Rapid HIV Point-of-Care Testing in Non-Urban Settings

A Scoping Review

Authors: Jacqueline Gahagan, Alexa Minichiello, Michelle Swab
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.reachprogramscience.ca/](http://www.reachprogramscience.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

It is estimated that approximately one quarter of Canadians living with HIV are unaware of their HIV status (Public Health Agency of Canada, 2012). Access to and uptake of testing for HIV, as well as sexually transmitted and blood borne infections (STBBI) such as Hepatitis C (HCV), remains an important public health and health equity issue in ensuring individuals are aware of their status and can benefit from treatment and care. Despite this, access to health interventions such as HIV and HCV testing, continue to present a variety of challenges, particularly in non-urban communities (Hart, Larson & Lishner, 2005).

Point-of-Care Testing (POCT) refers to the practice of providing rapid test results for a patient, rather than sending a blood sample to a laboratory and waiting on test results. HIV POCT has been used, in part, to help improve access to and uptake of HIV testing in resource-limited settings (Stevens et al., 2014) and among ‘at-risk’ populations in many cities in North America and elsewhere (Lewis et al., 2013; Guenter et al., 2008). The availability of HIV POCT has two significant public health impacts. First, rapid 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 implementation and scaling up of HIV point-of-care-testing in non-urban and rural settings. Specifically, this scoping review identified HIV POCT models currently offered in non-urban settings in Canada, the United States of America and the United Kingdom. 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.

Looking beyond traditional public health models where HIV POCT is typically offered, an explicit focus of this scoping review was to consider the role of allied health professionals such as pharmacists, dentists and community-based service providers in understanding the possible ways in which scaling up of HIV POCT can occur. To that end, this review highlights innovative models and novel approaches of HIV POCT that if implemented in non-urban settings may help address issues related to access and uptake of HIV POCT in non-urban, low prevalence settings in Canada.

The results from the three scoping reviews will inform:

1. Discussions at the REACH POCT Knowledge Translation and Exchange Day where stakeholders from across Canada will be engaged in discussion and
collaboration with regards to key aspects of and successful approaches to POCT including practices, program delivery, and strategies to promote testing.

2. Discussions at the Nova Scotia HIV-STBBI Knowledge Exchange and Health Promotion Forum regarding community preparedness for new HIV testing innovations such as HIV POCT in non-urban and/or low prevalence setting of Canada, starting with the Atlantic provinces.

3. The development of a subsequent operating grant which will be focused on developing and testing a variety of community preparedness models for the scaling up of HIV POCT in select non-urban, low prevalence settings in the Atlantic region and elsewhere in Canada.

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 3rd week August 2014)
- EBM Reviews (1991 – 3rd Quarter 2014)
- PsycINFO (1806 – 25 August 2014)

No language or date limiters were applied.

To supplement the database search, the review team conducted forward and backward citation searches of articles included in the non-urban POCT scoping review.

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 carried out in an Organization for Economic Co-operation and Development (OECD) country
• Study published in English or French

Studies that evaluated HIV POC test performance without providing further HIV POCT program description 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 non-urban scoping review. Non-urban settings were defined as locations that were a. classified as predominantly rural close to a city or predominantly rural-remote according to the 2013 OECD Regions at a Glance database, or b. Were self-described as non-urban or rural by the study authors. This inter rater reliability approach required that the reviewers met weekly to discuss each article’s eligibility and reach consensus on whether to include, exclude or flag the article. The selection process was documented and reasons for inclusion and exclusion were recorded. Any disputes were resolved between the two reviewers. Articles which did not meet the inclusion criteria for this review, but rather provided information about novel sites or innovative models of HIV POCT community preparedness were flagged for further exploration and potential inclusion in the broader discussion and operating grant development processes.

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. Items were typically excluded because they did not focus on HIV point-of-care testing and/or the HIV POC program described was not located in a rural or non-urban setting.

See Appendix B for search strategy decision tree.

**Findings**

**Description of included studies**
A total of 19 peer-reviewed studies were identified in this review. Twelve studies evaluated HIV POCT programs in non-urban settings whereas 6 studies elicited opinions about POCT in non-urban settings or at innovative sites.

