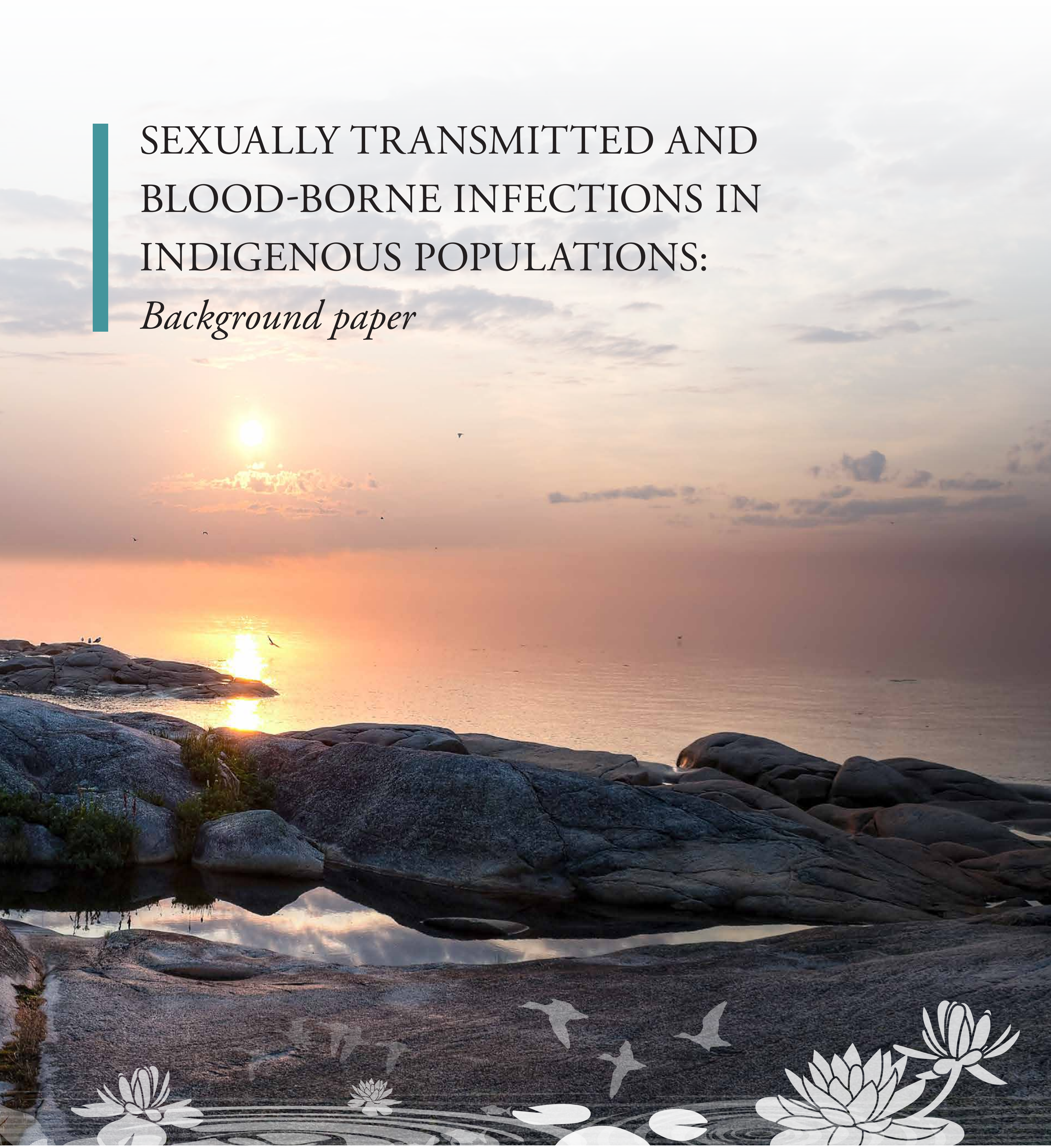

SEXUALLY TRANSMITTED AND BLOOD-BORNE INFECTIONS IN INDIGENOUS POPULATIONS:

Background paper

National Collaborating Centre
for Indigenous Health
Centre de collaboration nationale
de la santé autochtone

National Collaborating Centre
for Infectious Diseases
Centre de collaboration nationale
des maladies infectieuses

CHRONIC AND INFECTIOUS DISEASES

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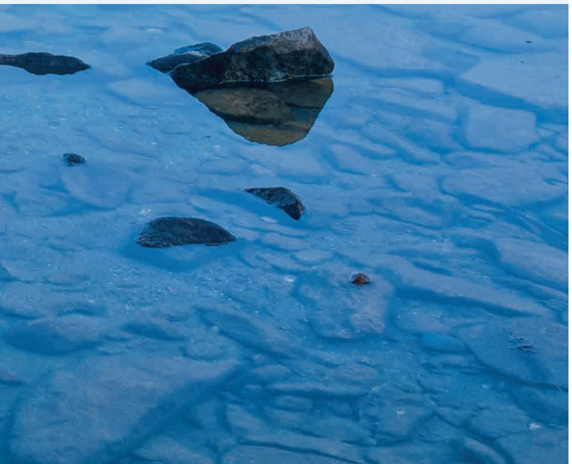

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CONTENTS CONT.


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GLOSSARY

Antiretroviral therapy

Antiretroviral therapy, also known as ART, is a treatment regimen of drugs that can help suppress HIV replication and reduce the likelihood of the virus developing drug resistance (Pan American Health Organization, 2020). The goal of ART is to reduce the presence of HIV to undetectable levels. ART has been instrumental in reducing mortality and morbidity rates among HIV-infected people, improving their quality of life, and preventing the transmission of the HIV virus to others.

Direct acting antivirals

Direct acting antivirals (DAA) are medications that target specific steps within the hepatitis C life cycle (HCV). They are molecules that target specific non-structural proteins of the Hepatitis C virus and disrupt the replication and infection of the virus (Pockros, 2023).

Historical trauma

When trauma is experienced collectively by specific populations who share a history of oppression, victimization, or massive group trauma over time and across generations, it is often referred to as "historical trauma" (Mohatt et al., 2014).

Intergenerational trauma

When individuals experience repeated traumatic events, the adverse emotional and behavioral reactions they have to that trauma can impact their children's development, leading the similar adverse behaviours and emotions. In this way, the trauma can be passed down to subsequent generations, which is referred to as "intergenerational trauma" (American Psychological Association, 2023).

Maternal syphilis

Maternal syphilis is when a mother with syphilis transmits the disease to her infant during pregnancy (Centers for Disease Control and Prevention [CDC], 2023a).

Pre-exposure prophylaxis

Pre-exposure prophylaxis (PrEP) refers to the use of medicine to reduce the changes of acquiring HIV from sex or injection use (CDC, 2023d). Health Canada has approved the use of two PrEP medications: Truvada (a pill for people at risk through sex or injection drug use) and Descovy (a pill for people who are at risk through sex, with the exception of people who are assigned female at birth who are at risk for HIV through receptive vaginal sex) (Community AIDS Treatment Information Exchange [CATIE], n.d.-a). Apretude, a shot provided to people at risk through sex who weigh at least 77 pounds/34 kg, offers a third PrEP option; however, has not yet been approved by Health Canada (CATIE, n.d.-b). These medications are generally safe with only minor side effects.

RNA Polymerase

A polymerase is any of several enzymes that can be used to synthesize RNA molecules from a template of DNA through a process called transcription (Integrated DNA Technologies, 2023). Transcription enables a gene's DNA sequence to be copied to make an RNA molecule.

RNA positive

Single-stranded RNA viruses are classified as positive or negative depending on the polarity of the RNA. Negative viral RNA must be converted to positive RNA by RNA polymerase before it can be infectious (European Virus Archive – Global, 2020).

Serological testing

Serological testing is a laboratory procedure involving the testing of blood for the presence of specific antibodies; that is, proteins that the immune system makes to fight foreign substances, like viruses and bacteria (Medline Plus, n.d.).

Seroprevalence

Seroprevalence refers to the number of persons within a population who test positive for a specific disease based on the frequency of specific antibodies found in their blood samples, which is determined through serological testing (Teslow, 2020).

Tender lymphadenopathy

Tender lymphadenopathy refers to the swelling of the lymph nodes. The swelling most often occurs as a result of an infection from bacteria or viruses but occasionally signal the presence of serious diseases like lymphoma or leukemia (Karpf, 1990).

Two-spirit

The term "two-spirit" is an Indigenous term used to refer to having both a masculine and feminine spirit and encompasses a wide variety of sexual and gender identities, including LGBTQ identities (Hunt, 2016). Prior to colonization, Indigenous views of sexuality were not rooted in heteronormativity but reflected greater acceptance for diverse sexual practices and identities. Two-spirited people historically were generally respected and assumed vital responsibilities to their nations' collective well-being.

Undetectable viral load

A viral load refers to the number of copies of HIV present in a milliliter sample of blood. Having an undetectable viral load means there are so few copies of the HIV virus are present in the blood sample that current tests are unable to detect them (Land, 2023). While this does not you are no longer HIV positive, it does mean you can no longer transmit HIV to others through sex and the virus is less able to attack your immune system, enabling individuals to live a healthier, longer life. This is often referred to as U = U (undetectable = untransmittable).

Viral load

Viral load is defined as the amount of HIV in the body (CDC, 2023c).

Viral suppression

Viral suppression means having less than 200 copies of HIV per milliliter of blood, which is the benchmark for achieving undetectable viral load (CDC, 2023c).

Vertical transmission

Vertical transmission refers to the transmission of viruses between an infected mother and her unborn child in uterus (Ward & Holtzman, 2018).

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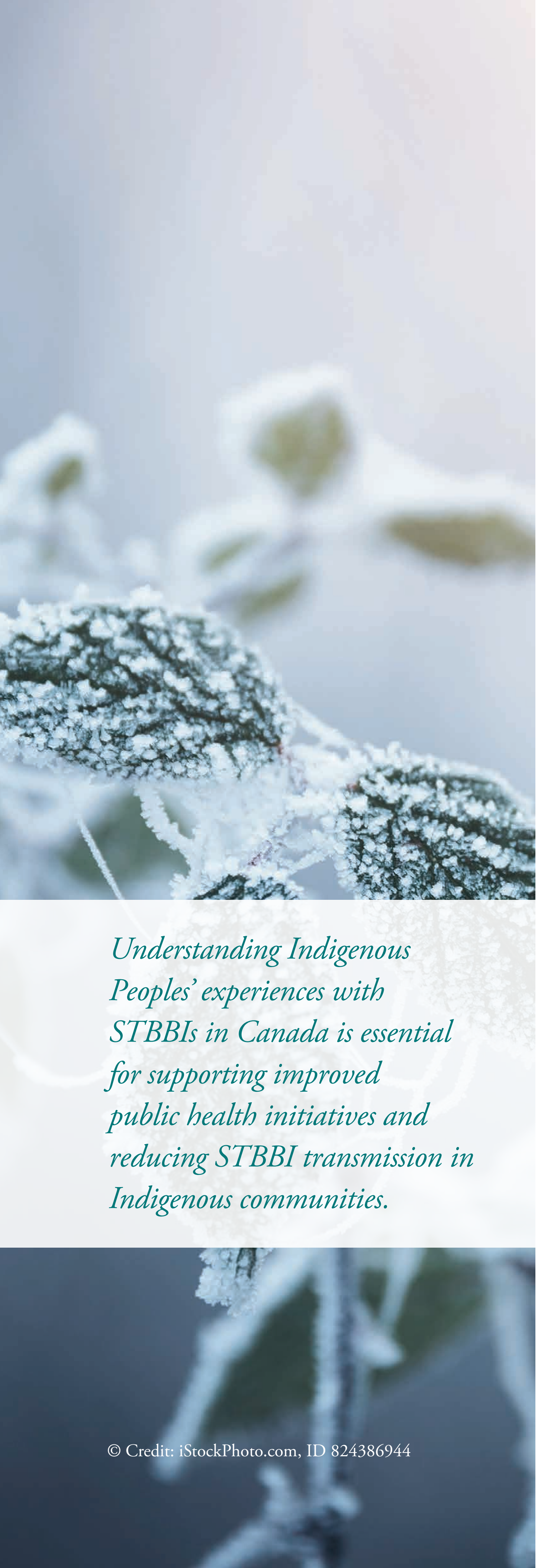
INTRODUCTION

Background

Indigenous[1] Peoples in Canada experience complex structural and systemic factors that increase their likelihood of contracting certain sexually transmitted and blood-borne infections (STBBIs) and create barriers to receiving adequate care and support. Understanding Indigenous Peoples' experiences with STBBIs in Canada is essential for supporting improved public health initiatives and reducing STBBI transmission in Indigenous communities.

In the Fall of 2020, the Public Health Agency of Canada (PHAC) approached the National Collaborating Centres for Indigenous Health (NCCIH) and Infectious Diseases (NCCID) to assess the impact of the COVID-19 pandemic on the ability of First Nations, Inuit, and Métis youth and adults to access STBBI services and care. This background paper is intended to complement this research by providing an overview of select literature to enhance understanding of the broader factors that influence STBBI transmission, prevention, and treatment among Indigenous Peoples; the experiences of Indigenous Peoples with STBBIs; and strategies for addressing the disproportionate rates of STBBIs in Indigenous communities. Other knowledge products stemming from the project assessing the COVID-19 pandemic's impact on STBBI services and care for First Nations, Inuit, and Métis youth and adults can be found on the websites of either the NCCIH or the NCCID.



Understanding Indigenous Peoples' experiences with STBBIs in Canada is essential for supporting improved public health initiatives and reducing STBBI transmission in Indigenous communities.

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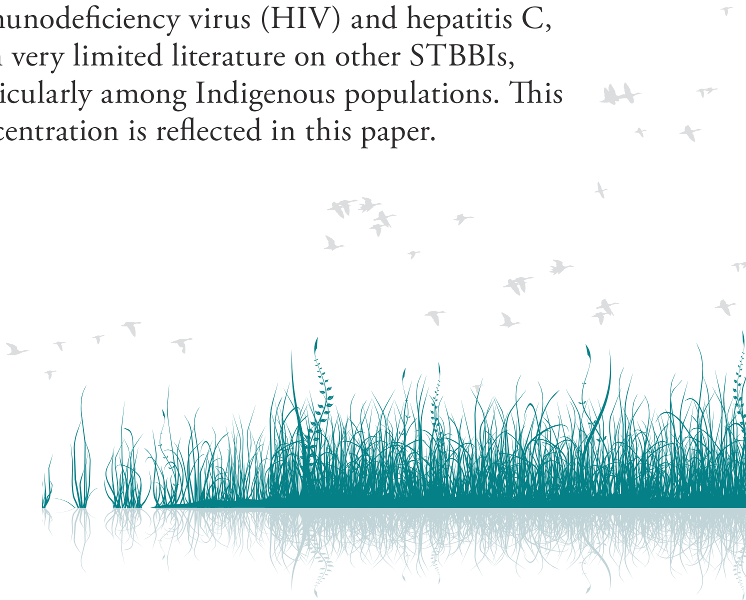
[1] In this report, "Indigenous" is used as the umbrella term for First Nations (status and non-status), Métis and Inuit. Wherever possible, the terms First Nations, Métis and/or Inuit are used when referring to specific populations.

The paper begins with an introduction outlining the purpose and goals of the paper, approach used, and search strategy. It then describes findings from a review of the literature on STBBIs among Indigenous populations in Canada. These findings are organized into three substantive themes. The first, "Understanding STBBIs," briefly explains what STBBIs are, how they are transmitted, their impacts on health, and how they are treated. It also provides an overview of public health responses to STBBIs and how STBBI rates are reported in Canada. The second theme, "STBBIs in Indigenous Populations," provides an overview of the factors that influence STBBI transmission, prevention, and management in Indigenous communities, including the legacy of colonialism, socioeconomic factors, intimate partner violence, child abuse, mental health and addictions, stigma, and access to health services. It then describes what is known about the rates and trends of specific types of STBBIs within Indigenous populations and specific subpopulations. The final section of this report details considerations for sexual health promotion and STBBI prevention in Indigenous communities, including a focus on social determinants of health, access to culturally safe and appropriate sexual health programs and services, and access to culturally appropriate health information. It also provides examples of promising practices in STBBI prevention, testing and care, and research in the context of Indigenous Peoples.

Search strategy

This review includes peer-reviewed and grey literature. The initial search was conducted via academic search platforms (Google Scholar, PubMed), using the following search terms: First Nations/Inuit/Métis/Indigenous/Aboriginal, and STI/STBBI/HIV/HPV/Hepatitis A, B, and C/ Chlamydia/Gonorrhoea/Syphilis/Sexual Health, and Canada. The initial review also included a search of the Government of Canada Publications website and was accompanied by a citation search of identified literature. While the original search strategy was aimed at identifying literature published within the last 10 years on STBBIs in relation to Indigenous populations in Canada, due to a lack of available data and literature on certain topic areas, articles outside of this time frame have been included, where appropriate. This review also includes systematic reviews involving global Indigenous populations if Indigenous populations in Canada were included. The search revealed that available research focuses predominantly on human immunodeficiency virus (HIV) and hepatitis C, with very limited literature on other STBBIs, particularly among Indigenous populations. This concentration is reflected in this paper.



Nationally notifiable STBBIs are considered priorities for monitoring and control measures by the federal and provincial/territorial governments

(PHAC, 2023a).

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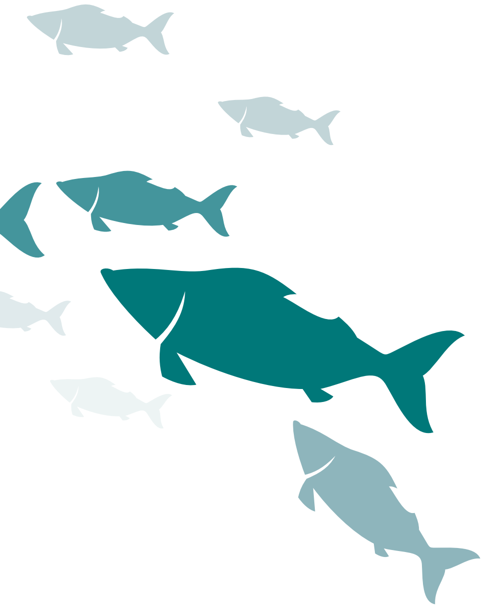
UNDERSTANDING STBBIs

This section provides an overview of STBBIs and is intended to provide the reader with a basic understanding of what they are. This includes the most common STBBIs, how they are prevented, transmitted, and treated, and potential health outcomes of STBBIs. This section also provides an overview of the history of public health responses to STBBIs in Canada and how STBBI rates are reported.



STBBIs – transmission, health outcomes, and treatment

STBBIs are infections that can be transmitted through vaginal, oral, or anal sex and through the exchange of sexual fluids, skin to skin genital contact, or contact with blood and other bodily fluids (Ottawa Public Health, 2023). STBBIs are a significant public health concern in Canada (Canadian Public Health Association [CPHA], 2023). The most notable STBBIs are Chlamydia (including lymphogranuloma venereum [LGV]), gonorrhoea, syphilis, human immunodeficiency virus (HIV), hepatitis B virus (HBV), and hepatitis C virus (HCV), which are all nationally notifiable in Canada. Nationally notifiable STBBIs are considered priorities for monitoring and control measures by the federal and provincial/territorial governments (PHAC, 2023a). As such, data on these infections are routinely submitted by provincial and territorial governments to the Canadian Notifiable Disease Surveillance System for the purposes of monitoring trends and rates at national level. Other STBBIs include hepatitis A (HAV), human papillomavirus (HPV), and herpes simplex viruses (HSV-1 and HSV-2),[2] which are not nationally notifiable (PHAC, 2023a).

STBBIs vary in transmission pathways, severity, and treatment. Some infections are primarily transmitted through sexual contact and are thus referred to as sexually transmitted infections (STIs). Some can by transmitted from an infected mother to her child during birth or through skin-to-skin contact, exchange of bodily fluids, or injection drug use and are thus referred to as STBBIs. Some bacterial STBBIs are curable (i.e. HCV), while others are not and either have some symptoms that can be cured (i.e. HPV) or can be managed with proper treatment (i.e. HIV). Regardless, all STBBIs can lead to adverse health outcomes if not diagnosed and treated properly.

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[2] Acronyms for common STBBIs are included here to reflect what readers may encounter in the literature and research.

