Perinatal Transmission of HIV: Prevention, Treatment, and Education

A report by the Saskatchewan Prevention Institute

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The Saskatchewan Prevention Institute provides services to all those living on Treaty Lands 2, 4, 5, 6, 8, and 10, and the homeland of the Métis. The Saskatchewan Prevention Institute is dedicated to moving forward on a shared path of reconciliation and partnership. We are all Treaty people.

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Executive Summary

Saskatchewan continues to see high rates of new cases of human immunodeficiency virus (HIV) in comparison to the rest of Canada. A large number of these new cases are being identified in women of childbearing age, particularly those between the ages of 15 and 39 years. These are important facts to consider when thinking about the prevention of HIV transmission, particularly the prevention of perinatal (mother-to-child) transmission of HIV. Both planned and unplanned pregnancies occur in women living with HIV, and HIV transmission to the baby can occur during pregnancy (in utero), around the time of delivery (intrapartum), or postnatally through breastfeeding. Women living with HIV have a 15-30% chance of transmitting HIV to their baby in the absence of preventative measures and HIV treatment. Without treatment, the risk of perinatal transmission through breastfeeding alone is 5-20%. Therefore, it is important that women living with HIV and their healthcare providers are knowledgeable about HIV in the context of pregnancy and ways to reduce the risk of transmission to the baby.

Due to increases in knowledge about perinatal transmission and advances in treatment, women receiving proper treatment and care have less than a 1% chance of passing HIV to their baby. The introduction of universal HIV testing in the antepartum period, the use of antiretroviral treatment (ART) to achieve an undetectable viral load, scheduled cesarean section when appropriate, and exclusive formula feeding have been found to produce transmission rates that are less than 1%. When perinatal transmission does occur, it is mainly in women who are unaware of their HIV status at delivery. It is for this reason that Saskatchewan's Sexually Transmitted and Blood-Borne Infection (STBBI) Testing Policy calls for confidential HIV testing to be included in the routine panel of prenatal screening for all pregnant women. Testing allows those who test positive to access treatment and care early, while also providing education to those who test negative who may be at risk of infection during pregnancy.

Research has identified numerous factors that increase the risk of perinatal transmission. Maternal factors related to perinatal transmission risk include advanced stage of disease; decreased CD4 cell count; high maternal viral load prior to birth; lack of ART during pregnancy; having a genital infection during pregnancy; and using alcohol, drugs, or cigarettes during pregnancy. The health of the fetus, which is related to maternal nutrition and prenatal care, has also been linked to in utero transmission. Overall, women who are less healthy are more likely to pass HIV to their babies. Intrapartum events associated with potential fetal exposure to maternal blood are also correlated with a higher incidence of perinatal transmission of HIV. Such intrapartum events include placental abruption, use of fetal scalp electrodes, intrauterine catheters, episiotomy, and lacerations. Other obstetric factors associated with an increased risk of transmission include longer duration between the rupture of membranes and delivery, presence of a bacterial infection in the membranes around the fetus and the amniotic fluid (chorioamnionitis), and the use of forceps or vacuums.

In addition to identifying factors that increase the risk of transmission, research has identified numerous factors that significantly decrease the risk of perinatal transmission of HIV. First, it is

important for pregnant women to find a doctor they trust and see them regularly. Pregnancy and HIV require special medical care, so it is important for women to find a doctor who is knowledgeable about HIV. Second, ART is vital for reducing the risk of perinatal transmission in pregnant women living with HIV. Treatment during pregnancy should focus not only on preventing perinatal transmission, but also on ensuring optimal health for the mother. Finally, women with HIV should take special care to increase behaviours that support a healthy immune system, such as getting enough sleep and rest, lowering their stress levels, ensuring they are getting proper nutrition, getting social support, maintaining contact with health professionals, and stopping or decreasing substance use.

Researchers working in the areas of HIV prevention and prenatal care for pregnant women living with HIV have identified numerous barriers. Many of the barriers to HIV prevention and prenatal care include social determinants of health: lack of food, stable housing, adequate finances, and transportation. When pregnant women are unable to meet their most basic needs, it can be difficult for them to participate in prenatal treatment and care. Refusal to be tested and/or inability to obtain test results have been attributed in part to obstacles with transportation and having to return to health facilities. Other commonly reported barriers include lack of childcare while attending doctor's appointments, mistrust of nurses and doctors, fear of health and social service organizations, fear of having the baby removed from their custody, and lack of access to appropriate substance use treatment programs. In order to receive appropriate treatment and counselling, women need to feel comfortable being honest with medical professionals about their lifestyle (e.g., treatment adherence, food intake, substance use).

Fear of potential judgements and discrimination by staff members, based on a pregnant woman's HIV status, can greatly decrease the likelihood that women will seek prenatal care. The stigma surrounding HIV can influence health and health-seeking behaviours. For example, stigma from others can limit the services women receive, and can cause women to avoid seeking treatment and/or avoid disclosing their HIV status. Stigma against HIV is reported to be a main reason for women's reluctance to be tested, to disclose their HIV status, and to take ART. Stigma and discrimination are often based on fear and are often the result of a lack of information, or a wealth of misinformation, about HIV. Therefore, education about HIV and pregnancy is important for the general public, youth, vulnerable women, and health professionals. In addition to increasing knowledge, such education may reduce the stigma and discrimination faced by women with HIV. This, in turn, may increase women's willingness to seek appropriate care and treatment for their HIV in order to further reduce the risk of perinatal transmission of HIV.

For more information, including a list of references, please refer to the complete report.

1. Introduction

Saskatchewan continues to have the highest rates of new cases of HIV in Canada at over 3 times the national average (18.6 vs 5.7 per 100,000 population in 2024) (Public Health Agency of Canada [PHAC], 2025b). The most recently available provincial data by age showed that of the 168 new cases of HIV reported in 2018, 60% were in those aged 39 years or younger (Saskatchewan Ministry of Health, 2020). Among women newly diagnosed with HIV, 83% were of childbearing age (aged 15 to 39 years) (Saskatchewan Ministry of Health, 2020). These are important facts to consider when thinking about the prevention of HIV transmission, particularly the prevention of perinatal (mother-to-child) transmission of HIV. Without effective education, prevention, and treatment efforts, including those directed at women who are or may become pregnant, HIV infection rates will likely continue to rise in Saskatchewan.

Recognizing the importance of understanding HIV in the context of pregnancy, including advancements in treatment and current guidelines, the Saskatchewan Prevention Institute conducted an updated review of the literature in this area.[1] The following literature review will focus on ways to ensure the best possible outcomes for pregnant women living with HIV and their newborns. The review includes findings and recommendations on perinatal transmission, transmission prevention, barriers to prevention, and health promotion around these topics, as well as information about after-care for babies exposed to HIV.

2. Introduction to HIV/AIDS

HIV is the acronym for human immunodeficiency virus. This name highlights the fact that HIV can only be transmitted from one human to another human, and that it is a virus that causes a deficiency in the immune system (Canadian AIDS Treatment Information Exchange [CATIE], 2025a; PHAC, 2025c). More specifically, HIV infects the CD4 positive T cells, which are the key components of the human cellular immune system (CATIE, 2025a; PHAC, 2021b). CD4 cells are a type of lymphocyte, or white blood cell, that are responsible for signaling other immune system cells to fight infections in the body (AIDS.org, n.d; CATIE, 2025a). When HIV enters these cells, it impairs or destroys them, resulting in a deterioration of the immune system. The immune system is considered deficient when it is no longer able to fight off infections and diseases (i.e., when the number of CD4 cells is less than 200, meaning 200,000 cells per mL of blood) (Garcia et al., 2025).[2] HIV is a progressive disease that continually causes changes and damage to an individual's immune system.

