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POSITION PAPER

Addressing HIV and HCV in Populations Experiencing Homelessness

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INTRODUCTION

Homelessness and health share an intricate and bidirectional relationship.[1] Poor health status is a major risk-factor for homelessness.[2] Likewise, homelessness is associated with greater overall morbidity and mortality when compared to the general population.[2] Chronic sexually transmitted and blood-borne infections (STBBI) such as human immunodeficiency virus (HIV) and hepatitis C virus (HCV) are key health concerns in homeless populations in Ontario (See Table 1), with greater prevalence than in the general population.

Patterns of chronic infection among homeless populations reflect greater exposure to routes of disease transmission. Injection drug use (IDU), inconsistent use of sexual barrier methods, multiple recent sexual partners, and sex work can increase the risk for transmission of HIV and HCV.[3,4] These demographics pose distinct risk-factors, but also have compounding effects and intersections. Preexisting health comorbidities and HIV-HCV co-infection can make homeless populations vulnerable to more severe and complex disease trajectories.[3,4] This Position Paper will outline recommendations focused on screening, prevention, treatment, and medical education to address chronic infection in populations experiencing homelessness in Ontario.

Table 1: Key Statistics on HIV and HCV in Homeless and/or IDU Populations in Ontario

Disease	Details
HIV	• Overall prevalence: 167 per 100,000 population[5] • In 2018, IDU made up 13.9% of new infections • Homelessness: 0.2 to 1.9% prevalence among Ontario homeless population[6]
HCV	• Overall prevalence: 30.4 per 100,000 population[7] • In Toronto, 23% of homeless people reported having HCV[8] • Injection drug users 60-85% of new HIV infections[7]

Defining Homelessness

Homelessness, defined by the Canadian Observatory on Homelessness as “the situation of an individual, family, or community without stable, safe, permanent, appropriate housing, or the immediate prospect, means and ability of acquiring it” presents a significant health inequity in Canada.[9] Gaetz et al. describe homelessness as a continuum which includes people who are at-risk of homelessness, provisionally accommodated, accessing emergency shelter, or absolutely unsheltered (summarized in Table 2). The experience of homelessness is fluid, and people may move across this spectrum throughout their lives.

Table 2: Homelessness Continuum

Term	Description
At-risk of homelessness	Individuals either facing an imminent risk of homelessness or precarious housing, in which an adverse event such as sudden unemployment, discontinuation of housing support, eviction, or mental illness threatens immediate loss of housing.[9] Inclusion of at-risk populations in the definition of homelessness demonstrates the large proportion of Canadians affected.
Provisional accommodation	People who have accessed temporary housing through the government, a non-profit organization, or independently.[9] Provisional forms of housing include transitional housing, “couch surfing”, temporary rentals in motels or hostels, institutional care (jails/prisons, medical institutions, residential treatment programs, etc), and temporary housing for immigrants and refugees. Provisional accommodation offers temporary shelter but is not a permanent option for homeless people.
Emergency sheltered	Emergency forms of shelter are often the first formal supports people can access when experiencing homelessness, and are provided by the public sector, non-profit organizations, faith-based organizations, and volunteers.[9] Shelters may serve specific groups of homeless people including women, men, families, youth, those impacted by family violence, or people fleeing natural disasters.
Unsheltered	The most extreme form of homelessness, unsheltered refers to people who are living in public spaces (sidewalks, parks, forests, etc.) or squatting in private and vacant buildings along with people living in venues not appropriate for long-term living (cars, garages, shacks, etc).[9] While being unsheltered increases a person’s exposure to environmental hazards, some people are forced to be unsheltered due to unavailability of other options, restrictions on shelters offered by municipalities and charities, or being removed from a shelter. Others may also choose to be unsheltered because of negative experiences in other forms of shelter, or a desire for increased autonomy.

Characterizing Homelessness in Canada and Ontario

Causes of Homelessness

The causes of homelessness are multifactorial. Individual risk-factors for homelessness are fairly well-documented and include addiction, poor health, disability, incarceration, joblessness, and dysfunctional family relationships.[10] Adverse childhood experiences such as parental neglect and physical abuse have been extensively studied in relation to overall health and wellbeing, and they are also associated with an increased risk of homelessness later in life.[11] At the systemic level, federal investment in housing has diminished over several decades, resulting in a depleted national housing stock and increased housing prices.[12,13] Moreover, social assistance including basic social assistance, tax credits, disability support, and child support fall below the Market Basket Measure, Canada’s Official Poverty Line.[14] Homelessness is further exacerbated by provincial legislation such as the Ontario *Safe Streets Act*, 1999, which has led to increased criminalization and policing of homeless people despite a lack of evidence that its implementation has led to improved public safety.[15] While policing and criminalization exemplified by the *Safe Streets Act* does not cause homelessness per se, it further punishes vulnerable members of society, thus reducing their autonomy and exacerbating the cycle of homelessness.[16]