Notifiable STBBIs

Sexually transmitted infections (STIs)

Chlamydia, gonorrhoea, and syphilis are STIs caused by bacteria and are generally curable with antibiotics, though resistance of these STIs to antibiotics has been increasing rapidly due to misuse and overuse, particularly for gonorrhoea[3] (Pan American Health Organization [PAHO], 2016). These infections are generally transmitted through sexual contact; however, they can also be transmitted from an infected mother to her newborn during birth (Choudhri et al., 2018a). STIs can lead to serious sexual and reproductive risks and complications, including stillbirths, neonatal deaths, low-birth weights, sepsis, and pneumonia for newborns, and reproductive complications such as infertility, genital and extragenital symptoms, cancer, ectopic pregnancy, and pelvic inflammatory disease for women (PAHO, 2016; PHAC, 2021a; World Health Organization [WHO], 2022a). Gonorrhoea and Chlamydia can also cause infertility in men (PAHO, 2016).

Chlamydia, gonorrhoea, and syphilis can be treated with either multi-day or single-dose regimens[4] of antibiotics. There is also emerging evidence that the risk of bacterial STIs can be reduced through use of the antibiotic doxycycline post-exposure prophylaxis (Doxy PEP). Doxy PEP involves taking a 200 mg pill as soon as possible, and no later than three days, after sex. Studies have found Doxy PEP to be highly effective in preventing STIs among men who have sex with men and transgender women (Kurtzman, 2023; Leutkemeyer et al., 2023; National Institutes of Health, 2023). In fact, the California Department of Public Health (2023) now recommends its use in preventing bacterial STIs in these two populations and has released guidelines for its use. There is, however, a slight risk that using Doxy PEP can cause increased antibacterial resistance over time, with subsequent loss of prophylaxis benefit, which could threaten available treatment options over the long term (National Institutes of Health, 2023; Reichert & Grad, 2023). Further research is needed to assess its effectiveness among other populations and over repeated use.

Human immunodeficiency virus (HIV)

HIV is a virus that attacks the immune system. Because of this, an HIV-infected person is more vulnerable to other infections such as tuberculosis, fungal infections, bacterial infections, and certain cancers (WHO, 2022b). Conversely, having certain STIs, such as herpes, gonorrhoea, and syphilis, can increase the risk of acquiring and transmitting HIV (WHO, 2022b). According to available national data, injection drug use and the sharing of injection materials accounts for most HIV cases among Indigenous populations (Miller et al., 2011; Pearce et al., 2021; PHAC, 2011a, 2014a). However, other substances that alter judgement, leading to risky sexual behaviours or affecting adherence to antiretroviral treatment (ART), can also increase the risk of getting and transmitting HIV (Centers for Disease Control and Prevention [CDC], 2021). Sexual transmission among heterosexual individuals is the second most common transmission pathway, while men who have sex with men is the third most frequent exposure category among Indigenous males (PHAC, 2011a).

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[3] In fact, *Neisseria gonorrhoeae*, the pathogen causing gonorrhoea, has developed resistance to all classes of antibiotics used for treatment, and antimicrobial resistance has been growing progressively, making gonococcal infections an emerging public health threat worldwide (PHAC, 2015).

[4] Single-dose therapy has the advantage of being convenient and ensuring virtually 100% adherence; however, there are disadvantages and greater risks for certain populations. For more information, please refer to Kingston & Carlin (2002).

HIV can also be transmitted from an infected mother to her newborn during birth (Adachi et al., 2018).

Taking pre-exposure prophylaxis (PrEP)[5] as prescribed can be highly effective in preventing HIV (CDC, 2022a). However, uptake of PrEP can be low for some populations due to low awareness of PrEP, stigma related to HIV and attending HIV clinics, add preferences for trusted community settings for discussion about HIV testing and prevention (Estcourt et al., 2023). It can also be low due to stigma related to accessing PrEP, such as associations with "promiscuity" and high-risk behaviours (Mosley et al., 2018). Because of stigma and gender norms, marketing of HIV PrEP may not be as effective for heterosexual persons who might not "perceive themselves as being at risk for HIV infection or as candidates for PrEP" (Baugher et al., 2021, p. 1637). Additionally, it is well known that stigma can act as a barrier to education and preventative measures (Woodgate et al., 2017b), and some Indigenous people face multiple stigmas that have been attributed to being Indigenous, living in poverty, and/or identifying as either lesbian, gay, bisexual, transgender, queer or questioning, or Two-Spirit (LGBTQ2S+) (Woodgate et al., 2017a). It is thus important that information about using HIV PrEP is incorporated within culturally appropriate sexual health promotion and services to ensure that the information is trusted by community members, better addresses relevant stigmas, and supports PrEP uptake and acceptance by all who can benefit (Estcourt et al., 2023; Goymann et al., 2023; Mosley et al., 2018).

If left untreated, HIV can lead to AIDS, a debilitating disease that can cause prolonged suffering and be life-threatening. With the use of ARTs, taken for the duration of one's life, individuals diagnosed with HIV can suppress viral load, prevent transmission to others, and live a long and healthy life. Because of advancements in ARTs, AIDS is no longer a global health concern (WHO, 2022b). However, not everyone benefits equally from ART or achieves virological suppression, including many Indigenous people with HIV in Canada (Benoit et al., 2017). This is due to a number of possible factors, including severity of HIV disease at the time of antiretroviral initiation, poorer adherence to treatment, injection drug use, composition of the ART regimen, and engagement with and inequities in HIV care (Barker et al., 2018; Benoit et al., 2017; McClarty et al., 2021). Achieving equitable access to ARTs and fostering optimal adherence to treatment are essential for improving HIV-related health outcomes among Indigenous people (McNeil et al., 2017). This requires attention to addressing the multiple barriers that Indigenous people face in accessing HIV care (discussed on the following pages).

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[5] Different PrEPs are available, based on different risk factors (through sex or injection drug use), as well as other characteristics such as gender and weight (CDC, 2022b).

Viral hepatitis

Viral hepatitis is an inflammatory condition of the liver, primarily caused by viruses, including: hepatitis A (HAV), hepatitis B (HBV), hepatitis C (HCV), hepatitis D, hepatitis E, and hepatitis G viruses (Jefferies et al., 2018; Odenwald & Paul, 2022). Viral hepatitis is a significant public health issue that affects millions of people globally and can have potentially serious health consequences, including liver cancer and death (CDC, 2020). While some individuals infected with viral hepatitis show symptoms, many others do not, enabling the transmission of hepatitis infections to others. Symptoms of viral hepatitis may include: jaundice, fever, fatigue, loss of appetite, nausea, vomiting, abdominal and/or joint pain, dark urine, and clay-colored stool. Some forms of viral hepatitis can be prevented or treated, while others cannot (CDC, 2020). There are also differences across types of viral hepatis in terms of the populations most affected and the severity of health outcomes associated with acute infection. As nationally notifiable diseases, HAV, HBV, and HCV will be discussed in greater detail below.

Hepatitis A (HAV)

While HAV is primarily transmitted by ingesting contaminated food and drinking water, it is included in this report because it can be transmitted from one person to another through close, personal contact, including sexual activity (CDC, 2020; WHO, 2022c). Individuals at increased risk of infection include those living in low-income regions or experiencing homelessness (CDC, 2020; Jefferies et al., 2018; Smith et al., 2019), international travelers, men who have sex with men, as well as people who use or inject drugs, have occupational exposure, or have close personal contact with an adopted child from another country where HAV may be prevalent (CDC, 2020). In 2021, the rate of HAV in Canada was 0.46 per 100,000 persons (PHAC, 2023b).

Health outcomes are less severe for HAV than for other forms of viral hepatitis. Individuals with HAV may experience diarrhea, which is a common symptom (CDC, 2020). Most people are sick for a few weeks to a few months and recover on their own, with the help of supportive care to relieve symptoms (CDC, 2020). Health outcomes are more severe for older people compared to younger people (WHO, 2022c) and for those who have chronic liver disease or HIV, leading in some cases, though rare, to death (CDC, 2020). Unlike other forms of viral hepatitis, HAV has no potential to become a chronic, long-term infection (CDC, 2020; Odenwald & Paul, 2022). It can also be prevented through vaccination (CDC, 2020).

Hepatitis B (HBV)

HBV can manifest as a mild illness that lasts only a few weeks; however, it can also lead to more serious health outcomes, including a life-long chronic condition, cirrhosis, liver cancer, and fatalities. In fact, HBV is the leading cause of liver cancer globally (CDC, 2020). More than half of individuals infected with HBV do not know they have the infection, which poses a barrier to preventing its spread (CDC, 2020). The younger a person is when infected with HBV, the greater the likelihood that individual will develop a chronic infection. Approximately 90% of infected infants eventually develop a chronic infection, while most older children and adults recover completely and do not develop a chronic infection (CDC, 2023b). In 2021, the rate of HBV in Canada was 9.22 per 100,000 persons (PHAC, 2023b).

HBV is primarily transmitted through the exchange of bodily fluids, such as blood or semen, from an infected person to uninfected persons. Transmission pathways include sexual activity, passage of HBV from an infected mother to her newborn during


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birth, the sharing of medical and drug-related equipment, direct contact with blood or open sores of an infected person, poor infection control in health care facilities, and sometimes, though less often, by the sharing of personal items such as toothbrushes or razors (CDC, 2020). HBV can be prevented through vaccination, especially in childhood (Odenwald & Paul, 2022). Acute HBV is generally treated through supportive care to relieve symptoms, with no specific treatment available; however chronic HBV can be treated with antiviral drugs (CDC, 2020). These drugs have a high degree of efficiency; however, they are not completely effective, have significant side affects, and require a lengthy period of treatment, which can pose significant barriers to adherence (Castaneda et al., 2021; Odenwald & Paul, 2022). Further, even when patients fully adhere to treatment, there is still a considerable risk of HBV relapse after medication has been completed (approximately 30% of patients by 5 years); thus, patient follow-up is recommended (Odenwald & Paul, 2022). Certain individuals are at increased risk of exposure to HBV, including people born in countries with high HBV prevalence, people who use injection drugs, and those who have HIV, HCV, or STIs. Other high-risk groups include: people who have multiple sex partners, share needles, have close contact with infected people, require immunosuppressive therapy, are on kidney dialysis, or those who donate blood, plasma, organs, tissues, or semen (CDC, 2020).

Hepatitis C (HCV)

HCV can be transmitted in similar ways to HBV, such as through the exchange of bodily fluids from an infected person to a non-infected person through sexual activity; from an infected mother to her newborn during birth; through the sharing of contaminated equipment that pierces the skin; and through poor infection control in health facilities (CDC, 2020). Prior to 1992, HCV was also commonly spread through blood transfusions or organ transplants. Injection drug use accounts for most HCV cases in Canada, including among Indigenous populations (Lourenço et al., 2021, Miller et al., 2011). In 2021, the rate of HCV in Canada was 19.71 per 100,000 persons (PHAC, 2023b).

While some individuals with HCV experience mild illness, approximately 40% of infected individuals will develop chronic hepatitis, which may lead to cirrhosis later in life (CDC, 2020). HCV cannot be prevented through vaccination; however, it can be treated through direct acting antivirals (DAAs), which have minimal side effects and a high degree of effectiveness, with approximately 95% of individuals completing treatment being cured (CDC, 2020). While these antivirals offer hope that HCV can be eradicated globally, some marginalized populations, including Indigenous people and women who inject drugs, are less likely to initiate DAAs in Canada (Saeed et al., 2017). These findings highlight the need for targeted strategies to address barriers to accessing DAA treatment and engaging with HCV care for marginalized populations (Pearce et al., 2019; Saeed et al., 2017). This may include enhanced cultural safety in healthcare providers' relationships with Indigenous patients (Pearce et al., 2019). Nevertheless, treatment should be initiated promptly to avoid liver damage and further transmission of the virus (CDC, 2020).

Non-notifiable STBBIs

Human papillomavirus (HPV)

HPV is possibly the most common sexually transmitted infection, with more than 80% of all individuals who are sexually active being infected at some point in their sexual lives (Bird et al., 2017). There are over 200 types of HPV, most of which are asymptomatic and resolve themselves; however, reinfection is possible (Szymonowicz & Chen, 2020). HPV 6 and 11 cause genital warts and do not lead to cancer; however, there are 14 high-risk HPV types (HPV 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 66, and 68) that can cause various types of cancer (cervix, anus, penis, vagina, vulva, oropharynx, tonsil, and/or oral cavity cancer), with HPV 16 and 18 causing most HPV-related cancers (Bird et al., 2017; Cogliano et al., 2005; Stein et al., 2015; Volesky et al., 2019).

HPV can be transmitted in a variety of ways, including through sexual activity, skin-to-skin or skin-to-mucosa contact, and from an infected mother to her newborn during birth (Petca et al., 2020). Three highly effective vaccinations are available in Canada to prevent HPV infection: CERVARIX® (HPV2), GARDASIL® (HPV4), and GARDASIL® 9 (HPV9) (Government of Canada, 2017); however, further efforts are needed to promote greater uptake of the vaccine (which requires two or three doses) within the Canadian population to reduce the burden of HPV-related disease (Bird et al., 2017).

Herpes simplex virus (HSV)

HSV, commonly referred to as herpes, is highly contagious and can be spread by kissing, skin-to-skin contact, oral sex, penetrative sex, or other sexual activity. It can also be transmitted from an infected mother to her newborn during pregnancy (third trimester) or childbirth (Samies et al., 2021). Neonatal herpes can cause neonatal death if untreated.

There are two types of HSV – type 1 (HSV-1) and type 2 (HSV-2) (Heilingloh et al., 2020). In the past, HSV-1 was primarily transmitted by oral-to-oral infection in and around the mouth and HSV-2 was almost exclusively located in the genital area; however, today, both are commonly found in both oral and genital areas, most likely due to the rise in oral sex (PAHO, 2019). HSV usually causes mild but uncomfortable and sometimes painful symptoms like cold sores and genital herpes,[6] but can also have more severe health outcomes, such as:

- vision threatening eye infections,
- genital ulcer disease,
- neonatal neurological disability,
- life threatening infections of the brain and spinal cord, and
- even death (Harfouche et al., 2021; WHO, 2023; Suryawanshi et al., 2023).

Individuals with HSV-2 are more susceptible to serious health outcomes, as are immune-compromised and immune-immature individuals (Heilingloh et al., 2020). HSVs can increase the sexual transmission and acquisition of HIV (Harfouche et al., 2021), and may lead to adverse psychosexual outcomes, including effects on sexual relations, depression, anxiety, and feelings of shame (Yousuf et al., 2020).

Many individuals infected with HSV experience no visible symptoms, making it difficult to detect, which when coupled with its chronic and recurring nature, makes HSV highly prevalent and a significant global health concern (Harfouche et al., 2021; Heilingloh et al., 2020).

Symptoms may include painful genital ulcers, legions, sores, crusts, tender lymphadenopathy, and pain or discomfort during urination (Fleming et al., 2006). An HSV test, usually done as a swab test, blood test, or lumbar puncture, can be used to help identify the presence of the virus in the body; determine whether sores on the mouth or genitals are caused by HSV; or diagnose the presence of HSV infection in pregnant women, newborns, and individuals at risk for STBBIs (MedLine Plus, 2020). Various antiviral medications can help reduce the severity and frequency of HSV symptoms; however, they cannot cure the infection and no licensed vaccines currently exist to prevent the infection (Heilingloh et al., 2020). Avoiding oral contact with others when symptoms of oral herpes are present can help prevent HSV. Using condoms can also help reduce HSV transmission, though this method is not always effective (Institute for Quality and Efficiency in Health Care, 2018; WHO, 2023).

History of public health responses to STBBIs in Canada

In response to shifting attitudes and social changes during the 1960s and the AIDS epidemic of the 1980s, Canada's public health response to STBBIs shifted from responding to disease outbreaks towards preventing them, with a focus on targeting specific populations (PHAC, 2011a). Responding to the Severe Acute Respiratory Syndrome (SARS) epidemic, in 2004 the Government of Canada created the Public Health Agency of Canada to provide a more coordinated response to epidemics and pandemics (PHAC, 2008). The PHAC conducts routine surveillance on some STBBIs and has developed frameworks for action to reduce the incidence of STBBIs in the country. Through a series of guidelines and standards, PHAC also provides recommendations for healthcare providers and public health in the areas of screening, diagnosis, and treatment of STBBIs (see PHAC, 2023a). These guidelines operate alongside provincial, territorial, and other jurisdictional guidelines or practice recommendations that are specific to local contexts (PHAC, 2021a).

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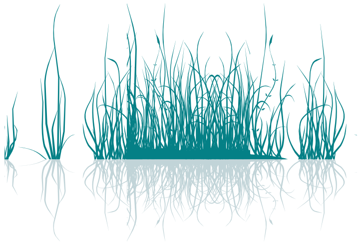
[6] Genital herpes is one of the most common STIs (Mathew & Sapra, 2022).

The federal guidelines and standards put forth by PHAC (2021a) outline the responsibilities for primary and secondary STBBI prevention at the provincial level. Primary STBBI prevention focuses on infection prevention strategies through person-centred counselling and education about how to reduce risk; while secondary prevention aims to "minimize the impact and spread of infection through early detection, treatment, counselling and partner notification" (PHAC, 2021a, n.p.). Healthcare providers are responsible for incorporating primary and secondary STBBI prevention into routine care. This includes:

- providing education on signs and symptoms of STBBIs;
- assessing and discussing STBBI risk;
- offering vaccination (when available);
- offering STBBI screening and testing;
- providing treatment, follow up, and counselling;
- supporting partner notification, when appropriate; and
- reporting notifiable cases to local public health authorities (PHAC, 2021a).

The *Pan-Canadian Sexually Transmitted and Blood-borne Infections Framework for Action*, released in 2018, provides a five-year action plan with strategic goals to reduce the incidence of STBBI in Canada; improve access to testing, treatment, and ongoing care and support; and reduce stigma and discrimination that create vulnerabilities to STBBIs, by the year 2030 (PHAC, 2018a). In response to this strategic framework, PHAC released an action plan titled *Accelerating our response: Government of Canada Five-Year Action Plan on Sexually Transmitted and Blood-Borne Infections,* which specifies the government's priorities under the Framework (Jackson & Tremblay, 2019). However, it is important to note that this framework adopts a pan-Canadian approach and lacks tangible steps to reach the 2030 timeline. A distinctions-based, culturally appropriate approach is needed, with co-developed measurable actions aimed at reducing the rates of STBBIs and creating safe, supportive spaces of care.



STBBI surveillance in Canada

Indigenous specific rates of STBBIs are often not available due to limitations in health surveillance and data collection methods. The Public Health Agency of Canada conducts surveillance of "nationally notifiable diseases" in coordination with provincial and territorial governments through the Canadian Notifiable Disease Surveillance System (CNDSS). However, very few demographic characteristics are collected on cases and race/ethnicity is not one of them (PHAC, 2018b). PHAC monitors HIV through the HIV/AIDS Surveillance System, which collates data that is voluntarily submitted by Canadian provinces and territories from both public health and laboratory reporting (PHAC, 2022a). This means the only data about STBBI rates that is available for Indigenous people is what might be collected through the First Nations and Inuit Health (FNIH) branch of Indigenous Services Canada or on-reserve surveillance systems, established by Indigenous communities,[7] or data that is voluntarily collected in provincial/territorial communicable disease surveillance systems.

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[7] See for example, Health Canada (2010) and Yacoub et al. (2020).

