

HUMAN IMMUNODEFICIENCY VIRUS / ACQUIRED IMMUNODEFICIENCY SYNDROME

Disease Overview

Human Immunodeficiency Virus (HIV) infection is a chronic progressive disease with potential life-threatening complications; HIV is the virus that causes Acquired Immunodeficiency Syndrome (AIDS). It attacks the body's immune system by infecting CD4 white blood cells.

Symptoms

HIV infection may be asymptomatic for many years. Within 2-4 weeks after HIV infection, many people may have mild symptoms comparable to influenza which generally subside within 2 to 3 weeks.

After the early symptoms subside, an infected person may be asymptomatic for many years. This is known as the stage of *clinical latency*, when the virus is living and developing in a person without producing symptoms. This stage is sometimes called "asymptomatic HIV infection" or "chronic HIV infection".

Antiretroviral treatment (ART) can reduce the viral load in the blood and other bodily fluids to undetectable levels. Individuals taking ART may experience clinical latency for several decades. Without treatment, the virus continues to replicate in the body and weaken the immune system, reducing the individual's CD4 count. As this happens, the individual will begin to experience symptoms of HIV infection as viral levels increase in the body. These symptoms usually include:

- Increased extreme fatigue
- Weight loss/chronic diarrhea
- Fever/swollen lymph nodes
- Night sweats

Without effective treatment, about half of infected adults will develop AIDS within 10 years of infection. This is the stage of HIV infection that occurs when the immune system is damaged, leaving the individual vulnerable to HIV-related opportunistic infections or cancers.

AIDS defining conditions can be found in the [Canadian Guidelines on Sexually Transmitted Infections - Canada.ca](#)

Reservoir

Humans

Mode of Transmission

HIV can be transmitted from person to person when infected body fluids (primarily blood, semen, vaginal/cervical or breastmilk) enter the blood stream of another person through a mucous membrane (anus, vagina, penis, mouth, eyes, nose), or by direct inoculation (e.g., HIV contaminated needle, blood transfusion). While the virus has occasionally been found in saliva, tears, urine and

bronchial secretions, transmission through contact with these secretions in the absence of blood has not been reported.

The primary modes of transmission are through:

- Sexual contact (oral, anal, vaginal)
- Injection drug use, the sharing of HIV contaminated needles and syringes, and other drug paraphernalia
- Vertical transmission: can occur at conception, during pregnancy, during delivery (most common) or via breastfeeding
- Using non-sterile equipment for activities involving skin punctures such as tattooing, body piercing, electrolysis and acupuncture
- Occupational exposure (e.g., needle stick injuries)
- Blood transfusion, tissue or organ transplant

Incubation Period

Variable. The time from infection to development of detectable antibodies is generally less than one month. With no intervention, the time from HIV infection to AIDS can range from less than 1 year to 15 years or longer. Adolescents and adults who acquire HIV infection at an early age progress to AIDS more slowly than those infected at an older age. Disease progression may also vary by viral subtype.

Period of Communicability

The communicable period is presumed to begin during acute HIV infection and extend throughout the lifetime. Epidemiological evidence suggests that infectiousness increases with increasing immune deficiency, increased viral load, clinical symptoms and the presence of other STIs. Infectiousness is high during acute HIV infection and decreases with therapeutic viral load reduction.

Risk Factors

Increased risk of acquiring/and or severe illness:

- Engaging in unprotected sexual contact (oral, anal and vaginal)
- For men, a history of sex with other men
- Sharing of contaminated needles and/or syringes and other drug paraphernalia
- Use of non-sterile equipment for tattoo/piercing, etc.
- Presence of other STIs
- Occupational injury (needle stick)
- Vertical transmission from mother to child during pregnancy, delivery or breastfeeding
- Receipt of blood or blood products in regions where HIV is endemic
- Receipt of blood or blood products in Canada prior to November 1985

A full list of risk factors can be found in Primary Care and Sexually Transmitted Infections of [Canadian Guidelines on Sexually Transmitted Infections - Canada.ca](https://www.canada.ca/en/public-health/services/canadian-guidelines-on-sexually-transmitted-infections-canada-ca)

Surveillance Case Definition

Confirmed case HIV

NDEG 7: Sexually Transmitted and Blood Borne - Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome

Adults, Adolescents and Children ≥ 18 months:

- detection of HIV antibody with confirmation (e.g. EIA screening with confirmation by Western blot or other confirmatory test)
OR
- detection of HIV nucleic acid (e.g. DNA PCR or plasma RNA)
OR
- HIV p24 antigen with confirmation by neutralization assay
OR
- isolation of HIV in culture

Children < 18 months (on two separate samples collected at different times):

- detection of HIV nucleic acid (e.g. DNA PCR or plasma RNA)
OR
- HIV p24 antigen with confirmation by neutralization assay
OR
- isolation of HIV in culture

In children < 18 months of age born to HIV-positive mothers, nucleic acid testing should be done within two weeks after birth and, if negative, repeated at 1 to 2 months and 3 to 4 months of age. Any positive result should be repeated with a second specimen for confirmation.

For children who were born to HIV-positive mothers and have negative nucleic acid results, antibody testing should be done at 12 and 18 months of age to ensure that they have lost maternally derived antibodies. This is not used to determine an uninfected status but rather to eliminate the possibility of a positive antibody result being misinterpreted. These children should continue to be monitored until they have a negative HIV antibody test.