Homelessness in Canada and Ontario

In the most recent 2016 national evaluation of homelessness, approximately 235,000 Canadians experience homelessness annually, with up to 35,000 on any given night.[17] Youth, women, families, immigrants, Indigenous people, and individuals identifying as LGBTQ2S+ are most at risk for becoming homeless.[17] According to a statement released by the Financial Accountability Office of Ontario in 2021, approximately 16,000 Ontarians are homeless on any given night.[18] The COVID-19 pandemic has caused a 10% increase in outdoor encampment sites and 90% decrease in shelter services due to outbreaks within shelter programs and constrained indoor capacity.[19] It must be noted that limitations to surveillance methods for homeless populations including inconsistent definitions, high rates of loss to follow-up, and difficulty tracking may lead to underestimations of the true extent of homelessness in Canada.[20]

PRINCIPLES

Recommendations are put forward using the following guiding principles:

1. Ontario should commit itself to the United Nations Sustainable Development Target 3.3: "to end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases".
2. Disease prevention is an important method for improving individual patient outcomes and reducing the overall burden on the health care system.
3. Harm reduction should be supported as a public health measure to destigmatize injection drug users and to reduce associated risks (e.g., overdose, infection, etc.).
4. Equitable care for homeless populations is best achieved through trauma-informed approaches which destigmatize these patients and provide care that targets their needs.

RECOMMENDATIONS

The Ontario Medical Students Association recommends the following:

1. The Ontario government should expand funding for point-of-care rapid testing for HIV and HCV at sites frequented by at-risk populations (e.g., opioid substitution clinics, supervised consumption sites, pharmacies dispensing methadone, shelters, and hostels) with a target of a 50% increase in the usage of these tests by 2027.

Many people with HIV or HCV infection are unaware of their infection status.[4,21] The availability of rapid, point-of-care testing for infectious diseases provides an opportunity for widespread testing and treatment. Ontario's HIV testing guidelines recommend that people at high risk of HIV be tested at least once a year and general screening is recommended for those at high risk of HCV.[22,23] However, for people with tenuous links to the healthcare system, providing rapid tests in accessible and frequently-visited locations offers a chance to expand existing screening efforts and decrease the time between infection, diagnosis, and treatment.

Screening for HIV and HCV among Homeless People

The relevant considerations for the implementation of a screening test have been characterized.[24] According to these criteria, the tested disease must pose a significant public health problem and have readily available treatment, while the test itself must be reasonably sensitive and specific, safe, cost-effective, widely available, and shown to improve health outcomes. Due to homeless people's frequent barriers to accessing stable healthcare follow-up, we propose an additional criterion for screening tests in this population: that they are easily read and processed at the site and that results can be delivered within a short window of time after initiating the test. While other screening tests in healthcare settings often involve repeat visits, as does further investigation or treatment in the event of a positive test. The difficulty with follow-up among homeless people emphasizes the importance of rapid testing and rapid sharing of results.[20]

Assessing the Benefits of Screening for Infectious Diseases

As noted above, HIV and HCV are both considered diseases of significant public health concern in Canada, especially among homeless people and those who inject drugs. They also have readily available treatments that can alter the prognosis of the disease. While there is no cure for HIV, lifelong antiretroviral therapy (ART) suppresses viral load and replication.[25] HCV is curable, and treatment consists of a 6-month course of direct-acting antivirals (DAAs).[26] Therefore, both HIV and HCV meet the required disease characteristics for a useful screening program.