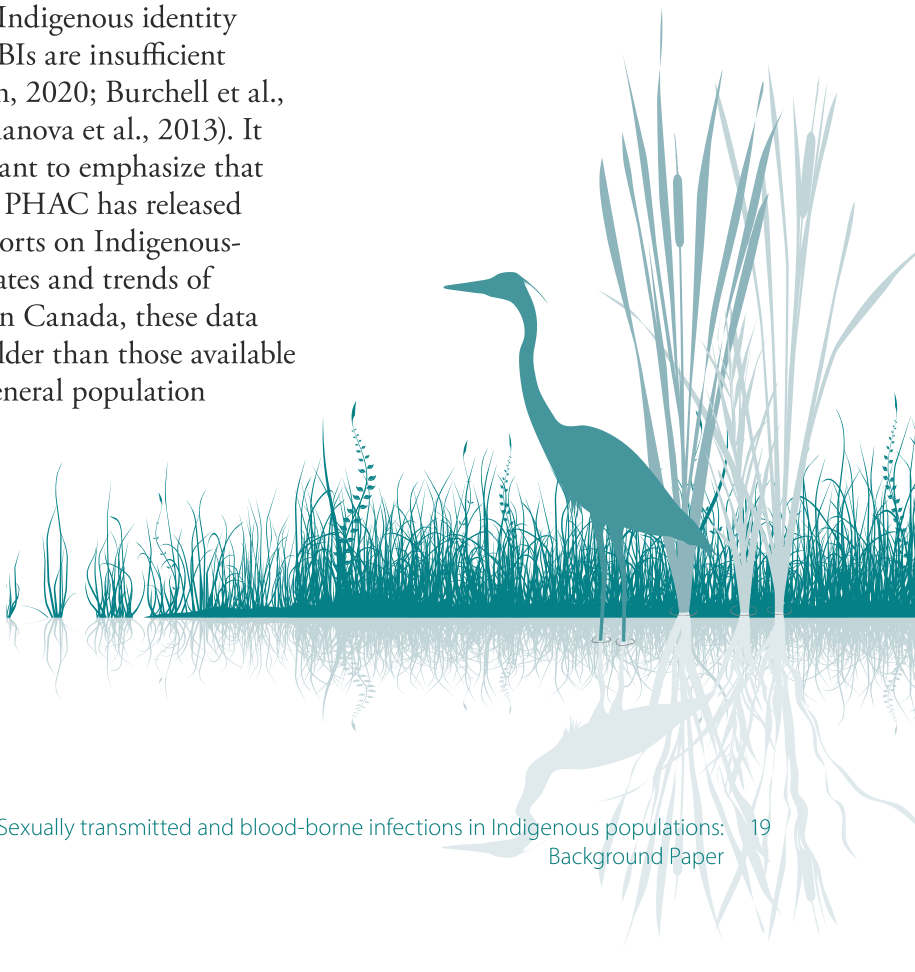
PHAC participates in several enhanced surveillance programs that provide information on clinical or treatment data, risk behaviours, and social determinants of health indicators (PHAC, 2023c). Some multi-site surveillance programs that provide enhanced information on STBBI rates in Canada include:

- Enhanced Hepatitis Strain Surveillance System (EHSSS), a multi-centre surveillance system which provides data on newly diagnosed acute and chronic HCV infection, including ethnicity and Indigenous identity data, and information on risk factors;
- I-Track, a multi-site surveillance system that monitors changes in drug use injection patterns, sexual risk behaviours, and HIV and HCV prevalence among people who inject drugs in Canada; and
- Enhanced Street Youth Surveillance (E-SYS), a multi-centre surveillance program that describes the prevalence of STBBIs, risk factors, and other factors associated with street-involved youth in sites across Canada (PHAC, 2011b).

However, collection of ethnic identity data is not consistent across Canada. Some provinces or territories do not report on race or ethnicity, while others do so with varying levels of completeness (from 22% to 100%) (Haddad et al., 2021). The exclusion and inconsistent use of Indigenous identity in much of the surveillance data has resulted in particularly scant data on Chlamydia, gonorrhoea, and infectious syphilis among Indigenous populations in Canada (Smylie & Firestone, 2015).

STBBI-related data are also collected through independent research initiatives across the country, most commonly seen in investigations of STBBI rates and trends in specific sub-populations (i.e., Indigenous street-involved youth, incarcerated individuals, etc.). Due to these trends in surveillance and reporting, national-level data on the links between Indigenous identity and STBBIs are insufficient (Atkinson, 2020; Burchell et al., 2014; Uhanova et al., 2013). It is important to emphasize that although PHAC has released select reports on Indigenous-specific rates and trends of STBBIs in Canada, these data may be older than those available for the general population of Canada. In fact, there is a significant gap in disaggregated data in the past decade, making comparisons in rates and trends between populations difficult.

Recognizing the need for harmonized collection of high-quality data across jurisdictions to enable cross-jurisdictional comparisons, the Canadian Institute for Health Information (2022) released minimum pan-Canadian standards and guidelines for collecting race-based and Indigenous identity data in health systems. While this development of standards is a step forward, adoption of the standards remains voluntary, which may present an ongoing barrier to high-quality STBBI data for Indigenous populations.



STBBIs IN INDIGENOUS POPULATIONS

This section examines what is known about the context, rates, and trends of STBBIs among Indigenous populations in Canada. Specifically, it provides a discussion of the factors that influence the prevention, transmission, and treatment of STBBIs among Indigenous people, as well as an overview of the rates and trends for specific STBBIs and sub-populations.

Factors that influence the prevention, transmission, and treatment of STBBIs among Indigenous populations

Although statistics can provide a snapshot of STBBI rates and trends among Indigenous populations in Canada, they cannot tell the story of the broader structural and systemic contexts that Indigenous populations experience. In fact, to fully understand these rates and trends and develop effective solutions for improving STBBI health outcomes for Indigenous Peoples', one must understand the intersecting factors that influence Indigenous health and well-being generally.

According to Andermann (2017), there is a potential to improve Indigenous health by approaching communicable diseases through the lens of syndemics. First proposed by Singer (1996), the theory of syndemics provides a conceptual framework for understanding health conditions in relation to how they may be exacerbated by social, economic, environmental, and political factors (as cited in Tsai, 2019). Using this lens, the literature highlights the various factors that influence STBBI rates in Indigenous populations in Canada that are rooted in the legacy of colonialism and intersect with each other, including socioeconomic marginalization, intimate partner violence (IPV), abuses of power, child abuse, mental health and addictions, stigma, and inequitable access to health services.

The legacy of colonialism, including socioeconomic marginalization, racial discrimination, intergenerational trauma, and high rates of mental health issues and addictions, violence, and despair, creates conditions that influence Indigenous people's risk taking and health seeking behaviours, which in turn drive higher rates of STBBIs.

Legacy of colonialism

STBBI prevention requires a focus on an individual's perception of risk, their health behaviours, and the social, cultural, and interpersonal contexts in which they engage in practices that are either protective or render them vulnerable to infection (Mooney-Somers et al., 2011). For Indigenous Peoples in Canada, this context is heavily influenced by colonialism. Colonial and assimilationist laws, policies, and practices exposed many Indigenous people to violence, trauma, and abuses of power spanning generations, and severed traditional parenting practices, traditional teachings, languages, and ceremonies through which knowledge about sexual health and relationships would traditionally have been imparted (Gesink et al., 2016; Lys et al., 2018a). The legacy of colonialism, including socioeconomic marginalization, racial discrimination, intergenerational trauma, and high rates of mental health issues and addictions, violence, and despair, creates conditions that influence Indigenous people's risk taking and health seeking behaviours, which in turn drive higher rates of STBBIs. As Burchell et al. (2014) recognize, while individual behaviours are a key factor in the transmission of STBBIs, they cannot be divorced from the legacy of colonialism for Indigenous Peoples. A key example is the way in which Indigenous Peoples' history of residential schools and intergenerational trauma, including physical, sexual, mental, and emotional abuse, may contribute to patterns of injection drug use, thus indirectly contributing to heightened rates of HIV and HCV among Indigenous populations (Burchell et al., 2014), and poorer sexual health outcomes generally (Craib et al., 2009; Healey, 2014a, 2014b, Varcoe & Dick, 2008, Wilk et al., 2017).

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The legacy of racism and discrimination that Indigenous people have and continue to experience has had significant impacts on their access to health services that are both accessible and culturally safe

(Nguyen et al., 2020).

The means by which colonialism and intergenerational trauma contribute to disproportionately high rates of STBBIs among Indigenous populations are both direct and indirect. As a result of colonialism, Indigenous women and girls experience high levels of violence and sexual abuse (Heidinger, 2022), inhibiting their ability to exercise sexual agency over safe sex practices, such as their ability to decide whether to have sex or whether a condom or other contraception will be used. High rates of violence, abuse, mental health issues, and addictions among Indigenous populations can increase the risk of contracting STBBIs through compounding stigmas, engagement in riskier sexual health behaviours, and poorer adherence to STBBIs treatment (Armenta et al., 2021; Burchell et al., 2014). The legacy of colonialism also manifests in socioeconomic marginalization of Indigenous people, including higher levels of poverty, inadequate housing, and poorer educational and employment outcomes, all of which can heighten the risk of STBBIs in Indigenous populations (Andermann, 2017). The legacy of racism and discrimination that Indigenous people have and continue to experience has had significant impacts on their access to health services that are both accessible and culturally safe (Nguyen et al., 2020). Further, social exclusion and racial discrimination can be internalized in ways that affect self-esteem and self-efficacy, which in turn affects risk-taking and health seeking behaviours (Wynne & Currie, 2011). Colonial policies that denigrated Indigenous cultures and ways of life attempted to erase Indigenous Peoples' healthy views on sexuality and gender expression, creating an environment of stigma and shame, which is a known barrier to accessing STBBI prevention and sexual health services, such as testing (Barkman et al., 2022).

Collectively, the impacts of colonialism present challenges to STBBI prevention and care in Indigenous communities. Each of these impacts (also known as determinants) intersects with other determinants in ways that increase the risk of STBBI transmission for Indigenous people. Further, when in the face of multiple competing life challenges, some Indigenous people may prioritize meeting immediate physical needs over sexual health concerns (Healey, 2016; MacPhail & McKay, 2018).

Socioeconomic factors

Literature suggests that socioeconomic factors are significant determinants of health that influence the rates and trends of STBBIs in Indigenous populations. Indigenous Peoples face significant socioeconomic disparities compared to the general population in Canada, including in the areas of poverty, housing, food insecurity, employment, education, and literacy (National Collaborating Centre for Indigenous Health [NCCIH], 2017a, 2017b, 2017c, 2020). Research on HIV trends in Ontario suggests that housing instability is a risk factor for HIV, and that frequent moves – particularly during childhood – may be an indicator of poor

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Providing information about STBBIs in culturally appropriate ways is important for reducing stigma and dispelling myths around STBBIs and sexual health

(CAAN & CATIE, 2017; Woodgate et al., 2017a).

health outcomes (Burchell et al., 2014). The authors emphasize that housing instability and moving frequently may affect an individual's ability to form "strong social networks, maintain employment and schooling, and have continuity in the health care services they receive," all of which may affect HIV risk (Burchell et al., 2014, p. 33). For example, strong social networks play key roles in STBBI prevention by influencing sexual risk-taking behaviours and diffusing sexual health information (Pagkas-Bather et al., 2020). Additionally, as schools are primary sites for sexual health education, disruptions to education brought about due to housing instability can present a challenge to successfully instilling public health education among a segment of the youth population who fail to receive adequate sexual health education (Burchell et al., 2014).

Poverty and food security are other factors that contribute to increased risk of STBBIs among Indigenous populations (Lys et al., 2019; Minichiello et al., 2013; NCCIH, 2020). Poverty increases biological susceptibility to HIV through food insecurity and malnutrition, is a driver of Indigenous migration into urban centres, which are sites of increased HIV infection, and is linked to a lack of access to health care (e.g., ability to pay transportation costs to medical appointments, health insurance, medications, or certain treatments) and inability to afford condoms (Duncan et al., 2011). Access to food and stable housing are important for helping HIV patients manage their illness with medications (German & Latkin, 2012) and for improving physical and mental health outcomes generally (Rourke et al., 2012; Zurba et al., 2012). In a study conducted by Logie et al. (2019b), in collaboration with an Indigenous sexual health program in the Northwest Territories (NWT), researchers found that food insecurity was associated with lower safer sex efficacy among youth. Their research points towards multiple pathways from food insecurity to HIV risk, including whereby food insecurity can lead to depression and substance use, which in turn may reduce safe sex practices (Logie et al. 2019b).

Education and literacy are also key determinants of STBBI risk among Indigenous populations. Stigma related to sexual health and myths about STBBIs can flourish in an environment where education and literacy are lacking. Educational attainment has been found to be associated with knowledge about STBBIs and increased prevalence of condom use (Kinasevych, 2011). Educational attainment is also an important factor in risk awareness, which affects risk-taking behaviours, and in poverty reduction, which affects STBBI transmission (Scheidell et al., 2018). Providing information about STBBIs in culturally appropriate ways is important for reducing stigma and dispelling myths around STBBIs and sexual health (CAAN & CATIE, 2017; Woodgate et al., 2017a).

Intimate partner violence

Indigenous women experience disproportionately high rates of gendered violence (Heidinger, 2022). Logie et al.'s (2019a) research highlights links between intimate partner violence (IPV) and safer sex efficacy among female Indigenous youth. The authors emphasize that IPV may play a role in shaping sexual risk and sexual agency among female youth, including agency over condom use.

The Cedar Project, initiated in 2003 by an independent body of Indigenous Elders, leaders, health and social service experts, and academics in British Columbia, sought to understand connections between the ongoing impacts of colonialism and STI transmission among young Indigenous people who use drugs in Vancouver and Prince George. They found multifaceted associations between sexual abuse and STI rates among project participants (Chavoshi et al., 2013). In particular, young women were less likely to use condoms consistently during sex if they had been victims of recent sexual abuse. The study also found that sexual abuse impacts mental health, empowerment, and overall health vulnerabilities, which can put women at greater risk for drug dependence, homelessness, and other factors that, in turn, may increase their likelihood of contracting HIV.

When addressing IPV and HIV risk, it is crucial to situate HIV prevention and care within the context of relationships. A qualitative study among Indigenous women in Quebec suggests that decision making regarding HIV prevention is complex and dependent on relationships and power dynamics – all of which are tied to gender inequalities and women's empowerment (O'Brien et al., 2020). Therefore, sexual agency and HIV prevention cannot be considered separate from relational power dynamics, and gender equity and empowerment should be threaded into prevention programming.

Abuses of power

Abuses of power can also contribute to the spread of STBBIs in Indigenous communities (Gesink et al., 2016; Lys et al., 2019). Gesink et al. (2016) conducted interviews with community members from one First Nation in Alberta to better

understand the high rates of STIs and how they can be reduced, based on Cree ways of knowing. From hearing numerous stories of abuse, violence, and trauma, their research highlighted abuse of power in relationships as a central theme to understand the high rates of STIs. This abuse of power occurred at multiple levels, including the person-to-person, kinship, intergenerational, communal, societal, and system levels, and resulted in mental, emotional, and spiritual wounds. Some participants attributed the high rates of STIs to individuals seeking "medicines" like sex, drugs, and alcohol to end their pain and suffering from these wounds. Some participants also talked about how fear of being kicked out or abandoned can prevent young girls from reporting sexual abuse from family members, creating an environment of silence and a normalization of sexual abuse. Others spoke about how abuse of power in monogamous relationships led to decreased safety and inability to negotiate condoms, a finding echoed in other studies (Devries & Free, 2010; Krüsi et al., 2018; Pulerwitz et al., 2002). Participants in Gesink et al.'s (2016) study identified ceremony, traditional teachings, and the restoration of relationships as medicines that promoted healing, thereby suggesting that resolving abuse of power in relationships and focusing on methods grounded in traditional teachings and ceremonies may help reduce the risk of STBBIs.

Abuse of power was also found to contribute to STBBI transmission among youth from the Northwest Territories (Lys et al., 2019) and in Corosky and Blystad's (2016) study of Inuit youth's access to sexual health and rights in Arviat, Nunavut. In Lys et al.'s (2019) study, some participants identified the predatory behaviours of older men who invited younger women to party with them as one of the biggest sexual health issues facing women in their community, as sexual activity was often not consensual and did not involve use of contraceptives. In this study, access to alcohol became the tool by which power was exercised by the older men over younger women. In Corosky and Blystad's (2016) study, the normalization of sexual abuse in the community was identified as a source of powerlessness for Inuit girls and a barrier to sexual health support.

...sexual agency and HIV prevention cannot be considered separate from relational power dynamics, and gender equity and empowerment should be threaded into prevention programming.

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Child abuse

Research suggests that both sexual and emotional child abuse can increase exposure to HIV and HCV by influencing behaviours that are associated with higher exposure risk. Child abuse has been associated with several risk factors, including: increased alcohol and substance abuse, homelessness, self-harm, suicide ideation and attempted suicide, mental illness, multiple sexual partners, sex work, and experiences of overdose (Bucharski et al., 2006; Pearce et al., 2008; Ross et al., 2015). These conditions place individuals at increased risk of HIV and other STBBI infections (Bucharski et al., 2006). Findings from the Cedar Project cohort affirm these results, referring to the pathways between childhood maltreatment and HIV/hepatitis C infection as a "cascade of consequences," including sex and drug-related risk behaviours (Pearce et al., 2021, p. 7). Because Indigenous populations in Canada have disproportionately high rates of childhood abuse due to the effects of colonialism (Corosky & Blystad, 2016; Fallon et al., 2021; Trocmé et al., 2021), researchers have found that Indigenous individuals who have experienced childhood abuse represent a "high risk group within a high risk group" in regards to hepatitis C risk factors (Parmar et al., 2016, p. 6).

Mental health issues and addictions

Research has shown that Indigenous populations are at increased risk of experiencing mental health and substance use disorders (Antonio & Chung-Do, 2015). These health disparities have been attributed to the impact of historical trauma on Indigenous Peoples (Gone et al., 2019; Jongbloed et al., 2016). Mental health problems and addictions may elevate the risk of STBBIs through injection drug use and sexual risk-taking pathways (Argento et al., 2019; Kalichman et al., 2013; Mooney-Somers et al., 2011), hampered help-seeking behaviours (Benz et al., 2021), and a failure to adhere to


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STBBI treatment (Kalichman et al., 2013; Willie et al., 2016).

Injection drug use is one of the most common determinants of HCV (Skinner et al., 2018) and HIV (Haddad et al., 2018; Tarasuk et al., 2021) infections among Indigenous populations. Studies examining risk of STBBIs among sex workers found that Indigenous sex workers were more than twice as likely than their non-Indigenous counterparts to be living with HIV and that substance use was associated with this increased risk (Duff et al., 2013; Goldenberg et al., 2014; Shannon et al., 2007; Wood et al., 2007). In one study, acohol and drug use were found to be associated with reduced condom use among youth living in the Northwest Territories, the majority of whom were Indigenous (Logie et al., 2018c). Substance abuse has also been identified as a barrier to accessing and engaging with STBBI care and prevention services (Falade-Nwulia et al., 2016; MacAfee et al., 2019; Tingey et al., 2022).

Mental health shapes STBBI transmission and prevention. In Logie et al.'s (2018b) study of mental health factors associated with STBBI vulnerability among young women in the Northwest Territories, the majority of whom were Indigenous, depression was found to have an indirect effect on high-risk sexual practices (such as having multiple sex partners) through substance use. Drugs may be used as a coping mechanism for dealing with emotional trauma, which in turn contributes to riskier sexual health behaviours (Argento et al., 2019; Shrier et al., 2001). This connection between mental health, substance abuse, and STBBIs highlights the value of integrated and co-located mental health, substance abuse, and sexual health services as a way of reaching and engaging populations at risk of STBBIs (Mendlowitz et al., 2023a; Salway et al., 2019; Socías et al., 2019).

Stigma

Multiple forms of stigma intersect to influence STBBI transmission and prevention among Indigenous populations. In addition to stigma related to being Indigenous, sexual orientation, and having an STBBI, colonialism has played a significant role in the development of stigma surrounding sexuality and bodies by enforcing normative ideas of shame around sex and imposing western understandings of gender and sexuality based on a heterosexual man/woman binary (Burns, 2020; Hunt, 2016; Sanderson et al., 2021). Colonialism, with its disruption to traditional coping mechanisms and healing processes, has been identified as a key factor in allowing sexual health related stigma and shame to arise in Indigenous communities where none existed previously (Armenta et al., 2021; Gesink et al., 2016). As a result, talking about sexual health is almost taboo, fostering a silence in many Indigenous communities that inhibits discussion on STBBIs (Barkman et al., 2022). This can result in misconceptions about transmission risk and reduced awareness of prevention services (Armenta et al., 2021; Barkman et al., 2022). Sexual stigma is thus a known barrier to STBBI prevention and a key driver of health disparities (Layland et al., 2020).

Despite efforts to reduce stigma surrounding STBBI infections in Canada and globally, significant stigma remains for Indigenous individuals seeking prevention, testing, and ongoing treatment for STBBIs, leading to avoidance of and delays in accessing sexual health prevention and care services (Barkman et al., 2022; Lys et al., 2019; MacLean, 2018). According to MacLean (2018), health and social service settings can be significant sources of stigma due to a number of contributing factors, including: care provider behaviours and attitudes, social norms and perceptions of behaviours (e.g., moral judgements on sexual activity or substance use), and a lack of cultural safety and accessibility for care recipients. There is also significant stigma associated with STBBIs at the societal level, as individuals may feel stigmatized by their peers, employers, and community members. These different levels of stigma can intersect to impact self-esteem, well-being, and health-seeking behaviour.

