shown in Table 17, a decline was observed in the proportions of participants reporting the use of ***only non-recommended materials*** for this task and a corresponding increase in the proportions of participants using ***only recommended materials*** between baseline and final interviews. The use of spoons, bottle and needle caps, the bottom or tops of cans, tinfoil, baggies from drugs, pill bottles or caps, or glasses or glass jars on at least one occasion was reported by 71% of participants in the baseline interviews and by 52% of participants in the final interviews; whereas 6% of participants in the final interviews compared with 3% of participants in the baseline interviews reported the use of sterile water from an ampoule ($p < 0.001$).

Table 17 Drug Preparation and Injection Preparation Equipment: Use of Mixing and Heating Container Prior to Injection

	Baseline N=1622		Final N=1643		
	N	**(%)**	**N**	**(%)**	***p-value***
Used a container to mix and/or heat drugs in six months prior to interview	**n=1619**		**n=1641**		
Yes	1590	(98.2)	1617	(98.5)	
No	29	(1.8)	24	(1.5)	
Container used, at least once, to mix and/or heat drugs	**n=1590**		**n=1617**		***
Used recommended only	41	(2.6)	91	(5.6)	
Used non-recommended only	1128	(70.9)	841	(52.0)	
Used both recommended and non-recommended	421	(26.5)	685	(42.4)	
Container used the MOST to mix and/or heat drugs	**n=1586**		**n=1610**		
Recommended	133	(8.4)	355	(22.0)	***
Non-recommended	1453	(91.6)	1255	(78.0)	

***** p≤0.001**

The majority of participants in both the baseline and final interviews reported ***only non-recommended materials*** as the **MOST** frequently used container to mix and or heat their drugs prior to injection. However, there was a statistically significant reduction in the proportion of participants reporting these materials as the **MOST** frequently used materials in the final interviews (78%) compared with the proportion of participants in the baseline interviews (92%) and a corresponding statistically significant increase in the proportion of participants in the final interviews (22%) who reported the sole use of ***recommended materials*** as the **MOST** frequently used container in comparison with the proportion in the baseline interviews (8%) ($p< 0.001$).

Filtering drugs prior to injection

Nearly all participants in both the baseline (94%) and final interviews (95%) reported filtering drugs prior to injection in the six months prior to their interview. The recommended material for this task is a filter with a pore width of 0.22µm [26].

Among these participants, as shown in Table 18, there was a decline in the proportions of participants reporting the use of ***only non-recommended materials*** for this task and a corresponding increase in the proportions of participants using ***only recommended materials*** between baseline and final interviews. The use of cigarette filters, tampons, cotton buds or cotton balls, Kleenex or a paper towel, or an item of clothing such as socks, on at least one occasion was reported by 52% of participants in the baseline interviews and by 41% of participants in the final interviews; whereas 13% of participants in the final interviews compared with 7% of participants in the baseline interviews reported the use of new filters obtained from their NEP (p<0.001).

Table 18 Drug Preparation and Injection Preparation Equipment: Filtering Drugs Prior to Injection

	Baseline N=1622		Final N=1643		
	N	**(%)**	**N**	**(%)**	***p-value***
Filtered drugs in six months prior to interview	**n=1621**		**n=1643**		
Yes	1524	(94.0)	1552	(94.5)	
No	97	(6.0)	91	(5.5)	
Item used, at least once, to filter drugs	**n=1524**		**n=1552**		***
Used recommended only	102	(6.7)	194	(12.5)	
Used non-recommended only	795	(52.2)	630	(40.6)	
Used both recommended and non-recommended	627	(41.1)	728	(46.9)	
Item used the MOST to filter drugs	**n=1516**		**n=1549**		
Recommended	359	(23.7)	545	(35.2)	***
Non-recommended	1157	(76.3)	1004	(64.8)	

***** p≤0.001**

The majority of participants in both the baseline and final interviews reported ***only non-recommended materials*** as the **MOST** frequently used materials to filter their drugs. However, there was a statistically significant reduction in the proportion of participants in the final interviews (65%) reporting these materials as the **MOST** frequently used materials compared with the proportion of participants in the baseline interviews (76%) and a corresponding statistically significant increase in the proportion of participants in the final interviews (35%) who reported the sole use of ***recommended materials*** as the **MOST** frequently used filter in comparison with the proportion in the baseline interviews (24%) ($p<0.001$).

Tying off vein prior to injection

Approximately two-thirds of participants in both the baseline (73%) and final interviews (69%) reported tying off their vein prior to injection in the six months prior to their interview. The recommended material for this task is a thin, pliable, easy-to-release tourniquet with a non-porous surface [26].

Among these participants, as shown in Table 19, there was a decline in the proportions of participants reporting the use of ***only non-recommended materials*** for this task and a corresponding increase in the proportions of participants using ***only recommended materials*** between baseline and final interviews. The use of belts, rope, bandanas, some form of clothing such as a shirtsleeve or string from pajamas or a necktie, shoelaces, string, some form of cord or their own body part such as their leg, hands or toes on at least one occasion to tie off a vein was reported by 49% of participants in the baseline interviews and by 40% of participants in the final interviews; whereas 27% of participants in the final interviews compared with 17% of participants in the baseline interviews reported the use of new tourniquets obtained from their NEP($p<0.001$).

Table 19 Drug Preparation and Injection Preparation Equipment: Tying Off Vein Prior to Injection

	Baseline N=1622		Final N=1643		
	N	(%)	N	(%)	*p-value*
Tied off vein prior to injection in six months prior to interview	**n=1621**		**n=1641**		
Yes	1179	(72.7)	1137	(69.3)	*
No	442	(27.3)	504	(30.7)	
Item used, at least once, to tie off vein prior to injection	**n=1179**		**n=1137**		***
Used recommended only	196	(16.6)	309	(27.2)	
Used non-recommended only	577	(48.9)	456	(40.1)	
Used both recommended and non-recommended	406	(34.4)	372	(32.7)	
Item used the MOST to tie off vein prior to injection	**n=1158**		**n=1119**		
Recommended	391	(33.8)	530	(47.4)	***
Non-recommended	767	(66.2)	589	(52.6)	

*** p≤0.05**
***** p≤0.001**

The majority of participants in both the baseline and final interviews reported ***only non-recommended materials*** as the **MOST** frequently used material to tie off their vein prior to injection. However, there was a statistically significant reduction in the proportion of participants in the final interviews (53%) reporting these materials as the **MOST** frequently used materials compared with the proportion of participants in the baseline interviews (66%) and a corresponding statistically significant increase in the proportion of participants in the final interviews (47%) who reported the sole use of ***recommended materials*** as the **MOST** frequently used material to tie off their vein prior to injection in comparison with the proportion in the baseline interviews (34%) ($p<0.001$).

Cleaning skin prior to injection

Three-quarters of participants in both the baseline (76%) and final interviews (76%) reported cleaning their skin prior to injection in the six months prior to their interview. The recommended material for this task is an individual sterile alcohol swab[(26)].

Among these participants, as shown in Table 20, a decline was observed in the proportions of participants reporting the use of ***only non-recommended materials*** and a corresponding increase in the proportions of participants using ***only recommended materials*** between baseline and final interviews. The use of soap and water, toilet tissue, baby wipes, water alone, vinegar, bleach, saliva, alcohol, ether, iodine or peroxide on at least one occasion to clean their skin prior to injection in the six months preceding their interview was reported by 16% of participants in the baseline interviews and by 12% of participants in the final interviews; whereas 65% of participants in the final interviews compared with 56% of participants in the baseline interviews reported the use of individual sterile alcohol swabs ($p<0.001$).

Table 20 Drug Preparation and Injection Preparation Equipment: Cleaning Skin Prior to Injection Skin Prior to Injection

	Baseline N=1622		Final N=1643		
	N	**(%)**	**N**	**(%)**	***p-value***
Cleaned skin prior to injection in six months prior to interview	**n=1619**		**n=1642**		
Yes	1229	(75.9)	1245	(75.8)	
No	390	(24.1)	397	(24.2)	
Substance used, at least once, to clean skin prior to injection	**n=1229**		**n=1245**		***
Used recommended only	687	(55.9)	812	(65.2)	
Used non-recommended only	194	(15.8)	145	(11.6)	
Used both recommended and non-recommended	348	(28.3)	288	(23.1)	
Substance used the MOST to clean skin prior to injection	**n=1220**		**n=1243**		
Recommended	913	(74.8)	1028	(82.7)	***
Non-recommended	307	(25.2)	215	(17.3)	

***** p≤0.001**

The majority of participants in both the baseline and final interviews reported only ***recommended materials*** as the **MOST** frequently used material to clean their skin prior to injection and there was a statistically significant increase in the proportion of participants in the final interviews (83%) reporting these materials as the **MOST** frequently used materials compared with the proportion of participants in the baseline interviews (75%). A corresponding statistically significant decrease in the proportion of participants in the final interviews (17%) who reported the sole use of ***non-recommended materials*** as the **MOST** frequently used material to clean their skin prior to injection in comparison with the proportion in the baseline interviews (25%) was observed ($p<0.001$).

Rinsing needles following injection

In the six months prior to their interview, 42% of participants in the baseline interviews and 45% of participants in the final interviews reported that they did not re-use their needles so did not rinse them between injections. This positive change was reflected in the significantly smaller proportion of final participants (49%) compared with baseline participants (57%) who reported rinsing their needles in the six months prior to their interview (p<0.001). The recommended material for this task is a single-use 2mL sterile water ampoule [26].

As shown in Table 21, among participants who did re-reuse and rinse their needles, an increase was observed between baseline and final interviews in the proportions of participants who carried out this task using ***only recommended materials***; however an increase was also observed between baseline and final interviews in the proportions of participants reporting the use of ***only non-recommended materials.*** Three percent of participants in the baseline interviews and 5% of participants in the final interviews reported the use of individual sterile water from an ampoule; whereas the use of tap water, bottled water, rain/puddle water, bleach, urinal/toilet water or saliva to rinse needles in the six months preceding their interview was reported by 80% of participants in the final interviews compared with 74% of participants in the baseline interviews (p<0.001).

Table 21 Drug Preparation and Injection Preparation Equipment: Rinsing Needles Following Injection

	Baseline N=1622		Final N=1643		
	N	**(%)**	**N**	**(%)**	***p-value***
Rinsed needles in six months prior to interview	**n=1620**		**n=1639**		
Yes	930	(57.4)	802	(48.9)	***
No	11	(0.7)	99	(6.0)	
N/A: Did not re-use needles	679	(41.9)	738	(45.0)	
Liquid used, at least once, to rinse needles	**n=930**		**n=802**		***
Used recommended only	32	(3.4)	38	(4.7)	
Used non-recommended only	687	(73.9)	642	(80.0)	
Used both recommended and non-recommended	211	(22.7)	122	(15.2)	
Liquid used the MOST to rinse needles	**n=920**		**n=798**		
Recommended	84	(9.1)	81	(10.2)	
Non-recommended	836	(90.9)	717	(89.8)	

***** p≤0.001**

In terms of the liquid used the **MOST** to rinse needles between injections, there was no significant change observed between the baseline and final evaluation time points in the use of recommended materials. Only a small proportion of both final (10%) and baseline participants (9%) had used the recommended method of rinsing with sterile water from an ampoule; the vast majority of both final (90%) and baseline participants (91%) had used tap water, bleach, hot or boiled water, lemon juice or vinegar as the liquid they had used the most to rinse needles between injections.

