



# HIV Point-of-Care Testing in Canadian Settings

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## A Scoping Review

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## **Preamble**

The CIHR Centre for REACH in HIV/AIDS (REACH 2.0) is a national partnership among people living with HIV, community-based organizations and other front-line service providers, health researchers from over 25 academic institutions across Canada, and federal, provincial, and regional policy makers. Our mission is to foster and undertake collaborative interdisciplinary research and training to understand the factors driving the epidemic, find innovative solutions, and move research evidence into action. The CIHR CBR Collaborative: A Program of REACH is working with partners across the country to build capacity in community-based research and support front-line agencies to deliver evidence-based solutions to the pressing needs of their communities and the populations they serve. These two CIHR funded REACH centres work together to provide the national-level infrastructure that allows our members to collaborate across geographic boundaries. Our goal is to create and support inter-professional research, policy, and community research teams.

More information: <http://www.reachprogramsscience.ca/>

## **Point-of-Care Testing within REACH**

REACH is spearheading research on Point-of-care testing (POCT) across all regions with the goal of generating a set of evidence-based best practices that can be used to develop and implement effective POCT interventions across the country. This will be done through a scoping review to identify:

- Existing HIV POCT interventions
- Strategies to connect with hard-to-reach groups, and
- Relevant policies and training practices or guidelines.

REACH 2.0 will expand this work to look more broadly at scaling up existing technologies and testing new technologies (such as home testing and combined STI-HIV-HCV testing).

## Project Aims

HIV Point-of-Care Testing (POCT) has been available in Canada since 2005. To date, these programs have been implemented in large Canadian cities such as Vancouver, Montreal, Toronto, Edmonton and Winnipeg. HIV POCT provides an important public health benefit for the estimated one quarter of Canadians living with HIV who are unaware of their HIV status (Public Health Agency of Canada, 2012). This benefit is twofold. First, HIV testing significantly improves the likelihood that clients will receive test results as results are conveniently available within minutes of testing (Weis et al., 2009; Carey et al., 2008). Second, it can help to facilitate timely linkages to care and treatment as clients receiving a positive result are provided post-test counselling and referrals to care (Basta et al., 2015; Ryder et al., 2013).

The focus of this scoping review was limited to the utilization of HIV point-of-care-testing in Canadian settings. It is one of three scoping reviews examining the use of HIV POCT in the following: 1. HIV POCT in non-urban settings, 2. Nationally (across Canada), and 3. Among health-care providers.

The focus of this scoping review is threefold:

1. To understand what is known about the utilization and implementation of HIV POCT in Canadian settings
2. To identify knowledge gaps in the evidence base
3. To provide evidence that will help shape and set research priorities

## Methods

### Search Strategy

A broad search strategy using a combination of controlled vocabulary and keyword searching was developed to capture literature relating to HIV POCT. The results of this search strategy were used in each of the three reviews. A sample search strategy is available in Appendix A.

The following electronic databases were searched:

- Ovid MEDLINE, including In-Process & Other Non-Indexed Citations (1946 to 3<sup>rd</sup> week August 2014)
- EMBASE (1974 – 25 August 2014)
- EBM Reviews (1991 – 3<sup>rd</sup> Quarter 2014)
- PsycINFO (1806 – 25 August 2014)
- CINAHL (1980 – 25 August 2014)

No language or date limiters were applied.

To supplement the database search, the review team conducted a search of 20 electronic sources for grey literature. The following sites were searched:

- AIDS Committee of Toronto
- ASO411
- BC Centre for Excellence in HIV/AIDS
- Bibliothèque et archives nationales du Québec
- CADTH
- Canadian HIV/AIDS Legal Network
- Canadian Nurses Association
- CATIE and sagecollection.ca
- CHRC
- CIHI
- CIHR Social Research Centre in HIV Prevention
- COCQ-SIDA
- Gay Men's Sexual Health Alliance
- Google custom search: government documents
- Google Scholar
- Health Nexus
- Health Quality Ontario
- INESSS
- Ontario HIV Treatment Network
- Open Grey
- Public Health Agency of Canada

In addition to our online search strategy, we hand searched the reference lists of included articles for additional items of relevance. We also contacted Canadian researchers who are members of the national REACH POCT Working Group. These contacts provided additional grey literature materials as well as further knowledge of ongoing POCT testing programs in Canada.