When an individual's CD4 cells drop below 200 and they contract one or more opportunistic infections, they are said to have AIDS (acquired immunodeficiency syndrome). Opportunistic infections are those that individuals with HIV are particularly susceptible to because of the

[1] The current document is an update of a previously completed literature review conducted by the Saskatchewan Prevention Institute in 2014.
[2] The lower limit of 'normal' is 500, meaning 500,000 CD4 cells per mL of blood.

damage to their immune system. There are a wide range of opportunistic infections that include, but are not limited to, fungal infections, respiratory infections, and various forms of cancer (Mayo Clinic, 2024). With advances in treatment and access to antiretroviral therapy (ART), most people living with HIV in Canada never develop AIDS.

2.1 HIV Transmission

HIV can only be transmitted when there is a direct exchange of specific bodily fluids between two humans. The five fluids capable of transmitting HIV are 1) blood, 2) semen and pre-cum, 3) vaginal fluid, 4) anal fluid, and 5) breast milk (CATIE, 2025a). Common high-risk activities include unprotected vaginal and anal sex, sharing needles and other substance use equipment, and tattooing with used needles. In Canada in 2023, 39% of new cases of HIV infection were attributed to heterosexual sex, 36% were attributed to male-to-male sexual contact, and 18% were attributed to injection drug use (IDU) (PHAC, 2025d). In contrast, in Saskatchewan, IDU and heterosexual sex have been identified as primary drivers of transmission with 48% and 40% of new cases of HIV being attributed to these exposure categories in 2023, respectively (PHAC, 2025d). Women living with HIV can also pass HIV to their babies through pregnancy, childbirth, and breastfeeding, although the occurrence is relatively rare in Canada. In 2023, five cases of perinatal transmission were reported in Canada, with two of the cases being from Saskatchewan (PHAC, 2025d).

Every day, casual contact is not a risk for transmitting HIV, unless people are participating in behaviours that could result in an exchange of bodily fluids. Simply put, HIV is spread when: 1) a body fluid with a high concentration of HIV (i.e., blood, semen, vaginal fluid, anal fluid, breast milk); 2) enters the body of someone else through an activity (e.g., sexual intercourse; sharing needles; during labour, delivery, breastfeeding); 3) that provides direct access to the bloodstream (e.g., through breaks in the skin or by passing through a mucous membrane[3]) (CATIE, 2025a; PHAC, 2025c). In other words, HIV transmission requires a direct exchange of body fluids with high concentrations of HIV. Certain activities, like unprotected vaginal and anal sex, are considered higher risk activities because small abrasions can occur during sex resulting in direct routes for HIV transmission.

2.2 Symptoms of HIV

Most people living with HIV do not show symptoms for several years after infection. This means that they may not know that they have been infected. Some people develop acute retroviral syndrome at the time of seroconversion (i.e., the time at which the body develops antibodies to HIV). Seroconversion usually takes place between one to three months after HIV infection (HealthLink BC, 2023a). People experiencing acute retroviral syndrome typically have symptoms similar to glandular fever (e.g., fever, rash, joint pains, and enlarged lymph nodes). Even people with HIV who are not symptomatic are highly infectious, particularly at

[3] Mucous membranes are tissues that line the surfaces of body cavities such as the nostrils, mouth, throat, vagina, urethra, and anus.

the time of seroconversion, and can transmit the virus to others.

AIDS is the most serious stage of HIV infection. People living with AIDS have severely weakened immune systems and, as such, may have developed an opportunistic infection (e.g., thrush, tuberculosis, recurrent pneumonia) or an AIDS-related cancer (e.g., lymphoma, Kaposi's Sarcoma) (Mayo Clinic, 2024). Not everyone living with HIV will advance to AIDS. If a person is diagnosed with AIDS, however, they require medical treatment in order to prevent death. With proper treatment, CD4 cell counts may increase, and the person's health may begin to improve. Once a person receives a diagnosis of AIDS, however, the diagnosis is not removed regardless of subsequent changes in health status.

2.3 HIV Testing

Early detection of HIV infection is important for both treatment and for the prevention of HIV transmission. HIV diagnostic tests are used to detect whether HIV antibodies and/or HIV antigens are present in a person's body. Antibodies are produced by the immune system in response to an HIV infection. HIV antigens are the virus itself and appear earlier in the bloodstream than HIV antibodies. In Saskatchewan, standard tests, self-test kits, and point of care tests are available.[4] Depending on the type of test used, a person can test positive for HIV as early as 15 to 20 days after exposure (PHAC, 2021a). By 35 days post exposure, 95% of positive cases are detectable; however, the window for a reactive HIV test result can be up to 12 weeks post exposure.

Regular HIV testing is extremely important as it allows people who test positive to access treatment, care, and support services as early as possible. As someone can have HIV and not have any symptoms for up to ten years, waiting until symptoms occur can be detrimental because damage to the immune system is still occurring (PHAC, 2025a). Receiving care before the immune system is severely impacted and/or opportunistic infections occur can help individuals keep their viral loads down, thereby delaying or preventing a diagnosis of AIDS. Testing is also crucial because it allows people who test positive to take the necessary precautions to prevent the spread of HIV to others. Frequent testing is particularly important for people who are engaged in higher risk activities, as their HIV infection status may change rapidly. Also, as the HIV virus mutates quickly, a person living with HIV can be re-infected with a different strain of HIV if they are participating in higher risk behaviours (CATIE, 2025a).

For pregnant women, women contemplating pregnancy, or women having unprotected sex, knowing their HIV status can help them to prevent the spread of HIV to their children, in

[4] For more information about HIV testing in Saskatchewan, including more information about the types of testing available and a list of testing sites, please refer to the Saskatchewan Ministry of Health's website at https://www.saskatchewan.ca/residents/health/diseases-and-conditions/human-immunodeficiency-virus-hiv/hiv-testing.

particular their fetus or newborn child. HIV counselling and testing can serve as both primary and secondary prevention strategies (Cabecinha & Saunders, 2022). Specifically, counselling can reduce the risk of HIV exposure in those who test negative by providing them with accurate information about HIV transmission (i.e., primary prevention). Counselling and testing can also reduce the risk of transmission to partners and unborn children in those testing positive through the provision of information and appropriate treatment and care. Testing of pregnant women can also serve as a secondary prevention activity, as knowledge of HIV status can increase the opportunities for interventions to improve and maintain health, thereby slowing or preventing the progression of HIV to AIDS. Women with advanced immunological stages of HIV/AIDS are at an increased risk of perinatal transmission of the virus to their fetus (Walters et al., 2025).

2.3.1 Saskatchewan's STBBI Testing Policy

Recognizing the importance of HIV testing for HIV care and transmission prevention, the Saskatchewan HIV Provincial Leadership Team (SK HIV/PLT) developed a Saskatchewan-specific HIV testing policy in 2013. An updated policy was released by the Saskatchewan Ministry of Health in 2025, "Sexually Transmitted and Blood-Borne Infection (STBBI) Testing Policy".[5] The policy recommends confidential HIV testing and counselling for:

- pregnant women (at first prenatal visit, with repeat testing if at ongoing risk for HIV infection)
- neonates exposed to HIV during pregnancy
- individuals with new or multiple sexual partners (every 3 to 6 months)
- individuals who are gay, bisexual, or other men who have sex with men (every year)
- transgender persons (every year)
- individuals 13 years of age or older (every five years)
- individuals with tuberculosis
- individuals with a current sexually transmitted infection
- individuals who exchange sex for money, food, or drugs
- individuals who inject or share drug use equipment

Both the Saskatchewan Ministry of Health (2025) and the SOGC (Keenan-Lindsay & Yudin, 2017) indicate that HIV testing should be included in the routine panel of prenatal screening for all pregnant women. They also recommend that women who test negative for HIV and continue to engage in higher risk behaviours should be retested in their third trimester. Finally, it is recommended that pregnant women with no prenatal care and an unknown HIV status should be offered HIV testing when they present to the hospital for labour and delivery.

[5] For more information about Saskatchewan's STBBI Testing Policy, please refer to https://www.ehealthsask.ca/services/Manuals/Documents/STBBI_Testing_Policy.pdf.