The barriers of stigma and shame can be particularly significant in small Indigenous communities, where care providers may be personally known to individuals accessing sexual health services and the ability to maintain confidentiality and anonymity cannot be assured, especially among youth who may feel judged, ashamed or embarrassed about being sexually active at their age (Barbour, 2017; Barkman et al., 2022; Gesink Law et al., 2008; Lys et al., 2019; O'Brien et al., 2020). In contrast, Barkman et al. (2022) found that individuals accessing STBBI-related health services in urban communities have greater physical access to health services, have more readily available information about STBBIs and testing, and experience less stigma associated with sexual health and more

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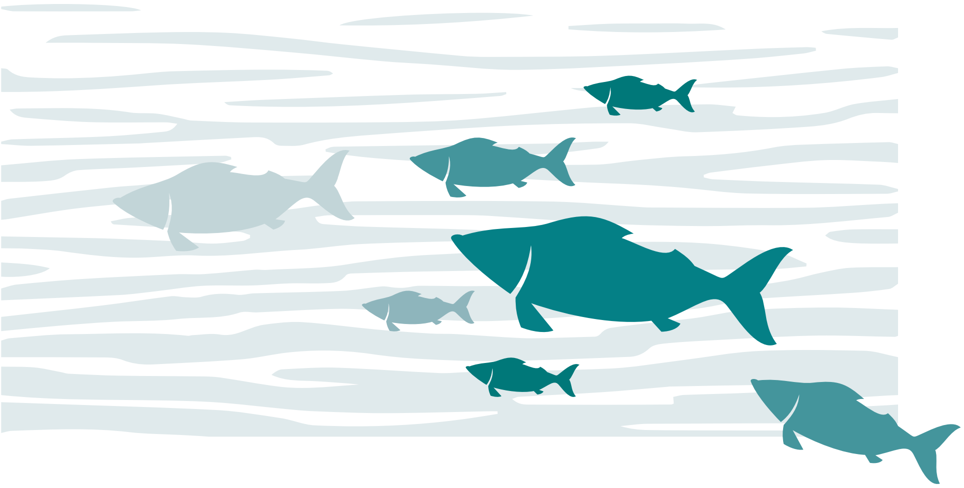
openness about sexuality, resulting in more normalized behaviours in relation to taking actions that promote sexual health.

In addition to stigma related to STBBIs and sexual health, being a member of the LGBTQ2S+ community can also compound barriers to appropriate sexual health services. The dominant discourse that constructs cisgender and heterosexual persons as normal, while obscuring sexual and gender diversity can render LGBTQ2S+ persons invisible in research, policies, and programs that address their sexual health needs (Logie et al., 2018a). This can inhibit "access to safer sex information for same-sex practices…"; constrain "access to safer sex resources and LGBTQ2S+ affirmative sexual healthcare;" and contribute to sexual stigma (Logie et al., 2018a, p. 2). Sexual stigma may be amplified for LGBTQ2S+ persons living in rural areas due to "community norms that [devalue] same sex identities and stigma surrounding LGBTQ[2S+]-specific services and agencies" (Logie & Lys, 2015, p. 2; see also Dahl et al., 2015; Logie et al., 2019c).

It is important to emphasize that STBBI stigma does not exist in isolation from other forms of stigma and discrimination faced by Indigenous populations in Canada (Goodman et al., 2017; Malama et al., 2023; Smye et al., 2023). MacLean (2018) references the layered stigma that can occur when the stigma of STBBIs is compounded by other identities or behaviours, such as sexual activity (e.g., multiple sexual partners or engaging in sex work), sexual orientation, and injection drug use. These intersecting stigmas may be further exacerbated by racism and discrimination, as Indigenous identity may provoke certain stereotypes and biases. Other intersecting stigmas include mental health issues and class. Collectively, these intersecting stigmas can present multiple barriers to accessing safer sex and harm reduction resources and lead to reduced safer sex efficacy (Logie et al., 2018a; Poteat & Logie, 2022). There is a need to consider the importance of these intersecting stigmas when trying to understand the experiences of Indigenous Peoples and STBBIs, particularly when considering the ways in which certain Indigenous populations may be subjected to multiple harms.



Access to health services

Having timely access to health care is critical for controlling STTBIs (Fairley, 2018). Indigenous communities and populations face unique barriers to accessing health services. In rural, remote, and northern communities, access to STBBI preventive services, early diagnosis, and treatment may be challenged by geographical remoteness and small population size. Access to health services in general may be constrained by a lack and transiency of qualified health care providers, reduced hours of health service operation, stigma, confidentiality issues, absence of primary care services, or the need to travel long distances to access services when they are not available locally, all of which impact continuity of care (Barbour, 2017; Corosky & Blystad, 2016; Fairley, 2018; Gesink Law et al., 2008; Larcombe et al., 2019). Although testing for STBBIs, such as HIV and HCV, continues to expand across the country, access to testing varies widely across geographic contexts.

Literature has increasingly focused on the importance of point-of-care testing (POCT) to improve accessibility of testing for HIV and other STIs. POCT refers to the testing of samples outside of central laboratories and in locations closer to the patients, such as in a physician's office, pharmacy, ambulance, long-term care facility, or in a patient's home, and is usually offered in conjunction with pre- and post-test counselling (Cowling & Dolcine, 2017). POCT generally utilizes a small portable medical device that can analyze samples and generate results at the time of testing (Madimenos et al., 2022). According to the BC Centre for Disease Control (BCCDC, 2012), POCT should be offered for routine testing at health services accessed regularly (i.e., family practices or health clinics), with additional targeted POCT testing offered to key populations through outreach services.

Research has shown that POCT can facilitate timely linkages to treatment and care (LeBlanc, 2019); as such, it offers a promising strategy for improving health outcomes for Indigenous individuals with STIs (Hughes & Fifer, 2018). However, a review of HIV testing in Canada in 2017 highlighted that POCT may not be available in many rural and remote communities, including in Indigenous communities. In 2017, there was no access to HIV POCT in the territories (Yukon, NWT, and Nunavut) or in any of the Atlantic provinces (Minichiello et al., 2017). More recently, some POCT has been initiated in the Northwest Territories, Nunavik, and Nunavut to respond to outbreaks of syphilis (Caya et al., 2022; Government of the Northwest Territories, 2022; Singh et al., 2022), while New Brunswick (Gould, 2018), Newfoundland (CATIE, 2020), and Prince Edward Island (Spencer, 2019) have initiated some POCT for either HIV, HPC, or both. To improve health outcomes among Indigenous populations, integrated care pathways are needed, with POCT offered in conjunction with rapid and complete treatment, partner notification, and regular testing (Hughes & Fifer, 2018). Community engagement and decision-making will be essential in the development and delivery of these services to improve "trust and access to care" (Hughes & Fifer, 2018, p. 1055).

Availability of self-testing options also offers the potential to increase access to STBBI testing in Indigenous communities. Self-testing allows individuals to collect their own samples and mail them to a lab for analysis. It offers the benefits of empowering individuals and reducing stigma associated with STBBIs; however, it also has some drawbacks. These may include a lengthier wait time for results, with resulting risk of not receiving timely counselling or access to treatment; as well as the risk of false-negatives and potentially prohibitive cost of test kits (Atkinson, 2020). Self-testing kits have been used successfully to test for HIV and other STIs like gonorrhoea and Chlamydia, including in resource-limited Indigenous communities. For example, one Métis community in Alberta piloted a dried blood spot (DBS) testing[8] project to identify STIs, which was administered by locally trained staff from a community service and offered in conjunction with related health information. DBS test users had very positive experiences, felt the test was easy, received adequate information about STIs, and indicated they would recommend the test to others and use it again in the future (Atkinson, 2020). Self-testing can also be linked with Internet/mobile-App based clinical

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[8] DBS testing involves prinking the skin, usually on the fingertip, and blotting the blood onto a filter paper called a Guthrie card, then shipping the sample to a lab for analysis.

management and support to help address barriers to accessing STI testing services in urban areas, including concerns around long wait times and lack of privacy; however, users would require access to these devices and have the necessary technology skills to use them (Fuller et al., 2013; Gilbert et al., 2017). Moreover, research among Inuit and First Nations women has found self-testing for HPV, which involves inserting a swab and collecting a sample, then shipping the sample to a lab for analysis, is acceptable, accurate, and preferred over provider-directed Pap screening for HPV (Cerigo et al., 2012, 2013; Zehbe et al., 2011, 2017).

Access to testing and treatment for STBBIs can be complex for rural and isolated communities, particularly for HCV. According to Skinner et al. (2018), treatment for HCV requires access to medical services (e.g., fibroscan, staging of liver disease) that are typically delivered by specialists in urban centres. This means that individuals from rural and isolated communities would likely have to travel to urban centres to get treatment for HCV infections. Barbour's (2017) research notes barriers to accessing health services in a rural Indigenous community in the Atlantic region, finding transportation from one's home community to centralized healthcare services can be difficult for those without a means of transportation. Having to rely on community transportation services may threaten confidentiality and anonymity if drivers are known to the patient.

There are a number of jurisdictional complexities that can act as barriers to adequate and consistent care for Indigenous populations, including difficulties in navigating complicated or disjointed referral processes between federal, provincial/territorial, and local Indigenous service providers (Dunn et al., 2021). Further issues relate to First Nations individuals living off reserve and their ability to access specific health services, since programs and services offered by First Nations communities are usually only available to on-reserve populations due to limited capacity, limited funding, or other factors (BC Association of Aboriginal Friendship Centres [BCAAFC], 2020).

Further, the literature suggests that distrust in the healthcare system among Indigenous populations is also a significant barrier to receiving not only STBBI-related preventive and treatment care, but overall health care in general (Negin et al., 2015; O'Brien et al., 2020; Pearce et al., 2021). The roots of this distrust are multifaceted and grounded in Indigenous Peoples' historical and contemporary experiences with the healthcare system (Jacklin et al., 2017). These experiences include, although are not limited to, forced medical experimentation conducted on Indigenous populations, including

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> (Dunn et al., 2021)

nutritional experiments in the residential schools and testing of new vaccines (Jacklin et al., 2017; Greenwood & MacDonald, 2021; Mosby & Swidrovich, 2021); segregated substandard health care facilities and services, also known as Indian hospitals (Greenwood & MacDonald, 2021); uninformed and coerced sterilizations (Collier, 2017; Stote, 2017); and the policy and practice of "birth alerts"[9] (Matheson et al., 2022; Tyler Doenmez et al., 2022).

Distrust in the healthcare system is compounded by a lack of culturally-safe and accessible health services for Indigenous patients, especially in urban centres (Bucharski et al., 2006; Pilarinos et al., 2023; Weerasinghe et al., 2023). Past negative experiences with the healthcare system, such as perceptions of being denied care, inferior care, negative stereotyping of Indigenous Peoples, racism, all forms of discrimination, and policies unsupportive of culture further undermine trust in mainstream health services (Browne, 2017; Browne et al., 2016; Jacklin et al., 2017; Lavoie et al., 2015; McCallum & Perry, 2018; Wylie et al., 2019; Wylie & McConkey, 2019). According to a study on Indigenous women's perspectives on culturally appropriate HIV care, participants shared they may avoid seeking mainstream care due to discriminatory treatment experienced by themselves or filtered down through the memories of generations of Indigenous people (Bucharski et al., 2006). When Indigenous patients are also members of the LGBTQ2S+ community, trust in the healthcare system may be further eroded when they feel judged by their healthcare provider or receive services that are not gender inclusive (Logie et al., 2019c). Addressing these issues can be challenging.

Given the central role that colonialism has played in helping to foster Indigenous health disparities and creating distrust in the mainstream health system, addressing these challenges will require attention and action toward reconciliation between Indigenous and non-Indigenous peoples in relation to health. The Truth and Reconciliation Commission (TRC) of Canada (2015) offers several key recommendations for working towards reconciliation, all of which may apply to improving Indigenous Peoples' access to STBBI health services. These include:

1. establishing, in consultation with Indigenous Peoples, measurable goals to identify and close the gaps in health outcomes between Indigenous and non-Indigenous communities and publishing annual reports;
2. addressing jurisdictional disputes concerning Indigenous people who do not reside on reserves and recognizing the distinct needs of Inuit, Métis, and off-reserve First Nations;
3. recognizing the value of Indigenous healing practices and using them in the treatment of Indigenous patients when requested;
4. increasing the number of Indigenous health care professionals;
5. providing cultural competency training for all health care professionals; and
6. ensuring medical and nursing students are taught about Indigenous Peoples' histories, teachings, practices, and rights, and acquire skills in intercultural competency, conflict resolution, human rights, and anti-racism.

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[9] In the past, hospitals have issued alerts to provincial child and family services to notify them of Indigenous births, often based on their own prejudicial assumptions about the parents and under the false pretext of ensuring the infant's safety and well-being. These birth alerts were associated the threat of state apprehension of infants.

Given the central role that colonialism has played in helping to foster Indigenous health disparities and creating distrust in the mainstream health system, addressing these challenges will require attention and action toward reconciliation between Indigenous and non-Indigenous peoples in relation to health.

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General rates and trends of STBBIs in Indigenous populations

As noted, general rates and trends of STBBIs in Indigenous populations are not easily identified through national-level data due to limitations in the variables collated from provincial and territorial reporting sources. Additionally, available STBBI data may underrepresent true STBBI rates and trends, as they account for only those who self-disclose diagnoses in research settings (e.g., surveys) and diagnoses recorded in medical settings. The following sections summarize available data on STBBIs from various data sources, including federal surveillance reports, provincial/territorial surveillance reports, and research projects. However, the authors recognize there are limitations in the relevance of certain datasets to all Indigenous populations across Canada and the conclusions drawn from studies that are dated (released prior to 2013) and restricted in terms of geographic scope and populations of focus. Despite these limitations, there are observable historic and ongoing trends in which Indigenous populations are disproportionately impacted by STBBIs in Canada, and more specifically by HIV and hepatitis C.

Notifiable STBBIs

Chlamydia

Nationally, PHAC (2013) estimated that in 2013, rates of Chlamydia were almost seven times higher among Indigenous adults compared to non-Indigenous adults. This disparity was also noted among First Nations adults in the 2008/10 Regional Health Survey, conducted by the First Nations Information Governance Centre (FNIGC) in 2012.

Some regional surveillance data from Saskatchewan and Alberta reveal exceptionally high rates of Chlamydia among First Nations. In Saskatchewan, rates of


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Chlamydia among First Nations increased from 1616.0 cases per 100,000 population in 2007 to 2064.9 cases per 100,000 in 2012, before decreasing to 1770.8 per 100,000 in 2016 (Indigenous Services Canada [ISC], 2018). These rates were 7.2 times, 6.8 times, and 5.2 times higher than the corresponding rates for Canada over these periods, suggesting that the gap between the two populations may be declining over time, perhaps due to increased awareness and availability of testing, screening, and contact tracing activities. Between 2008 to 2013, Chlamydia accounted for 51.1% of reported communicable diseases in Saskatchewan's Northern Inter-Tribal Health Authority Region (Lam et al., 2017). Health Canada's Medical Officer of Health (2013) in Alberta reported increasing rates of STIs among on-reserve First Nations over the period 2007-2011. Chlamydia was the most commonly reported STI, with rates increasing by 50% over this period. Vertical transmission of Chlamydia was also tracked over this period at a rate of 1.4 per 10,000 live births (Medical Officer of Health, 2013).

The highest rates of Chlamydia have been reported in Canada's northern regions. While surveillance data for these regions often do not disaggregate by Indigenous populations, it is important to remember that Indigenous people represent the majority of the population in the Northwest Territories (51%) and Nunavut (86%) (ISC, 2020). Over the period 2010-2015, the rate of reported laboratory-confirmed cases of Chlamydia was 2002.5 per 100,000 people in the Northwest Territories and 3791.2 per 100,000 in Nunavut, compared to the national average of 325.0 per 100,000 (Choudhri et al., 2018b). By 2020, this rate had increased to 3816.1 per 100,000 population (PHAC, 2023d). Collectively, Chlamydia accounted for approximately 54% of all reported diseases and 74% of all STIs reported in Nunavut over the period 2007 to 2014 (Office of the Chief Medical Officer of Health, 2016). In 2013, the age-standardized rate of Chlamydia in Nunavut was 3000 per 100,000 population compared to less than 500 per 100,000 population for the rest of Canada (Office of the Chief Medical Officer of Health, 2016). The Government of Quebec also reports widespread Chlamydia infection in the Nunavik region, which is predominately Inuit. In 2017, the incidence rate for Chlamydia was 18 times higher in this region than the rest of the province (Institut National de Santé Publique du Québec, 2017). Over the period 2013 to 2017, the rate of Chlamydia infection in this region increased by more than 44%.

In contrast, Chlamydia rates are much lower among on-reserve First Nations in the Atlantic provinces. The crude rate of Chlamydia declined from 9 per 1000 persons in 2011 to 4 per 1000 persons in 2015, which was slightly higher than the Canadian rate of 3 per 1000 persons (First Nations and Inuit Health Branch, 2016).

Gonorrhoea

The available evidence is limited for gonorrhoea, but what exists suggests Indigenous populations have disproportionately higher rates than the non-Indigenous population. In Saskatchewan, the rates of gonorrhoea among First Nations increased from 540.3 per 100,000 to 638.7 per 100,000 from 2007 to 2012, then decreased to 445.7 per 100,000 population in 2016 (ISC, 2018). In comparison, the rates of gonorrhoea for Canada were 36.1 per 100,000, 37.5 per 100,000, and 65.4 per 100,000 over 2007, 2012, and 2016 respectively. In the Northern Inter-Tribal Health Authority Region of Saskatchewan, 16.8% of the communicable diseases reported over the period 2008-2013 were gonorrhoea infections (Lam et al., 2017).

Again, rates of gonorrhoea appear to be especially high in Nunavut. The age-standardized incidence rate of gonorrhoea declined from 2010 to 2014, accounting for about 25% of all STIs reported in the territory over that period (Office of the Chief Medical Officer of Health, 2016). Nevertheless, the age-standardized rate of gonorrhoea was nearly 27 times higher than the rest of Canada in 2013 (600 per 100,000 vs. 50 per 100,000 population). In 2018, the reported rate of gonorrhoea was 1911.1 per 100,000 population in Nunavut, compared to 95.8 per 100,000 population for Canada (PHAC, 2018b). By 2020, that rate had increased to 2433.3 per 100,000 population (PHAC, 2023d). Likewise, the highest observed incidence rate for gonorrhoea in Quebec was in the Inuit region of Nunavik, which in 2017 was 28 times that of the provincial rate (Institut National de Santé Publique du Québec, 2017).

Syphilis

Syphilis rates have varied widely among Indigenous populations but have risen dramatically across Canada (PHAC, 2023e). Rates have particularly been rising in the Prairie provinces and among gay and bisexual men who have sex with men (Aho et al., 2022; Singh, 2019), though rates are also rising for heterosexual men and women, with subsequent increases in congenital syphilis (Singh & Romanowski, 2019). Past studies have shown that Indigenous people in Canada may be disproportionately affected by syphilis, due to risk factors such as involvement in sex work and illicit drug use (Raval et al., 2022; Sankaran et al., 2023; Singh et al., 2007; Singh & Romanowski, 2019).

In Saskatchewan, rates of syphilis have, in the past, been generally lower for First Nations than the general population, apart from in 2010 and 2011 when rates were 1.9 times greater than the Canadian population (ISC, 2018). In 2007, the rate of syphilis was 0.0 per 100,000 for First Nations communities compared to 8.4 per 100,000 for Canada (ISC, 2018), though this may reflect reduced awareness and testing activities among First Nations at that time. Since then, the rate for the First Nations population has increased to 7.2 per 100,000 in 2012 and 6.7 per 100,000 in 2016, compared to 9.8 and 14.8 per 100,000 in 2012 and 2016 for Canada, respectively. More recently, Indigenous Services Canada's top public health physician in Saskatchewan reported surging syphilis rates in First Nations communities in 2022, with a 900% increase in the number of cases reported since 2019 (Ghania, 2022).

In Alberta, over 50% of infectious syphilis cases reported over the period January 1, 2018 to December 21, 2019 were among individuals who identified as Indigenous, of which 41.2% were First Nations and 10.3% were Métis (Raval et al., 2022). Of

374 cases of infectious syphilis diagnosed during pregnancy in Alberta between January 1, 2017 and December 31, 2020, 61% were among individuals who identified as First Nations and 9.6% were among individuals who identified as Métis (Gratrix et al., 2022). Approximately 39.4% of these First Nation and 36% of Métis mothers transmitted congenital syphilis to their infants, compared to 29% of White mothers[10] (Gratrix et al. 2022). Health Canada's Medical Officer of Health (2013) for Alberta also tracked vertical transmission of syphilis to infants among on-reserve First Nations over the period 2007 to 2010, identifying a rate of 2.2 per 10,000 live births.