The major HIV screening test available in Canada is the INSTI test, which assesses the presence of HIV-1 and HIV-2 antibodies. The test is administered at the point of care, using a drop of whole blood and read after 20 minutes.[27] In the event of a positive result, the patient is further investigated using serology testing to detect viral RNA. Studies have shown sensitivity and specificity to be around 99% and 98%, respectively.[27,28] Routine HIV screening has been demonstrated to be cost-effective with prevalence rates as low as 0.05% to 0.1%.[29]

For HCV, the OraQuick antibody test offers similar benefits. It is also administered at the point of care using a drop of blood, and has been shown to be highly sensitive for active viremia if read after 5 minutes.[30] If a patient tests positive, they are further investigated using a dried blood spot or phlebotomy HCV RNA test to confirm an active infection. Sensitivity and specificity have been shown to 98.8% and 100%, respectively.[31] HCV testing is most effective in populations with high prevalence[32] and has been shown to be worthwhile among people who inject drugs.[32,33]

Colocalization of infectious disease testing with desirable health and/or social services in other settings has been shown to be successful in screening high volumes for infection, targeting testing to at-risk populations, and linkage to care. Among these settings are COVID-19 vaccination clinics,[34] supervised consumption sites,[35] and methadone clinics.[36] Given the shared risk-factors for HIV and HCV and the prevalence of co-infection, any person who seeks a test for one disease should be offered testing for the other.[22] Screening must also be paired with efforts to reduce stigma associated with these illnesses and education on the importance of early diagnosis.[22] Table 3 summarizes the characteristics that make HIV and HCV suitable candidates for sensitive point-of-care testing.

Table 3: Assessment of Available HIV and HCV Tests as Screening Programs for Homeless Hopulations

	HIV (INSTI test)	HCV (OraQuick test)
Disease is a significant public health problem (high prevalence among homeless people)	Canadian prevalence: 167 per 100,000[5] Homelessness: 0.2 to 1.9% prevalence among Ontario homeless population[6] 13.9% of new infections are among people who inject drugs	Canadian prevalence: 30.4 per 100,000[7] In Toronto, 23% of homeless people reported having HCV[8] 60-85% of new infections are among people who inject drugs[7]
Disease is readily treated with early detection associated with better outcomes	Treatment through antiretroviral therapy[25] Treatment most effective when started early[22]	Cured with direct-acting antivirals (DAAs) DAA therapy can prevent liver fibrosis and cirrhosis if HCV is detected and treated early[37,38]
Test has high sensitivity and specificity	Sensitivity: 98.99% Specificity: 98.15%[28]	Sensitivity: 98% Specificity: 100%[31] Sensitivity for viremic patients at 5 minutes = 100%[30]
Test is safe to administer	Uses a drop of blood from finger prick Standard PPE should be used[27]	Uses a drop of blood from finger prick Standard PPE should be used[30]

Test is cost-effective	Routine HIV screening is cost-effective with prevalence rates as low as 0.05% to 0.1%.[29]	Screening is most effective in populations with high prevalence[32] Cost-effective to screen among people who inject drugs[33]
Test has demonstrated improved health outcomes	Detection of HIV leads to earlier administration of ART	Detection of HCV, especially asymptomatic, can lead to cure with direct-acting antivirals
Test is widely available	Portable and does not require specialized equipment - can therefore be administered outside of large academic centres	Portable and does not require specialized equipment - can therefore be administered outside of large academic centres
Test results ready within 30 minutes	20 minutes[27]	20 minutes per manufacturer's recommendations, but is highly sensitive for viremia at 5 minutes[30]

2. The Ontario government should expand disease prevention programs, including accessibility of mental health and sexual health resources, and safe consumption sites (SCS) as measured through annual qualitative surveys of perceived accessibility by target populations.

Mental Health and Addiction

Untreated mental illness, such as depression and substance abuse disorders, is strongly associated with risk behaviors and acquisition of HIV and HCV infection.[39] Improving mental health services is equally as important for prevention as it is for treatment (e.g., improved adherence to medication, improved morbidity and mortality, etc.).[39] Acute services such as crisis helplines and emergency rooms are well established, but long-term ongoing care for mental health are less accessible.[40] Wait times for community-based mental health services can reach up to 4 months in Canada.[41] The Ontario government should support the delivery of evidence-based, culturally appropriate mental health interventions to individuals with and at-risk for HIV and HCV through the co-localization of community-based AIDS/HCV health services and shelter networks.[22] Additional support should also be given to individuals on waitlists through periodic electronic or telephone check-ins about waitlist positions, extended hours of drop-in counseling, or supervised peer support groups.[42]

Sexual Health

Protective barriers for intercourse and pre-exposure prophylaxis (PrEP) have been shown to reduce HIV acquisition. However, PrEP is poorly accessed by homeless individuals, especially among women, due to lack of awareness and barriers to access. In one US study, the majority of (53.6%) homeless respondents did not receive any HIV prevention education.[43] Knowledge is insufficient on its own for effective prevention. The provincial government should support street nurses in helping homeless patients develop the skills for negotiating safer sex and drug use, and providing increased access to condoms and PrEP.[22]