2.4 HIV Treatment

When the HIV/AIDS epidemic first began in the early 1980s, the virus was considered to be a death sentence, and individuals did not live long post-diagnosis. Currently, although there is still no cure for HIV, there are highly effective treatments that can help maintain the health of people living with HIV (CATIE, 2025a; PHAC, 2025a). As previously discussed, ART can stop the virus from replicating in the body which, in turn, stops the virus from rapidly damaging the immune system (Cleveland Clinic, 2023). The medications allow CD4 cells to live longer and protect the body from infections. Because ART does not eliminate HIV from the body, people with HIV need to take these medications for the rest of their lives. The World Health Organization (WHO, 2021) states that ART should be initiated for adults, pregnant and breastfeeding women, and infants regardless of disease stage and CD4 cell count.

HIV is able to quickly adapt to medications, which makes the increased number of available antiretroviral drugs very important. For the same reason, treatment adherence is also important. Because HIV is characterized by high levels of virus production and mutation, the virus can become resistant to medication when treatment regimens are not adhered to (CATIE, 2023b). When HIV becomes resistant to one drug, it may also become resistant to other drugs in the same class, even if the individual has never taken those drugs (CATIE, 2021a). Keeping the right levels of medications in the body at all times decreases the likelihood that the virus will become resistant to the medication (Cleveland Clinic, 2023). It also increases the likelihood of HIV becoming undetectable (i.e., less than 40 or 50 copies per mL of blood, measured every 4-6 months) and untransmittable through sexual contact. According to PHAC (2023), “Undetectable = Untransmittable (U=U)” communicates the scientific consensus that HIV cannot be transmitted through sexual contact when a person living with HIV takes and adheres to ART and maintains an undetectable viral load.[6]

Current recommendations from WHO (2021) and the Panel on Treatment of HIV During Pregnancy and Prevention of Perinatal Transmission (2025) indicate that initial ART should consist of dolutegravir (DTG) in combination with nucleoside/nucleotide reverse-transcriptase inhibitors (NRTIs) for adults and infants. Some ART medications can cause side effects, although these are less common than with earlier medications. Side effects may include headaches, nausea, muscle pain, diarrhea or dizziness. Most of these side effects improve over time or can be managed through a change in diet or the use of additional medications (CATIE, 2025c). Although these side effects can usually be managed, they can sometimes cause low adherence to HIV treatment (Al-Dakkak et al., 2013). This may be especially true in pregnant women who may already be experiencing some of these effects from pregnancy (e.g., nausea and vomiting). In order to reduce the impact of side effects on

[6] For more information about U=U, please visit https://www.canada.ca/en/public-health/services/publications/diseases-conditions/preventing-hiv-transmission-undetectable-equals-untransmittable-health-professionals-fact-sheet.html and https://www.canada.ca/en/services/health/campaigns/hiv-aids.html.

adherence, it is important that healthcare providers and patients discuss side effects, as well as options for managing them. These discussions should include the frequency, intensity, duration, and pattern of the side effects, as well as whether anything has been found to help lessen their intensity (CATIE, 2025c).

3. HIV and Pregnancy

3.1 Modes of Perinatal Transmission of HIV

When a woman living with HIV passes the virus to her fetus or baby, this is called perinatal transmission[7] (CATIE, 2021a). It is also sometimes called mother-to-child transmission, vertical transmission, or maternal transmission. Transmission can occur during pregnancy (in utero), around the time of delivery (intrapartum), or postnatally through breastfeeding. The timing of transmission is difficult to determine for certain, and the risk factors for transmission vary between the in utero, intrapartum, and postnatal periods. Therefore, it is important for preventative interventions to address the major risk factors at the appropriate time. Research suggests that among non-breastfeeding women, approximately one third of infections are acquired in utero and two thirds during delivery (Kourtis et al., 2006). Research also indicates that in utero transmissions occur primarily in the weeks or days prior to delivery (CATIE, 2023a; ClinicalInfo.HIV.gov, 2025).

Women living with HIV have a 15-30% chance of transmitting HIV to their newborn in the absence of preventative measures and HIV treatment (Atkinson et al., 2024; CATIE, 2020b). Without effective treatment, the risk of perinatal transmission from breastfeeding alone is 5-20% (CATIE, 2020b). The introduction of universal HIV testing in the antepartum period, the use of ART, scheduled cesarean section when appropriate, HIV treatment for newborns 6 weeks following delivery, and formula feeding have been found to produce transmission rates that are less than 1% (Atkinson et al., 2024; Keenan-Lindsay & Yudin, 2017).

The potential for decreasing transmission rates is reflected in the Canadian data. Of the 254 Canadian infants who were prenatally exposed to HIV in 2024, there was only one confirmed HIV transmission (less than .4%) (PHAC, 2025b). This is compared to 2016 through 2023, where HIV perinatal transmission rates ranged between 1 and 4% (PHAC, 2025d). In 2023, 5 of the infants who were perinatally exposed to HIV were infected: 3 of whom were born to women who did not receive any ART, and two were born to women who received some or partial ART (PHAC, 2025d). In Saskatchewan, three cases of perinatal transmission were reported in 2022, and another two cases were reported in 2023 (PHAC, 2025d).

3.2 Factors that Increase the Risk of Perinatal Transmission

The Saskatchewan Ministry of Health (2015) states that when perinatal transmission does occur, it is mainly in women who are unaware of their HIV status at delivery. Studies confirm

[7] When HIV is transmitted between sexual partners, it is known as horizontal transmission.

that perinatal transmission is most often due to the late HIV diagnosis of the mother (i.e., diagnosed at or after delivery) (Lu et al., 2014; Shoemaker et al., 2021). Knowledge about HIV status is important as research has identified a link between perinatal transmission and maternal factors. These maternal factors include advanced stage of disease, decreased CD4 cell count, high maternal viral load prior to birth, and lack of ART during pregnancy (Walters et al., 2025). The health of the fetus, which is related to maternal nutrition and prenatal care, has also been linked to in utero transmission (Obeagu, 2025). Overall, women who are less healthy are more likely to pass HIV to their babies.

The use of alcohol and other substances can result in poorer maternal health. Specifically, alcohol, tobacco, and substance use can weaken the immune system, impact nutrition, and increase the risk of other pathogens. Therefore, women who are living with HIV and are using alcohol, tobacco, and other substances may be more likely to get infections or viruses. Women who use alcohol and other substances may also be less likely to adhere to their HIV treatment regimens (Rodriguez et al., 2025). To increase their health and the health of their babies, women should use alcohol and substances less often, practice safer substance use, and stop using alcohol and substances if possible (CATIE, 2025a). Stopping alcohol and substance use should be done under the care of a medical professional, especially when pregnant.

In addition to these maternal factors, intrapartum events associated with potential fetal exposure to maternal blood are correlated with a higher incidence of perinatal transmission of HIV. Such intrapartum events include placental abruption, use of fetal scalp electrodes, intrauterine catheters, episiotomy, and lacerations (Atkinson et al., 2024). Other obstetric factors associated with an increased risk of transmission include longer duration between the rupture of membranes and delivery, presence of a bacterial infection in the membranes around the fetus and the amniotic fluid (chorioamnionitis), the use of forceps, and, in some circumstances, having a vaginal delivery[8] (Atkinson et al., 2024; PHAC, 2012). It is important to note that epidural anesthesia is not contraindicated for women living with HIV (Toledano et al., 2023).

3.3 Factors that Reduce the Risk of Perinatal Transmission

In addition to identifying factors that increase the risk of transmission, research has identified numerous factors that significantly decrease the risk of perinatal transmission of HIV (Atkinson et al., 2024; Khan et al., 2023). These include:

- routine prenatal testing for all pregnant women
- consistent use of ART during pregnancy for women with HIV
- intravenous zidovudine treatment for women with HIV during labour or 2 hours prior to scheduled cesarean delivery
- 4-6 weeks of oral zidovudine prophylaxis for newborns with perinatal HIV exposure

[8] Mode of delivery is discussed further later in this review.