In the most recent report for which Indigenous data is readily accessible in British Columbia, the proportion of infectious syphilis cases over the period 2008 to 2017 steadily declined for self-identified First Nations people,[11] from 8.8% in 2008 to 2.3% in 2017 (BCCDC, 2017). In this report, First Nations women comprised a much larger proportion of syphilis cases among all women in BC compared to the proportion that First Nations men comprised among all men in the province.

In terms of trends, the rate of infectious syphilis decreased among First Nations men from 21.0 per 100,000 population in 2008 to 7.6 per 100,000 in 2010, after which cases steadily increased, peaking in 2013 and 2016 at 23.4 per 100,000 population and 22.4 per 100,000 per population, respectively. A similar decreasing trend was observed among First Nations women, with the incidence rate starting the highest in 2008, with an incidence rate of 18.8 per 100,000, then declining to 1.5 per 100,000 in 2010, followed by an increasing trend that peaked in 2015 at 6.9 per 100,000 and dropped to 2.7 per 100,000 in 2016 and 2017 (BCCDC, 2017). Nevertheless, there has been a resurgence of infectious syphilis in the province in recent years, particularly among females (BCCDC, 2023), which has been associated, in part, to housing instability, substance use, and mental illness (Willemsma et al., 2022). These conditions disproportionately impact Indigenous populations. Approximately 13% of maternal syphilis cases in British Columbia from January 2010 to July 2016 were among women who self-identified as Indigenous (Wong et al., 2016).

Syphilis rates are high among Inuit in Canada's northern regions. In 2019, the Northwest Territories and Nunavut recorded rates of 106.9 per 100, 000 and 259.8 per 100,000 respectively (Harrigan, 2021). PHAC (2020a) reports that Nunavut had the highest rates of infectious syphilis in Canada in 2017, with 234 cases of syphilis per 100,000 (301 cases per 100,000 among females), compared to 11.2 per 100,000 for Canada as a whole. Given that Nunavut's population is predominantly Inuit, these rates indicate that Inuit have the greatest burden of syphilis among Indigenous populations. The Office of the Chief Medical Officer of Health (2016) of Nunavut reported a significant increase in syphilis cases in the territory since 2012. The rate of infectious syphilis increased dramatically over the period 2012 to 2019 for both men and women in Nunavut (Singh et al., 2022). While Nunavut still had the highest reported rate of infectious syphilis in Canada in 2020, at 127.1 per 100,000, with the Canadian rate having increased to 24.7 per 100,000 population, the gap between Nunavut and the rest of Canada has narrowed slightly (Aho et al., 2022). Despite 48 reported cases of syphilis in

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[10] Calculated by authors, based on data available in source document.

[11] The availability of population estimates of Métis and Inuit people is extremely limited, and approximately 20% of cases had no known ethnicity.

pregnancy, no confirmed cases of congenital syphilis were identified in Nunavut over the period 2012 to 2020 (Singh et al., 2022).

Quebec also reported disproportionately higher rates of infectious syphilis in the Inuit region of Nunavik compared to the province's general population. The incidence rate of infectious syphilis in this region was 236 per 100,000 in 2017, compared to 11 per 100,000 for the province as a whole (Institut National de Santé Publique du Québec, 2017).

HIV

A diverse body of literature details the rates and trends of HIV in Indigenous populations in Canada over the past few decades. The Public Health Agency of Canada (PHAC) reports HIV surveillance data annually, though there has been a decreasing trend of race/ethnicity information reported for HIV cases, including the use of Indigenous identifiers (PHAC, 2022b). As a result, caution must be exercised in interpreting more recent HIV surveillance data.

In 2020, First Nations, Inuit, and Métis people represented 18.2% of all new HIV infections, an increase of 3.5% since 2018 (PHAC, 2020b, 2022c). PHAC (2022b, 2022d) reports that among an estimated 62,790 people living with HIV in Canada in 2020, approximately 1 in 10 were Indigenous people (5.1% were First Nations, 0.4% Métis, and 5.2% Indigenous unspecified); however, no additional information is provided about sex, age, gender, or geography. The incidence rate of HIV among Indigenous Peoples in 2020 was almost four times that of the general Canadian population (15.2 per 100,000 vs. 4.0 per 100,000) (PHAC, 2022d); however, this rate represents a slight decline since 2017, when it was 16.22 per 100,000 for Indigenous Peoples (Koehn et al., 2021). In previous years, of all HIV cases in Canada with known race/ethnicity, 20.1% reported Indigenous status in 2017, 19.3% did so in 2018, and 24.7% did so in 2019 (Haddad et al., 2019; Haddad et al., 2021).

Province-specific datasets can provide a more detailed glimpse into the rates and trends of HIV infection among Indigenous populations. For example, the BC Centre for Disease Control's

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(BCCDC) 2017 annual report on HIV rates notes that between 2008 and 2017, there were 15-52 new HIV diagnoses each year among First Nations people in BC, and five or fewer new HIV diagnoses each year among Métis and Inuit people (BCCDC, 2019). Questionnaires from the Laboratory Enhancement Program (LEP) showed that Indigenous people in Ontario represented 2.7% of HIV diagnoses between 2009 and 2011 (Burchell et al., 2014). According to data from Manitoba's statistical updates on HIV rates, in 2016, 31.2% of new HIV diagnoses, of those who self-reported ethnicity, were among Indigenous people in the province compared to 18.3% among the White ethnic group (Government of Manitoba, 2018). In 2018, approximately 50% of the new HIV cases reported in Manitoba were among those who self-identified as Indigenous (Government of Manitoba, 2019). This represents a substantial increase in the representation of Indigenous populations in new HIV diagnoses since 2006, when Indigenous people comprised 26.3% of new diagnoses in the province (Government of Manitoba, 2018). In contrast, Nunavut reported no HIV/AIDS cases from 2007 to 2014 (Office of the Chief Medical Officer of Health, 2016).

The provinces of Saskatchewan and Alberta are particularly impacted by new HIV diagnoses among First Nations (Lydon-Hassen et al., 2022). Saskatchewan has seen fluctuating trends of HIV diagnoses in First Nations communities over time, where the rate of HIV infection was 16.0 per 100,000 in 2007, 63.6 per 100,000 in 2012, and 45.2 per 100,000 in 2016 – rates that were 2.2, 10.6, and 7.1 times greater than the general Canadian population (ISC, 2018). In Alberta, 15.4% of new HIV cases over the period 2012-2016 were among First Nations (Alberta First Nations Information Governance Centre [AFNIGC], 2018). The HIV incidence rate was four times higher for First Nations males than for non-First Nations males, and eight times higher for First Nations females compared to non-First Nations females (AFNIGC, 2018).

Data and research on prevention and testing behaviours among Indigenous populations in Canada are limited. However, PHAC reports that among respondents of a national attitudinal survey in 2012, 49% of First Nation respondents and 56% of Métis respondents had an HIV test (as cited in Burchell et al., 2014, p. 55).


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In a review of Canada's progress on meeting targets set out in the UNAIDS 90-90-90[12] framework for eliminating AIDS globally (UNAIDS, 2014), PHAC (2020b) reports that of the approximately 62,050 people living with HIV, 87% had received an HIV diagnosis, 85% of these individuals were on antiretroviral treatment, and 94% of those on treatment had a suppressed viral load at the end of 2018. However, few studies have been conducted to determine the degree to which the 90-90-90 targets are being met with respect to Indigenous people living with HIV. Drawing on data from all 82 on-reserve First Nations communities in Saskatchewan, PHAC (2022c) reports that at the end of 2020, 88% of those who were diagnosed and living with HIV were on treatment and 78% of those on treatment had achieved viral suppression. Results from *Tracks survey of people who inject drugs in Canada*, implemented by First Nations in Saskatchewan and Alberta over the 2018-2020 period, show poorer results with an estimated 65% of First Nations diagnosed with HIV and self-aware of their HIV-positive status, 81% of them indicating they were on treatment, and 54% of them indicating they had achieved a suppressed viral load (PHAC, 2022c). In comparison, at the end of 2018, 90% of Indigenous inmates in federal corrections facilities had their HIV status diagnosed, 94% of them were on treatment, and 92% had a suppressed viral load, suggesting that targets may be better met in an institutional environment[13] (PHAC, 2020b).

UNAIDS 90-90-90 targets

Canada has endorsed both the Joint United Nations Programme on HIV/AIDS and the World Health Organization's global health sector strategy on HIV, committing the country to work towards achieving the UNAIDS 90-90-90 global targets set for eliminating AIDS as a public health threat by 2030. The 90-90-90 targets stipulate that by 2020, 90% of individuals living with HIV are aware of their status, 90% of those diagnosed receive antiretroviral treatment, and 90% of those on treatment achieve viral suppression. It is anticipated that by achieving these targets by 2020, the world will be able to eliminate the AIDS epidemic by 2030 (PHAC, 2020b).

Results from the *Tracks survey of people who inject drugs in Canada* suggest that Indigenous people may face considerable structural and social barriers to care and initiation of HIV treatment, based on the continued impacts of colonialism and intergenerational trauma, manifested in socioeconomic marginalization, stigma and discrimination, substance misuse, and a history of abuse during childhood or with a sexual partner (Lydon-Hassen et al., 2022; Tarasuk et al., 2020). Some studies have shown that Indigenous people are at risk of not achieving an undetectable viral load (Hosein, 2017; Kerkerian et al., 2018) and of experiencing a viral rebound (Palmer et al., 2018), suggesting that barriers may be hindering their access to care and willingness to adhere to treatment (Jongbloed et al., 2019).

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[12] UNAIDS recently released new 95-95-95 targets for ending AIDS that targets 95% of individuals knowing their HIV status, 95% being on antiretroviral treatment, and 95% having achieved a suppressed viral load by 2030 (UNAIDS, 2023).

[13] Individuals living in institutional environments like federal corrections facilities have access to food, shelter, and in some cases, regular care – factors that are critical for facilitating adherence to HIV treatment and thus, improved health outcomes.

Viral suppression is key to preventing HIV from progressing to its final stage – AIDS. Because the body's immune system is severely compromised, life expectancy for people diagnosed with AIDS is about three years (Minority HIV/AIDS Fund, 2022). Less is known about the prevalence of AIDS among Indigenous populations in Canada, as statistics tend to be combined with HIV generally. In Ontario, one study revealed rapidly declining rates of diagnoses for AIDS-defining conditions among both Indigenous and non-Indigenous people diagnosed with HIV, from a high of 33% in 1995 for both groups to a low of 6% and 4% for Indigenous and non-Indigenous people, respectively, by 2010 (Burchell et al., 2014). Data from 2006 suggests that among Indigenous groups in Canada, First Nations individuals are over-represented among reported AIDS cases, making up 73.1% of Indigenous AIDS cases reported that year, while Métis and Inuit individuals accounted for 7.3% and 3.6% respectively of these cases (PHAC, 2011a). PHAC (2014b) also noted that from 2001 to 2011, the proportion of AIDS cases increased among Indigenous youth, but declined among white youth.

Hepatitis B

Research on HBV in Indigenous communities is exceptionally limited and generally dated (published prior to 2013). While existing research publications may fall outside the data parameters of the literature search for this paper, they are nevertheless included below to establish a baseline for this virus.

Limited data suggests that Indigenous populations have a higher prevalence of chronic HBV relative to the non-Indigenous population. Martin et al. (2002) provide hepatitis B surveillance data collected from residential First Nations alcohol and drug treatment centres in British Columbia over the period January 1992 to September 2000 and found that 23% of individuals tested were HBV positive, while 10% were positive for hepatitis B core antibody.[14] A more recent study showed decreasing rates of HBV in Canada over the period 1999 to 2008; however, the rate of acute hepatitis B infection was still three times higher among Indigenous compared to non-Indigenous people (PHAC, 2011c). In 2019, the rate of chronic hepatitis B infection in Nunavut was 10.4 per 100,000 people compared to 13.1 per 100,000 for Canada (PHAC, 2019). This rate was lower than British Columbia, Alberta, Ontario, and Saskatchewan, but higher than Quebec, the Atlantic provinces, and the Yukon. Indigenous populations have been identified as one group at risk of HIV-HBV co-infection due to shared modes of exposure (Cooper et al., 2021).

The childhood vaccination program in Nunavut has been effective in reducing the prevalence of HBV to a non-endemic level since the program's inception in 1980 (Coffin et al., 2019; Huynh et al., 2017). In a study testing serum specimens collected over the period April 2013 to April 2014 for HBV antibodies, surface antigen, and HBV DNA, Huynh et al. (2017) found that prevalence of HBV exposure was only 1.8% among those born after the vaccination program was implemented, compared to 19.8% among those born before the program.

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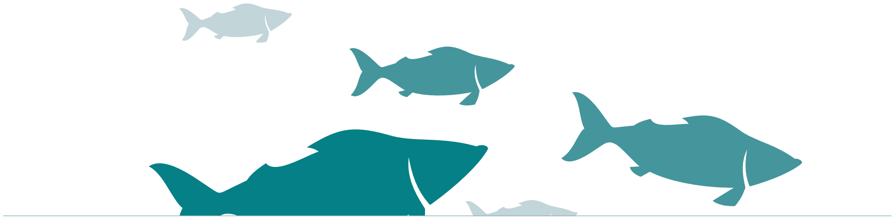
[14] The test for hepatitis B core antibody can detect the presence of the core protein of the virus, indicating a person has been infected with HBV, but it cannot tell whether the person has cleared the virus, still has it, or is immune to reinfection. In contrast, hepatitis B surface antigen detects the presence of HBV, with a positive result meaning the person is currently infected and can transmit the infection to others (Center for Substance Abuse Treatment, 2011).

Hepatitis C

While rates of HCV have fluctuated widely among Indigenous populations in Canada, it is routinely between 3 and 6 times higher among Indigenous populations than the national average (Bruce et al., 2019; ISC, 2018). PHAC's analysis of available data sources shows that in 2008, reported incidence rates of HCV were almost five times higher among Indigenous compared to non-Indigenous people (Atkinson, 2020; Pearce et al., 2021). However, the rate of HCV appears to be lower among Inuit than the general Canadian population. In 2019, Nunavut had the lowest rate of HCV in the country at 5.2 per 100,000 people (PHAC, 2021d). The rate of newly diagnosed HCV was three times higher among First Nations living on reserve in 2016 than the general Canadian population (ISC, 2019). Drawing on data from a cohort of Canadian adults born between 1945-1975,[15] a more recent study indicated that in 2019, an estimated 7.35% of the Indigenous population had HCV antibodies compared to 1.03% of the general population, while an estimated 3.5% of the Indigenous population had chronic hepatitis C compared to 0.87% of the general population (Popovic et al., 2022). Among incarcerated individuals, 22.7% of Indigenous men and 44.8% of Indigenous women were estimated to have HCV antibodies in 2014, compared to 18.6% and 22.7% of incarcerated men and women generally (Bartlett et al., 2021). Injection drug use is a common exposure pathway for HCV infections among Indigenous people (Lourenço et al., 2021), especially among youth (24 years and younger), who accounted for 70-80% of new HCV infections among young people who inject drugs (PHAC, 2011b; Trubnikov et al., 2011; Uhanova et al., 2013).

As with rates of HIV infection, available provincial datasets for HCV provide a more detailed picture of rates and trends of infection among Indigenous populations. Drawing on data from the Enhanced Hepatitis Strain Surveillance System (EHSSS), Burchell et al. (2014) estimated the incidence of HCV among Indigenous Peoples in Ontario over the period 2007-2010 was 71.2 cases per 100,000 population, a rate which was more than twice the 2009 annual incidence rate of HCV (33.7 per 100,000) in Canada. Mendlowitz et al. (2021) examined the prevalence of HCV infection among on- and off-reserve First



...the rate of HCV appears to be lower among Inuit than the general Canadian population. In 2019, Nunavut had the lowest rate of HCV in the country at 5.2 per 100,000 people

(PHAC, 2021d).

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[15] This cohort was selected as a priority population who would most likely be undiagnosed.

Nations in Ontario over an eight-year period and found an increase from 0.9 in 2006 to 2.0 per 100 people in 2015, or a rate of 2%. In comparison, the national seroprevalence of laboratory-confirmed HCV infection over the period 2007-2011 was 0.5%. Mendlowitz et al.'s study also revealed that testing, diagnosis, and prevalence rates of HCV infection were higher among First Nations living off reserve compared to those living on reserve throughout this period, while on-reserve First Nations had larger increases over time.

A twelve-year study (1991 to 2002) on HCV rates in Manitoba revealed a disproportionate burden of HCV infection among Indigenous populations in the province, with the authors reporting that 13.4% of the total 5,018 reported cases of hepatitis C over this period were among First Nations persons (Uhanova et al., 2013). This represented more than twice the proportion of First Nations individuals registered with the Manitoba Health Plan Registry. Compared to the non-First Nations population, First Nations individuals infected with HCV tended to be younger, more often female, and more often residing in urban centres.

Saskatchewan has also reported high rates of HCV infections among First Nation populations. In 2007, the rate of HCV was 129.5 per 100,000 for First Nations in Saskatchewan, compared to 36.5 per 100,000 for Canada as a whole (ISC, 2018). Rates then spiked for First Nations to 190.6 per 100,000 in 2011 and 196.2 per 100,000 in 2015, before declining to 173.0 per 100,000 in 2016. In 2016, the rates of HCV among First Nations living on reserve were three times higher than the overall provincial population and four times higher than the national population (Lydon-Hasson et al., 2022). Skinner et al. (2018) examined regional differences in the rate of HCV in Saskatchewan in 2015. They reported rates of HCV that were six times higher among those living on reserve in southern Saskatchewan compared to the provincial rate (372.0 per 100,000 population vs. 62.7 per 100,000 population), while rates were three times higher in central on-reserve communities (186.7 per 100,000 population) and two times higher in northern on-reserve communities (129.0 per 100,000 population) compared to the provincial rate. They also noted an increasing trend in rates of HCV among First Nations over the years, particularly in the southern communities (Skinner et al., 2018).

In Alberta, the incidence rate of HCV was four times higher among First Nations than non-First Nations (AFNIGC, 2017). In contrast, the rate of HCV among First Nations in Atlantic Canada appears to be similar to provincial averages. Over the period 2011-2015, the rate of HCV among Atlantic First Nations was 6 per 1000, compared to the provincial rates of 8 per 1000 in Nova Scotia, 6 per 1000 in New Brunswick, and 8 per 1000 in Prince Edward Island (First Nations and Inuit Health Branch, 2016).

Research suggests that attention to co-infection with both HIV and HCV is important. According to Burchell et al. (2014), approximately 37% of Indigenous people with HIV in Ontario were co-infected with hepatitis C in 2008. Likewise, of 379 cases of co-infection in BC over the period 1995-2008, Indigenous people accounted for 20.8% of cases (Buxton et al., 2010). However, both of these studies were conducted prior to the advent of direct acting antivirals. Only 6% of Indigenous survey participants in the *Tracks survey of people who inject drugs in Canada* study were both HIV positive and hepatitis C RNA positive (Tarasuk et al., 2021). Nevertheless, the two diseases share some of the same modes of transmission, which supports the need for co-screening and preventative interventions (Buxton et al., 2010).

Non-notifiable STBBIs

HPV infections

HPV is highly prevalent in Canada, with the majority of sexually active Canadians affected by it at least once in their lifetime (ISC, 2020b). However, studies on the prevalence of HPV among Indigenous populations are lacking, and it is generally difficult to compare between populations and studies because of the absence of information about the type of HPV being reported and whether the HPV carries a high risk of health complications. Poirier et al. (2021) notes that Indigenous populations have a high prevalence of HPV infection and a high incidence of HPV associated cancers. Sethi et al. (2021) undertook a systematic review and meta-analysis of the prevalence of HPV infection in Indigenous populations globally and found a strikingly high pooled prevalence compared to non-Indigenous populations. They identified a pooled prevalence of high-risk HPV infection (both oral and genital sites) at 34.2% among Indigenous populations globally, while the pooled prevalence among American Indigenous populations was 33%. The most common type of HPV was HPV 16, followed by HPV 18, both of which are considered high-risk types of HPV that increase the risk of various forms of cancer (Cassata, 2022; National Cancer Institute, n.d.).