Harm Reduction

Harm reduction encompasses a wide range of practices such as equipment supply distribution programs and safe consumption sites that aim to minimize injury and the spread of disease.[44] There is sufficient evidence supporting the effectiveness of needle and syringe programmes (NSP) in the prevention of HIV transmission among injecting drug users, while limited evidence exists for the prevention of HCV.[45] SCSs facilitate safer injecting practices and reduce needle sharing to prevent transmissions of blood-borne diseases and lower overdose mortality.[46]

Of the 38 SCS in Canada, there are 21 locations in Ontario with close to half concentrated in Toronto.[47] Public health responses to expand harm reduction programs such as SCS have focused on large urban centers and neglected mid-sized and small communities.[48] Substance users and homeless individuals are not as concentrated within specific regions of smaller communities, so harm reduction services are scaled down and scattered across multiple locations. This, however, further obstructs access to homeless people living in these smaller, underserved regions.[49]

Mobile delivery models of SCS and harm reduction supplies through retrofitted recreational vehicles have been pilot tested in British Columbia with positive experiences from surveyed clients in terms of access, reduced needle sharing, and increased health-seeking behaviors and practices.[49] Many challenges still remain with the limited physical space of mobile units, negative perceptions of community stakeholders, and operational challenges such as service disruptions due to seasonal weather changes.[49] Governments should support these growing models of harm reduction.

Canada should also implement online, mail-based harm reduction platforms that deliver sterile syringes, drug use equipment, and naloxone as modeled by NEXT Distro in the United States.[50] These supplies to be delivered to homeless shelters or to post office mail slots for individuals without a permanent address following in the footsteps of the Montreal based Le Sac à Dos initiative.[51]

3. **The Ontario government should produce a report detailing a provincial plan to expand financial, technical, and resource support for organizations offering integrated care for homeless populations (e.g., outreach, case management) by 2027.**

The effective management of HIV and HCV requires the initiation of treatment early in the course of the disease, sustained relationships with the healthcare system, adherence to treatment, and access to medications.[37,52–54]. This is difficult to attain among homeless populations, who face barriers including direct (e.g., medications) and indirect costs (e.g., transportation, parking), competing time spent securing basic needs, missing/invalid entitlement documentation for provincial health insurance, and concurrent mental health, substance use, and/or cognitive challenges.[3,22,55] While services are available to address individual barriers faced by at-risk populations, poor coordination of care often results in gaps, inefficiencies, and long-term "cycling" through systems and services.[56,57]

Integrated care offers a systems-level approach to improving care for homeless populations, involving close coordination and collaboration between healthcare and supportive services (e.g., housing, substance use, employment) at the financial, organizational, administrative, and service-delivery levels.[58] In practice, integrated care can take several forms. Outreach models bring healthcare to settings which are convenient to homeless people, including shelters and day programs.[59] Case managers build long-term, person-centred relationships with clients and coordinate healthcare appointments and referrals to supportive services.[60] Among homeless people with HIV, integrated care has been shown to improve initiation of ART, improve CD4 cell counts, increase survival, reduce risky behaviours, and increase healthcare access.[60–63] Among homeless populations with HCV, integrated care has been associated with greater treatment initiation.[64–66]

Both mobile and case management services are available in Ontario. As of 2021, there are 29 mobile health clinics in Canada that serve vulnerable populations including homeless individuals.[67] Integrated care models are employed with success for the care of homeless people by a variety of community health centers, local interdisciplinary healthcare groups, newly-introduced Ontario Health Teams (OHTs), and the former Local Health Integration Networks (LHIN).[68–71] Nevertheless, these services are mostly organized by independent groups of professionals, resulting in reported leadership challenges, resource limitations, and financial difficulties.[72]

The Ontario government should create a report detailing a long-term plan to expand support for offering integrated care for homeless populations. Taken together, these steps will not only facilitate healthcare access for HCV and HIV care among people experiencing homelessness, but also improve access to services designed to address concurrent barriers to care. Moreover, these changes would support the goals of Recommendation 2 by improving access to preventive resources for HIV and HCV. The plan should include:

1. *Alternative model of payment for healthcare professionals:* Some groups offering integrated care are financed through basic models of physician funding; however, fee-per-service care is often unsustainable given patient complexity and the importance of trust-building in the patient-physician relationship.[73,74] Following the lead of groups which have negotiated with the Ministry of Health to adopt alternative payment plans featuring hourly remuneration rates, we propose an expansion of alternative payment models for physicians offering integrated care for homeless populations.[73,75]
2. *Cross-sectoral electronic medical record (EMR):* This EMR would connect health records with those of local supportive services (e.g., housing, substance use, employment, etc.) to facilitate the coordination of clients' care as they transition between services and supports.[76] This will also serve as a route of communication between sectors.
3. *Guidance for the expansion of integrated care:* The challenges of implementing successful integrated care has been well-documented.[56,58] The Ontario government should collaborate with teams who have, or are presently, offering integrated care to produce guiding resources on the creation and implementation of integrated care teams so that others may introduce these services in their locale.