- exclusive formula feeding for infants of mothers living with HIV

Women with HIV should also take special care to increase behaviours that support a healthy immune system, such as getting enough sleep and rest, maintaining proper nutrition, accessing social support, lowering their stress levels, maintaining contact with healthcare professionals, and stopping or decreasing substance use (CATIE, 2025a, 2025b). They should also find a doctor they trust and see them regularly. Pregnancy and HIV require special medical care to reduce perinatal transmission risk, so it is important for women to find a doctor who is knowledgeable about HIV.

3.3.1 HIV Testing in Pregnancy

One of the most basic ways to reduce the risk of perinatal transmission of HIV is to screen pregnant women as early in pregnancy as possible. The earlier in pregnancy the HIV testing takes place, the sooner arrangements can be made for treatment of both the mother and the fetus. SOGC (Keenan-Lindsay & Yudin, 2017) states that the main goals of HIV testing during pregnancy are to: 1) identify women who are living with HIV so that they can receive optimal care, 2) decrease the incidence of perinatal transmission of HIV, and 3) reduce the risk of transmission to sexual partners. These goals highlight the importance of offering HIV testing as a part of routine prenatal care and as a way of reducing perinatal transmission of HIV. In recognition of the importance of prenatal HIV testing, it is recommended that all pregnant women are offered prenatal screening for HIV, instead of just those who present as being high risk for HIV (Keenan-Lindsay & Yudin, 2017; Saskatchewan Ministry of Health, 2025). SOGC recommends that all pregnant women be screened for HIV in the first trimester or at their first prenatal visit (Atkinson et al., 2024).

Saskatchewan currently uses an opt-out testing strategy, where all pregnant women are offered HIV testing as part of their routine prenatal screening tests (Saskatchewan Ministry of Health, 2025). As part of the opt-out testing strategy, the healthcare provider is required to inform the woman that HIV testing is part of routine screening, and that she has the option to decline the test (opt-out) if desired. Ideally, healthcare providers should make sure that the purpose, risks, and benefits of the test are explained to the woman and that she understands her right to refusal. Research has shown that pre-test counselling of pregnant women leads to higher acceptance of testing, increased knowledge of HIV transmission, and increased use of condoms and contraceptives (Obermeyer & Osborn, 2007; WHO, 2013). It is important that the common principles of confidentiality and informed consent, conducted in a non-judgmental fashion, are applied to HIV testing in pregnancy (CATIE, 2021b; Saskatchewan Ministry of Health, 2025).

Additionally, repeat testing each trimester is recommended for women at continued risk for HIV infection (Keenan-Lindsay & Yudin, 2017). SOGC states that pregnant women

involved in activities with high risk of contracting HIV should be retested at each trimester, near term, and again postpartum especially if breastfeeding (Atkinson et al., 2024). Those at high risk for HIV should also be offered pre-exposure prophylaxis (PrEP) for use throughout their pregnancy (Atkinson et al., 2024). This includes women who engage in injection drug use, commercial sex work, and unprotected intercourse with multiple partners, and those in serodiscordant relationships (e.g., an HIV-negative woman in a relationship with an HIV- positive man) (Atkinson et al., 2024; Bitnun et al., 2014).

HIV testing usually consists of a blood test for HIV antigens or antibodies. For pregnant women presenting for labour and delivery with no prenatal care, rapid HIV antibody testing or point-of-care HIV testing is recommended by SOGC and PHAC (Atkinson et al., 2024). This testing provides an "important last opportunity to identify women living with HIV before delivery and to provide emergency prophylaxis to decrease the risk of perinatal transmission" (Atkinson et al., 2024, p. 5).

3.3.2 HIV Treatment

Once women are aware of their HIV status, ART is one of the most important ways to significantly reduce the risk of perinatal transmission of HIV (Atkinson et al., 2024; CATIE, 2023a). The combination of medications taken during pregnancy depends on many factors, including the medications the woman has taken in the past, other medical conditions (e.g., heart disease, diabetes), and drug resistance testing (HIVinfo.NIH.gov, 2025a). Treatment during pregnancy should focus not only on preventing perinatal transmission, but also on ensuring optimal health for the mother (Atkinson et al., 2024). Therefore, the most effective regimen that is safe in pregnancy should be selected.

SOGC recommends that all pregnant women living with HIV be treated with ART, regardless of baseline CD4 cell count and viral load (Atkinson et al., 2024). They also recommend that pregnant women should generally continue already established ART regimens. Women should not change or stop their medications without first consulting with their doctors. If a woman suddenly stops her medications, her viral load will likely increase, thereby increasing the risk of transmitting HIV to her baby (Atkinson et al., 2024; CATIE, 2023a). As well, stopping medications can increase the risk of the woman developing drug resistance, which, in turn, can limit her treatment options in the future (HIVInfo.NIH.gov, 2025a). It is for these reasons that the importance of adherence to medications should be highlighted at each doctor's visit. For pregnant women living with HIV not currently on ART, the sooner they start ART and reach an undetectable viral load, the lower the risk of perinatal transmission to their baby (CATIE, 2023a; Loutfy et al., 2025).

For those with detectable viral loads or suboptimal ART adherence, Canadian guidelines recommend maternal intravenous HIV medication as soon as possible after labour

onset, rupture of membranes, or 2 hours prior to cesarean delivery to reduce the risk of perinatal transmission (Atkinson et al., 2024; CATIE, 2023a). This is in addition to continuation of their oral ART regimen and should occur regardless of mode of delivery and current ART regimen. For up-to-date, Saskatchewan-specific maternal and infant clinical resources, including treatment order sets and clinical forms, visit the Saskatchewan Health Authority's website at https://www.saskhealthauthority.ca/intranet/health-provider-resources/clinical-resources/z-list-clinical-resources/maternalchildrens-health-resources/hiv-maternal-and-newborn-clinical-resources.

It is recognized that ART medications can have side effects for both the mother and the fetus. Some maternal side effects include nausea, diarrhea, headaches, and muscle aches (CATIE, 2025c). As these side effects can be worse during pregnancy, women should be monitored throughout pregnancy. Women who experience morning sickness due to pregnancy can throw up their HIV medications. To support their ART adherence, it is recommended to pre-emptively and aggressively treat nausea and vomiting with doxylamine/pyridoxine (Atkinson et al., 2024). Prevention of vomiting is important for managing a pregnant woman's viral load and reducing the risk of perinatal transmission. For women who have not started ART prior to pregnancy and who have significant vomiting, initiation of ART may be delayed until nausea is adequately controlled (Atkinson et al., 2024).

Potential fetal side effects include anemia and liver changes, low birth weight, preterm birth, and small for gestational age (Delicio et al., 2018; Thorne & Newell, 2007). However, much of the evidence for potential harm is from animal studies and observational studies of varying strengths (e.g., whether other factors like maternal age, substance use, tobacco use, socioeconomic factors, and others were considered). The clear benefits of ART for reducing perinatal transmission and delaying maternal HIV disease progression highlight the importance of clarifying the risks and benefits of different medications (CATIE, 2023a). Physicians should be aware of the most recent evidence and assist their patients to balance the known benefits and risks of ART medications during pregnancy. Updated information about the safety and toxicity of individual antiretroviral medications in pregnancy is available from the Clinical Info HIV website (see https://clinicalinfo.hiv.gov/en/guidelines/perinatal/safety-toxicity-arv-agents-drug-use-pregnant-full).