The literature reveals that regions that are predominately comprised of Inuit have high rates of HPV infection and are at high risk of cervical cancers. The region of Nunavik in northern Quebec has been identified as one such region. In studies assessing HPV infection among Inuit women in Nunavik, Metcalfe (2012) determined HPV positivity at 47.6% among a cohort of 548 Inuit women seeking routine care over the period 2002-2010. HPV positivity among a cohort of 676 Inuit women in the region over the period 2002-2006 was determined at 22% by Gauthier et al. (2015), while Gauthier et al. (2018) determined positivity for three types of HPV among a cohort of 677 Inuit women in the region at 17.6%. Drawing on samples collected between January 2002 and December 2007, Bennett and colleagues (2015) found that of 416 Inuit women in the Nunavik region, 40% acquired a new HPV infection of any type, corresponding to a rate of 14.44 infections per 1000 women.[16] Severini et al. (2013) measured HPV type prevalence among women in Labrador in 2010. While they did not compare rates between Indigenous and non-Indigenous women, they did disaggregate the data by region. Focusing on only the two regions where Indigenous women represented 87% of the population, the prevalence of any type of HPV was 24.5% in the North Coast region and 13.5% in the South Coast region.

Several studies have also shown higher rates of HPV infection among First Nations and Métis peoples. Jiang and colleagues (2011, 2013) undertook a cross-sectional study of the routine and scheduled Pap testing program in the three territories of Canada and found that HPV infection was 50% higher among Indigenous women compared to non-Indigenous women (27.6% vs. 18.5%). However, this rate was not consistent across all types of HPV, with some types having higher rates among Indigenous populations and others showing no differences between the two populations. This finding is similar to other studies investigating HPV infection in Manitoba conducted by Demers

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[16] The authors calculated this incidence rate based on women-months, that is, the “number of months from enrollment to either a first positive test result for the infection of interest or the end of follow-up, defined as the date of the most recent HPV-DNA test, if the woman remained negative for the infection of interest” (p. 273).


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and colleagues, which found Indigenous women carried a disproportionate burden of HPV. Demers et al. (2012) undertook analysis of data collected from 2007-2009 in Manitoba and found that 24% of HPV cases among women under 30 years of age and 14.4% of HPV cases among women 30 years and older were Indigenous women. In a 2008 study examining the prevalence of HPV infections among Métis and First Nations living in Manitoba, Demers et al. (2011) found rates that were 2.3 times higher among Métis and First Nations participants compared to non-Indigenous participants (32.7% vs. 14.2%); however, only certain types of HPV were more prevalent among Indigenous populations.

Vaccination is an effective way of preventing HPV and associated cancers; however, studies suggest that uptake of the vaccine may be low among Indigenous populations (MacDonald et al., 2023; Mrklas et al., 2018; Poirier et al., 2021; Whop et al., 2021), as are screening rates for cervical cancer (Henderson et al., 2018). A systematic review of the literature exploring the barriers to vaccine uptake among Indigenous populations globally identified lack of knowledge about HPV and distrust of healthcare systems and vaccines as key factors affecting HPV vaccine uptake (Poirier et al., 2021). The authors highlight the need for health care providers to develop relationships with Indigenous patients and have honest conversations with Indigenous people about vaccines, in ways that prioritize oral forms of education and utilize stories to enhance "patient understanding and develop a collaborative management approach" (Poirier et al., 2021, p. 10). Enhancing awareness and knowledge about HPV vaccines among Indigenous health workers, emphasizing mother-daughter communication, and centralising men in HPV conversations could also help increase understanding and uptake of HPV vaccines in Indigenous communities (MacDonald et al., 2023; Poirier et al., 2021). Henderson et al. (2018) identified additional barriers to HPV vaccination in Indigenous communities, including resource constraints, service infrastructure gaps, and community sensitivities regarding sexual health promotion. They highlighted the need to address healing from colonization to enhance HPV vaccine uptake. Key elements of this approach include culturally-competent and safe engagement of communities in the development of prevention measures, utilization of a trauma-informed lens, strengthened intergenerational ties and Elder involvement to build community capacity for prevention, and involvement of men in sexual health promotion.

Hepatitis A

The research on HAV in Indigenous communities is also exceptionally limited and generally dated (published prior to 2013). The review identified several publications on HAV, all falling outside the scope of this paper's date search parameters, and none of which examined the pathway of transmission. Jin and Martin (2003) tabulated reported cases of HAV among on-reserve First Nations in British Columbia over the period 1991-1996 and found a crude incidence rate of 31 per 100,000 persons per year, a rate that was more than twice that of the provincial rate of 15.1 per 100,000. Pham et al. (2005) conducted a systematic review of seroprevalence of HAV infection in Canada and identified four studies. They found HAV prevalence rates among First Nations and Inuit populations ranging from 75-95%, which were approximately three times that of the non-Indigenous population. The lack of active research in this area is surprising given the well publicized issue of water safety[17] in some Indigenous communities, highlighting a significant knowledge gap.

Subpopulation-level findings

Research has increasingly focused on specific populations and demographics that are shown to be disproportionately impacted by STBBIs in Canada. The literature highlights key differences in STBBI rates and trends among Indigenous youth, Indigenous females, older generations, people who inject drugs (PWID), men who have sex with men, and individuals living in northern communities, discussed below. However, it is important to note that data on STBBI prevalence among specific Indigenous sub-populations is particularly sparse and dated.

Indigenous youth

Evidence suggests that Indigenous populations are diagnosed with both HIV and hepatitis C at a younger age than non-Indigenous Canadians (Andersson et al., 2008; Burchell et al., 2014; Flicker et al., 2008; PHAC, 2011a). According to research done by Flicker et al. (2008), Indigenous youth contract HIV approximately 10 years earlier than the non-Indigenous population in Canada.

National data report that 31.6% of HIV diagnoses among Indigenous populations between the years 1998 and 2012 occurred in youth and adolescents aged 15-29 years old, in comparison to 22.2% among non-Indigenous populations in Canada (PHAC, 2011d). Between 2001 and 2011, the proportion of AIDS cases among Indigenous youth increased from 2.7% to 27.8% but declined significantly among White youth from 83.5% to 38.9% over this period (PHAC, 2014a). Data published by the PHAC (2014a) show that over the period 1998-2009, injection drug use was the most common HIV exposure pathway for Indigenous youth, accounting for 64.4% of positive HIV cases in this population. It was also identified as a common exposure pathway for HCV among youth (Lourenço et al., 2021).

According to data collected from the Enhanced Street Youth Surveillance (E-SYS) Cycle 6 cohort, Indigenous street-involved youth may have an increased risk of STBBI infection compared to their non-Indigenous counterparts (PHAC, 2014b). The study, which included a total of 1,325 street-involved youth in urban centers, found that a higher proportion

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[17] As mentioned earlier, the most common mode of HAV transmission is through the consumption of contaminated water.

of Indigenous youth (33.8%) tested positive for an STBBIs compared to White youth (19.7%) and youth identifying as other ethnicities (27.2%). It also found that prevalence rates for Chlamydia (14.5%), hepatitis C (8.6%), and herpes (19%) were significantly higher among Indigenous youth than those identifying as non-Indigenous.

Indigenous women

Indigenous women are disproportionately represented in HIV and hepatitis C infection rates in Canada (Burchell et al., 2014; Landy & Worthington, 2021; PHAC, 2011d; Uhanova et al., 2013). According to national data, while Indigenous women and girls accounted for approximately 4.9% of all women and girls in Canada in 2016,[18] they represented 40% of all HIV cases among women and girls in 2019 (Haddad et al., 2021). Indigenous women and girls in Saskatchewan and Manitoba are exceptionally over-represented in this data (O'Brien et al., 2020). Studies involving select First Nation populations reveal that women comprise the majority of reported HIV cases within their population (Cedar Project et al., 2008, Shea et al., 2011). In contrast, men comprise the majority of reported HIV cases in the general Canadian population (Gesink et al., 2016; PHAC, 2022c). These gender differences across population groups reflect greater injection drug use among First Nations, which drive the high HIV rates among Indigenous women, while among the general Canadian population, HIV rates largely been driven by men who have sex with men (Shea et al., 2011).

The Cedar Project, a 17-year community-driven research project involving a cohort of 800 study participants in urban centres in British Columbia, found that gendered-differences existed among Indigenous youth as well (Mehrabadi, 2007). In this cohort, Indigenous female youth had higher HIV infection rates (13.1%) than Indigenous male youth (4.3%).[19] Further, rates of HCV were 25.4% among males compared to 43.6% of females. Heightened

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[18] Calculated by the author using data from Bleakney & Melvin (2022), Table 1.

[19] Approximately 60% of new infections among Indigenous youth were attributable to injection drug use (Mehrabadi, 2007).

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rates of HCV were also identified among Indigenous female youth in Manitoba. In fact, research conducted by Uhanova et al. (2013) found that 55% of Indigenous individuals with new hepatitis C diagnoses were female, compared to 38% of cases in the non-Indigenous population.

A body of literature also presents findings on the rates of STBBIs among incarcerated Indigenous women living in Canada. Recent research on trauma-informed STBBI interventions for incarcerated women and gender-diverse people highlight the concurrent trends of Indigenous female incarceration and STBBI rates in Canada. Although rates are not reported, research has suggested that the prevalence rates of HCV and HIV are higher among federally incarcerated Indigenous women compared to any other population in Canada (Ryan et al., 2020a).

Older generations

As STBBI rates in Indigenous populations are more likely to affect younger generations, there is a paucity of literature on STBBI rates and trends among older generations. One study conducted by Ryan et al. (2020b), titled *Successful Aging: Indigenous Men Aging in a Good Way with HIV/AIDS*, considers aspects of 'successful' aging among Indigenous men specifically. In this study, the authors note that in 2014, 69.3% of Indigenous people living with HIV in Canada were between the ages of 30 and 49 years. Given these rates, the percentage of older (≥ 50 years of age) Indigenous people living with HIV/AIDS can be expected to increase rapidly, particularly due to the use of antiretroviral therapy to extend the lives of those with HIV diagnoses (Ryan et al., 2020b). The gap in research and literature on HIV/AIDS and older generations is thus a concern in terms of addressing the health needs and priorities of the older Indigenous population (Ryan et al., 2020b).

People who inject drugs

People who inject drugs (PWID) is the primary exposure category for HIV and HCV among Indigenous populations in Canada (Pearce et al., 2021; Skinner et al., 2018). In fact, Burchell et al. (2014) report that injection drug use was a risk factor for 66% of HIV infections among the Indigenous population nationally, compared to 17% of infections in non-Indigenous people. Data from 2011 reports that PWID accounted for 80% of HCV infections among urban Indigenous youth and adolescents under the age of 24 (Miller et al., 2011). Negin et al. (2015) put particular emphasis on the risk of PWID for HIV exposure among Indigenous youth, as Indigenous populations are often over-represented among youth who inject drugs in urban centres in Canada. Findings from Phase 4 of the *Tracks survey of people who inject drugs in Canada* over the period 2017-2019 reveal that 15.4% of survey respondents who self-identified as Indigenous tested positive for HIV (Tarasuk et al., 2021).

In their study of HIV rates and trends among Indigenous people in Ontario, Burchell et al. (2014) found gendered differences in exposure pathways among Indigenous men and women. They highlighted that injection drug use was the primary exposure category for HIV among Indigenous men (32%), followed by men having sex with men (28%), while Indigenous women were primarily exposed through heterosexual transmission (59%), followed by injection drug use (35%) (p. 18). According to research by Negin et al. (2015), Indigenous male and female PWID were found to have more frequent injection drug use, a higher likelihood of sharing equipment, and lower access to harm reduction programming.

In a systematic review of literature on HCV prevalence among Indigenous populations conducted in 2017, Bruce et al. (2019) found that the highest rates of HCV among Indigenous people in Canada were among PWID, with rates ranging from 25.7% to 67.6%. Approximately 65.8% of Indigenous survey respondents from the *Tracks surveys of people who inject drugs in Canada* study had lifetime exposure to HCV infection, while 36.4% had current HCV infection (Tarasuk et al., 2021).


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Men who have sex with men

Men who have sex with men (MSM) is often referenced in HIV and hepatitis C literature as a significant category of exposure for new infections. From 1998 to 2012, 6.6% of HIV cases among Indigenous individuals were attributed to the MSM exposure category, and 3.2% were attributed to both MSM and injection drug use (PHAC, 2011a). Between 1998 and 2006, 48.8% of reported AIDS cases among Métis people were attributed to the MSM exposure category, while 27.2% and 27.3% of reported AIDS cases among First Nations and Inuit populations, respectively, were attributed to this exposure category (PHAC, 2014a).

Federal surveillance data show that Northern Canada reports high rates of STBBIs in comparison to southern Canada

(ISC, 2020; Gesink Law et al., 2008; PHAC, 2020a).

Northern communities

Finally, the literature suggests that northern communities may experience STBBI rates and trends in unique ways. Federal surveillance data show that Northern Canada reports high rates of STBBIs in comparison to southern Canada (ISC, 2020; Gesink Law et al., 2008; PHAC, 2020a). STBBI rates in Canada's north are high for both men and women, yet are highest among women in their early 20s (Healey, 2016).

Data gathered in 2013 highlighted rates of Chlamydia, gonorrhoea, and syphilis that were over 10 times higher in Nunavut than the rest of Canada (Healey, 2016). In fact, as was seen in Section 2.2.1, Nunavut had the highest rates of syphilis, gonorrhoea, and Chlamydia in Canada, as well as high rates of HPV, while Nunavik had similarly high rates of STIs.

The Northwest Territories reported high rates of STBBIs from 2003-2012, with data showing a 32% increase over this period, with the majority of cases (82.6%) concentrated in younger populations (below the age of 30) (Logie et al. 2019b). In fact, the prevalence rate of gonorrhoea in the NWT was reported at 12 times the national average. Although these findings are among the general population of the NWT, Indigenous Peoples comprise 51% of the NWT's population and experience ongoing health disparities within the territory, thus pointing towards an inferred differential impact of these STBBI rates on Indigenous populations in the NWT (Logie et al. 2019b).

Although existing research seems to suggest relatively low rates of HIV in Canada's north in comparison to Indigenous populations in southern Canada, some concerns with this assumption have been identified. Rand (2016) noted that the high birth rate among Inuit, coupled with high STI rates, points towards a pattern of unprotected sexual intercourse in the population, which poses a risk for HIV infection. Further, the author notes that travel between northern communities and the south may also be a risk factor for HIV and hepatitis C infection for Inuit communities. A previous health and social services minister in Nunavut has suggested that the low reported rates of HIV in the territory may be due to a lack of testing and stigma surrounding HIV in northern communities, resulting in a possible under-representation of HIV rates in surveillance data (George, 2003). With the lack of available research and literature on this topic in Nunavut, it is important to exercise caution in interpreting historical STBBI data in northern communities.

In Indigenous communities, STBBI prevention must address the stigma related to sexual health and restore healthy views on sexuality, as well as shift the discourse from being unworthy to empowering Indigenous communities and providing them with the tools they need to protect themselves

(Barkman et al., 2022).

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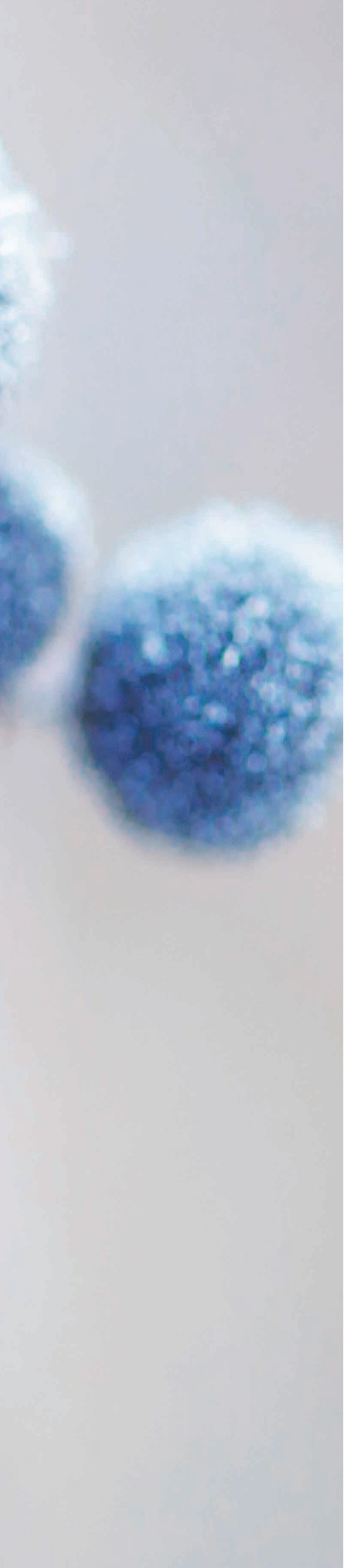

SEXUAL HEALTH PROMOTION AND STBBI PREVENTION IN INDIGENOUS COMMUNITIES

Multi-pronged structural approaches are being considered globally as models of best practice in STBBI prevention (Argento et al., 2019). In Indigenous communities, STBBI prevention must address the stigma related to sexual health and restore healthy views on sexuality, as well as shift the discourse from being unworthy to empowering Indigenous communities and providing them with the tools they need to protect themselves (Barkman et al., 2022). As noted by Neighbors et al. (1994), holistic and strengths-based approaches are needed, as "[i]t is impossible to produce health among the powerless" (as cited in Steenbeek, 2004, p. 256). In the context of Indigenous Peoples, such strengths-based approaches may include increasing knowledge about STBBIs, encouraging commitment to condom use, and normalizing use of STBBI screening services through culturally appropriate health education. It also may include facilitating improved access to culturally safe services and taking actions on the determinants of health that lead to riskier health behaviours.

This section offers considerations for sexual health promotion and STBBI prevention in Indigenous communities. These considerations are grouped into three themes: addressing the social determinants of health for Indigenous Peoples, improving access to culturally safe and appropriate STBBI health services and programs, and developing culturally appropriate sexual health education. This section also presents some promising practices in STBBI prevention, testing and care, and research relating to Indigenous populations.

Addressing the social determinants of health

Research suggests that STBBI prevention is most effective when approaches address the factors that influence Indigenous people's susceptibility to contracting STBBIs and give attention to the unique contexts and intersecting factors that impact Indigenous people's lived experiences (Landy, 2019). A holistic approach is needed that focuses on redressing social inequities, emphasizes women's empowerment and solidarity, and incorporates both prevention education alongside a focus on general self-esteem, cultural continuity, and healthy relationships (O'Brien et al., 2020). A holistic approach to STBBI prevention is especially important when targeting populations with complex trauma and risk factors, such as people who use drugs or have experienced childhood maltreatment, recognizing that past experiences and circumstances have mediating effects on an individual's likelihood to negotiate safer sex practices (Pearce et al., 2021). Elements of a holistic approach include consideration of determinants of health that influence STBBIs among Indigenous populations, including:

- education and literacy;
- social exclusion, racism, and discrimination;
- gender-based power imbalances, violence, and abuse;
- mental health and addictions; and
- poverty, food insecurity, and housing.

Improving education and literacy, particularly around STBBIs and the importance of prevention, is critical for addressing stigma, dispelling myths around STBBIs, and increasing risk awareness. It can also lead to transformation and resilience for Indigenous individuals, reflected in a renewed sense of self, ability to find personal strength to carry on and look to the future, a growing sense of individual agency, and increased motivation to share knowledge about STBBIs and its prevention with others (Mooney-Somers et al., 2011). Since schools are important sites for providing information about STBBIs and sexual health and leaving school early can leave youth without the knowledge they need to make sexual health decisions (Kinasevych, 2011), sexual health education must be offered in a variety of settings to reach this harder-to-reach population. As shown by Lys and colleagues (2019), school-delivered sexual health education may also not be meeting the needs of Indigenous youth due to teachers' discomfort with delivering course material. The information provided may be too basic and not adequately cover contraceptive use, or it may not meet the educational needs of LGBTQ2S+ youth. Indigenous youth living in Canada's north identified a need for greater access to accurate and non-judgemental sexual health information (Logie et al., 2018a, 2019c).