3.4.2 Crack-smoking equipment

Among crack-smoking participants (1,051 baseline participants, 982 participants in the final interviews), the greatest proportion of participants in both the baseline (83%) and final interviews (89%) had at some point used a glass stem to smoke crack as shown in Table 22. Although the ranking of other materials and devices that had been used to smoke crack remained the same between the baseline and final evaluation points, a significant change in the pattern of use was observed. In addition to the greater proportion of final participants who reported the use of a crack pipe, a greater proportion of final (79%) compared with baseline participants (76%) reported that they had used a metal pipe at some point to smoke crack, and a greater proportion of final (74%) compared with baseline participants (71%) reported that they had used a pop can. Conversely, a smaller proportion of final (21%) compared with baseline participants (23%) reported that they had at some point used a car antenna to smoke crack.

In terms of more recent use, again a significant change in the pattern of use was observed. The greatest proportion of participants in both the baseline (77%) and final interviews (81%) had used a glass stem to smoke crack in the six months prior to interview as shown in Table 22. However, this increase in use observed among final participants was the only increase observed; the use of all other materials to smoke crack declined among participants in the final interviews compared with participants in the baseline interviews. Fifty-seven percent of final participants compared with 60% of baseline participants had used a metal pipe, 45% of final participants compared with 46% of baseline participants had used a pop can, 42% of final participants compared with 46% of baseline participants had used an inhaler and 9% of final participants compared with 11% of baseline participants had used a car antenna.

The use of non-recommended materials remained high when equipment used the **MOST** to smoke crack among final and baseline participants was examined. However, a non-significant decline in their use was observed with a corresponding non-significant increase in the proportion of final participants (54%) compared with baseline participants (49%) who reported that they had used the ***recommended material,*** a glass stem, the MOST to smoke crack in the six months prior to their interview.

Table 22 Equipment Used to Smoke Crack

	Baseline N=1051		Final N=982		
	N	(%)	N	(%)	*p-value*
Equipment EVER used	**n = 1040 [a]**		**n = 967 [a]**		
Glass stem	864	(83.1)	861	(89.0)	
Metal pipe	788	(75.8)	764	(79.0)	
Light bulb	136	(13.1)	121	(12.5)	
Car antenna	234	(22.5)	201	(20.8)	
Pop can	741	(71.3)	716	(74.0)	
Inhalers	723	(69.5)	667	(69.0)	
Other	456	(43.8)	395	(40.8)	
Equipment used at least once six months prior to interview	**n = 1032 [a]**		**n = 966 [a]**		
Glass stem	790	(76.6)	781	(80.8)	
Metal pipe	618	(59.9)	546	(56.5)	
Light bulb	56	(5.4)	37	(3.8)	
Car antenna	109	(10.6)	87	(9.0)	
Pop can	470	(45.5)	436	(45.1)	
Inhalers	475	(46.0)	407	(42.1)	
Other	321	(31.1)	288	(29.8)	
Equipment used the MOST six months prior to interview	**n = 1027 [a]**		**n = 944 [a]**		
Glass stem	500	(48.7)	505	(53.5)	
Metal pipe	207	(20.2)	180	(19.1)	
Light bulb	0	(0.0)	1	(0.1)	
Car antenna	5	(0.5)	2	(0.2)	
Pop can	77	(7.5)	64	(6.8)	
Inhalers	112	(10.9)	87	(9.2)	
Other	126	(12.3)	105	(11.1)	

[a] Participants could report more than one piece of equipment to smoke crack, therefore % may be >100%.

3.5 Accessing Sterile/New Equipment

3.5.1 Sterile/new injection supplies

Sterile needles

Baseline participants had identified four main sources from which they had ever obtained sterile needles on at least one occasion; 70% had obtained sterile needles from a NEP, 51% from a pharmacy, 34% from friends or family and 12% from a community agency. As shown in Table 23, these four sources were similarly identified as the main sources by final participants. However, a significant increase in the proportion of final participants accessing the NEP was observed with a corresponding decline in proportions accessing the other sources. Seventy-six percent of final participants had obtained sterile needles from a NEP, 41% from a pharmacy, 32% from friends or family and 9% from a community agency ($p<0.001$).

Table 23 Accessing Sterile/Unused Equipment: Access to Sterile Needles

	Baseline N=1622		Final N=1643		
	N	(%)	N	(%)	*p-value*
Collected sterile needles at least once from...	**n = 1616**		**n = 1639**		***
Pharmacy	822	(50.9)	676	(41.2)	
NEP	1135	(70.2)	1242	(75.8)	
Community Agency	188	(11.6)	139	(8.5)	
Sexual Partner(s)	107	(6.6)	87	(5.3)	
Friend(s)/Family	549	(34.0)	516	(31.5)	
People I don't know well	73	(4.5)	40	(2.4)	
People I don't know at all	19	(1.2)	16	(1.0)	
Make them myself from different sources	6	(0.4)	2	(0.1)	
Other	48	(3.0)	45	(2.7)	
Collected sterile needles the MOST from...	**n = 1505**		**n = 1618**		***
Pharmacy	280	(18.6)	187	(11.6)	
NEP	876	(58.2)	1075	(66.4)	
Community Agency	70	(4.7)	42	(2.6)	
Sexual Partner(s)	11	(0.7)	20	(1.2)	
Friend(s)/Family	242	(16.1)	276	(17.1)	
People I don't know well	11	(0.7)	7	(0.4)	
Make them myself from different sources	3	(0.2)	0	(0.0)	
Other	12	(0.8)	11	(0.7)	

***** p≤0.001**

These four sources were identified as those participants had obtained sterile needles from the **MOST** in the six months preceding their interview, although significant changes were observed in terms of the proportions accessing each. A NEP remained the most frequently accessed source for final participants (66%) as it had for baseline participants (58%). A greater proportion of final participants (17%) compared with baseline participants (16%) had obtained their sterile needles the most from friends or family, a smaller proportion of final participants (12%) compared with baseline participants (19%) had obtained their sterile needles the most from a pharmacy and a smaller proportion of final participants (3%) compared with baseline participants (5%) had obtained their sterile needles the most from a community agency ($p<0.001$).

Sterile water

A significant change in the pattern of sources of sterile water accessed by baseline compared with final participants was observed. A shown in Table 24, a greater proportion of final (62%) compared with baseline participants (55%) had accessed a NEP to obtain on at least one occasion sterile water, while a smaller proportion of final participants (5%) compared with baseline participants (7%) reported accessing a community agency to obtain sterile water ($p<0.01$). However, of concern must be the high proportion of participants at both baseline (66%) and at the final evaluation point (65%) who reported using other sources of water.

Table 24 Access to Sterile Water

	Baseline N=1622		Final N=1643		
	N	**(%)**	**N**	**(%)**	***p-value***
Collected sterile water at least once from...	**n = 1564**		**n = 1585**		**
Pharmacy	40	(2.6)	30	(1.9)	
NEP	862	(55.1)	988	(62.3)	
Community Agency	106	(6.8)	74	(4.7)	
Sexual Partner(s)	54	(3.5)	41	(2.6)	
Friend(s)/Family	195	(12.5)	214	(13.5)	
People I don't know well	31	(2.0)	13	(0.8)	
People I don't know at all	13	(0.8)	3	(0.2)	
Make them myself from different sources	1029	(65.8)	1023	(64.5)	
Other	9	(0.6)	14	(0.9)	
Collected sterile water the MOST from...	**n = 1481**		**n = 1562**		***
Pharmacy	12	(0.8)	9	(0.6)	
NEP	571	(38.6)	731	(46.8)	
Community Agency	32	(2.2)	26	(1.7)	
Sexual Partner(s)	7	(0.5)	12	(0.8)	
Friend(s)/Family	83	(5.6)	97	(6.2)	
People I don't know well	4	(0.3)	3	(0.2)	
Make them myself from different sources	770	(52.0)	683	(43.7)	
Other	2	(0.1)	1	(0.1)	

**** p≤0.01**
***** p≤0.001**

A significant change in the pattern of sources of sterile water accessed the **MOST** by baseline compared with final participants was also observed A smaller proportion of final participants (44%) compared with baseline participants (52%) reported these alternate sources as their **MOST** frequently accessed source in the six months preceding their interview with an increase in the proportion of final participants (47%) compared with baseline participants (39%) who reported colleting sterile water the **MOST** from a NEP ($p<0.001$).

New filters

Similarly, a significant change in the pattern of sources of new filters accessed by baseline compared with final participants was observed, with the pattern of accessing new filters resembling that of accessing sterile water. As shown in Table 25, the greatest proportions of both baseline and final participants reported making their own filters from different sources but with a decline among final participants (68%) compared with baseline participants (72%) reporting this source; an increase in the proportion of final participants (56%) compared with baseline participants (43%) who reported that on at least one occasion they had collected new filters from a NEP; and a smaller proportion of final participants (4%) compared with baseline participants (6%) who reported accessing a community agency to obtain new filters ($p<0.001$).

Table 25 Access to New Filters

	Baseline N=1622		Final N=1643		
	N	**(%)**	**N**	**(%)**	***p-value***
Collected new filters at least once from...	**n = 1500**		**n = 1518**		***
Pharmacy	91	(6.1)	49	(3.2)	
NEP	639	(42.6)	852	(56.1)	
Community Agency	93	(6.2)	62	(4.1)	
Sexual Partner(s)	41	(2.7)	41	(2.7)	
Friend(s)/Family	151	(10.1)	195	(12.8)	
People I don't know well	22	(1.5)	13	(0.9)	
People I don't know at all	11	(0.7)	4	(0.3)	
Make them myself from different sources	1081	(72.1)	1032	(68.0)	
Other	10	(0.7)	13	(0.9)	
Collected new filters the MOST from...	**n = 1424**		**n = 1485**		***
Pharmacy	46	(3.2)	16	(1.1)	
NEP	399	(28.0)	608	(40.9)	
Community Agency	28	(2.0)	19	(1.3)	
Sexual Partner(s)	7	(0.5)	10	(0.7)	
Friend(s)/Family	63	(4.4)	89	(6.0)	
People I don't know well	5	(0.4)	3	(0.2)	
Make them myself from different sources	873	(61.3)	739	(49.8)	
Other	3	(0.2)	1	(0.1)	

***** p≤0.001**

Again, similar to the pattern of accessing sterile water, a significant change in the pattern of sources of new filters accessed the **MOST** by baseline compared with final participants was also observed. A smaller proportion of final participants (50%) compared with baseline participants (61%) reported these alternate sources as their **MOST** frequently accessed source in the six months preceding their interview with an increase in the proportion of final participants (41%) compared with baseline participants (28%) who reported collecting new filters the **MOST** from a NEP ($p<0.001$).