**Locations**

• 3 in Canada
• 1 in the UK
• 15 in the USA
Existing HIV POCT Interventions
Existing HIV POCT programs were implemented and evaluated at the following sites:

- Community health centres (2)
- Door-to-door outreach (1)
- Hospital (3)
- Pharmacy (1)
- Primary Care settings (2)
- Prisons (1)
- Substance abuse clinics (1)

Potential Sites for Scaling-up
Discussions regarding the potential feasibility and acceptability of HIV POCT were completed at the following sites:

- Dental Office (1)
- Home Testing (2)
- Pharmacy (3)
- Primary care settings (1)
- Sexual Health/ HIV Clinics (1)

Benefits of Novel or Innovative Approaches
Innovative approaches and non-traditional models of HIV POCT have a number of public health benefits that are particularly relevant in rural or non-urban settings. These will be briefly highlighted in the sections below.

Community Health Centres
HIV POCT was provided at three community health centres in South Carolina (Weis et al., 2009) and at six community health centres in North Carolina, South Carolina and Mississippi (Myers et al., 2009), serving rural populations. Weis et al. (2009) report that clients from the most rural areas in Aiken County were significantly less likely to accept HIV testing than people living in urban areas. This finding may reflect two trends observed in non-urban and low prevalence settings. First, people in rural locations may consider themselves at lower risk for acquiring HIV. Second, the social stigma attached with HIV in rural areas may prevent people from accessing testing services (Weis et al., 2009; Myers et al., 2009). HIV POCT at community health centres or other innocuous locations will keep HIV testing top of mind for people who may otherwise not be tested while reducing the social stigma attached with conventional HIV testing sites.
Dental Offices
Conclusions made from a qualitative investigation eliciting the opinions of 174 dentists regarding the provision of HIV POCT in dental clinics make it clear more must be done to mainstream this health service (Siegel et al., 2012). Prohibitive costs, a lack of confidence regarding testing procedures, fear of false results and associated stigma were common barriers associated with the practice of HIV POCT. Despite these barriers, HIV POCT at a dental clinic would improve dental and overall health care. Individuals are more likely to visit a dentist than any other health-care provider, providing an important opportunity to receive HIV POCT. Moreover, dental care is enhanced when dentists know a patient’s HIV status. This knowledge allows the dentist to make appropriate determinations on what dental procedures are safe for the patient at that time.

Home Testing & Door-to-Door Outreach
In an investigation of the acceptability of rapid HIV testing in rural Appalachia, Basta et al. (2015) reported two main barriers to testing for program participants: 1. Not knowing where to get tested. 2. Fear of being recognized at a testing site. Basta et al. (2015) conclude that the provision of an over-the-counter home test would address these concerns. Furthermore, a sample of men who have sex with men in Brighton, England preferred discrete packaging of HIV home testing kits and desired labels such as “health check packs” or “health kits” rather than STI or HIV kits.

A team of ‘promotores’ (outreach workers) offered door to door rapid testing in nine apartment complexes in Durham, North Carolina home to large populations of Latino immigrants. Among this population 66.5% of participants had no prior HIV testing. Common reasons for a lack of testing were time constraints due to conflicting work hours, not knowing where to get tested and no self-perceived risk for HIV (Sena et al., 2010). The potential benefits of home and door-to-door testing in non-urban settings include: improved confidentiality and privacy which are important enablers of testing as well as greater access to convenient locations and times reducing the burden of travel to testing sites.

Hospitals
Hospitals are another possible site to provide greater access and uptake of HIV POCT. This approach has been successfully implemented in semi-rural emergency departments (ED) in Augusta, Georgia (Freeman et al., 2009; Sattin et al., 2011) and in rural acute care settings in Canada (Lee et al., 2010).

Acceptability of HIV POCT was very high among patients visiting the ED in Augusta, Georgia with 91% of approached patients accepting the test (Freeman et al., 2009; Sattin et al., 2011). In both cases older patients, African American patients and unmarried patients (p<0.001) were significantly more likely to accept the test. Linkage to care rates were also
high; 92.9 (Sattin et al., 2011) and 93% (Freeman et al., 2009) of patients were linked to care in a timely manner. The high acceptance rates were associated with the inclusion of dedicated ED staff who had previous experience with HIV testing (Freeman et al., 2009), while the linkage to care rates were facilitated by supportive counselors who scheduled and escorted patients to follow-up appointments (Sattin et al., 2011).

**Pharmacies**

Community pharmacies provide another innovative site to offer and receive HIV testing. Rapid HIV testing was found to be within the scope of pharmacy practice with comparisons made to immunization requests. This approach could improve access to testing services in small towns that may not have primary care clinics, and could also provide adequate linkages to care (Meyerson et al., 2013; Meyerson et al., 2014; Ryder et al., 2013; Weidle et al., 2014). The results of a pilot HIV POCT program at 21 community pharmacies in the United States demonstrated that HIV POCT can be implemented by existing pharmacy staff with minimal disruptions to their work flow and productivity. This pilot program provided convenient access to HIV POCT and improved the availability of health information among individuals with limited access to health-care providers (Weidle et al., 2014).