### **Inclusion Criteria and Study Selection**

Two members of the scoping review team assessed studies identified during the initial database search for relevance based on information in the title & abstract. Studies were included in the broader HIV POCT article set if they met the following criteria:

- Empirical study investigating HIV POCT programs, including articles investigating access & uptake to HIV POCT
- Study published in English or French

Studies that evaluated HIV POCT performance without providing further HIV POCT program descriptions were excluded.

Following the development of the broader HIV POCT article set, two members of the scoping review team assessed articles for eligibility in the Canadian scoping review. Literature from both peer-reviewed journals and grey literature sources were included in this review. Items were included that took place in Canadian locations.

The peer-reviewed database search yielded 6091 records. After duplicates were removed, 3142 were screened for eligibility resulting in the identification of 571 items of potential relevance to this review. The grey literature search produced an additional 14 articles. Items were typically excluded because they did not focus on HIV point-of-care testing and/or the HIV POCT program described was not located in a Canadian setting.

See Appendix B for search strategy decision tree.

### **Data Extraction and Quality Appraisal**

A data extraction sheet in Excel including data extraction guidelines was prepared. The tool was designed to extract information on the citation type, program characteristics, program participants, the evidence base including study design and methodology, and outcomes related to HIV POCT performance characteristics, feasibility, acceptability, preference, satisfaction and impact including loss to follow-up and linkage to care rates. The data extraction tool was piloted with three articles and revised iteratively, as required.

Two trained research assistants independently reviewed and extracted the information for each article included in the review. A calibration exercise was undertaken and eligibility criteria were modified where the agreement between the two reviewers was low (Kappa

<0.5). The reviewers met biweekly to discuss the extracted information and reach consensus. Discrepancies were determined by a third reviewer.

The quality of each study (both quantitative and qualitative) was also assessed using a scoring system based on the criteria for the systematic evaluation of mixed studies reviews (Pluye et al., 2009). The quality score was not used to exclude the weaker studies but rather to identify the overall quality of the evidence base.

## Findings

### Description of Included Studies

A total of 28 studies were identified in this review. Of the 28 items, 11 were from peer-reviewed journals and 17 were from grey literature sources. Thirteen studies were quantitative, four studies were qualitative and 11 studies used mixed-methods approaches. Three articles were written in French and the remaining were written in English.

The 28 articles included in this literature set represent 20 articles which evaluated or described existing HIV POCT programs in Canada while 8 articles elicited opinions including preferences for HIV POCT in Canadian settings.

17 studies surveyed the recipients of HIV POCT, four studies surveyed health-care providers and seven studies surveyed both recipients and providers of HIV POCT.

The majority of studies (50%) were of low quality, 25% were of moderate and 25% were assessed as strong.

### Locations and Settings of Existing HIV Testing Programs

HIV POCT programs are currently operating or have been piloted in the following provinces:

- Alberta (3)
- British Columbia (7)
- Manitoba (2)
- Ontario (4)
- Québec (4)

And in the following settings:

- Aboriginal health/friendship centres (2)
- Addictions facilitates (2)
- Community based organizations (5)
- Community health centres (4)
- Dental offices (3)
- Hospital (4)
- Indoor commercial sex markets (1)
- Primary care centres (1)
- Prisons or correctional facilities (5)
- Sexual health/ HIV clinics (4)
- Street outreach (4)

## **Tester Characteristics**

The majority of test providers were nurses (11), followed by HIV testing counselors (3), outreach workers (3), dental professionals (2), and community-based researchers (1).

## **Client Characteristics**

The MSM population was a focus in five studies respectively. People with a history of substance use were a priority population in five studies while Aboriginal people were the focus of one.

## **HIV POCT Programs in Canada**

The following section focuses primarily on 20 studies that describe or evaluate existing HIV POCT programs. Twelve of the 20 studies demonstrated the use of rapid finger prick technology while 8 studies did not specify the exact technology used.

Nine studies used HIV POCT technologies alone while 9 used HIV POCT technologies in combination with STI testing and 1 study described a multiplex testing strategy whereby POCT technologies were used for HIV, Hepatitis C (HCV) and STI testing.