Sterile or new cookers

The significant change observed in the pattern of accessing sterile water and new filters was also observed in new or sterile cooker access patterns. As shown in Table 26, the greatest proportions of participants reported making their own cookers from different sources but a decline was observed among the proportions of final participants (76%) compared with baseline participants (82%) who reported these sources. In addition, an increase was observed in the proportion of final participants (46%) compared with baseline participants (28%) who reported that on at least one occasion they had collected new or sterile cookers from a NEP, while equal proportions of final (4%) and baseline participants (4%) reported accessing a community agency to obtain new or sterile cookers ($p<0.001$).

Table 26 Access to Sterile/New Cookers

	Baseline N=1622		Final N=1643		*p-value*
	N	(%)	N	(%)	
Collected sterile/new cookers at least once from...	**n = 1537**		**n = 1544**		***
Pharmacy	6	(0.4)	6	(0.4)	
NEP	436	(28.4)	710	(46.0)	
Community Agency	56	(3.6)	61	(4.0)	
Sexual Partner(s)	33	(2.1)	44	(2.8)	
Friend(s)/Family	175	(11.4)	200	(13.0)	
People I don't know well	38	(2.5)	15	(1.0)	
People I don't know at all	19	(1.2)	8	(0.5)	
Make them myself from different sources	1260	(82.0)	1179	(76.4)	
Other	12	(0.8)	12	(0.8)	
Collected sterile/new cookers the MOST from...	**n = 1469**		**n = 1516**		***
Pharmacy	2	(0.1)	0	(0.0)	
NEP	240	(16.3)	453	(29.9)	
Community Agency	8	(0.5)	17	(1.1)	
Sexual Partner(s)	6	(0.4)	11	(0.7)	
Friend(s)/Family	88	(6.0)	89	(5.9)	
People I don't know well	7	(0.5)	2	(0.1)	
Make them myself from different sources	1109	(75.5)	943	(62.2)	
Other	9	(0.6)	1	(0.1)	

***** p≤0.001**

A significant change in the pattern of sources of new or sterile cookers accessed the **MOST** by baseline compared with final participants was also observed. A decline was observed in the proportion of final participants (62%) compared with baseline participants (76%) who reported alternate sources as their **MOST** frequently accessed source of new or sterile cookers in the six months preceding their interview with an increase in the proportion of final participants (30%) compared with baseline participants (16%) who reported collecting new or sterile cookers the **MOST** from a NEP ($p<0.001$).

New tourniquets

As shown in Table 27, significant changes in the pattern of access of new tourniquets were similarly observed among final compared with baseline participants. As observed with the collection of other harm reduction materials, substantial proportions reported using other materials from different sources as their tourniquets but a decline was observed among final participants (52%) compared with baseline participants (63%) in reporting these sources. An increase was observed in the proportion of final participants (55%) compared with baseline participants (43%) who reported that on at least one occasion they had collected new tourniquets from a NEP and a decline was observed among final participants (4%) compared with baseline participants (6%) who reported accessing a community agency to obtain new tourniquets ($p<0.001$).

Table 27 Access to New Tourniquets

	Baseline N=1622		Final N=1643		
	N	**(%)**	**N**	**(%)**	***p-value***
Collected new tourniquets at least once from...	**n = 1080**		**n = 1033**		***
Pharmacy	8	(0.7)	7	(0.7)	
NEP	468	(43.3)	565	(54.7)	
Community Agency	62	(5.7)	44	(4.3)	
Sexual Partner(s)	25	(2.3)	28	(2.7)	
Friend(s)/Family	114	(10.6)	133	(12.9)	
People I don't know well	14	(1.3)	5	(0.5)	
People I don't know at all	7	(0.6)	3	(0.3)	
Make them myself from different sources	683	(63.2)	539	(52.2)	
Other	15	(1.4)	16	(1.5)	
Collected new tourniquets the MOST from...	**n = 1044**		**n = 1023**		***
Pharmacy	6	(0.6)	3	(0.3)	
NEP	359	(34.4)	489	(47.8)	
Community Agency	26	(2.5)	18	(1.8)	
Sexual Partner(s)	7	(0.7)	10	(1.0)	
Friend(s)/Family	64	(6.1)	89	(8.7)	
People I don't know well	5	(0.5)	1	(0.1)	
People I don't know at all	1	(0.1)	0	(0.0)	
Make them myself from different sources	568	(54.4)	408	(39.9)	
Other	8	(0.8)	5	(0.5)	

***** p≤0.001**

A significant change in the pattern of sources of new tourniquets accessed the **MOST** by baseline compared with final participants was also observed. A decline was observed in the proportion of final participants (40%) compared with baseline participants (54%) who reported alternate sources as their **MOST** frequently accessed source of new tourniquets in the six months preceding their interview with an increase in the proportion of final participants (48%) compared with baseline participants (34%) who reported collecting new tourniquets the **MOST** from a NEP ($p<0.001$).

Sterile Acidifiers

The significant changes observed in the patterns of accessing sterile water, new filters, new or sterile cookers and new tourniquets between baseline and final participants was also observed in sterile acidifier access patterns. As shown in Table 28. the greatest proportions of participants reported making their own acidifiers from different sources but a decline was observed among the proportions of final participants (71%) compared with baseline participants (77%) who reported these sources, an increase was observed in the proportion of final participants (51%) compared with baseline participants (37%) who reported that on at least one occasion they had collected sterile acidifiers from a NEP and a decline was observed among the proportions of final participants (5%) compared with baseline participants (6%) who reported accessing a community agency to obtain sterile acidifiers ($p<0.001$).

Table 28 Access to Sterile Acidifiers

	Baseline N=1622		Final N=1643		
	N	(%)	N	(%)	*p-value*
Collected unused acidifiers at least once from...	**n = 790**		**n = 686**		***
Pharmacy	13	(1.6)	4	(0.6)	
NEP	291	(36.8)	349	(50.9)	
Community Agency	49	(6.2)	36	(5.2)	
Sexual Partner(s)	19	(2.4)	20	(2.9)	
Friend(s)/Family	109	(13.8)	87	(12.7)	
People I don't know well	16	(2.0)	10	(1.5)	
People I don't know at all	10	(1.3)	4	(0.6)	
Make them myself from different sources	606	(76.7)	484	(70.6)	
Other	4	(0.5)	8	(1.2)	
Collected unused acidifiers the MOST from...	**n = 749**		**n = 677**		***
Pharmacy	7	(0.9)	3	(0.4)	
NEP	168	(22.4)	255	(37.7)	
Community Agency	15	(2.0)	10	(1.5)	
Sexual Partner(s)	2	(0.3)	6	(0.9)	
Friend(s)/Family	46	(6.1)	38	(5.6)	
People I don't know well	2	(0.3)	3	(0.4)	
People I don't know at all	1	(0.1)	0	(0.0)	
Make them myself from different sources	506	(67.6)	360	(53.2)	
Other	2	(0.3)	2	(0.3)	

***** p≤0.001**

A significant change in the pattern of sources of sterile acidifiers accessed the **MOST** by baseline compared with final participants was also observed. A decline was observed in the proportion of final participants (53%) compared with baseline participants (68%) who reported alternate sources as their **MOST** frequently accessed source of sterile acidifiers in the six months preceding their interview with an increase in the proportion of final participants (38%) compared with baseline participants (22%) who reported collecting sterile acidifiers the **MOST** from a NEP ($p<0.001$).

Sterile alcohol swabs

Although in comparison to the previous patterns of collection of items of drug preparation and injection preparation equipment only small proportions of both baseline and final participants reported making sterile alcohol swabs themselves from other sources at least once in the six months prior to their interview, a significant change was nevertheless observed in the patterns of accessing sterile alcohol swabs between baseline and final participants. As shown in Table 29, an increase was observed in the proportion of final participants (77%) compared with baseline participants (74%) who reported that on at least one occasion they had collected sterile alcohol swabs from a NEP and among the proportion of final participants (18%) compared with baseline participants (16%) who reported that on at least one occasion they had collected sterile alcohol swabs from a friend or family member. Conversely, a decline was observed among the proportions of final participants (6%) compared with baseline participants (8%) who reported making swabs themselves from different sources and among the proportions of final participants (6%) compared with baseline participants (9%) who reported accessing a community agency to obtain sterile alcohol swabs ($p<0.001$).

Significant changes in the pattern of sources accessed the **MOST** for sterile alcohol swabs among baseline compared with final participants were also observed. A decline was observed in the proportion of final participants (3%) compared with baseline participants (6%) who reported alternate sources as their **MOST** frequently accessed source of sterile alcohol swabs in the six months preceding their interview and among the proportions of final participants (3%) compared with baseline participants (5%) who reported accessing a community agency to obtain sterile alcohol swabs. Conversely, an increase was observed in the proportion of final participants (73%) compared with baseline participants (67%) who reported collecting sterile alcohol swabs the **MOST** from a NEP and among the proportion of final participants (13%) compared with baseline participants (10%) who reported collecting sterile alcohol swabs the **MOST** from a friend or family member ($p<0.001$).

Table 29 Access to Sterile Alcohol Swabs

	Baseline N=1622		Final N=1643		
	N	(%)	N	(%)	*p-value*
Collected unused alcohol swabs at least once from...	**n = 1197**		**n = 1238**		***
Pharmacy	166	(13.9)	118	(9.5)	
NEP	885	(73.9)	953	(77.0)	
Community Agency	113	(9.4)	72	(5.8)	
Sexual Partner(s)	42	(3.5)	40	(3.2)	
Friend(s)/Family	194	(16.2)	228	(18.4)	
People I don't know well	12	(1.0)	7	(0.6)	
People I don't know at all	7	(0.6)	1	(0.1)	
Make them myself from different sources	92	(7.7)	70	(5.7)	
Other	26	(2.2)	24	(1.9)	
Collected unused alcohol swabs the MOST from...	**n = 1160**		**n = 1229**		***
Pharmacy	103	(8.9)	73	(5.9)	
NEP	782	(67.4)	893	(72.7)	
Community Agency	61	(5.3)	36	(2.9)	
Sexual Partner(s)	7	(0.6)	15	(1.2)	
Friend(s)/Family	117	(10.1)	162	(13.2)	
People I don't know well	4	(0.3)	1	(0.1)	
Make them myself from different sources	73	(6.3)	41	(3.3)	
Other	13	(1.1)	8	(0.7)	

***** p≤0.001**

3.5.2 New crack-smoking supplies

Not surprisingly, as few Ontario NEPs or community agencies distribute safer inhalation equipment, the greatest proportion of both baseline and final participants reported making pipes themselves from other materials. As shown in Table 30, a decrease was observed in the proportion of final (46%) compared with baseline participants (55%) who reported these sources of smoking supplies. Declines were also observed in the proportion of final participants (36%) compared with baseline participants (38%) who reported collecting new smoking supplies from smoke shops and in the proportion of final participants (28%) compared with baseline participants (31%) who reported collecting supplies from other people. The proportion of participants accessing smoking supplies from their local NEP or local community agency increased from 14% of baseline participants to 18% of final participants and the proportion of participants accessing smoking supplies from a NEP in another place increased from 5% of baseline participants to 6% of final participants ($p<0.001$).