Although some ART medications were previously contraindicated in pregnancy (e.g., efavirenz), SOGC now recommends that pregnant women living with HIV should generally continue their established ART regimens, including those with efavirenz (Atkinson et al., 2024). The Canadian Paediatric Society (2022) states that children exposed to ART during pregnancy and as babies have not demonstrated major

consequences in infancy and childhood. The Antiretroviral Pregnancy Registry[9] is a program run by the United States health authorities. To date, the registry has found no evidence of long-term side effects in children of mothers who took ART during pregnancy. The SOGC recommends that ART with no safety data should be avoided during pregnancy whenever possible, particularly during organogenesis (i.e., the process of fetal organ formation, typically between 6 and 8 weeks of pregnancy) (Atkinson et al., 2024).

3.3.3 Mode of Delivery

SOGC states that mode of delivery (i.e., vaginal vs. cesarian delivery) should be discussed throughout pregnancy, with plans made in the third trimester based on viral load and obstetric factors at that time (Atchison et al., 2024). For women with an undetectable viral load over the last four weeks prior to delivery (<50 copies/mL), vaginal delivery is recommended in the absence of other obstetrical indications for a cesarean section (Atkinson et al., 2024; CATIE, 2023a). If other obstetrical indicators for a cesarean delivery are present, SOGC suggests that the cesarean delivery can occur at term for these women (i.e., those with an undetectable viral load). However, SOGC recommends scheduled pre-labour cesarean delivery at approximately 38 weeks gestation for women living with HIV in the following specific situations: 1) women who have not received ART, 2) women with a detectable viral load (≥400 copies/mL), 3) women with unknown viral load, and 4) women with unknown prenatal care (Atkinson et al., 2024).

For all women living with HIV, the chance of perinatal transmission can be further reduced with the following precautions during labour and delivery: 1) limiting the use of forceps and vacuum, 2) avoiding fetal scalp electrodes, 3) avoiding fetal scalp sampling, 4) avoiding intrauterine catheters, and 5) avoiding prolonged rupture of membranes (Atkinson et al., 2024). Additionally, newborns' skin should be cleaned with soap, water, and alcohol swabs prior to any skin punctures (e.g., initiating an IV) (Saskatchewan Health Authority, 2022). The goal of these precautions is to limit fetal exposure to maternal blood to decrease the risk of HIV transmission.

3.3.4 Other Elements of Care

Risk of perinatal transmission has been associated with other potentially modifiable factors, including cigarette smoking, substance use, genital tract infections, and unprotected sexual intercourse with multiple partners during pregnancy (Atkinson et al., 2024; CATIE, 2025a; PHAC, 2012).[10] Along with improving maternal health, decreasing or stopping smoking and substance use, treatment of genital tract infections, and use of

[9] The Antiretroviral Pregnancy Registry has been monitoring children born to mothers living with HIV in the United States and Canada since the 1990s. For more information about this registry, as well as resources and reports, visit: https://www.apregistry.com/.

[10] Perinatal HIV transmission is also associated with breastfeeding. Breastfeeding will be addressed in the Infant Feeding section of this report.

condoms during sexual intercourse may reduce the risk of HIV transmission. Within a harm reduction model, women should be encouraged to stop or reduce smoking, drinking alcohol, and using recreational drugs and should be referred for counselling support and/or treatment as appropriate (CATIE, 2025a).

Women should be counselled on all relevant aspects of ensuring a healthy pregnancy, such as good nutrition, exercise, safe water, basic hygiene, plenty of sleep, strong support networks, and limited stress. In addition to these elements of care, complementary and alternative medicines can be used to improve maternal health during pregnancy, including, but not limited to yoga, massage, meditation, and traditional Indigenous healing practices (prayer, smudge ceremonies, sweat lodges, healing circles) (National Collaborating Centre for Indigenous Health, 2013; PHAC, 2022; Schwartz, 2015).

Nutrition is especially important for pregnant women living with HIV. HIV causes the body to burn more calories, so women with HIV need to eat more in order to maintain their weight (Ontario HIV Treatment Network [OHTN], 2018). In order to avoid and better fight infections, women should eat a variety of nutritious foods and take multivitamins with folic acid (Atkinson et al., 2024; Finkelstein & Mehta, 2018; OHTN, 2018). Women should take folic acid for at least the first three months of their pregnancy, ideally starting before they become pregnant (Atkinson et al., 2024). Because HIV can make it difficult for the stomach to digest food, women should try to eat frequent, smaller portions. As malnutrition and micronutrient deficiencies have been linked to perinatal transmission risk (Finkelstein & Mehta, 2018), it is important that women with food insecurity issues be linked to nutrition resources. It is also important that HIV positive pregnant women get enough sleep, wash their hands regularly, and try to avoid stressful situations.

4. After-Care for Babies Exposed to HIV

4.1 HIV Testing and Treatment

Throughout pregnancy, a developing fetus has its own blood supply, meaning that it does not come into contact with its mother's blood. Fetuses do, however, receive nutrients and immune system antibodies from their mothers. This means that although all babies born to women living with HIV are born with HIV antibodies, not all babies are born with HIV (International Association of Providers of AIDS Care, 2025). Therefore, HIV antibody and HIV antigen/ antibody tests should not be used for infants and children under 18 months of age born to women living with HIV as they may receive false-positive HIV test results. Instead, infants with perinatal HIV exposure are tested and diagnosed with HIV using virological assays that directly detect for the presence of HIV using HIV RNA or HIV DNA nucleic acid tests [NATs] (ClinicalInfo.HIV.gov, 2025).

All babies born to mothers living with HIV should be tested for HIV as soon as possible after

birth (CATIE, 2023a; ClinicalInfo.HIV.gov, 2025). A positive test result should be confirmed as soon as possible by a repeat NAT (ClinicalInfo.HIV.gov, 2025). HIV infection is definitively diagnosed when two HIV tests performed on separate blood samples taken at separate times are returned positive. If the test result at birth is negative, the child should receive repeat NATs at 1 to 2 months of age and 3 to 4 months of age (Government of Saskatchewan, 2018). If these tests are negative, antibody testing should be done at 12 and 18 months of age to ensure that children have lost maternal antibodies. This is done to eliminate the possibility of positive antibody results being misinterpreted. Therefore, antibody tests should be continued on children born to women living with HIV who have negative NATs until they have a negative HIV antibody test (Government of Saskatchewan, 2018).

In addition to maternal treatment and care before and during pregnancy and during delivery, postnatal prophylaxis (i.e., ART for the infant following birth) is important for reducing the risk of perinatal HIV transmission (Penazzato et al., 2023). The Canadian Paediatric and Perinatal HIV/AIDS Research Group states that all infants born to mothers with HIV should receive ART as soon as possible after birth (Bitnun et al., 2023), regardless of maternal ART, viral load, or mode of delivery (CATIE, 2023a). The recommended regimen and length of regimen depend on the level of risk of HIV transmission to the infant. Factors influencing decisions about the treatment regimen include the maternal ART, adherence to ART, and maternal viral load. For example, Penazzato et al. (2023) suggest that infants born to mothers without viral suppression in the weeks leading up to delivery are considered high risk, indicating a need for combination and longer-term ART. It is recommended that all infants born to women living with HIV be referred to a pediatrician with HIV expertise for ongoing assessment and care (Atkinson et al., 2024). For Saskatchewan-specific information, refer to the Saskatchewan Health Authority's practitioner order set, available at https://www.saskhealthauthority.ca/sites/default/files/2022-05/CS-OS-5801-INFANTS-Born-to-HIV-Positive-Individuals-INITIAL-Orders.pdf.

4.2 Infant Feeding

In Canada, formula feeding remains the preferred method of infant feeding regardless of maternal HIV viral load and use of ART (Atkinson et al., 2024). This is because the risk of perinatal transmission through breastfeeding is not zero, even with an undetectable plasma viral load. Therefore, Canadian guidelines recommend formula feeding as it eliminates any risk of HIV perinatal postnatal transmission (Khan et al., 2023). Saskatchewan infants born to women living with HIV are eligible for free formula for their first 12 months of life through the Saskatchewan Infant Formula Program (see https://skhiv.ca/saskatchewan-infant-formula-program/ for more information).