STBBI preventative interventions must teach about social exclusion, racism, and discrimination and its impacts on health, and foster youth leadership to increase awareness about these issues and ways to reduce it (Wynne & Currie, 2011). Strengthening social support networks in Indigenous communities, including with peers/friends, family, and sexual partners (Seto, et al., 2011; Steenbeek, 2004), can contribute to improved mental health and

Improving education and literacy, particularly around STBBIs and the importance of prevention, is critical for addressing stigma, dispelling myths around STBBIs, and increasing risk awareness.

self-esteem, and the modelling of positive sexual health and risk-taking behaviours, and is important in the dissemination of sexual health information (Brooks et al., 2019; Ramiro et al., 2013; Rand, 2016). STBBI prevention interventions must also address the social contexts of the multiple, intersecting stigmas that can cause Indigenous persons, particularly Indigenous LGBTQ2S+ persons, to feel shame and socially isolated, thus impeding their access to appropriate sexual health information, resources, and services (Logie et al., 2018a). Ensuring that healthcare providers working with Indigenous LGBTQ2S+ persons are non-judgemental, have knowledge about LGBTQ2S+ health issues, and can provide relevant health information can help patients feel more comfortable and restore their trust in the healthcare system (Logie et al., 2019c). Providing free access to condoms in places where Indigenous youth do not feel like they are under surveillance or judged, in places where they can be accessed 24 hours a day, 7 days a week (Lys et al, 2019; Mooney-Somers et al., 2011), addresses known barriers to accessing STBBI services in rural and remote locations where confidentiality and privacy cannot be assured. Government distribution of condoms for low-income and vulnerable persons is a targeted STBBI strategy that can also help to address poverty (United Nations Population Fund, 2020).

It is important that gendered power imbalances be addressed in STBBI prevention in Indigenous communities. O'Brien et al. (2020) show how conventional approaches commonly used in HIV and HCV prevention, such the "ABC" approach (Abstinence, Be Faithful, Condomize), fail to account for gendered power imbalances in relationships that impact the ability to negotiate safer sex practices. Gendered power imbalances can be addressed in STBBI prevention through a focus on teaching men about their responsibility to use condoms and the need to respect women's rights (Mooney-Somers et al., 2011).

As noted earlier, intergenerational trauma, IPV and other types of abuse, mental health issues, and addictions play key roles in the transmission and prevention of STBBIs among Indigenous populations in Canada. Over the past two decades, a strong body of evidence has emerged showing that connection to one's Indigenous culture is a protective factor in mental health and addictions, and contributes to individual, family, and community well-being (Assembly of First Nations & Government of Canada, 2015; Chandler & Lalonde, 1998; Dijk et al., 2017). Incorporating Indigenous culture into STBBI programs and services offers a pathway to healing and a strengths-based, decolonized approach to health promotion and STBBI prevention (Heidebrecht et al., 2022; Ryan et al., 2020a). Programs that support healing from trauma; restore mental, physical, spiritual, and emotional health; connect Indigenous people to themselves, others, place, land, and culture; and reduce drug-related harms have been found to be critical to preventing certain types of STBBIs, particularly HIV (Gesink et al., 2019; Jongbloed et al., 2016). Mental health issues and addictions can also be addressed in STBBI interventions through community-level drug and addiction monitoring programs and increased awareness of factors that promote resilience (Skinner et al., 2018). Attention must also be paid to addressing the impacts of alcohol use on sexual decision-making (Rand, 2016).

Beyond addressing the social determinants in STBBI prevention interventions, there is also a need to address the upstream social and economic determinants that contribute to the disproportionately high rates of STBBIs and other health and social inequities among Indigenous populations generally. Any broad federal and provincial strategies that aim to address racism, poverty, food insecurity, housing, family violence, child welfare, and mental health and addictions can be considered an STBBI prevention strategy that focuses on restoring general health and well-being (German & Latkin, 2012; Scheidell et al., 2019; Woodgate et al., 2017a).

Improving access to culturally safe and appropriate sexual health programs and services

Current evidence highlights the importance of community-driven and community-led STBBI programs, services, and health information that incorporates Indigenous knowledge and perspectives, uses decolonizing methodologies, and adopts strengths-based approaches that focus on healing and resilience. STBBI interventions should be developed as a health promotion strategy that entails both personal and community empowerment (Steenbeek, 2004). This process requires engagement with Indigenous Peoples and capacity building (Seto et al., 2011; Skinner et al., 2018). STBBI programs and services led by or developed in partnership with Indigenous populations is necessary to ensure these programs and services meet the needs of communities, reflect available human and material resources to enhance self-help and social support (Steenbeek, 2004), incorporate Indigenous peoples' priorities for STBBI messaging, and utilize communication mediums that resonate with the target population to enhance the effectiveness of the intervention (Seto et al., 2011). STBBI prevention approaches should be community wide, family-focused, and youth-centred in Indigenous contexts (Rand, 2016). Successful interventions in Indigenous contexts include a focus on: self-efficacy and self-advocacy so that individuals can seek, evaluate, and use information to promote their own health; life skills education, such as communication and negotiation skills; and strategies to build confidence and self-esteem (Ryan et al., 2020a; Steenbeek, 2004; Wynne & Currie, 2011).

Various mechanisms[20] that enable the transfer of some health care authority to Indigenous communities and the integration of health services have facilitated better access to culturally appropriate and safe health programs and services, leading to improvements in health outcomes (Wynne & Currie, 2011). These efforts have enabled Indigenous communities and populations to exercise a measure of self-determination[21] in the design and delivery of culturally appropriate sexual health services and to pool personnel and resources, such as sexual health, mental health, and addiction services, so that patients can access multiple services in the same location, which provides considerable advantages for sexual health promotion (CAAN & CATIE, 2017; Skinner et al., 2018; Wynne & Currie, 2011).

Training healthcare professionals to integrate STBBI education and prevention into clinic visits for other services can also be very helpful (Wynne & Currie, 2011). Other initiatives that can help build health system capacity include providing mandatory and ongoing cultural safety training to health practitioners to ensure they know how the determinants of health and racism perpetuate risk taking behaviours, affect help-seeking behaviours, and result in health inequities for Indigenous populations (Wynne & Currie, 2011). The Canadian Public Health Association (CPHA) developed a resource for public health practitioners called *Language Matters*, which aims to reduce stigmas by making STBBI services safer and more accessible to care recipients through use of inclusive, neutral, and person-first language (Canadian Public Health Association [CPHA], 2019).

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[20] See for example, the Cree Board of Health and Social Services of James Bay, which emerged as a result of the James Bay and Northern Quebec Agreement and the First Nations Health Authority in British Columbia.

[21] It should be noted that while Indigenous communities may have gained some measure of self-determination in relation to health care, this authority is limited by federal government oversight.

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STBBI prevention approaches should be community wide, family-focused, and youth-centred in Indigenous contexts

(Rand, 2016).

However, more innovative sexual health service provision models are needed to address current health services challenges. Some suggestions include:

- extending mobile sexual health clinics offered in partnership with public health organizations, Indigenous communities, labs, and clinical providers that bring testing, education, diagnostic, and treatment services directly to communities;
- adopting harm reduction approaches that link sexual health screening with mental health and addiction services; and
- offering point of care testing (POCT) at nursing stations and through specialized mobile nursing and outreach teams (Skinner et al., 2018).

A culturally grounded Know Your Status program that incorporates clinical management, surveillance, and evaluation components has proven to be a highly effective model of HIV care for on reserve First Nations communities and could be extended to include other STBBIs (Skinner et al., 2018).

There is also a need to create more Indigenous organizations focused on STBBI prevention to provide culturally safe health services and effectively address the needs of urban Indigenous clients. Sexual health services must know who their clients are – their stories, experiences, and traumas; for example, many Indigenous HIV/AIDs clients are dealing with identity issues around their sexuality and looking for confirmation of who they are (Barkman et al., 2022).

Health care providers must be able to build relationships with Two-Spirit and gender diverse people, establish trust, and be willing to learn from their clients (Barkman et al., 2022). Over the years, Indigenous people with HIV/AIDS have been building their own communities and organizations to provide resources and supports for those living with the disease. These types of organizations have been effective because they engage meaningfully with Indigenous people of different gender expressions and sexualities, instill cultural teachings that support Indigenous clients in embracing their sexual identities, and offer health services and resources in a culturally safe environment to address stigma, foster resilience, and encourage healthy behaviours (Barkman et al., 2022).

At present, urban Indigenous organizations face considerable challenges in meeting the needs of their clients due to inadequate levels of funding[22] and their inability to offer services that are as comprehensive as those offered to the general population (Kurtz et al., 2008; Lemchuck-Favel & Jock, 2004; Maxwell, 2011). Providing more sustainable funding and changing the mandate of urban Indigenous services can facilitate greater access to culturally appropriate sexual health information and services.

Finally, there is a robust body of literature detailing the need for STBBI services to be trauma-informed and culturally safe. Given the complexities of risk factors impacting Indigenous experiences with STBBIs, research shows that clinicians must have a background in trauma-informed practice and be capable of addressing possible histories of complex trauma, in order to provide appropriate and effective care to Indigenous Peoples (O'Brien et al., 2020; Pearce et al., 2021). In their research promoting trauma-informed hepatitis C care for Indigenous people in Canada, Fayed et al. (2018) grounded successful trauma-informed care in three key principles: safety against re-traumatization within healthcare, stabilization through strengthening resilience, and empowerment to promote self-management. To be successful and achieve cultural safety, STBBI programs and services must be:

- grounded in meaningful community participation,
- incorporate Indigenous knowledges and perspectives,
- utilize decolonizing methodologies, and
- adopt a strengths-based approach that focuses on healing and resiliency rather than challenges and deficits (Ryan et al., 2020a).

Care providers can promote trauma-informed care through diverse actions relating to organizational culture, physical space, and provider-client interaction. For example, care settings should foster an organizational culture that both understands and tries to reduce the harms of trauma on their clients' health and well-being through staff training and trauma- and violence-informed skills assessment in the hiring phase (CPHA, 2020). Appropriate physical spaces can facilitate effective trauma-informed care by ensuring that rooms used by clients are comfortable, inviting, and welcoming, and that materials displayed in the space are easy to read and engaging. Provider-client relationships are crucial in promoting trauma-informed care and can be supported by developing trust and encouraging choice, collaboration, and connection (Halseth & Odulaja, forthcoming). Finally, research also suggests that hiring and training Indigenous healthcare staff can facilitate culturally safe and appropriate care, including STBBI-related counselling for Indigenous care recipients (LeBlanc, 2019).

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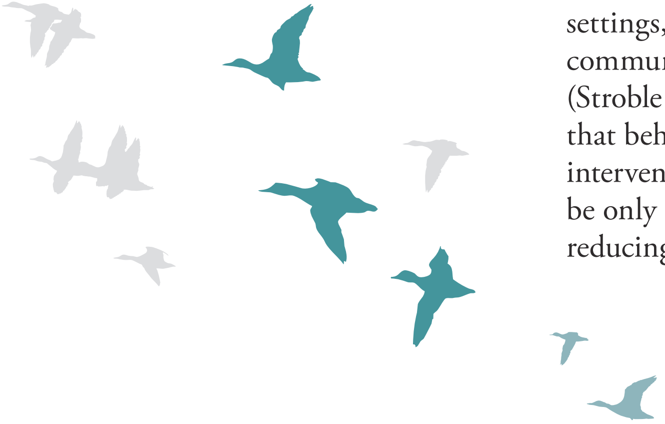
[22] Due to jurisdictional fragmentation, urban Indigenous organizations are provided funding that is proportional to the urban Indigenous people's representation in the total Indigenous population and is heavily reliant on grant-driven, short-term program funding sources (Maxwell, 2011). This threatens the sustainability of urban Indigenous health services and programs.

Crucially, literature suggests that STBBI services and care should also be grounded in Indigenous ways of knowing and utilize what the Mi'kmaq refer to as *etuaptmumk* – or a Two-eyed Seeing approach – to incorporate holistic physical, mental, and spiritual health and well-being into western care models (Heidebrecht et al., 2021; Ryan et al., 2020b). Heidebrecht et al. (2021) recommend a "reconciliatory" approach that adopts Indigenous land-based, retreat-style healing programs to promote HIV/ hepatitis C care and well-being through collective healing and traditional wisdom. Such retreats can provide safe spaces and opportunities to share stories of addictions and other life challenges, build relationships, and reconnect to culture and Indigeneity. This recommendation is echoed by Krementz et al. (2018) in their scoping review on land-based cultural wellness retreats to promote health and healing among Indigenous Peoples living with HIV/hepatitis C. They note that land-based approaches have been shown to be an effective and culturally safe approach to HIV/hepatitis C support.



Developing culturally appropriate sexual health education

Literature suggests there is a general lack of knowledge among many Indigenous people about STBBIs, how to prevent them, and the benefits of screening (Barkman et al., 2022; Zehbe et al., 2016). This lack of knowledge contributes to the ongoing stigma and shame associated with sexual health, delayed health seeking behaviour, and poorer health outcomes. More information is needed, particularly in rural, remote, and northern communities, to foster conversations about sexual health.

Sexual health education can lead to delayed initiation of sex, increased condom use, and greater utilization of sexual health screening services (Strobel & Ward, 2012). Research evidence indicates that it is best to provide this education early, before youth become sexually active, and continue to be provided throughout a person's life, with a focus on promoting a culture of routine screening (Arakawa, 2021; Zehbe et al., 2016). Education should occur in a variety of settings, including schools, community, and clinical settings (Stroble & Ward, 2012). Given that behavioral and biomedical interventions have been found to be only moderately successful in reducing STBBIs (Argento et al., 2019), the best interventions are comprehensive and focus on changing behaviours, knowledge, beliefs, and practices (Strobel & Ward, 2012).

At present, evidence of what works in sexual health education programs in Indigenous contexts is limited (Hackett et al., 2021; Rand, 2016; Strobel & Ward, 2012; Wynne & Currie, 2011). Much of the research focuses on HIV/AIDS, particularly on screening and treatment, with STI literature focused primarily on women and statistics. There is a gap in knowledge on the holistic sexual health needs of Indigenous boys and men (Hackett et al., 2021), on culturally appropriate sexual health promotion programs for First Nations, Inuit, and Métis populations, and on the effectiveness of STBBI prevention interventions (Wynne & Currie, 2011). There also appears to be a gap in the literature on the needs of Indigenous members of the LGBTQ2S+ community.

The literature highlights a need to enhance knowledge about key prevention activities, such as using condoms regularly, abstaining from sex, establishing a trusting relationship with one partner, and monitoring STI status in Indigenous communities (Mooney-Somers et al., 2011). Health education interventions that focus on these types of prevention activities must consider barriers to condom use. These may include embarrassment and shame when picking up condoms, especially in rural and remote communities where privacy is limited, unplanned sex, lack of knowledge about where to obtain condoms, disparities in men's and women's commitment to using condoms, alcohol and drug use, and abuse of power in trusting, monogamous and committed relationships (Gesink et al., 2016; Mooney-Somers et al., 2011). Poverty, depression, and food insecurity may also constrain condom use in regions where considerable social and health disparities exist (Logie et al., 2019a).

Some considerations for enhancing condom use among Indigenous youth in health education have been identified by Mooney-Somers and colleagues (2011). These include:

- encouraging youth to find out where condoms are available, take more than is needed, carry them with them, and share this knowledge with others to normalize the practice of carrying condoms;
- allowing time to get to know potential sexual partners and develop trust;
- working with young people to develop STI prevention strategies that adopt a harm reduction framework in the context of sexual activity while under the influence of drugs and alcohol;
- developing skills-based programs that support young Indigenous people's negotiation of healthy and safe relationships and the notion of shared responsibility;
- encouraging young Indigenous people to get screened regularly during general health checks and following potential exposure; and
- encouraging couples-based STI testing at the beginning of a relationship.

Elders have traditionally played a key role in the transmission of knowledge to younger generations, but this role has been disrupted by colonization. Researchers have identified the need for Elders to be re-engaged in cross-generational health promotion and education (Landy & Worthington, 2021; Rand, 2016; Wilson et al., 2016). However, there are often no Indigenous words for specific sexual health terminology to support them in this endeavor (Rand, 2016; Barkman et al., 2022), and many Indigenous languages, particularly Inuit languages, do not contain past and future tenses, making it difficult to communicate messages on long-term consequences of behaviour (Steenbeek, 2004). Recognizing the need for language to support sexual health conversations, the Pauktuutit Inuit Women of Canada developed *Tukisiviit – Do you understand?*, an Inuit sexual health glossary to aid in communication and comprehension about sexual health (Rand, 2016). Such language tools are a fundamental part of promoting sexual health conversations and STBBI prevention in Indigenous communities (Barkman et al., 2022; Rand, 2016).

Sexual health education must be comprehensive, culturally appropriate, accessible, and tailored to meet the needs of Indigenous Peoples and the realities they face. For example, there is a need to target youth with health education that accounts for them becoming sexually active at younger ages, using an "engaged style of learning" that focuses "on educating youth about their sexual rights to contraception" and providing "a breadth of information to enable choice" (Lys et al., 2019, p. 6). Further, health education that normalizes the discourse around sexual health, STBBIs, and testing can be essential to reducing stigma and fear. This can lead to more consistent testing (Antoniou et al., 2023; Barbour, 2017; Laprise & Bolster-Foucault, 2021), as well as a more supportive environment for contraceptive decision making (Lys et al., 2019).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Some promising practices have been identified for delivering sexual health education in Indigenous contexts generally. These include:

- Incorporating traditional Indigenous knowledge and approaches to healing alongside Western therapies (CAAN & CATIE, 2017; Hackett et al., 2021);
- Emphasizing positive and supportive health messaging that draws on original teachings and worldviews to promote resilience, including about being positive, strong, and healthy, embracing life, and respecting yourself and others (CAAN & CATIE, 2017);
- Targeting comprehensive sexual health education not only to those living with STBBIs but all community members to reduce shame and stigma associated with STBBIs, dispel any myths about STBBIs and their treatment, and provide information about the importance of prevention, screening, and treatment (CAAN & CATIE, 2017);
- Having sexual health education delivered by workers who closely reflect the target clients in terms of demographics, such as peer-led and peer-based sexual health education (CAAN & CATIE, 2017; Lys et al., 2016, 2018a; Monchalin et al., 2016a; Seto et al., 2011; Steenbeek, 2004; Strobel & Ward, 2012; Tingey et al., 2021; Wynne & Currie, 2011);
- Drawing on the importance of intergenerational relationships to promote sexual health, including the role of Elders (Barkman et al., 2002; Hackett et al., 2021; Rand, 2016);
- Building knowledge and skills related to STBBIs and sexual health among Elders, parents, and guardians to facilitate communication with youth on sex topics (Rand, 2016; Rink et al., 2014);
- Having sexual health messages delivered by individuals with shared life experiences (Corosky & Blystad, 2016; Barkman et al., 2022; Steenbeek, 2004); and
- Incorporating methods that target hard-to-reach populations, such as youth who do not attend school and men who do not have the same community programs and social networks as women (Rand, 2016).

Individuals involved in sexual health education must be empowered to do this work and require comprehensive training regarding sexual/reproductive health, STBBI prevention, and how to foster healthy beliefs, skills, and behaviours (Steenbeek, 2004; Wynne & Currie, 2011).

The literature also identifies some effective ways that sexual health education has been delivered to Indigenous populations. These include:

- Using social marketing campaigns and various forms of electronic media as sexual health education tools (Seto et al., 2011; Strobel & Ward, 2012);
- Using theatre or arts-based methods to teach life skills (i.e., assertiveness, decision making, and values awareness) and enhance self-help skills, including role playing, dramatization of realistic situations, and short skits (Lys et al., 2016, 2018a; Monchalin et al., 2016a; Steenbeek, 2004);
- Role modelling what healthy intimate relationships should look like (Rand, 2016);
- Hosting sexual health fairs and conducting STI testing blitzes at local health centres (Rand, 2016);
- Hosting a summer sports camp with comprehensive sexual health lessons, offered daily, exploring topics of puberty, pregnancy and STBBIs, how to identify and reduce related risk behaviours, and skills development, such as problem solving, communication with sexual partners and others, and goal setting (Tingey et al., 2021); and
- Modelling of learned skills, such as using a "family tree" to contextualize abstract concepts, providing culturally appropriate interactive activities, and practicing condom and contraceptive use skills (Tingey et al., 2022).

Promising practices for STBBI prevention, testing and care, and research

There is potential in the realm of public health to improve STBBI education and prevention knowledge in Indigenous communities. The literature provides several examples of promising initiatives that have seen success in recent years that can be built upon. These examples focus on STBBI prevention, testing and care, and research.

STBBI prevention

"Know your status" (KYS) is a Saskatchewan-wide public health initiative that aims to prevent and reduce HIV and hepatitis C transmission, while connecting individuals to appropriate care and services. Research on the KYS campaign in Ahtahkakoop Cree Nation (ACN) (expanded between 2016 and 2019) highlights the potential of this initiative, noting its adaptability to community needs and contexts (Pandey et al., 2021). In the case of Ahtahkakoop Cree Nation, the KYS initiative included hepatitis C education for the community to reduce stigma and raise awareness about risk factors, prevention, and treatment options. The initiative utilized creative community engagement techniques such as radio, educational booths, and community-based screening events. One promising aspect of the community-based screening events was a focus on "one-stop-shop" approaches that offered POCT for hepatitis C viral load, along with genotyping, bloodwork, and fibroscan to increase rapid assessment and treatment initiation (Pandey et al., 2021).