Table 30 Access to New Crack-smoking Supplies

	Baseline N=1622		Final N=1643		
	N	(%)	N	(%)	*p-value*
Collected new crack-smoking supplies at least once from...	**n = 1028**		**n = 963**		***
Buy them from smoke shops	390	(37.9)	351	(36.4)	
Get them from local NEP or other local community agency	143	(13.9)	175	(18.2)	
Make them from different pieces	570	(55.4)	447	(46.4)	
Get them from other people	314	(30.5)	266	(27.6)	
Other	144	(14.0)	193	(20.0)	
NEP in another place	47	4.6	56	(5.8)	
Collected new crack-smoking supplies the MOST from...	**n = 1019**		**n = 942**		***
NEP/Community agency	122	(12.0)	133	(14.1)	
Combined other source	868	(85.2)	772	(82.0)	
NEP in another place	29	(2.8)	37	(3.9)	

***** p≤0.001**

In terms of the **MOST** frequently accessed source of these materials, a slight increase was observed in the proportion of final participants (14%) compared with baseline participants (12%) who reported collecting new smoking supplies the **MOST** from a NEP or community agency in the six months prior to their interview; however this difference was not statistically significant.

3.6 Barriers to the Collection of Equipment through Local NEP or Community Agency

3.6.1 Barriers to the collection of sterile injection supplies

Unavailability of supplies

A significant decline was observed between the proportions of participants in the final and baseline interviews who reported the experience of being unable, in the six months prior to their interview, to get **ANY** injection supplies from their local NEP or other community agency. As shown in Table 31, the unavailability of supplies was reported by 24% of participants in the baseline interviews and by 14% of participants in the final interviews (p<0.001).

Table 31 Unavailability of Supplies in Past Six Months: Injection Supplies

		Baseline N=1622		Final N=1643		
		N	(%)	N	(%)	*p-value*
Unable to get ANY drug injection supplies from local NEP or other community agency		**n=1163**		**n=1269**		
	No	884	(76.0)	1098	(86.5)	***
	Yes	279	(24.0)	171	(13.5)	
Unable to get ENOUGH drug injection supplies from local NEP or other community agency		**n=1152**		**n=1259**		
	No	925	(80.3)	1105	(87.8)	***
	Yes	227	(19.7)	154	(12.2)	

***** p≤0.001**

Insufficient supplies

Similarly, a significant decline was observed between the proportions of participants in the final and baseline interviews who reported the experience of being unable, in the six months prior to interview, to get **ENOUGH** injection supplies from their local NEP or other community agency. As shown in Table 31, being unable to collect enough supplies for their needs was reported by 20% of participants in the baseline interviews and by 12% of participants in the final interviews (p<0.001).

3.6.2 Barriers to the collection of new crack-smoking supplies

Unavailability of crack-smoking supplies

Data from Phase 2 of the associated OHRDP **Process Evaluation** revealed that five of the 31 participating sites in this process component of the OHRDP evaluation were distributing at least some safer inhalation supplies. Kingston and Toronto reported that they always distributed glass stems, brass filters, chopsticks, rubber mouthpieces and safer smoking information either as individual items or in a kit; Durham reported that they sometimes were able to distribute the above items; and for Ottawa participants these items were available through community agencies but not through Ottawa Public Health. Hamilton was distributing rubber mouthpieces and safer smoking information and Wellington-Dufferin-Guelph was distributing glass stems, rubber mouthpieces and safer smoking information.

As shown in Table 32, among the 143 baseline participants and 174 final participants from the six sites (Ottawa, Kingston, Toronto, Wellington-Dufferin-Guelph, Hamilton, Durham) distributing safer inhalation supplies at the time of the evaluation interviews, a significant increase was observed in the proportions of final participants (25%) compared with baseline participants (8%) who reported being unable to collect ANY safer smoking supplies from their local NEP or other community agency in the six months prior to their interview ($p<0.001$).

A significant increase was also observed in the frequency with which this unavailability occurred; a greater proportion of final participants (48%) compared with baseline participants (8%) reported that this unavailability happened "every time" or "frequently" in the six months prior to their interview ($p<0.05$).

Table 32 Unavailability of Supplies in Past Six Months: Crack-smoking Supplies

	Baseline N=143		Final N=174		
	N	(%)	N	(%)	*p-value*
Unable to get ANY crack/crystal meth-smoking supplies from local NEP or community agency in the six months prior to interview	**n = 1612**		**n = 1616**		
No	131	(91.6)	131	(75.3)	
Yes	12	(8.4)	43	(24.7)	
If YES, frequency of not being able to get ANY crack/crystal meth-smoking supplies in six months prior to interview	**n = 12**		**n = 42**		
Every time	0	(0.0)	1	(2.4)	
Frequently	1	(8.3)	19	(45.2)	
Sometimes	2	(16.7)	9	(21.4)	
Hardly ever	9	(75.0)	13	(31.0)	

3.7 Methods of Disposal of Used Equipment

3.7.1 Disposal of used needles

As shown in Table 33, a significant change in the pattern of methods of disposal of used needles in the six months prior to interview by final compared with baseline participants was observed; although patterns of **safer disposal** predominated. A greater proportion of final (53%) compared with baseline participants (49%) had, on at least one occasion, returned them to the NEP while equal proportions of both baseline (11%) and final participants (11%) had placed them in needle drop boxes. However, a decline in methods of safer disposal of needles in the garbage was observed; 10% of final compared with 13% of baseline participants reported placing them in a biohazard container before throwing in the garbage and 36% of final compared with 40% of baseline participants reported placing them in a container such as a plastic bottle or can before throwing them in the garbage.

In terms of patterns of **unsafe disposal**, a decline was observed among the proportions of final participants (16%) compared with baseline participants (21%) who reported throwing them loose in the garbage and among the proportions of final participants (6%) compared with baseline participants (9%) who reported giving them to others to discard. Equal proportions of both final (8%) and baseline participants (8%) reported throwing them loose in the streets, parks, alleys or down a sewer ($p<0.001$).

Of all the methods that both final and baseline participants had used, the **MOST** frequently used method of disposal of used needles was that recommended for safer disposal [(26)]. In the six months prior to their interview, the greatest proportion of final participants (44%) reported returning them to the NEP themselves; this was a significant increase in proportions when compared with baseline participants, 37% of whom had returned them to the NEP themselves. Similarly, a decline was observed in engagement in two methods of unsafe disposal; 10% of final participants compared with 13% of baseline participants reported that the method they had used the **MOST** to dispose of their used needles was to throw them loose in the garbage and 2% of final participants compared with 3% of baseline participants reported that the method they had used **MOST** to dispose of their used needles was to throw them in the street or alley, in a park or down a sewer. ($p=0.001$).

Table 33 Methods of Disposal of Used Needles/Syringes

	Baseline N=1622		Final N=1643		
	N	(%)	N	(%)	*p-value*
Method	**n=1614**		**n=1642**		***
Throwing them loose in the garbage	332	(20.6)	265	(16.1)	
Putting them in a container (e.g., plastic bottle, can) and then throwing them in the garbage	650	(40.3)	597	(36.4)	
Putting them in a biohazard container and then throwing them in the garbage	203	(12.6)	160	(9.7)	
Returning them to the NEP	792	(49.1)	868	(52.9)	
Throwing them in the needle drop boxes	179	(11.1)	174	(10.6)	
Giving them to others to discard	137	(8.5)	97	(5.9)	
Giving them to others to return to the NEP	300	(18.6)	235	(14.3)	
Throwing them in the street/parks/alleys/sewers	132	(8.2)	125	(7.6)	
Other	121	(7.5)	109	(6.6)	
Method used the MOST	**n=1605**		**n=1640**		***
Throwing them loose in the garbage	204	(12.7)	164	(10.0)	
Putting them in a container (e.g., plastic bottle, can) and then throwing them in the garbage	415	(25.9)	358	(21.8)	
Putting them in a biohazard container and then throwing them in the garbage	87	(5.4)	73	(4.5)	
Returning them to the NEP	593	(36.9)	721	(44.0)	
Throwing them in the needle drop boxes	60	(3.7)	66	(4.0)	
Giving them to others to discard	27	(1.7)	46	(2.8)	
Giving them to others to return to the NEP	111	(6.9)	108	(6.6)	
Throwing them in the street/parks/alleys/sewers	40	(2.5)	34	(2.1)	
Other	68	(4.2)	70	(4.3)	

***** p≤0.001**

3.7.2 Disposal of used drug injection equipment

Overall, in contrast to the high prevalence of safer disposal of used needles, used injection and drug preparation equipment was less safely disposed at both baseline and final evaluation time points. However, a significant change in the pattern of disposal of used drug injection and preparation equipment in the six months prior to interview by final compared with baseline participants was observed with a trend toward safer disposal.

In terms of **safer methods** of disposal and in contrast to the high return of used needles to a NEP, as shown in Table 34 smaller proportions of both baseline and final participants had returned used equipment to the NEP, but an increase was observed among the proportion of final participants (18%) compared with the proportion of baseline participants (16%) who reported this method of disposal. A similar increase was observed in the proportion of final participants (25%) compared with the proportion of baseline participants (23%) who reported putting them in a puncture-free container before placing in the garbage. Although the greatest proportion of both baseline and final participants reported throwing used equipment loose in the garbage, a decline was observed in the proportions of participants reporting this **unsafe method** from 66% of baseline participants to 63% of final participants and 3% of final participants compared with 4% of baseline participants reported throwing used equipment loose on the street, in parks, in alleys or down sewers ($p<0.001$).

The greatest proportion of both final and baseline participants reported an unsafe method of disposal of used injection preparation equipment as the **MOST** common method they had used in the six months prior to interview; however a decline in the proportions of final (54%) compared with baseline participants (55%) who reported throwing used equipment loose in the garbage was observed. Similarly an increase in the proportions of final compared with baseline participants who reported safer methods of disposal was observed; 18% of final compared with 16% of baseline participants reported placing used equipment in a puncture-proof container before disposal in the garbage and 13% of final compared with 11% of baseline participants reported returning used equipment to a NEP ($p=0.01$).