As the topic of infant feeding can be sensitive to new mothers, discussion and planning during pregnancy is recommended (Khan et al., 2023). It is important to address reasons mothers may not want to use formula, including concerns regarding nutrients, engorgement, bonding with their newborn, and HIV status disclosure. To help address these concerns, health professionals

should assure mothers that formula is safe and provides the nutrients their newborn needs for healthy development (CATIE, 2023a). As mothers who are unable to breastfeed may experience engorgement, which can be painful, they should be provided with comfort measures (e.g., pain relievers, cold compresses). Additionally, when there is no uncontrolled hypertension, mothers can receive cabergoline within 24 hours after delivery to suppress lactation (Atkinson et al., 2024). Cabergoline has no reported clinically significant interactions with ART medications (Diamond et al., 2025). Mothers should also be advised not to pump to relieve engorgement as this will cause their bodies to produce more milk (CATIE, 2023a). Information on other ways to bond with their newborn should be provided to mothers who are not breastfeeding (e.g., skin-to-skin contact, frequent eye contact, cuddling and gently rocking, talking and singing, smiling, and responding promptly to crying) (HealthLink BC, 2023b, 2023c; Khan et al., 2023).

Regarding fear of involuntarily disclosing HIV status, it is important to provide mothers living with HIV with advice on how to explain to others why they are not breastfeeding (Khan et al., 2023). These communications can be especially important when there are cultural and/or family pressures to breastfeed. Not being able to breastfeed has also been found to impact a woman's sense of being a woman and a good mother (Greene et al., 2014). The women in Greene et al.'s study reported feelings of guilt, loss, and shame, as well as concerns about stigma and disclosure. Therefore, women need to be supported and provided with advice about how to explain their choice to bottle-feed without disclosing their HIV status. Ideally, healthcare providers should work with women to create a plan around what to say to family and friends (Money et al., 2013).

Even when a mother's HIV status is known to their family, there may be confusion around the recommendation to formula feed for those from countries outside of Canada. This is because Canada's guidelines differ from those of WHO. WHO guidelines are for countries with high HIV prevalence and for settings in which diarrhea, pneumonia, and undernutrition are common causes of infant and child mortality. In these settings, WHO recommends that mothers with HIV take ART and breastfeed (CATIE, 2023a; WHO, 2023b). This is because in these countries, the risk of passing HIV to a baby is outweighed by the benefits of breastfeeding for the baby's health (e.g., prevention of malnutrition, protection against life-threatening infections that are common in these countries). Therefore, it may be necessary to address why differences exist between WHO and Canadian guidelines.

While formula feeding is the preferred method of infant feeding for women in Canada living in with HIV, some women may choose to breastfeed. In these situations, a supportive and non-judgmental approach is important to maintain the woman's engagement in her and her newborn's care (Atkinson et al., 2024). If a health professional is unwilling to support a mother's decision to breastfeed while living with HIV, they should refer them to a provider that will provide care (Khan et al., 2023). The Canadian Pediatric and Perinatal HIV/AIDS Research Group outlines the following conditions for women living with HIV in Canada to

breastfeed as safely as possible (Khan et al., 2023):

- mother fully adherent to ART
- maternal viral load is undetectable (ideally before conception) and remains undetectable throughout the duration of breastfeeding
- maternal viral load is tested every 1 to 2 months until breastfeeding is stopped
- mother attends medical visits every 1 to 2 months
- infant viral load tested every month until 2 to 4 months after last exposure to breastmilk
- infant taken to regular medical visits for care by pediatrician with infectious diseases expertise

Even when all of these conditions are met and maintained for breastfeeding while living with HIV, situations may arise where breastfeeding needs to be stopped. These include (Khan et al., 2023):

- maternal viral load becomes detectable
- maternal cracked or bleeding nipples
- maternal significant or recurrent mastitis
- maternal blocked ducts due to inflammation in breast tissue with potential progression to mastitis
- infant gut inflammation (e.g., prolonged diarrhea or vomiting illness)
- infant oral/esophageal candidiasis

It is recommended that breastfeeding women living with HIV are supported to maintain optimal breast health with emphasis on achieving a good feeding latch to reduce the risk of cracked nipples or mastitis (Khan et al., 2023). If breastfeeding is stopped due to maternal viral load becoming detectable, triple antiretroviral prophylaxis may be considered for the infant (Khan et al., 2023). To further reduce the risk of perinatal transmission through breastfeeding, the duration of breastfeeding should be minimized. This involves weaning and transitioning to bottle feeding before solid foods are introduced at 4-6 months of age to avoid mixed feeding (Khan et al., 2023). Premastication of food (i.e., chewing food before feeding it to a child) is also a potential risk factor for HIV transmission. Transmission via this route occurs when there is blood in a caregiver's mouth (e.g., bleeding gums) and that blood mixes with pre-chewed food (Centers for Disease Control and Prevention, 2024). Therefore, premastication of food by caregivers living with HIV is not recommended (Bitnun et al., 2014).

Finally, it is also recommended that infants receive ART for the duration of breastfeeding and for at least one month after cessation of breastfeeding (Khan et al., 2023).

5. Pregnancy Planning and HIV

For women who do not wish to become pregnant, it is important for them to have information about and access to effective contraception. Drug interactions between ART medications and oral contraceptives have been documented, so it is important to examine potential interactions when

making decisions about oral contraceptives (Murray et al., 2020). Information about specific interactions can be found in the National Institutes of Health *Perinatal HIV Guidelines* (see https://www.hiv.gov/blog/update-to-the-perinatal-hiv-clinical-guideline). The Saskatchewan Prevention Institute's *Keep It Safe - Saskatchewan* app (KIS-SK; see http://www.skprevention.ca/keep-it-safe-saskatchewan/) provides information about free contraceptives, as well as information about STBBI testing sites throughout Saskatchewan. Many of the programs that offer contraceptives and/or testing also provide information about the prevention of STBBIs and the prevention of unplanned pregnancies.

For women with HIV who do wish to become pregnant, planning their pregnancies is an important step in preventing transmission of HIV to the baby. By planning for a pregnancy, women with HIV are better able to plan for the additional measures that need to be taken to ensure the best possible outcomes for their babies. It is critical to support women to safely achieve their reproductive goals through pre-conception, pregnancy, and postpartum services and support (including access to fertility services as required), as an increasing number of women living with HIV express the intention to have biological children (Loutfy et al., 2018, 2025). The following issues need to be considered with respect to pregnancy planning and counselling in women living with HIV: 1) preconception health including intake of folic acid, 2) achieving and maintaining viral suppression before conception, and 3) use of ART and other drugs in pregnancy (Atkinson et al., 2024; CATIE, 2023a). Of note, as most HIV medicines are now considered safe during pregnancy, ART drug regimens typically do not change once a woman becomes pregnant (Atkinson, et al., 2024; HIVinfo.NIH.gov, 2025a).

According to SOGC's *Canadian HIV Pregnancy Planning Guidelines* (Loutfy et al., 2018), all people living with HIV who require ART for their own health should continue their current regimens throughout the preconception period. Ideally, before becoming pregnant, women will have been on ART for at least 3 months and have had a minimum of two undetectable viral load test results at least one month apart (CATIE, 2020a). It is preferable if women are able to maintain an undetectable viral load for at least 6 months before trying to get pregnant (Atkinson et al., 2024; CATIE, 2020a). This helps to ensure that they will not pass HIV to sexual partners or their baby during pregnancy.[11]

In addition to ART, it is important to remember that most general recommendations for pregnancy planning also apply to people living with HIV. PHAC's *Your Guide to a Healthy Pregnancy* provides information about nutrition, folic acid, alcohol use, physical activity, smoking, and oral health (see https://www.canada.ca/en/public-health/services/health-promotion/healthy-pregnancy/healthy-pregnancy-guide.html).