### **HIV POCT in Prisons: A Pilot Program (Milton, ON)**

The Halton Region Health Department ran a six month pilot program offering HIV POCT to inmates at two provincial correctional facilities. 156 people were simultaneously tested for HIV and gonorrhea and chlamydia with only one reactive test result observed. Satisfaction was very high (98%) among the 156 individuals tested (Halton Region Health Department, 2014).

### **Hassle Free Clinic HIV POCT Program (Toronto, ON)**

For 5 months between December 2001 and April 2002, Hassle Free Clinic offered rapid HIV testing alongside standard testing. Rapid testing was accepted by 1468 (out of 1610) testers making it the preferred option among this client population (Guenter et al., 2008). Of the 1468 rapid tests performed, 22 were reactive and 18 received confirmatory results (Guenter et al., 2003). HIV POCT has since become the standard of care at Hassle Free.

## **Hospital-based Programs**

HIV POCT was offered in hospitals in three Canadian cities including Winnipeg, Manitoba (Becker et al., 2013), Edmonton, Alberta (Lee et al., 2010), and Montreal, Quebec (Pai et al., 2014). Acceptance of HIV POCT was high in this setting with an acceptance rate at 89% or above in all three studies. Of the 7 individuals with confirmed HIV positive results in an emergency department in Winnipeg, Manitoba all 7 individuals were successfully linked to care (Becker et al., 2013). Moreover, patients at both hospitals in Montreal and Winnipeg preferred HIV POCT to conventional testing and would either re-test (Becker et al., 2013) or recommend POCT to others (Pai et al., 2014).

### **Rapid Point-of-Care HIV Testing Demonstration Program (Winnipeg, MB)**

Nine Circles Community Health Centre implemented a one-year pilot program studying the determinants and motivations of HIV POCT use among their clients. Just over half (57.2%) of clients opted for HIV. Transgender people, people with a new partner, people who live in Winnipeg's inner city and men who have sex with men were most likely to accept HIV POCT. The program was successful in reaching 438 individuals and 5 new HIV diagnoses were made. A post-test survey found that 96.6% of clients reported satisfaction with the HIV POCT and 100% said they would opt for POCT in the future (Nine Circles Community Health Centre, 2009).

### **Seek and Treat for Optimal Prevention (S.T.O.P) of HIV/AIDS Program (British Columbia)**

The S.T.O.P HIV/AIDS pilot program was delivered over a three year period by the Vancouver Coastal Health Authority as well as the Northern Interior Health Service Authority in British Columbia (Brodani and Chang, 2014; Fielden et al., 2013). The program has demonstrated success in reaching a broad demographic of people as 17,029 individuals were tested within the first 18 months (Fielden et al., 2013). Moreover, HIV POCT was offered at multiple innovative sites throughout the program's duration including dental clinics (Brondani and Change, 2014; Vancouver STOP Project, 2013a) as well as community centres, single-room occupancy hotels, parks, gay bars and PRIDE events (Vancouver STOP Project, 2013b).

### **SPOT Project (Montréal, Québec)**

The SPOT project is a multidisciplinary research project which was implemented to provide rapid HIV testing services (standard testing was also available at the sites) for men who have sex with men in Quebec. The project was set up in one community setting, specifically chosen for this project, and two clinical settings in Montreal. The project recruited 967 men and looked at many different areas including; virology, psychosocial and the implementation of the program (Veillette-Bourbeau, 2013).

### **Syphilis and HIV Point-of-Care Testing Project (Edmonton, AB)**

A simultaneous syphilis and HIV point-of-care pilot program ran for 18 months in Edmonton, Alberta. The program was targeted to reach priority populations including people with a history of substance use, people with a history of commercial sex work and the MSM population living in Edmonton. HIV POCT was offered in community health centres, bath houses, gay bars and inner city drop in centres, as well as prison and addictions facilities. Over the 18 month study period, 1031 individuals consented to testing. Four people were confirmed HIV positive and all were successfully linked to care. Based on the success of the pilot program, HIV POCT was continued as a standard of care in all outreach settings (Bergman et al., 2013a; Bergman et al., 2013b).