Table 34 Methods of Disposal of Used Drug and Injection Preparation Equipment

***** p≤0.001**

	Baseline N=1622		Final N=1643		
	N	(%)	N	(%)	*p-value*
Method	**n=1613**		**n=1639**		***
Throwing it loose in the garbage	1059	(65.7)	1025	(62.5)	
Putting it in a container (e.g., plastic bottle, can) and then throwing them in the garbage	377	(23.4)	403	(24.6)	
Putting it in a biohazard container and then throwing in the garbage	94	(5.8)	82	(5.0)	
Returning it to the NEP	253	(15.7)	298	(18.2)	
Throwing it in the needle drop boxes	49	(3.0)	46	(2.8)	
Giving it to others to discard	65	(4.0)	62	(3.8)	
Giving it to others to return to the NEP	62	(3.8)	48	(2.9)	
Throwing it in the street/parks/alleys/sewers	59	(3.7)	55	(3.4)	
Other	388	(24.1)	274	(16.7)	
Method used the MOST	**n=1607**		**n=1630**		**
Throwing it loose in the garbage	881	(54.8)	882	(54.1)	
Putting it in a container (e.g., plastic bottle, can) and then throwing them in the garbage	253	(15.7)	289	(17.7)	
Putting it in a biohazard container and then throwing in the garbage	30	(1.9)	42	(2.6)	
Returning it to the NEP	175	(10.9)	215	(13.2)	
Throwing it in the needle drop boxes	11	(0.7)	9	(0.6)	
Giving it to others to discard	26	(1.6)	27	(1.7)	
Giving it to others to return to the NEP	19	(1.2)	17	(1.0)	
Throwing it in the street/parks/alleys/sewers	17	(1.1)	13	(0.8)	
Other	195	(12.1)	136	(8.3)	

**** p≤0.01**
***** p≤0.001**

3.7.3 Disposal of used crack-smoking equipment

Again, in contrast to the high prevalence of safer disposal of used needles, used crack-smoking equipment was less safely disposed.

As shown in Table 35, in the six months prior to their interview, very few participants at either the baseline or final evaluation time points had returned their used crack-smoking equipment to the NEP; although an increase was observed in the proportion of final participants (6%) compared with baseline participants (3%) who reported this **safer method** of disposal. Putting used crack smoking materials in a puncture-proof container before placing them in the garbage, another method of safer disposal, was reported by a greater proportion of final participants (17%) compared with baseline participants (15%). In terms of **less safe disposal**, although the greatest proportions of both final and baseline participants reported they disposed of their used crack-smoking equipment by throwing it loose in the garbage, a modest decline was observed in the proportion of final participants (62%) reporting this unsafe non-recommended method compared with baseline participants (66%). Similarly, a modest decline was observed in the proportion of participants reporting throwing their used crack-smoking equipment in the street, in a park, in an alley or down a sewer; 8% of final participants compared with 9% of baseline participants ($p<0.001$).

The **MOST** common method of disposal of used drug-smoking equipment at both baseline and final evaluation time points was to throw it loose in the garbage; although a non-significant decrease was observed in the proportion of final participants (54%) compared with baseline participants (56%) who reported this **less safe method** of disposal as the most frequent method used. A modest increase was observed in the **safer disposal** method of putting used crack smoking materials in a puncture-proof container before placing them in the garbage, reported by a greater proportion of final participants (12%) compared with baseline participants (10%) as the method they used the most to dispose of their used crack-smoking equipment.

Table 35 Methods of Disposal of Used Equipment: Drug-smoking Equipment

	Baseline N=1622		Final N=1643		
	N	(%)	N	(%)	*p-value*
Method	**n=980**		**n=885**		***
Throwing it loose in the garbage	645	(65.8)	548	(61.9)	
Putting it in a container (e.g., plastic bottle, can) and then throwing in the garbage	148	(15.1)	147	(16.6)	
Putting it in a biohazard container and then throwing in the garbage	13	(1.3)	10	(1.1)	
Returning it to the NEP	30	(3.1)	56	(6.3)	
Throwing it in the needle drop boxes	11	(1.1)	13	(1.5)	
Giving it to others to discard	79	(8.1)	37	(4.2)	
Giving it to others to return to the NEP	10	(1.0)	10	(1.1)	
Throwing it in the street/parks/alleys/sewers	89	(9.1)	74	(8.4)	
Other	176	(18.0)	137	(15.5)	
I keep my equipment	141	(14.4)	109	(12.3)	
Method used the MOST	**n=979**		**n=881**		
Throwing it loose in the garbage	550	(56.2)	472	(53.6)	
Putting it in a container (e.g., plastic bottle, can) and then throwing in the garbage	95	(9.7)	109	(12.4)	
Putting it in a biohazard container and then throwing in the garbage	3	(.3)	5	(.6)	
Returning it to the NEP	18	(1.8)	31	(3.5)	
Throwing it in the needle drop boxes	5	(.5)	4	(.5)	
Giving it to others to discard	19	(1.9)	19	(2.2)	
Giving it to others to return to the NEP	6	(.6)	3	(.3)	
Throwing it in the street/parks/alleys/sewers	42	(4.3)	38	(4.3)	
Other	128	(13.1)	102	(11.6)	
I keep my equipment	113	(11.5)	98	(11.1)	

***** p≤0.001**

3.8 HCV and HIV-Related Risk Behaviours and Practices

3.8.1 Multi-person use (sharing) of needles for injection

Engagement in the practice of passing on previously-used needles to others to use did not differ between the two evaluation time points; a minority of participants in both the baseline (14%) and final interviews (13%) reported passing on their own used needles in the six months prior to their interview by giving, selling or lending them to other users. As shown in Table 36, frequency of engagement in this practice was low; the majority of participants in both the baseline (54%) and final interviews (56%) reporting "hardly ever" doing so. Of concern however must be the continuing high proportion (18%) of final participants who reported doing so every time or frequently; a similar proportion to that noted at baseline (17%).

In comparison to the almost static level of engagement observed in passing on used needles between the two evaluation points, a significant decline was observed in engagement in injecting with previously-used needles in the six months prior to interview; 19% of baseline participants compared with 16% of final participants reported this practice ($p<0.05$). Frequency of engagement in this practice was again low; two-thirds of participants in both the baseline (61%) and final interviews (64%) reporting "hardly ever" doing so. A non-significant decline in the proportion of baseline participants (15%) compared with final participants (12%) who reported doing so every time or frequently was observed.

In addition to the observed decline in participants injecting with needles *known* to have been used by someone else, a significant decline in engagement was also observed in the related practice of injection with a needle *without knowing* if it had been previously used by someone else; 11% of final participants compared with 14% of baseline participants reported this practice ($p<0.01$). Frequency of engagement in this practice was again low; nearly three-quarters of participants in both the baseline (70%) and final interviews (73%) reporting "hardly ever" doing so.

Table 36 HCV and HIV-Related Risk Behaviours and Practices: Multi-person Use of Needles for Injection in Six Months Prior to Interview

	Baseline N=1622		Final N=1643		
	N	(%)	N	(%)	*p-value*
Gave, lent or sold needles previously used by self	**n=1620**		**n=1643**		
Yes	219	(13.5)	217	(13.2)	
No	1401	(86.5)	1426	(86.8)	
Frequency of giving, selling or lending needles previously used by self	**n=219**		**n=217**		
Every time	13	(5.9)	10	(4.6)	
Frequently	25	(11.4)	28	(12.9)	
Sometimes	62	(28.3)	58	(26.7)	
Hardly ever	119	(54.3)	121	(55.8)	
Used a needle that had previously been used by someone else	**n=1618**		**n=1642**		
Yes	308	(19.0)	261	(15.9)	*
No	1310	(81.0)	1381	(84.1)	
Frequency of using a needle that had previously been used by someone else	**n=308**		**n=261**		
Every time	15	(4.9)	10	(3.8)	
Frequently	30	(9.7)	21	(8.0)	
Sometimes	74	(24.0)	63	(24.1)	
Hardly ever	189	(61.4)	167	(64.0)	
Injected with needles without knowing if they had been previously used by someone else	**n=1606**		**n=1634**		
Yes	225	(14.0)	172	(10.5)	**
No	1381	(86.0)	1462	(89.5)	
Frequency of injecting with needles without knowing if they had been previously used by someone else	**n=225**		**n=172**		
Every time	2	(0.9)	2	(1.2)	
Frequently	13	(5.8)	9	(5.2)	
Sometimes	52	(23.1)	35	(20.3)	
Hardly ever	158	(70.2)	126	(73.3)	

*** p≤0.05**
**** p≤0.01**

In terms of reasons for ever injecting with a needle known to have been used by someone else, resource-associated reasons continued to predominate over individual reasons. However, a significant decline was observed in the proportion of final participants (48%) compared with baseline participants (54%) who explained it was because needles were hard to get, in the proportion of final participants (10%) compared with baseline participants (17%) who explained that their behaviour was due to the fact that they did not know where to go to get sterile needles and in the proportion of final participants (2%) compared with baseline participants (5%) who explained that their behaviour was due to the fact that the NEP would not give them as many needles as they needed. (Data not shown.)

Overall, individual reasons were less frequently reported; although declines were observed in these behaviours. For example, always sharing with other people was reported by 2% of final participants and by 5% of baseline participants; always sharing with their sexual partner by 22% of final and by 23% of baseline participants, 27% of final participants compared with 35% of baseline participants explained it was because they were too high, and 24% of final participants compared with 27% of baseline participants explained it was the person looked or told them that they were "clean." (Data not shown.)

3.8.2 Multi-person use (sharing) of drug preparation and injection preparation equipment

Water

A significant decline in engagement in the practice of using water in the six months prior to interview that had been previously used by someone else was observed between the two evaluation time points. Eighteen per cent of final participants compared with 23% of baseline participants reported this practice ($p<0.01$). In addition, a non-significant decline was observed in frequency of engagement in this practice; 38% of final participants compared with 42% of baseline participants reported sharing water "every time" or "frequently".

Table 37 HCV and HIV-Related Risk Behaviours and Practices: Engagement in Sharing Water in Six months Prior to Interview

	Baseline N=1622		Final N=1643		
	N	(%)	N	(%)	*p-value*
Used WATER previously used by someone else	**n = 1613**		**n = 1630**		
Yes	363	(22.5)	298	(18.3)	**
No	1250	(77.5)	1332	(81.7)	
Frequency of using water previously used by someone else	**n = 335**		**n = 291**		
Every time	68	(19.2)	49	(16.8)	
Frequently	79	(22.3)	63	(21.6)	
Sometimes	104	(29.3)	99	(34.0)	
Hardly ever	104	(29.3)	80	(27.5)	

**** p≤0.01**

Filters

Engagement, in the six months prior to interview, in the practice of using previously-used filters did not significantly differ between the two evaluation time points; 15% of baseline participants and 14% of final participants reported this practice. However, a non-significant decline was observed in the proportion of final participants (44%) compared to baseline participants (47%) reporting sharing filters "every time" or "frequently".