4. Medical and healthcare professional programs should incorporate additional trauma-informed care and harm reduction principles into professional training, including medical school curricula and continuing medical education, as measured by annual accreditation audits.

Formal clinical experiences during medical school and residency have demonstrated impacts on medical professionals' future attitudes towards caring for homeless or otherwise underserved populations.[77] Similarly, a clinical rotation in a shelter-based primary care setting significantly increased students' self-reported knowledge, attitude, and self-efficacy. This was matched by evaluations of students' communication skills and history taking and physical examinations for mental health, substance use, and other risky behaviours.[78] [79]

With respect to classroom-based learning, a Canadian study shows that homeless people are represented in curricula and are characterized as presenting with serious health problems, in keeping with the known epidemiological picture among homeless populations.[80] However, these cases often present homeless people as having limited agency, and cases were predominantly found within the ethics/professionalism curriculum rather than the biomedical curriculum, with physicians portrayed as responsible for only the immediate physical health needs of the patients.[80] Furthermore, many Canadian medical students do not think homelessness is adequately addressed in their medical education.[81] Key recommendations from this same study included increasing time and materials in the pre-clerkship curriculum devoted to discussing homelessness, along with opportunities for direct community outreach during clerkship.[81]

Based on these findings, a potential gap in Ontario medical school curricula is the lack of practical tools and strategies students can learn and apply in clinical settings. This entails applications of trauma-informed care, student experiences working within various outreach models that serve homeless patients, and specific clinical skills in evaluating mental health, substance use, infectious disease, and risky behaviour. Our recommended interventions can be divided into classroom-based learning and clinical exposure.

Classroom-based learning

Classroom-based learning recommendations should address the shortcomings identified by studies of Canadian medical school curricula, including a lack of accessible materials and clinical strategies provided by the medical program. To address this, we recommend the development of brief information sheets to be made available to students during discussions of various aspects of health for homeless people. Among these are principles of trauma-informed care and specific examples of their application with homeless patients; an outline of infectious diseases, their modes of transmission, and available tests and treatments; mental health care for homeless patients; and existing outreach models that provide homeless patients with primary care. One such model that can be adopted in Canadian

medical schools is the “A SAFE DC” framework for providing care to homeless inpatients.[82] Curating clinically-relevant information and tools for medical students will help to focus pre-clerkship discussions of homelessness on the roles of physicians and the day-to-day methods that can be used in various settings. Such information sheets should be paired with existing aspects of the curriculum that relate to homelessness, and clinical strategies can be practiced in clinical skills settings.

To complement instructional materials, we also propose inclusion of relevant topics in OSCE scenarios, including homelessness, addiction, chronic infection, and trauma. Formal assessment of relevant knowledge and communication skills emphasizes these aspects of the medical curriculum. Such scenarios can also have substantial overlap with other topics typically covered in OSCEs such as history-taking, medical non-adherence, and establishing a trusting physician-patient relationship.

Clinical exposure

Clinical experiences including electives and clerkship rotations provide an opportunity for students to get first-hand experience providing care for homeless patients in a variety of settings. To provide more clinical exposure, we recommend that schools collaborate with local partners and offer opportunities for exposure in settings such as shelter- or outreach-based clinics. These opportunities may include pre-clerkship electives, optional clinical learning opportunities (OCLO)/observership, volunteering, and clinical research. In addition, schools may consider strengthening existing partnerships with community-based clinics that serve high numbers of homeless patients, and allowing interested students to complete rotations in these settings as part of primary care electives during pre-clerkship or clerkship. Depending on the availability of institutional partnerships, structured opportunities may take different forms at different schools. Some potential partnerships in the GTA/Golden Horseshoe area include Shelter Health Network (Hamilton), REACH Niagara (Niagara Region), Inner City Health Associates (Toronto), and Street Health Community Nursing (Toronto).

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