**Primary Care Settings**

A common site of HIV testing is the primary care setting, as it is an important venue for testing. Three articles investigated HIV POCT at primary care clinics in three rural or semi-rural settings. HIV POCT was accepted by the majority of patients at a private medical practice (Harmon et al., 2014), and at a student-run clinic based out of a primary health care centre (Feldacker et al., 2011). Both clinics reached high-risk populations and successfully linked clients with positive results to care (Harmon et al., 2014; Feldacker et al., 2011). Feldacker et al. (2011) attribute success to their online outreach strategy that uses chat rooms, social networking sites and online forums to recruit individuals to their testing and counseling services. The use of the internet to inform and recruit individuals to HIV POCT services may help connect individuals living in geographically disperse rural counties to testing services.

**Prisons**

Access to HIV POCT in correctional settings was piloted in Westchester County as one way to increase access to HIV POCT to individuals who may be outside the reach of the county’s health department (Yang, 2009). Participants of the TEST program were offered reduced sentencing times in exchange for taking a HIV test. In the first year of operation 73 clients were tested. While correctional settings may provide alternative sites for HIV POCT, it is important that when provided, testing is done anonymously, with trained health care staff and without coercion or fear (Prisoners with HIV/AIDS Support Action Network, 2011).
Sexual Health/HIV Clinics
An investigation into the preferences of and acceptability for HIV POCT among patients attending the Halifax Sexual Health Clinic in Halifax, Nova Scotia concluded that acceptability of HIV POCT was comparable to other Canadian cities. When asked, 69.8% of patients were even willing to pay a $20 fee for a rapid test (Lewis et al., 2013). This study highlights the desire for POCT in non-urban and low-prevalence settings.

Substance Abuse Clinics
HIV POCT was offered in a substance abuse treatment centre serving Richmond and Lexington Counties in South Carolina. Among detoxification patients, HIV testing was highly accepted as 62% received rapid HIV testing while 60% of those who declined cited a recent test as their main reason for refusal. Program organizers credit strong project leadership, access to non-typical funding streams and flexible testing strategies as essential elements of the project’s success. The success of this model in Richmond and Lexington counties facilitated statewide implementation (Haynes et al., 2011).

Relevant Polices and Guidelines for Implementation
The studies including in this scoping review provided important considerations and lessons learned for the successful implementation and scaling up of HIV POCT in non-urban settings. These include:

- Accommodations to preserve privacy and confidentiality must be maintained. Private counseling and testing space must be available in all settings.

- A streamlined consent and counseling process, if permissible, ought to be created to help reduce wait times for clients and providers.

- Dedicated staff, including peers, with previous HIV counseling and testing experience should be hired to manage and offer testing services.

- Consider the feasibility of clear quality assurance procedures in the development of HIV POCT in non-urban settings.

- Design a patient navigation process to include HIV screening that allows for the integration of testing into routine clinical practice.

- Timely and comprehensive referral systems must be available to ensure patients are linked to care. This is especially important in areas where existing HIV treatment centres are not readily available.
Limitations of this scoping review

This scoping review investigated innovative approaches to scaling up HIV POCT in non-urban settings. Due to time and resource constraints, we limited our search strategy to include only academic peer-reviewed literature that was available in English. Due to this approach, our review does not reflect many of the innovative community programs that occur in non-urban settings but have yet to be written or published in academic literature.

Further reading

The following articles did not meet the strict inclusion criteria for the non-urban scoping review but were flagged due to their relevance in describing innovative models or approaches to offering HIV POCT to help address issues related to access and/or uptake of testing.


Citations


Meyerson, B.E., Ryder, P.T., von Hippel, C., and Coy, K. (2013). "We can do more than just sell the test: pharmacist perspectives about over the counter rapid HIV tests." *AIDS Behaviour* 17: 2109-2113.


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 Tree

EBM Reviews (Cochrane Library) 160

Medline 2045

Embase 2454

PsycInfo 506

CINAHL 926

Total combined 6091

Removed: 2949 duplicates

Discarded: 2471 Not meeting inclusion criteria

Total assessed for non-urban review 571

Discarded: 556 Not meeting inclusion criteria

Hand searching 4

Final total non-urban review 19