## The Impact of HIV POCT Programs in Canada

The following section focuses on the relationships between HIV POCT and acceptability, feasibility, satisfaction, preference, returned results, losses to follow-up and linkage to care rates. The available evidence was used to assess these outcomes and assigned an evidence rating. These evidence ratings are based on the work of Broeckeaert and Challacombe (2015) that have previously assessed the evidence of POCT testing in North American settings.

**Table 1: Evidence to support POCT in Canadian Settings**

	Strong	Moderate	Limited	None
<b>Acceptability</b>		✓		
<b>Feasibility</b>			✓	
<b>Linkage to care (rates)</b>			✓	
<b>Loss to follow-up (rates)</b>		✓		
<b>Preference (client)</b>			✓	
<b>Reach (never testers)</b>			✓	
<b>Reach (previous testers)</b>			✓	
<b>Returned results (confirmatory testing rates)</b>			✓	
<b>Satisfaction (client)</b>			✓	
<b>Uptake</b>			✓	

**Acceptability:** Acceptability rates were measured in 8 studies and ranged from 52% to 90%. Higher acceptability rates were reported among the MSM population (Bergman et al., 2013) and because HIV POCT results are made available immediately lessening wait times (Halton Region Health Department, 2014; HIV Counselling and Testing Community Advisory Committee, 2010; Thériault, Noël, and Gagnon, 2013.).

**Feasibility:** Three studies measured feasibility and determined that HIV POCT was feasible in hospitals (Pai et al., 2014), sexual health and hiv clinics (Thériault et al., 2013), and outreach settings (Bergman et al., 2013).

**Linkages to Care:** Linkage to care rates were 89% in one study (Vancouver STOP Project, 2013b) and 100% in two (Becker et al., 2013; Bergman et al., 2013). A third study demonstrated that peer HIV POCT helped re-link 324 previously diagnosed individuals to care (PHS Community Services Society, 2013).

**Loss to follow-up:** Losses to follow-up were generally very low ranging from no loss (Nine Circles Community Health Centre, 2009), to a loss of 1.1% (Guenter et al., 2003) and a loss of 3% (Fielden et al., 2013).

**Preferences:** HIV POCT was preferred to conventional standard testing in seven studies. When compared to standard testing, preferences for HIV POCT ranged from 81.1% to 97%. A multiplex strategy in which individuals were tested for HIV, Hepatitis C and STIs was preferred by 97% (n = 109) of those enrolled in the study (Pai et al., 2014). Preferences for HIV POCT were reported by study participants in multiple settings including sexual health clinics (Gahagan, Stein, and Campbell, 2012; Lewis, Gahagan and Stein, 2013), hospitals (Schwandt et al., 2012; Pai et al., 2014), community health centres (Nine Circles Community Health Centre, 2009) and community based organizations (Fielden et al., 2013). For commercial sex workers in British Columbia, HIV POCT was preferred due to its flexibility and less invasive procedures (Bungay et al., 2013).

**Reach (never testers):** Three programs were successful in reaching never-testers. Forty-two percent (42%) of participants tested in two provincial correctional facilities were never-testers (Halton Regional Health Department, 2014). Twelve and a half percent (12.5%) of commercial sex workers were also reached for the first time by trained outreach staff (Bungay et al., 2013). Finally, 12.5% of participants reached in a sexual health clinic in Québec city had not previously been tested for HIV (Thériault et al., 2013).

**Reach (previous testers):** In six studies (Becker et al., 2013; Guenter et al., 2008; Iqbal et al., 2014; Pai et al., 2014; Schwandt et al., 2012), there were a large percentage of individuals who had previously been tested for HIV ranging from 50% to 96% of the total sample.

**Returned Results (confirmatory testing):** One study measured rates of returned results. Ninety-eight percent (98%) of testers received test results, of which 22 (1.5%) were reactive. Four of the 22 individuals did not receive confirmatory testing (Guenter et al., 2008).

**Satisfaction:** Satisfaction with HIV POCT was high among participants in eight studies with satisfaction levels between 96% and 100%. HIV POCT was reported to be less invasive, less stressful and less painful than traditional models of HIV testing leading to increased satisfaction (Bungay et al., 2013; Miller and Martindale, 2000; Thériault et al., 2013).