[11] For more information about pregnancy planning, including methods of conception, visit https://www.catie.ca/resource/canadian-hiv-pregnancy-planning-guidelines, and CATIE's resource for women and families at https://www.catie.ca/growing-your-family.

5.1 HIV Transmission and Sexual Assault

Although planned pregnancies are preferable in terms of preventing HIV transmission, they are not always possible. This is especially true in cases of sexual violence and sexual assault. Sexual assault can lead to HIV infection directly, particularly because violent sex can increase the risk of transmission (Klot et al., 2013). In cases of sexual violence and sexual assault, HIV post-exposure prophylaxis (HIV PEP) should be considered to prevent possible HIV transmission (PHAC, 2024a). It is important that PEP be taken as soon as possible after a potential exposure to HIV, ideally within 24 hours and not more than 72 hours after exposure (CATIE, 2026).[12]

Sexual assault has also been found to increase HIV risk indirectly, as women who have experienced sexual assault, violence, and abuse have been found to engage in more higher risk behaviours (Klot et al., 2013; O'Callaghan et al., 2020). Through participation in these higher risk behaviours (e.g., unsafe sex and sex with multiple partners), women may also be at higher risk for unintended pregnancies. It is important for clinical and social service providers to be aware of and sensitive to the possibility and prevalence of sexual violence in the lives of women living with HIV (CATIE, 2025a; Cozart et al., 2022).

6. Addressing Barriers to Perinatal HIV Transmission

6.1 Social Determinants of Health

Researchers working in the areas of HIV prevention and prenatal care for pregnant women living with HIV have identified numerous barriers. Many of the barriers to HIV prevention and prenatal care include social determinants of health: lack of food, stable housing, adequate finances, and transportation (American Psychological Association, 2022; Johnson et al., 2015; OHTN, 2025). When pregnant women are unable to meet their most basic needs, it can be difficult for them to participate in prenatal care and HIV treatment. Refusal to be tested and/or inability to obtain test results have been attributed in part to obstacles with transportation and having to return to health facilities (Clausen et al., 2023). The availability of point of care tests and self-test kits may help to reduce issues related to the inability and/or unwillingness to return for test results. However, both types of tests are screening tests that require follow-up with a standard HIV test in order to confirm results.

Access to other HIV-related services (e.g., counselling, care and treatment services, infant feeding guidance) is also influenced by the place in which women live and their access to transportation. Other common reported barriers include lack of childcare while attending doctor's appointments, mistrust of nurses and doctors, fear of health and social service organizations, homelessness or lack of accessible housing, substance use, and fear of having the baby removed from their custody (Mill et al., 2007; Villacis-Alvarez et al., 2024). In order to receive appropriate treatment and counselling, women need to feel comfortable being honest

[12] For more information about PEP, visit https://www.saskhealthauthority.ca/intranet/health-provider-resources/clinical-resources/z-list-clinical-resources/public-health/blood-and-body-fluid-exposure-bbfe-public-health for a self-directed online course, as well as clinical resources, order sets, and recommendations.

with medical professionals about their lifestyle (e.g., treatment adherence, food intake, substance use).

Research has shown that women from marginalized communities are less likely to access prenatal care, increasing the risk of perinatal transmission if these women are living with HIV (Forbes et al., 2012). Overall, numerous studies have found that women are diagnosed with HIV at more advanced disease states, have longer delays in initiating ART, and are more likely to be non-adherent to treatment (summarized in Carter et al., 2014). Lack of social or family support, mental illness, and stigma have been consistently associated with non-adherence among women (Pellowski et al, 2018). Many of the barriers faced by women living with HIV are shaped by their gender (e.g., stigma and discrimination, violence, lack of financial resources, inflexibilities in clinic hours, balancing work, and childcare) (Ganguly et al., 2025; UN Women, 2017). Therefore, women-specific HIV/AIDS programs and services that are responsive to the unique issues and challenges faced by women living with HIV are critical. Culturally safe and inclusive health services are also important, particularly for Indigenous women in Canada (Government of Canada, 2024; Howell et al., 2016; Native Women's Association of Canada, 2020), who continue to experience sexual and reproductive health disparities related to limited access, poor quality of care, discrimination within the healthcare system, and ongoing impacts of colonization (Horrill et al., 2018).[13]

In order to address the barriers faced by women living with HIV, it is important that health and allied health professionals are prepared to refer them to necessary services and supports (CATIE, 2023a). These may include income support programs, housing, food security programs, drug and alcohol programs, mental health supports, and programs that address intimate partner violence, among others. In Saskatchewan, https://sk.211.ca/ provides information about available resources and supports for various issues, including those listed above.

6.2 Stigma and Discrimination

Stigma surrounding HIV can influence health and health seeking behaviours (OHTN, 2025; Rintamaki et al., 2019). For example, stigma from others can limit the services women receive, and internalized stigma can cause women to avoid seeking treatment and/or avoid disclosing their HIV status. Stigma against HIV is reported to be the main reason for reluctance to be tested, to disclose HIV status, and to take ART medications (Obermeyer & Osborn, 2007; Rintamaki et al., 2019). Fear of potential judgements and discrimination by staff members, based on a pregnant woman's HIV status, can greatly decrease the likelihood that women will seek prenatal care (Nguyen et al., 2024). This may be particularly true for women who are using alcohol or other substances (Do et al., 2021).

[13] To view an environmental scan of available sexual and reproductive health resources and services in Canada created by or in partnership with Indigenous people, please visit: https://skprevention.ca/resource-catalogue/environmental-scan-of-available-online-indigenous-sexual-and-reproductive-health-resources/.

Wood and Tobias (2005) state that women living with HIV may be "reluctant to access the health care system due to lack of trust, previous negative experiences, or fear of confidentiality violations" (p. 48). Stigma and discrimination may be especially experienced by pregnant women about their choices for wanting to have children and/or their actions during their pregnancy (Bharat & Mahendra, 2007; Margolese, 2009). In addition to impacting their willingness to access prenatal care and HIV treatment, this can prevent women from having the opportunity to learn healthy baby and self-care skills (Margolese, 2009).

In order to receive appropriate treatment and counselling, women need to feel comfortable being honest with medical professionals about their lifestyle (e.g., treatment adherence, food intake, drug use). Medical substance use treatment programs are necessary for pregnant women who are living with HIV and are using drugs and/or alcohol. Although drug and alcohol use increase the chance of perinatal transmission, many substance use treatment programs are not designed to deal with the barriers faced by pregnant women with HIV. Lack of childcare while in treatment has been identified as a significant barrier to participating in drug and alcohol treatment programs (Barnett et al., 2021). For women to be successful in their prenatal care, HIV treatment, and/or substance use treatment, programs need to address their unique needs and challenges. In Saskatchewan, one example is Sanctum 1.5 – a transitional care home for pregnant women who inject drugs (see https://sanctumcaregroup.com/sanctum-15/). They work preventively to meet the health and social needs of these women, with the goal of improving the health and wellbeing of the mother and baby while also mitigating the risks associated with apprehensions of infants at birth.

6.3 Public Education about HIV, AIDS, and Pregnancy

Stigma and discrimination are two of the most significant barriers to HIV testing and accessing of treatment by people with HIV (OHTN, 2025; Rintamaki et al., 2019). As these barriers have serious consequences, it is important that public education focuses on reducing the stigma surrounding HIV, including reducing prevalent misinformation. This can include media campaigns, provision of information in health offices, and easily accessible and understandable online information. It is important that health and allied health professionals make use of opportunities to provide accurate information about HIV transmission and prevention. For example, when people decide to be tested for HIV, pre-test counselling has been found to be an effective way of increasing knowledge about HIV transmission as well as increasing the use of condoms and contraceptives (HIVInfo.NIH.gov, 2025b; WHO, 2013).