Table 38 HCV and HIV-Related Risk Behaviours and Practices: Engagement in Sharing Filters in Six Months Prior to Interview

	Baseline N=1622		Final N=1643		
	N	(%)	N	(%)	*p-value*
Used FILTERS previously used by someone else	**n = 1612**		**n = 1633**		
Yes	244	(15.1)	225	(13.8)	
No	1368	(84.9)	1408	(86.2)	
Frequency of using filters previously used by someone else	**n = 237**		**n = 221**		
Every time	48	(20.3)	43	(19.5)	
Frequently	63	(26.6)	53	(24.0)	
Sometimes	65	(27.4)	64	(29.0)	
Hardly ever	61	(25.7)	61	(27.6)	

Cookers

Although still at a high level of engagement, a significant decline in the six months prior to interview in engagement in the practice of using cookers previously used by someone else was observed. Twenty-eight percent of final participants compared with 32% of baseline participants reported this practice (p<0.01). A significant decline was also observed in the frequency of engagement in this practice; a smaller proportion of final participants (37%) compared to baseline participants (44%) reported sharing cookers "every time" or "frequently" (p=0.5).

Table 39 HCV and HIV-Related Risk Behaviours and Practices: Engagement in Sharing Cookers in Six Months Prior to Interview

	Baseline N=1622		Final N=1643		
	N	(%)	N	(%)	*p-value*
Used COOKERS previously used by someone else	**n = 1613**		**n = 1629**		
Yes	518	(32.1)	452	(27.7)	**
No	1095	(67.9)	1177	(72.3)	
Frequency of using cookers/spoons previously used by someone else	**n = 506**		**n = 444**		
Every time	99	(19.6)	71	(16.0)	*
Frequently	122	(24.1)	94	(21.2)	
Sometimes	128	(25.3)	147	(33.1)	
Hardly ever	157	(31.0)	132	(29.7)	

*** p≤0.05**
**** p≤0.01**

Tourniquets

A significant decline in absolute engagement in the practice of using tourniquets in the six months prior to interview previously used by someone else was observed. Nineteen percent of final participants compared with 23% of baseline participants reported this practice ($p<0.01$). However, a non-significant increase in the frequency of engagement in this practice was observed; 45% of final participants compared to 43% of baseline participants reported sharing tourniquets "every time" or "frequently".

Table 40 HCV and HIV-Related Risk Behaviours and Practices: Engagement in Sharing Tourniquets in the Six Months Prior to Interview

	Baseline N=1622		Final N=1643		
	N	(%)	N	(%)	*p-value*
Used TOURNIQUETS previously used by someone else	**n = 1616**		**n = 1636**		
Yes	375	(23.2)	309	(18.9)	**
No	1241	(76.8)	1327	(81.1)	
Frequency of using tourniquets previously used by someone else	**n = 362**		**n = 294**		
Every time	63	(17.4)	60	(20.4)	
Frequently	92	(25.4)	73	(24.8)	
Sometimes	98	(27.1)	83	(28.2)	
Hardly ever	109	(30.1)	78	(26.5)	

**** p≤0.01**

Acidifiers

Engagement in the practice of breaking down drugs with an acidifier previously used by someone else was reported by a significantly smaller proportion of final participants (8%) than baseline participants (12%) (p=0.001). However, as observed in the practice of sharing tourniquets, a non-significant increase in the frequency of engagement in sharing acidifiers was observed; 42% of final participants compared to 40% of baseline participants reported sharing tourniquets "every time" or "frequently".

Table 41 HCV and HIV-Related Risk Behaviours and Practices: Engagement in Sharing Acidifiers in Six Months Prior to Interview

	Baseline N=1622		Final N=1643		
	N	**(%)**	**N**	**(%)**	***p-value***
Used ACIDIFIERS previously used by someone else	**n = 1612**		**n = 1616**		
Yes	186	(11.5)	128	(7.9)	***
No	1426	(88.5)	1488	(92.1)	
Frequency of using acidifiers previously used by someone else	**n = 176**		**n = 123**		
Every time	31	(17.6)	23	(18.7)	
Frequently	39	(22.2)	29	(23.6)	
Sometimes	56	(31.8)	44	(35.8)	
Hardly ever	50	(28.4)	27	(22.0)	

***** p≤0.001**

Alcohol swabs

Although engagement in sharing alcohol swabs was low at both evaluation time points, a significant decline in the proportions of final participants reporting this practice compared with baseline participants was observed; 3% and 5% respectively (p<0.01). Frequency of engagement in sharing alcohol swabs remained high however, with no significant difference between the proportion of final participants (45%) and the proportion of baseline participants (40%) who reported sharing alcohol swabs **"**every time" or "frequently".

Table 42 HCV and HIV-Related Risk Behaviours and Practices: Engagement in Sharing Alcohol Swabs in Six Months Prior to Interview

	Baseline N=1622		Final N=1643		
	N	**(%)**	**N**	**(%)**	***p-value***
Used ALCOHOL SWABS previously used by someone else	**n = 1610**		**n = 1631**		
Yes	76	(4.7)	43	(2.6)	**
No	1534	(95.3)	1588	(97.4)	
Frequency of using alcohol swabs previously used by someone else	**n = 70**		**n = 42**		
Every time	13	(18.6)	5	(11.9)	
Frequently	15	(21.4)	14	(33.3)	
Sometimes	23	(32.9)	10	(23.8)	
Hardly ever	19	(27.1)	13	(31.0)	

**** p≤0.01**

3.8.3 Multi-person use (sharing) of crack-smoking equipment

In comparison to the rates of engagement in sharing drug preparation and drug injection equipment, participants reported higher rates of passing on and using previously-used crack smoking equipment at both baseline and final evaluation points. No significant differences were observed among the proportions of final and baseline participants who reported engagement in passing on or smoking with previously used equipment in the six months prior to their interview and no significant differences were observed in the frequency with which participants engaged in these practices.

As shown in Table 43, in the six months prior to their interview, over three-quarters of both baseline participants (78%) and final participants (78%) who injected drugs and who also smoked crack reported they had passed on to other smokers their own crack smoking equipment which they had previously used. Although a modest decline in the proportion of participants reporting doing so "every time" or "frequently" was observed between the baseline (56%) and final time points (54%), this difference was not statistically significant.

Similarly, the vast majority of both baseline (80%) and final participants (78%) who injected drugs and who also smoked crack reported smoking crack with equipment previously used by someone else; this modest decline was not significant. Among those participants who reported smoking with previously-used equipment, a modest increase was observed between the proportion of final participants (49%) compared with the proportion of baseline participants (48%) who reported doing so "every time" or "frequently".

Table 43 HIV and HCV-Related Risk Behaviours and Practices: Multi-person Use of Crack-smoking Equipment in Six Months Prior to Interview

	Baseline N=1051		Final N=982		
	N	(%)	N	(%)	*p-value*
Lent drug smoking equipment previously used by self	**n=1039**		**n=967**		
Yes	808	(77.8)	756	(78.2)	
No	231	(22.2)	211	(21.8)	
Frequency of lending drug smoking equipment previously used by self	**n=808**		**n=756**		
Every time	191	(23.6)	186	(24.6)	
Frequently	261	(32.3)	224	(29.6)	
Sometimes	197	(24.4)	188	(24.9)	
Hardly ever	159	(19.7)	158	(20.9)	
Used drug smoking equipment previously used by someone else in six months prior to interview	**n=1039**		**n=968**		
Yes	834	(80.3)	752	(77.7)	
No	205	(19.7)	216	(22.3)	
Frequency of using drug smoking equipment previously used by someone else	**n=834**		**N=752**		
Every time	164	(19.7)	158	(21.0)	
Frequently	234	(28.1)	207	(27.5)	
Sometimes	233	(27.9)	202	(26.9)	
Hardly ever	203	(24.3)	185	(24.6)	

3.9 HIV AND HCV INFECTION

3.9.1 HIV Testing

As shown in Table 44, a significant increase in the proportions of participants undergoing a blood test to test for the presence of HIV was observed between baseline participants (84%) and final participants (86%)(p<0.05). Although a slightly higher proportion of final participants (59%) compared with baseline participants (58%) had tested within a year of their interview, this difference was not statistically different.

HIV testing, with the opportunity to learn of and adopt HIV-preventive behaviours and to learn about treatment, is maximally effective when the result of the HIV blood test is known. Virtually all of the IDUs participating in the baseline interviews (99%) and final interviews (98%) who had undergone testing had returned to collect the results of their most recent HIV test when they were available.

A significant change in the pattern of test locations was observed. A smaller proportion of final (24%) compared with baseline participants (27%) reported that they had undertaken their most recent HIV test with a family physician, and a smaller proportion of final (14%) compared with baseline participants (16%) reported that they had undergone their most recent HIV test in a hospital. Conversely, a greater proportion of final (17%) compared with baseline participants (14%) reported that they had undergone their most recent HIV test while in jail and a greater proportion of final (13%) compared with baseline participants (10%) reported that they had undertaken their most recent HIV test at a drug treatment program. Equal proportions of both final (13%) and baseline participants (13%) reported that they had undertaken their most recent HIV test at a community health centre. A NEP was seldom accessed for HIV testing by either final (4%) or baseline participants (5%); although slightly more final (7%) than baseline (6%) participants reported undergoing their most recent HIV test at a Health Unit (p<0.001).