## **Gaps in the Canadian Literature**

Three gaps in the availability and access of HIV POCT in Canada were identified in this scoping review. The three gaps are described below:

### **Lack of accessibility in Atlantic Canada and the Northern Territories**

Despite the benefits of HIV POCT, rapid testing services are not universally accessible across Canada (Wertheimer, 2011). In fact, there is little to no availability of HIV POCT in the Northern Territories or four Atlantic provinces. These disparities continue despite the evidence that shows a demonstrated preference for HIV POCT over standard testing (Pyra Management Consulting Services Inc., 2008; Lewis et al., 2013). For example, a study of the acceptability of HIV POCT in Halifax, Nova Scotia demonstrated that acceptability for HIV POCT was similar to those of other Canadian cities that offer it (Lewis et al., 2013).

### **Challenges for rural/remote populations**

There are unique challenges when offering HIV POCT in rural and remote communities some of which may be First Nations, Inuit and Métis communities. These challenges include increased stigma and concerns of confidentiality (Fielden et al., 2013; Lewis et al., 2013), long distances from and restricted hours of operation of confirmatory lab services (Lee et al., 2010), difficulties finding qualified healthcare professionals (Fielden et al., 2013), and building trustful relationships between healthcare professionals and individuals that have experienced stigma, racism, homophobia and gender discrimination in the healthcare system (Vancouver STOP Project, 2013b).

### **Barriers for HIV POCT in innovative sites**

The use of HIV POCT in innovative sites, outside of the traditional scope of public health, such as dental clinics or outreach settings has helped broaden access to HIV testing. Programs that have implemented this model have encountered similar barriers and used various strategies to increase uptake. Common barriers include a lack of education in HIV or point-of-care testing (Vancouver STOP Project, 2013a), privacy concerns and lack of proper linkages to care (Brondani and Chang, 2014). To address these challenges, program organizers suggest that it is important to develop trust between participants and healthcare providers while providing multilingual and culturally safe services (Bungay et al., 2013:254).

## **Limitations**

This scoping review investigated the use of HIV POCT in Canadian settings. While the analysis includes both peer-reviewed and grey literature sources, we relied primarily on electronic sources rather than electronic and print. However, we did search the reference lists of all included articles as well as contact well-known researchers who work on POCT in Canada.

## **Conclusion**

In the process of this review, we investigated the feasibility, acceptability, preference for and impacts of HIV POCT programs in Canada. However, the findings from this review are mainly from limited evidence as most studies were observational in nature. These findings do suggest, however, that HIV POCT is widely accepted by the Canadian population and has high satisfaction rates. The loss to follow-up rates were generally very low for the HIV POCT programs identified in this review, while linkage to care rates were nearly perfect.

This review also suggests that there are challenges in the availability and use of HIV POCT in the Atlantic Provinces and Northern Territories, in rural and remote settings and at innovative sites. Future research focusing on improving access to HIV POCT for all people across Canada would help promote health equity and increase access to timely diagnoses, treatment and care.

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## Appendix A: Search Strategy

Database: Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations and Ovid MEDLINE(R) <1946 to August 2014>

Search Strategy:

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- 1 HIV Infections/di [Diagnosis] (12845)
- 2 HIV Seropositivity/di [Diagnosis] (2397)
- 3 AIDS Serodiagnosis/ (6158)
- 4 HIV.ti. (148826)
- 5 human immunodeficiency virus.ti. (30058)
- 6 or/1-5 (179146)
- 7 Point-of-Care Systems/ (7372)
- 8 POCT.ti,ab. (588)
- 9 point of care.ti,ab. (7517)
- 10 point of service.ti,ab. (345)
- 11 ((rapid or instant or home or self) adj3 (test\$ or screen\$ or kit\$)).ti,ab. (28828)
- 12 oraquick.ti,ab. (110)
- 13 clearview.ti,ab. (97)
- 14 (reveal adj2 rapid).ti,ab. (146)
- 15 insti.ti,ab. (69)
- 16 uni-gold recombigen.ti,ab. (7)
- 17 multispot.ti,ab. (84)
- 18 (sure adj check).ti,ab. (1)
- 19 stat-pak.ti,ab. (62)
- 20 chembio.ti,ab. (29)
- 21 or/7-20 (40720)
- 22 6 and 21 (2185)
- 23 remove duplicates from 22 (2045)

## Appendix B: Search Strategy Decision