The Province of Alberta recently explored the implementation of an ECHO+ telehealth outreach model (Extension for Community Health Outcomes) to improve equitable access to hepatitis C care for Indigenous populations in the province (Dunn et al., 2021). The ECHO model seeks to improve access to hepatitis C care for remote populations by implementing a "hub and spoke" model of care, wherein a "hub" of specialists supports communities (or "spokes") via telehealth support to community physicians and nurse practitioners. While expanding this model to Indigenous communities in the province, the ECHO+ project team received requests for culturally appropriate campaigns and educational resources aimed at reducing stigma and increasing testing. In response, a number of initiatives were developed including a "myth vs fact" booklet, as well as print and video campaigns from those with lived experiences who have completed hepatitis C treatment (Dunn et al., 2021). Importantly, these initiatives included a shift in language from a focus on "hepatitis C virus" to "liver health," emphasizing that "Hepatitis C can happen to anyone," as well as a shift from "testing" to "screening" to reduce stigma (Dunn et al., 2021).

Several studies have shown the promising potential of trauma-informed and arts-based prevention programs that are rooted in cultural practices for empowering youth and adolescents to develop protective sexual health behaviours (Flicker et al. 2008; Landy, 2019; Lys et al., 2018a, 2018b; Lys et al., 2023). Examples include the Taking Action! Human Immunodeficiency Virus (HIV) Prevention Project (Flicker et al., 2013; Monchalin et al., 2016a), the Sexy Health Carnival (Monchalin et al., 2016b), and Fostering Open eXpression among Youth (FOXY) (FOXY, 2023; Lys et al., 2016, 2018a, 2018b, 2019). Other studies conducted with Indigenous youth in Canada reveal the potential of peer-to-peer education, highlighting innovative approaches that emphasize peer mentorship and youth gatherings (Flicker et al., 2008; Lys et al., 2018a), as well as land-and-arts-based Peer Leader retreats (Gittings et al., 2022; Strength, Masculinities, and Sexual Health [SMASH], 2023). These approaches provide a space for open dialogue, as well as integrated programming where youth are able to discuss multiple topics or issues and support each other (Flicker et al., 2008; Lys et al., 2018a). Such programs can foster increased leadership, empowerment, confidence, and social connectedness, which in turn can lead to improved sexual health knowledge, sexual health-affirming behaviours, and increased resilience (Gittings et al., 2022; Lys et al., 2018a).

> *...reinstating the traditional role of Elders as educators and knowledge holders may be a critical component of effective and decolonizing STBBI health promotion*
>
> (Landy & Worthington, 2021).

Several research studies emphasized the potential of intergenerational health promotion relating to STBBI education (Flicker et al., 2008; Hackett et al., 2021; Landy, 2019; Landy & Worthington, 2021). A participatory filmmaking HIV prevention program with youth and Elders in Labrador revealed that the intergenerational approach was successful in empowering youth in their role within peer-to-peer sexual education, while also honouring the role of community Elders as knowledge holders (Landy, 2019). In fact, additional research reveals that reinstating the traditional role of Elders as educators and knowledge holders may be a critical component of effective and decolonizing STBBI health promotion (Landy & Worthington, 2021). The inclusion of Elders and community members in STBBI health promotion is supported in research among Inuit youth as well, who reported they would prefer to receive sexual health information from parents or caregivers as opposed to the internet, school, or the public health system (Healey, 2016). This was echoed in research completed with Inuit women, who suggested an emphasis on family-centred learning and family role models in effective STBBI prevention models (Rand, 2016).

> *By paying attention to the holistic aspects of health, some of the risk factors for developing STBBIs in Indigenous communities can be addressed, including sexual violence, poor mental health, substance abuse, and poor self-esteem.*

Research suggests that open communication and involvement of role models can also facilitate positive STBBI health programming and prevention efforts among Indigenous boys and men. For example, Biderman et al.'s (2021) research with Indigenous boys and men shows the importance of role modelling in fostering positive relationships with self, others, the community, and culture, which in turn influence sexual health. The study also emphasized the importance of open communication and accessible and comprehensive information on sexual health to support holistic sexual health programming and STBBI prevention.

There is also a strong body of evidence supporting the importance of strengthening relationships between self, others, and the environment to promote physical, social, emotional, and mental aspects of health and well-being for Indigenous Peoples, in Canada and globally (see for example Barker et al., 2017; Chandler & Lalonde, 1998; Reweti, 2022; Richmond, 2018). This includes reconnecting Indigenous people with their culture(s) in STBBI interventions. Successful programs include traditional rites of passage and other youth programs being run by Indigenous-led organizations, such as the Ahkwesáhsne Mohawk Nation's (2019) Oheró:kon – Under the Husk (Rights of Passage) program, which aims to enhance the resiliency of youth by providing a strong foundation of cultural support. The program offers age-appropriate, culturally based teachings and activities to prepare youth as they transition into adulthood (Ahkwesáhsne Mohawk Nation, 2019). In addition to learning traditional practices, the program provides contemporary teachings about sexual health and drug and alcohol prevention. Participating youth are challenged "spiritually, mentally, emotionally, and physically" (Ahkwesáhsne Mohawk Nation, 2019, n.p.). The FOXY (Fostering Open eXpression among Youth) program operating in Northern Canada is another program that incorporates culture as a tool for enhancing the resiliency and sexual empowerment of young women and gender diverse youth, including traditional beading and land-based activities (FOXY, 2023). A parallel program to FOXY, "Strength, Masculinities, and Sexual Health (SMASH)", developed in collaboration with Elders and community leaders, offers culture-based programming to meet the needs of young men around the Northwest Territories (SMASH, 2023).

By paying attention to the holistic aspects of health, some of the risk factors for developing STBBIs in Indigenous communities can be addressed, including sexual violence, poor mental health, substance abuse, and poor self-esteem. Common themes in this research are the importance of developing healthy relationships, connecting and reconnecting with culture to break the cycle of trauma, having role models as a system of support, engaging in cultural activities and practices, and fostering open communication (Biderman et al., 2021; Gaspar et al., 2022; Rand et al., 2023). Consideration of these aspects of health should be incorporated into the planning and delivery of Indigenous-specific/informed public policy and health services (Atkinson et al., 2023; Gesink et al., 2019).

Testing and care

A key aspect of STBBI prevention in Indigenous communities is reducing barriers to culturally safe, acceptable, and non-judgemental STBBI testing and care (Argento et al., 2019; Landy et al., 2022). Bringing HIV and other STBBI testing stations to Indigenous communities would help remove the barriers of travel and transportation (Barbour, 2017; Skinner et al., 2018). According to research published by the National Collaborating Centre for Infectious Diseases, it may be more feasible to increase point-of-care testing in rural and remote communities rather than transport individuals to larger centres for testing (LeBlanc, 2019). Further, combining POCT and treatment services is a promising approach to reducing barriers for Indigenous communities in accessing more comprehensive care by facilitating follow-up services and ongoing access to care (LeBlanc, 2019). Bringing POCT into communities allows for the testing of multiple STBBIs, including HIV and serological testing for hepatitis C and syphilis (LeBlanc, 2019). As demonstrated in Saskatchewan, bringing POCT into Indigenous communities also has the potential to improve STBBI education and treatment (Skinner et al., 2018).

Using methods that do not require health care providers/clinicians to administer testing can also help improve access to culturally appropriate testing. Landy and colleagues (2022) assessed the acceptability of a novel approach to STBBI testing – dried blood spot testing (DBST) – among members of Métis communities in Alberta. DBST is a portable approach to STBBI testing that involves pricking the fingertip, blotting the blood onto filter paper, drying the blood, and shipping it to a laboratory for testing. The test was administered by trained individuals who were not health care providers/clinicians. The authors then assessed the acceptability of this approach, using community-based and Indigenous research approaches that prioritized Métis perspectives. Most of the study participants found the testing experience acceptable, indicated they would recommend it to others, and felt they received enough information about specific STBBIs during their testing experience. Many participants described their DBST experience as easy and felt it could reduce barriers to STBBI testing associated with phlebotomy (the current standard for testing for STBBIs) for Métis people, particular in more rural and smaller community settings. While stigma remains an ongoing barrier to STBBI testing, some participants felt DBST could help reduce this stigma if the testing was hosted at community events, as such venues allow testing behaviours to be role modeled and normalized. Participants also felt that having Métis service providers administer the STBBI testing in the community helped contribute to their comfort in receiving this testing.

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The expansion of the ECHO+ model in Alberta provides another example of innovative testing for STBBIs in rural areas. This model of care responds to localized needs for streamlined testing by implementing fillable and updated case presentation forms, providing step-by-step instructions to support Zoom sessions with specialists, and importantly, simplifying case reports to more easily access treatment referrals (Dunn et al., 2021).

A Two-eyed Seeing approach was incorporated into Alberta's expansion of the ECHO+ model for hepatitis C care by integrating traditional knowledge, traditional healing, and community guidance with western models of care. This Two-eyed Seeing approach to hepatitis C care incorporates the Five R's: respect, relationship, responsibility, relevance, and reciprocity (Dunn et al., 2021). These components are then supported by the following core principles: building relationships, culturally safe and relevant resource development, community-directed, educating and building infrastructure, and iterative wholistic knowledge. The Two-eyed Seeing approach ensures the development of community-led strategies that are grounded in local needs and priorities. As emphasized by Ryan et al. (2020a), individuals cannot be considered separately from their environments, and public health interventions must engage with target populations to understand their complex needs, challenges, and barriers in order to be meaningful and impactful.

Research also suggests that incentivized testing can be effective in improving testing and treatment rates among hard-to-reach populations with high STBBI rates. A 2020 qualitative study conducted among target populations in British Columbia found that incentivized testing is an approach that helps to "bring people through the door" and increases the uptake of desired health-related behaviours (Gagnon et al. 2020). Research by Niruban et al. (2019) echoes this finding, showing that offering $10 incentives for testing and follow-up visits for STBBI-care at subsidized housing locations in Edmonton led to improved access to testing for Indigenous individuals, including PWID. However, Gagnon et al. (2020) also note some disadvantages to incentivized testing, namely that the effectiveness of incentives in STBBI care can be "superficial, short-lived, and one-dimensional" (p. 1), as it does not address the underlying structural barriers and determinants of health that influence health behaviour and health outcomes in the populations targeted by incentive approaches.

Public health emergencies, like the recent COVID-19 pandemic, have the potential to further constrain access to STBBI services for Indigenous Peoples. Many jurisdictions saw a decrease in STBBI testing and diagnosis during the pandemic due to closure or reduction of services, but also in part due to not accessing, delaying, or avoiding needed sexual health care (Gilbert et al., 2021). Much needed Indigenous specific services, such as Indigenous health and healing initiatives for STBBI prevention, testing, and treatment services; HIV and/or hepatitis C support and treatment services; and substance use and treatment services were particularly impacted by the pandemic (PHAC, 2021b). Sexual health and STBBI-related services adjusted to the pandemic through a greater reliance on alternative service delivery options, such as internet-based STI testing programmes.

A survey conducted by Gilbert et al. (2021) sought to understand the acceptability of internet based STI programmes among clients accessing sexual health services at the BC Centre for Disease Control STI clinic and/or GetCheckedOnline testing services. They found this method to be acceptable for individuals experiencing testing barriers. Their findings supported those of Ablona et al. (2021), who conducted a similar study using the same data sources as Gilbert and colleagues. While only 4% of the survey respondents were Indigenous, support for alternative STI testing models was overwhelming, with up to 88% of respondents stating they were likely to use at-home testing kits and 79% indicating they were likely to use express testing models (e.g. virtual consultation with specific collection at a clinic). The likelihood of using alternative models of service delivery did not differ among participants who experienced service access barriers due to the pandemic. Of particular importance in this study is participants' interest in using text-messaging to receive STI results and reminders, pointing towards a potential low-barrier communication method for STBBI-related care both during COVID-19 and beyond (Ablona et al., 2021). Although available research regarding STBBI-related care during the COVID-19 pandemic cannot be generalized to the Indigenous population due to low Indigenous representation in the dataset, the study provides insight into STBBI health care delivery and health seeking behaviors, with the potential to increase Indigenous people's access to STBBI testing services.

In 2021, the Public Health Agency of Canada released a National Report on *Findings from the Survey on the Impact of COVID-19 on the delivery of STBBI prevention, testing and treatment including harm reduction services in Canada*. The report details findings from a self-administered survey among service providers (e.g., community-based organizations or local public health units) that directly provided STBBI and/or harm reduction services in Canada. The survey revealed that many key harm reduction services that were instrumental in reducing exposure to STBBIs (i.e., drug equipment exchanges and distribution, outreach, etc.) stopped or decreased their services during the pandemic, further impacting a population already vulnerable to STBBI transmission (PHAC, 2021c). However, service providers demonstrated adaptability and innovation in light of pandemic-related restrictions, including mobile outreach, STI testing, and self-service pickup or delivery of harm reduction materials, providing important insight into the potential of accessible STBBI care in the future (PHAC, 2021c).

STBBIs research

Administrative health data that is meaningful to Indigenous communities can be a valuable tool that supports STBBIs decision-making, advocacy, and community-based interventions (Mendlowitz et al., 2023b). However, to be meaningful, Indigenous groups must lead and/or be involved in the co-creation and co-interpretation of that knowledge to avoid a deficit-based lens that can perpetuate stigma. Research has shown a link between "health outcomes and strength-based indicators of Indigenous health and wellness, Indigenous worldviews, cultural connection, and resilience" (Sharma et al., 2021, as cited in Mendlowitz et al., 2023b, p. 51).

Mendlowitz and colleagues (2023b) reflect on lessons learned from a research partnership with the Ontario First Nations HIV/AIDS Education Circle (OFNHAEC) to co-create knowledge based on hepatitis C administrative health data. By meaningfully engaging with the OFNHAEC to conceptualize the study design, parameters, and administrative health data, including co-analysis and co-interpretation of the health data, the research produced findings that were beneficial to First Nations people. The findings avoided misinterpretation while also supporting reciprocal relationships, fostering trust, and advancing reconciliation in STBBI research.

...Indigenous groups must lead and/or be involved in the co-creation and co-interpretation of that knowledge to avoid a deficit-based lens that can perpetuate stigma.

Indigenous populations are at increased risk of STBBIs and face inequitable access to services, largely due to the legacy of colonialism.

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CONCLUSION

Indigenous populations are at increased risk of STBBIs and face inequitable access to services, largely due to the legacy of colonialism. The burden of STBBIs they carry is especially high among specific sub-populations, including Indigenous youth, women, people who inject drugs, men who have sex with men, and individuals living in northern communities, particularly Inuit. This is due to the intersection of multiple stigmas, feelings of powerless, the prevalence of various forms of abuse and violence, mental health issues and addictions, and reduced access to health services. Surveillance data show that rates of HIV, HCV, and certain STIs are disproportionately high among Indigenous populations. However, ongoing challenges present barriers for cross-jurisdictional and cross-population comparisons, including lack of disaggregated data for select populations, inconsistent collection of Indigenous identifiers, and the voluntary nature of data collection and coordination across national, provincial, and territorial jurisdictions.

Findings from this literature review highlight the importance of promoting access to safe and adequate care along the continuum of health, including prevention, testing, and ongoing support, to address STBBI health inequities among Indigenous populations. Promising practices in STBBI both before and in the context of COVID-19 show potential for innovative and tailored public health responses that better meet the needs of Indigenous populations in Canada. The various public health responses that have emerged to address STBBIs in Indigenous populations are multi-pronged. They address the intersecting social determinants that make Indigenous populations more susceptible to STBBIs and influence their transmission, while also improving access to culturally safe and appropriate sexual health programs, services, and education. Indigenous-led STBBI and sexual health programs that are strengths-based and designed to reconnect individuals to culture, foster resiliency, and empower individuals to make health-promoting sexual health decisions show promising potential.

The literature review also highlighted some ongoing knowledge gaps in the research. There continues to be a lack of research on the sexual health needs of Indigenous LGBTQ+ individuals (Logie et al., 2018a) and on the holistic sexual health needs of Indigenous boys and men (Biderman et al., 2021; Hackett et al., 2021). Much of the data on STBBIs among Indigenous populations focuses on First Nations, leaving gaps in knowledge for Inuit and Métis populations. The research heavily emphasizes HIV/AIDS, particularly on screening and treatment, leaving a gap in knowledge about the prevalence of other STBBIs, especially other types of viral hepatitis beyond HCV. Much of the data for specific Indigenous sub-populations and STBBIs is particularly dated, and for older generations is almost absent. There is also a gap in knowledge on the effectiveness of prevention strategies for First Nations, Inuit, and Métis populations, particularly those that are culture-based.

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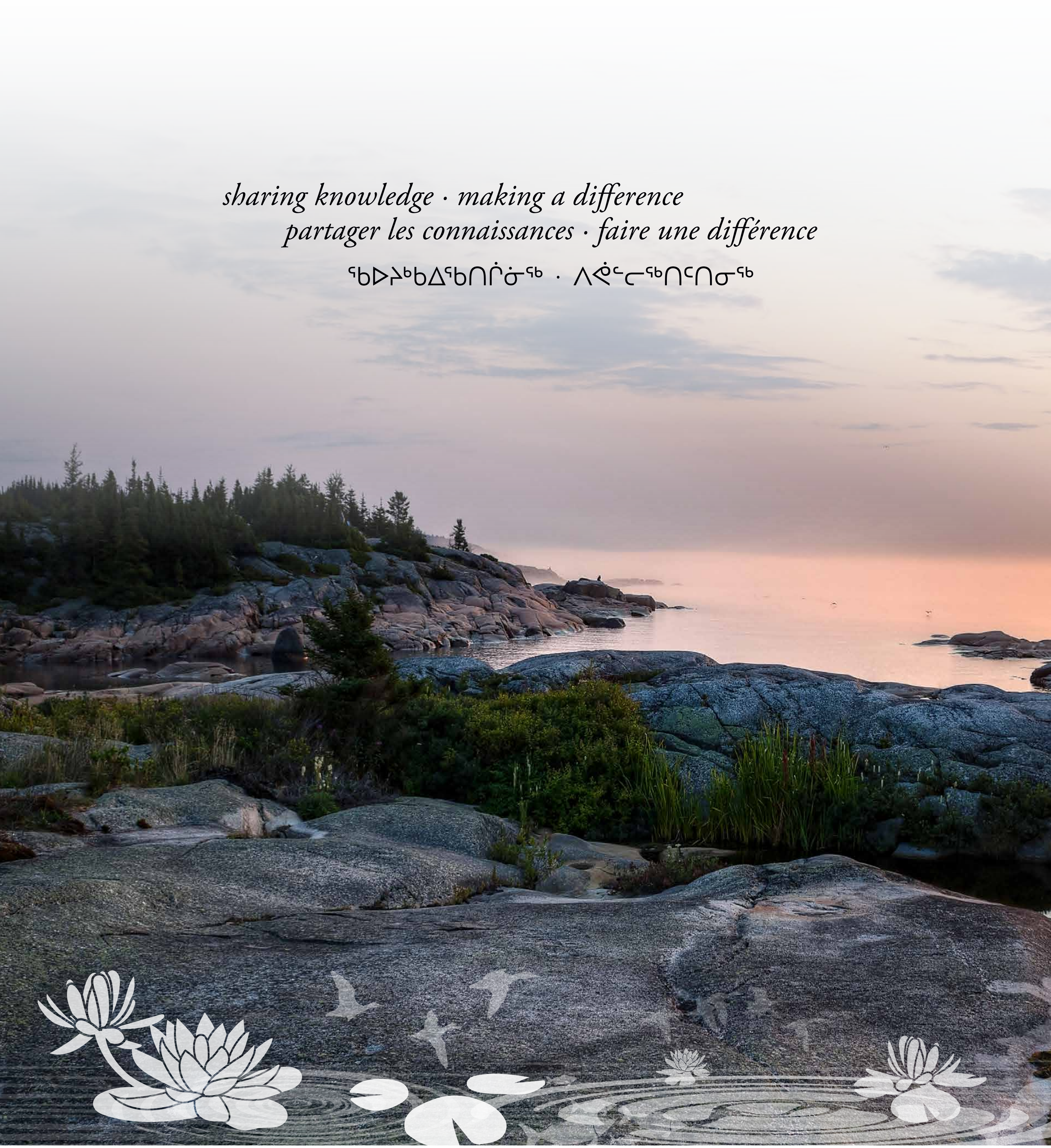

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National Collaborating Centre for Indigenous Health
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