Table 44 HIV and HCV Infection: Testing for HIV

	Baseline N=1622		Final N=1643		
	N	(%)	N	(%)	*p-value*
EVER tested for HIV	**n=1618**		**n=1642**		
Yes	1357	(83.9)	1419	(86.4)	*
No	234	(14.5)	208	(12.7)	
Don't know	27	(1.7)	15	(0.9)	
Date last tested for HIV	**n=1313**		**n=1373**		
≤1 year ago	767	(58.4)	814	(59.3)	
>1 year - ≥2 years	231	(17.6)	248	(18.1)	
>2 years ago	315	(24.0)	311	(22.7)	
Location where last HIV test undertaken	**n=1350**		**n=1413**		***
Canadian Blood Services Donation	6	(0.4)	0	(0.0)	
Community Health Centre	170	(12.6)	183	(13.0)	
Family Physician	364	(27.0)	344	(24.3)	
Hospital	212	(15.7)	193	(13.7)	
Jail	182	(13.5)	237	(16.8)	
Health Unit	74	(5.5)	101	(7.1)	
Needle Exchange Program (NEP)	73	(5.4)	62	(4.4)	
Prenatal Testing	0	(0.0)	3	(0.2)	
Drug Treatment Program	138	(10.2)	178	(12.6)	
Immigration	0	(0.0)	0	(0.0)	
Anonymous Testing Program	4	(0.3)	6	(0.4)	
Methadone Clinic	68	(5.0)	53	(3.8)	
Outreach Worker	5	(0.4)	3	(0.2)	
Clinic (Walk-In, Drop-In)	21	(1.6)	18	(1.3)	
AIDS Service Organization (ASO)	0	(0.0)	8	(0.6)	
HIV/HCV Specialist/Hepatologist	5	(0.4)	5	(0.4)	
STI Clinic	0	(0.0)	2	(0.1)	
Other	28	(2.1)	17	(1.2)	
Self-report of most recent HIV test result	**n=1353**		**n=1415**		
HIV positive	82	(6.1)	58	(4.1)	
HIV negative	1217	(89.9)	1284	(90.7)	
Indeterminate	2	(0.1)	3	(0.2)	
Waiting for results	33	(2.4)	47	(3.3)	
Did not go back to get results	19	(1.4)	23	(1.6)	

***p≤0.05**
***** p≤0.001**

3.9.2 HIV Status

A non-significant decline in the self-reported HIV prevalence rate among final compared with baseline participants was observed.

Among the 1,299 IDUs participating in the baseline interviews who had undergone testing for HIV and had collected conclusive results, 6% reported receiving a positive result from their most recent HIV blood test. Based on the self-reported test results, the HIV prevalence rate with a 95% confidence interval for the cross sectional sample of IDUs participating in the provincial evaluation baseline interviews and who had undergone HIV testing and received conclusive results was 6.3% (95% CI: 5.0, 7.6).

Among the 1,342 IDUs participating in the final interviews who had undergone testing for HIV and had collected conclusive results, 4% reported receiving a positive result from their most recent HIV blood test. Based on the self-reported test results, the rate of HIV prevalence with a 95% confidence interval for the cross sectional sample of IDUs participating in the final provincial evaluation interviews was 4.3% (95% CI: 3.2, 5.4).

The self-reported provincial HIV prevalence rate of 4% among participants in the final interviews masks the wide range of final self-reported HIV prevalence rates reported at the different sites.

As shown in Table 45, among 64 IDUs in Sudbury who had collected conclusive results, 20% reported a positive result from their most recent HIV blood test as did 15% of 62 IDUs in Thunder Bay, 12% of 60 IDUs in Ottawa, 9% of 23 IDUs in Eastern Ontario, and 7% of 14 IDUs in Peel. At the other end of the scale, no participant in the final interviews from Health Units in Leeds, Grenville and Lanark, Oxford County, Simcoe Muskoka, Hastings/ Prince Edward, Perth, Lambton, Northwestern and Porcupine reported a positive result from their most recent HIV blood test.

Despite the high HIV prevalence rate among participants in the final interviews in Thunder Bay, a significant decrease in the proportion of participants reporting a positive HIV test results was observed; 34% of participants in the baseline interviews reported a positive HIV test result compared with 15% of participants in the final interviews ($p<0.01$).

Table 45 HIV and HCV Infection: Self-report of HIV Prevalence by Health Region

Site	Baseline (N[1])	Baseline %	Final (N[1])	Final %	*p-value*
Algoma	(45)	11.1	(54)	3.7	
Chatham-Kent	(61)	8.2	(57)	1.8	
Durham	(58)	0.0	(64)	3.1	
Eastern Ontario	(33)	9.1	(23)	8.7	
Hamilton	(60)	6.7	(62)	4.8	
Hastings, Prince Edward	(58)	0.0	(56)	0.0	
Kingston	(64)	3.1	(67)	1.5	
Lambton	(50)	0.0	(54)	0.0	
Leeds, Grenville & Lanark	(26)	7.7	(14)	0.0	
Middlesex-London	(67)	3.0	(62)	3.2	
Niagara Region	(60)	8.3	(51)	3.9	
Northwestern	(32)	0.0	(51)	0.0	
Ottawa	(52)	21.2	(60)	11.7	
Oxford County	(35)	0.0	(42)	0.0	
Peel	(17)	5.9	(14)	7.1	
Perth	(35)	0.0	(46)	0.0	
Peterborough	(55)	3.6	(62)	4.8	
Porcupine	(20)	5.0	(37)	0.0	
Simcoe Muskoka	(57)	0.0	(58)	0.0	
Sudbury	(63)	12.7	(64)	20.3	
Thunder Bay	(53)	34.0	(62)	14.5	**
Toronto	(61)	6.6	(64)	6.3	
Waterloo	(59)	0.0	(63)	1.6	
Wellington-Guelph	(60)	6.7	(56)	3.6	
Windsor-Essex County	(54)	5.6	(55)	3.6	
York	(64)	3.1	(44)	2.3	

[1] N includes only those IDUs who had undergone testing for HIV and who had collected conclusive test results.

**** p≤0.01**

3.9.3 Hepatitis C (HCV) Testing

Uptake of testing to detect the presence of HCV antibodies was somewhat lower among participants in both the baseline and the final interviews compared with that reported for HIV. However, as shown in Table 46, an increase in the proportions of participants undergoing a blood test to determine the presence of HCV antibodies was observed between final participants (84%) and baseline participants (82%) which was marginally significant (p=0.06). Although a slightly higher proportion of final participants (57%) compared with baseline participants (55%) had tested within a year of their interview, this difference again, was not statistically significant. Virtually all baseline (99%) and final interview participants (99%) who had been tested had returned to collect the result of their most recent HCV test when available.

A change in the pattern of test locations, in the same direction as HIV testing locations, was observed; and, as was the case of HIV testing, this difference in testing locations between baseline and final participants was statistically significant (p=0.01). A smaller proportion of final (25%) compared with baseline participants (28%) reported that they had undertaken their most recent HCV test with a family physician, and a smaller proportion of final (14%) compared with baseline participants (15%) reported that they had undergone their most recent HCV test in a hospital. Conversely, a greater proportion of final (16%) compared with baseline participants (14%) reported that they had undergone their most recent HCV test while in jail and a greater proportion of final (14%) compared with baseline participants (12%) reported that they had undertaken their most recent HIV test at a drug treatment program. As with HIV testing, a NEP was seldom accessed for HCV testing by either final (4%) or baseline participants (5%) and similarly, a slight increase was observed in the proportion of final participants (7%) compared with baseline participants (5%) who had undergone their most recent HCV test at a Health Unit.

Table 46 HIV and HCV Infection: Testing for HCV

	Baseline N=1622		Final N=1643		
	N	(%)	N	(%)	*p-value*
EVER tested for HCV	**n=1574**		**n=1607**		
Yes	1290	(82.0)	1357	(84.4)	
No	284	(18.0)	250	(15.6)	
Date last tested for HCV	**n=1242**		**n=1287**		
≤1 year ago	682	(54.9)	731	(56.8)	
>1 year - ≥2 years	211	(17.0)	234	(18.2)	
>2 years ago	349	(28.1)	322	(25.0)	
Location where last HCV test undertaken	**n=1281**		**n=1339**		**
Canadian Blood Services Donation	6	(0.5)	0	(0.0)	
Community Health Centre	155	(12.1)	168	(12.5)	
Family Physician	360	(28.1)	337	(25.2)	
Hospital	195	(15.2)	184	(13.7)	
Jail	177	(13.8)	218	(16.3)	
Health Unit	65	(5.1)	87	(6.5)	
Needle Exchange Program (NEP)	60	(4.7)	55	(4.1)	
Prenatal Testing	0	(0.0)	2	(0.1)	
Drug Treatment Program	151	(11.8)	188	(14.0)	
Immigration	0	(0.0)	0	(0.0)	
Anonymous Testing Program	2	(0.2)	2	(0.1)	
Methadone Clinic	71	(5.5)	54	(4.0)	
Outreach Worker	3	(0.2)	3	(0.2)	
Clinic (Walk-In, Drop-In)	11	(0.9)	18	(1.3)	
AIDS Service Organisation	0	(0.0)	5	(0.4)	
HIV/HCV Specialist	3	(0.2)	1	(0.1)	
Hepatologist	0	(0.0)	0	(0.0)	
STI Clinic	0	(0.0)	2	(0.1)	
Other	22	(1.7)	15	(1.1)	
Self-report of most recent HCV test result	**n=1281**		**n=1346**		*
HCV positive	650	(50.7)	637	(47.3)	
HCV negative	598	(46.7)	644	(47.8)	
Indeterminate	8	(0.6)	15	(1.1)	
Waiting for results	15	(1.2)	32	(2.4)	
Did not go back to get results	10	(0.8)	18	(1.3)	

*** p≤0.05**
**** p≤0.01**

3.9.4 HCV Status

As with HIV prevalence, a decrease in the self-reported HCV prevalence rate among final compared with baseline participants was observed. However, in the case of HCV prevalence, this reduction in self-reported HCV prevalence between the baseline participants and the final interview participants was significant ($p<0.05$).

Among the 1,248 baseline participants who had undergone testing for HCV and had collected conclusive results, 52% reported receiving a positive result from their most recent HCV blood test. Based on the self-reported test results, the rate of HCV prevalence with a 95% confidence interval for the cross sectional sample of IDUs participating in the provincial evaluation baseline interviews was 52.1% (95% CI: 49.3, 54.9).

Among the 1,281 IDUs in the final interviews who had undergone testing for HCV and had collected conclusive results, 50% reported receiving a positive result from their most recent HCV blood test. Based on the self-reported test results, the rate of HCV prevalence with a 95% confidence interval for the cross sectional sample of IDUs participating in the final provincial evaluation interviews was 49.7% (95% CI: 47.0, 52.4).

The self-reported provincial HCV prevalence rate of 50% masks the wide range of HCV prevalence rates reported at the different sites. As shown in Table 47, among 13 IDUs in Peel, 85% reported a positive result from their most recent HCV blood test as did 73% of 55 IDUs in Niagara Region, 71% of 66 IDUs in Kingston, 68% of 63 IDUs in Sudbury, 70% of 59 IDUs in Hamilton and 64% of 64 IDUs in Toronto. Lower self-reported HCV prevalence rates were observed among participants from Northwestern, Perth and Oxford County; among 45 IDUs in Northwestern, 11% reported a positive result from their most recent HCV blood test as did 25% of 40 IDUs in Perth and 25% of 40 IDUs in Oxford County.

A significant decrease in the proportion of participants from Waterloo reporting a positive HCV test result was observed; 51% of participants in the baseline interviews reported a positive HCV test result compared with 29% of participants in the final interviews ($p<0.05$).