HIV education within schools can also help to reduce stigma, dispel misinformation, and provide information to help youth protect themselves from HIV and other STBBIs (AVERT, n.d.). HIV education is most effective when carried out within a comprehensive school health education program (Wilkins et al., 2022). Effective education on HIV involves the use of multiple media (e.g., stories, role-play, lectures, self-tests) (Gibson, 2025). The use of different methods of learning provides an opportunity for students to become actively engaged in learning. Interactive activities, like role playing and simulations, are designed to help youth personalize and retain the information (Gibson, 2025).

Although schools and parents may be concerned that HIV education promotes sexual intercourse, the research does not support this concern. Instead, such education can serve to delay the onset of sex, reduce the frequency of sex, and increase condom and contraceptive use (Goesling et al., 2014; Vivancos et al., 2013; WHO, 2023a). HIV education programs were found to be particularly effective at increasing condom use, over and above classes focused on sexual education alone (Kirby, 2007). Other important considerations for youth education include activities that address social pressures that influence high risk behaviour; provision of modelling and practice of communication, negotiation, and refusal skills; and provision of training to teachers and peers who can then provide the information to others (Kirby, 2007).

6.4 Education for Vulnerable Women

Primary prevention of HIV infection in women of childbearing age is the most effective way to prevent perinatal transmission of HIV. Particularly in Saskatchewan, women who use injection drugs are at a high risk for HIV infection. Outreach programs can be effective at providing HIV prevention information and establishing links with the necessary services (e.g., drug treatment, HIV counselling and testing, medical care, social services) (Cozart et al., 2022). Such programs also usually offer specific materials for reducing risk (e.g., new needles, condoms, dental dams). Outreach programs have also been found to be effective in reaching pregnant women with complex life situations (e.g., homelessness) (Cozart et al., 2022; Sanctum Care Group, n.d.).

Another particularly vulnerable population in Saskatchewan are Indigenous women. Of the new cases of HIV among women in Saskatchewan in 2018, 84% self-identified as Indigenous women of childbearing age (Saskatchewan Ministry of Health, 2020). PHAC (2024b) recommends evidence-based, culturally specific responses to HIV education. Such responses should be designed to address the realities that contribute to infection and poor health outcomes for Indigenous women. In order for programs and supports to be effective, women at risk of infection and those living with HIV should be consulted in order to directly shape policies and programs that affect them. Additionally, peer-driven interventions have been found to be highly successful at sharing HIV-related information and reducing the risk of HIV transmission (He et al., 2020). In Saskatchewan, All Nations Hope (https://allnationshope.ca/) and Persons Living With AIDS (PLWA) Network (https://www.aidsnetworksaskatoon.ca/) are two Indigenous community-based organizations that provide care, support, and education to those affected by HIV/AIDS.

6.5 Education for Healthcare Professionals

As discussed previously, stigma and discrimination among health professionals are major barriers to receiving adequate care for people living with HIV (WHO, n.d.). They are also associated with a decrease in health-seeking behaviours (OHTN, 2025; PHAC, 2026). However, proper education in HIV prevention, care, and treatment has been found to positively shape the attitudes of healthcare professionals towards people living with HIV, reduce misconceptions, and increase access to care (Yapici & Caglar, 2024). In other words, education

and training can reduce misinformation and discrimination towards people with HIV, resulting in an increased quality of care. Additionally, increasing physicians' knowledge of their own importance and influence on HIV prevention may change how they view their role.

For prevention of HIV perinatal transmission, health professionals need to receive and understand the information presented in this literature review (e.g., HIV transmission, transmission prevention, and testing, as well as these topics in the context of pregnancy). Being knowledgeable and comfortable sharing this information is especially important at the time of diagnosis as women who feel alienated by health professionals at this time are less likely to return for follow-up care (Deering et al., 2021; Ion & Elston, 2015). In contrast, the behaviour of healthcare providers can also serve to motivate women to practice good self-care and prenatal care (Skerritt et al., 2021). Women living with HIV who report feeling comfortable with their healthcare providers are more likely to discuss their reproductive goals, which is a key component to preventing perinatal transmission (Loutfy et al., 2025; Skerritt et al., 2021).

Pre-service HIV education for healthcare professionals is critical for an increase in HIV prevention, care, and treatment services. This type of education boosts the numbers of HIV-trained and knowledgeable healthcare professionals (Person et al., 2023; Wagner et al., 2025). By including HIV-specific information in training curricula, all new professionals can receive fundamental HIV knowledge before entering the workforce. For practicing healthcare professionals, in-service training is recommended, and particularly on-site training followed by regular support and clinical mentoring after training (CATIE, 2016). All training and education should also include culturally safe approaches to teach medical professionals how to support the unique needs of diverse communities (CATIE, 2024).

The research discussed has highlighted the importance of healthcare professionals having accurate knowledge about HIV in the context of pregnancy, particularly in terms of reducing the risk of perinatal transmission. Healthcare providers need to be aware of, or at least have access to, up-to-date guidelines for the care of women living with HIV during pregnancy, labour, and delivery, and guidelines for the postpartum care of babies. In addition to the resources referred to throughout this report, the Appendix contains a list of relevant organizations, as well as current guidelines, care orders, and more.

7. Conclusions

As there is currently no cure for HIV infection, prevention is currently the only way to stop the epidemic. Effective prevention of perinatal transmission of HIV requires the following combination strategy: 1) preventing HIV infection among prospective parents; 2) avoiding unwanted pregnancies among women living with HIV; 3) preventing transmission of HIV from mother to infants during pregnancy, labour, delivery, and feeding; and 4) integration of care, treatment, and support for women living with HIV and their families. Education about HIV and pregnancy is important for the general public, youth, vulnerable women, and health professionals. In addition to increasing

knowledge, such education may reduce the stigma and discrimination faced by women with HIV. This, in turn, may increase women's willingness to seek appropriate care and treatment for their HIV in order to further reduce the risk of perinatal transmission of HIV.

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Appendix: List of Resources for Healthcare Professionals

Guidelines for HIV screening:

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Public Health Agency of Canada (2017). *Human immunodeficiency virus - HIV screening and testing guide.* https://www.canada.ca/en/public-health/services/hiv-aids/hiv-screening-testing-guide.html

Guidelines for the care of pregnant women living with HIV:

SOGC. (2024). *Clinical practice guidelines: Care of pregnant women living with HIV and interventions to reduce perinatal transmission*. https://doi.org/10.1016/j.jogc.2024.102551

British Columbia Centre for Excellence. (2024). *Care of pregnant women living with HIV and interventions to reduce perinatal transmission guidelines*. https://bccfe.ca/care-of-hiv-positive-pregnant-women-and-interventions-to-reduce-perinatal-transmission-guidelines/

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Other related resources:

Saskatchewan Health Authority. Maternal and newborn HIV clinical resources, including order sets and clinical forms - https://www.saskhealthauthority.ca/intranet/health-provider-resources/clinical-resources/z-list-clinical-resources/maternalchildrens-health-resources/hiv-maternal-and-newborn-clinical-resources

Government of Saskatchewan. Information for health professionals on HIV testing, testing locations, provincial guidelines, provincial reports - https://www.saskatchewan.ca/government/health-care-administration-and-provider-resources/treatment-procedures-and-guidelines/blood-and-blood-borne-illness/hiv-information-for-health-care-providers

University of Saskatchewan Continuing Pharmacy Education (https://pharmacy-nutrition.usask.ca/cpe/courses.php#SexuallyTransmittedandBloodBorneInfectionsSTBBI) and the STBBI Treatment Education Program for Saskatchewan (STEPS; https://cmelearning.usask.ca/specialized-programs/stepsprogram/programoverview.php). Continuing medical education supports for health and allied healthcare providers.

Canadian AIDS Treatment Information Exchange (CATIE). Information and guidelines about HIV/AIDS, including those related to the care of HIV positive women during pregnancy - http://www.catie.ca

Public Health Agency of Canada. Information and resources for health professionals, including accredited courses, on their “HIV and AIDS: For health professionals” webpage - https://www.canada.ca/en/public-health/services/diseases/hiv-aids/health-professionals.html