Table 47 HIV and HCV Infection: Self-report of HCV Prevalence by Health Region

Site	Baseline (N[1])	Baseline %	Final (N[1])	Final %	*p-value*
Algoma	(47)	61.7	(49)	44.9	
Chatham-Kent	(58)	63.8	(57)	56.1	
Durham	(57)	45.6	(64)	46.9	
Eastern Ontario	(29)	37.9	(23)	34.8	
Hamilton	(59)	62.7	(59)	69.5	
Hastings, Prince Edward	(53)	43.4	(54)	46.3	
Kingston	(61)	62.3	(66)	71.2	
Lambton	(50)	20.0	(48)	31.3	
Leeds, Grenville & Lanark	(26)	53.8	(11)	63.6	
Middlesex-London	(65)	66.2	(62)	56.5	
Niagara Region	(58)	65.5	(55)	72.7	
Northwestern	(29)	17.2	(45)	11.1	
Ottawa	(58)	65.5	(60)	55.0	
Oxford County	(30)	13.3	(40)	25.0	
Peel	(14)	50.0	(13)	84.6	
Perth	(26)	26.9	(40)	25.0	
Peterborough	(56)	66.1	(63)	57.1	
Porcupine	(16)	50.0	(31)	25.8	
Simcoe Muskoka	(58)	41.4	(54)	35.2	
Sudbury	(65)	69.2	(63)	68.3	
Thunder Bay	(48)	58.3	(57)	50.9	
Toronto	(65)	60.0	(64)	64.1	
Waterloo	(55)	50.9	(51)	29.4	*
Wellington-Guelph	(55)	40.0	(58)	50.0	
Windsor-Essex County	(51)	49.0	(51)	56.9	
York	(59)	45.8	(43)	39.5	

[1] N includes only those IDUs who had undergone testing for HCV and who had collected conclusive test results.

*** p≤0.05**

4.0 DISCUSSION

Implementation of the OHRDP

Data from the on-line questionnaire completed by managers and staff during May 2007 for the purposes of Phase One of the Process Evaluation established the status of distribution of each item at the time of the baseline interviews in each public health region.

While the previous analyses assume full implementation of the OHRDP at all sites, examination of these early process data permitted an analysis based on full compared with partial implementation of the OHRDP in terms of items distributed.

The process data revealed that overall approximately one-third of public health units (32%) were not distributing all supplies; 31% were not distributing acidifiers, 24% were not distributing cookers, 17% were not distributing filters and 10% were not distributing tourniquets. The baseline participants were divided into two groups; the ACC Group whose local Public Health Unit (PHU) had fully implemented the OHRDP for more than two months at the time of the outcome evaluation baseline interviews and the NOACC Group whose local PHU had not fully implemented the OHRDP or had implemented the OHRDP for less than two months at the time of the baseline outcome interviews.

Significant effects of less than full implementation of the program were observed on the HIV- and HCV-related practice of the multi-person use of drug preparation and injection preparation equipment. A significantly greater proportion of participants in the NOACC group (37%) compared with the proportion of participants in the ACC Group (26%) reported sharing cookers ($p<0.001$); a significantly greater proportion of participants in the NOACC group (27%) compared with the proportion of participants in the ACC Group (21%) reported sharing cookers ($p<0.05$); a significantly greater proportion of participants in the NOACC group (20%) compared with the proportion of participants in the ACC Group (13%) reported sharing filters ($p<0.001$); and a significantly greater proportion of participants in the NOACC group (27%) compared with the proportion of participants in the ACC Group (21%) reported sharing tourniquets ($p<0.01$).

The majority of the sites (70%) not distributing the full range of harm reduction materials available through the OHRDP cited either the lack of approval from their regional Medical Officer of Health or lack of approval from their Regional Board of Health.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 OHRDP Successful in reducing HIV- and HCV-related Risk Behaviours

The objective of this outcome evaluation was to describe the impact of the distribution of additional harm reduction supplies such as sterile water, sterile alcohol swabs, new filters, new and sterile cookers, sterile acidifiers and new tourniquets on the HIV and HCV-related risk practice of sharing drug preparation and injection preparation equipment. As previously discussed, engagement in the practice of using drug preparation and injection preparation equipment previously used or currently being used by some else poses significant risk of HIV and HCV transmission. The observed significant declines in engagement in these practices and behaviours among final participants - interviewed several months post-implementation of the OHRDP, compared with the proportions of baseline participants - interviewed concurrent with the implementation of the OHRDP, are arguably associated with the implementation of the OHRDP. For example, significantly smaller proportions of participants completing final interviews compared with the proportion of participants completing baseline interviews reported lower levels of engagement in sharing water to dissolve drugs, in sharing filters, cookers, tourniquets, acidifiers and alcohol swabs – all materials distributed free of charge and on request through the OHRDP. In addition, among those participants continuing to share water, cookers and filters declines were observed in the frequency of engagement.

The use of readily available materials such as tap or puddle water or water from a urinal to dissolve drugs and to rinse needles, the use of cigarette filters, cotton buds or tampons to filter drugs, the use of water, alcohol, ether, iodine and saliva to clean skin prior to injection, the use of clothing and body parts to tie off a vein prior to injection and the use of lemon juice, vinegar or pickle juice to break down drugs has been demonstrated to be associated with significant health problems for the user [(26)]. The significant declines observed in the exclusive use of these non-recommended materials and the corresponding significant increase in the exclusive use of only recommended materials reported by a greater proportion of participants in the final interviews compared with the proportion of participants in the baseline

interviews can also similarly be argued to be linked to the impact of the implementation of the OHRDP.

In addition, a more indirect benefit of the implementation of the OHRDP was the increase in use of needle exchange programs (NEPs). Significantly greater proportions of final compared with baseline participants reported the NEP as their primary source for the collection of sterile water, new filters, new and sterile cookers, new tourniquets, new acidifiers and sterile alcohol swabs. This development suggests potential greater exposure to the wide range of other harm reduction and health improving resources and materials available at NEPs including education on safer injecting and sexual practices.

5.2 Areas of Concern

5.2.1 Demonstrated capacity of regional Medical Officers of Health to resist full implementation of the OHRDP

While the above two observations are compelling testaments to the success of the program and demonstrate the critical importance of its sustained continuance, two areas of concern must be addressed.

The first is the demonstrated capacity of individual Medical Officers of Health to prevent the full implementation of the program in their region. As previously discussed, the impact of the non-distribution of harm reduction materials by one-third of Public Health Units appears to have had significant impacts on the ability of people who inject drugs to engage in the recommended practice of single use of these materials and to refrain from multi-person use of these materials.

5.2.3 Program development to include the distribution of safer inhalation materials for people who smoke drugs

Levels of engagement in the practices of smoking crack with equipment already used by someone else and passing on to others smoking equipment that had already been used were unacceptably high. These two practices were reported by over three-quarters of participants in both the baseline and final interviews. As approximately two-thirds of the injection drug users participating in both the baseline and final interviews reported smoking crack as well as injecting drugs in the six months prior to their interviews, the scope of this problem is not insubstantial. Emerging epidemiologic and virologic evidence documents the biological plausibility of HIV and, most particularly, HCV transmission through the shared use of devices to smoke crack. The OHRDP is well positioned to quickly and effectively assume a key and pivotal role in ensuring the reduction of harm through this method of ingestion of drugs, a method which demands the same level of resources and attention as drug use by injection.

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7.0 APPENDIX

Table A1 List of Site Administrators and Interviewers

Site Name[1]	Site Administrator(s)	Interviewer(s)[2]
Algoma PHU	Elizabeth Larocque	Theresa Balch Mary Russon
Chatham-Kent PHU	Betty Schepens	Thomas Maxwell Debbie Mestermaker
County of Lambton PHU	Rhonda Galler	Beatrice Lennan
Durham PHU, John Howard Society (Durham Region)	Beth Whalen	Kertis John
Eastern Ontario HU	Linda Cleroux	Angie Jesmer Lisa Martin
Hamilton PHU, The AIDS Network	Suzanne Newmark Joe Whelan	Ursula Brown Michelle Vebert
Hastings & Prince Edward Counties HU	Bill Sherlock Debbie Laughton	Debbie Breau Brent Taylor
Kingston Street Health Centre Kingston PHU	Ron Shore	Matt Silburn
Leeds, Grenville, Lanark District HU	Muriel Campbell Melanie Ramsey Violet Capper	Kari Evoy Gail Larocque
Middlesex-London HU, AIDS Committee of London	Janine Luce Brian Lester	Karen Burton Natalie Hebert
Niagara Regional HU, AIDS Niagara – Streetworks	Rhonda Thompson	Colin Willoughby
Northwestern HU	Arlene Lesenke	David Schwartz Eva Shields Joan McGogy Judy Roy Kim Vares Lori Green Shelly McLarty

Site Name[1]	Site Administrator(s)	Interviewer(s)[2]
		Sue Wood Twyla Berube Moyra Koivukosky
Ottawa PHU, The Site NEP	Paul Lavigne	Sarah Brown Leslie Fleming
Oxford County HU	Mary Metcalfe Lisa Gillespie	Ruth Ferris
Peterborough AIDS Resource Network, Haliburton, Kawartha, Pine Ridge HU & Peterborough City County HU	Charles Shames Owen McEwan	Heather Koller Christine Hignett
Peel Regional HU – Peel Works NEP	Sherry Baidwan Vanessa Secan	Danny Bilan Clare Hay Lisa Marie Middleton
Perth District HU	Jane DeBlock	Tara Johnson
Porcupine PHU – The Quill NEP	Lynn Leggett Carole Guillemette	Terry Boucher
Simcoe Muskoka District HU	Donna Milne Louise Thompson	Pauline Leroux
Sudbury Action Centre for Youth, Sudbury District HU	Marlene Gorman	Kelly Sinclair Doris Schwar Julie Gorman
Thunder Bay HU - Superior Points NEP, AIDS Thunder Bay	Don Young Michael Sobota	Lori Frazen Gail Linklater Stuart Boland Chris Barbini
Toronto PHU - The Works NEP	Shaun Hopkins	Emily Cooper Patrick Shaw
Waterloo PHU	Heidy Choi-Keirstead Karen Verhoeve	Julie Porter Rob Smith Leesa Stephenson
Wellington-Dufferin-Guelph PH,	Alison Burnett	Kimberly Patton

Site Name[1]	Site Administrator(s)	Interviewer(s)[2]
AIDS Committee of Guelph	Kimberly Patton Oscar Reimer	
AIDS Committee of Windsor – New Points NEP, Windsor-Essex HU	Sharron Aaron Lori Baxter	Lauren St.Louis
York Region Health Services Department	Ethel Achampong	Sue Williamson Mohamed Mjasiri

1 Several of the Site Administrators were also interviewers for their region.

2 PHU = Public Health Unit, HU = Health Unit, PH = Public Health.