Confirmed case AIDS

- One or more of the specified indicator diseases as outlined in the [Canadian Guidelines on Sexually Transmitted Infections](#)
- Meeting the case definition of HIV infection

Diagnosis and Laboratory Guidelines

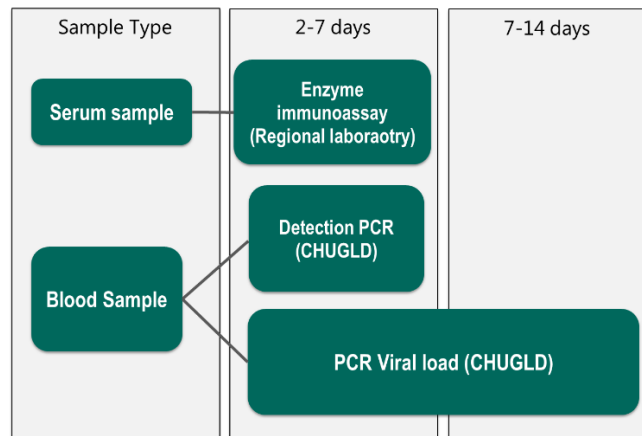
The diagnosis of HIV infection is based primarily on a positive serological test. Since persons with HIV infection may be asymptomatic, serological testing is recommended when there is a high index of suspicion (e.g., sexually active, high-risk behaviour and/or suspicious clinical signs and symptoms). Persons may also present with specific opportunistic infections or other conditions indicative of underlying immunosuppression.

Laboratory Testing

The most common diagnostic test for HIV is the enzyme immunoassay (EIA). This test detects anti-HIV antibodies produced by an infected patient and is done on a serum sample. The test can detect antibodies starting 2 weeks after the infection, but it can take up to 6 months in certain cases. Positive HIV tests are followed by a Western Blot to confirm the EIA results and eliminate the possibility of false positive test results. Patients tested early after the risky behaviour may need to be retested later, as a negative test may not be conclusive.

PCR testing is available for HIV, but it is not commonly used as a detection tool, apart from being the recommended detection method for children under 18 months old. PCR is also used to monitor viral load for HIV positive patients.

Figure: Laboratory testing available in New Brunswick with their laboratory reporting times (reporting times are estimated, longer reporting times may happen).



Some patients who already have been diagnosed out of province may not get a detection test and will directly get a viral load PCR.

Reporting

Per Policy 2.2 Disease and Event notification to OCMOH and Disease and Event Reporting section

- Enhanced Surveillance. For all confirmed cases, an enhanced surveillance form should be completed, and information sent to OCMOH on a monthly basis (STBBI Database).
- Routine Surveillance (RDSS) for all newly reported confirmed HIV (asymptomatic) or AIDS cases

For laboratory confirmed cases who have a history of donation or transfusion of blood/blood products, the *Disclosure of Information to Canadian Blood Services Transfusion Transmissible Infections* form must be completed upon receipt of information, and sent to the CD Specialist at the Canadian Blood Services via their Confidential Fax.

Case Management

Education

Public health professionals play an important role in educating clients about HIV/AIDS. To protect others from infection:

- Discuss the use of highly active antiretroviral therapy (HAART) to improve prognosis and reduce infectiousness.
- Help the client link with resources such as Community Based AIDS Organizations (CBAOs).

- Inform the client of his/her obligation to notify all current and future sex partners of his/her HIV status. Clarify that failing to do so, in certain circumstances, could result in being charged with a criminal offense under the Canadian law.
- Provide education and encouragement for the adoption of reduced risk behaviours such as sexual abstinence, reduced number of sexual partners, proper use of barrier methods, and precautions with injection drug use (IDU).
- Advise the breastfeeding mother to stop breastfeeding and to use formula instead, until receipt of negative blood test results.

Investigation

- Case management should be initiated according to the [Canadian Guidelines on Sexually Transmitted Infections](#) or as directed by the Regional Medical Officer of Health (RMOH).
- Investigate newly detected cases as well as previously detected out of province cases.
- Contact the client as soon as possible after confirming the diagnosis and treatment with the health care provider. Arrange a face-to-face meeting, if possible.
- Discuss the importance of notifying sexual contacts and contacts who share drug-using equipment and confirm who will assume this responsibility.
- Ensure the client has access to a clinician for medical follow-up.
- Assess the need for psychological support and/or counselling.
- Discuss and encourage testing for other STBBIs.
- HIV positive individuals should also be screened for latent tuberculosis infection.

Perinatal Case Management

- HIV positive pregnant women currently not under treatment should be referred to a physician specializing in HIV care as early as possible during pregnancy or labour.
- Under the direction of a physician specializing in HIV infections, the pregnant woman should receive antiviral therapy during pregnancy, labour and delivery.
- Pregnant women should be counseled that, in some women, a caesarian section will reduce the risk of transmission to the infant(s).
- All children born to mothers who are or may be infected with HIV need to be evaluated (see
- Breastfeeding is contraindicated.

Exclusion/Social Distancing

- Cases should abstain from unprotected sexual activities and take actions to prevent exposure of others to blood and body fluids.
- Abstain from blood, tissue and organ donations.

Treatment

- Treatment should be offered as per the [Canadian Guidelines on Sexually Transmitted Infections](#).
- Viral load monitoring is the preferred approach to monitoring treatment success and diagnosis of antiretroviral treatment failure.

Immunization

- Discuss eligibility for hepatitis A and hepatitis B vaccine. Patients who are anti-HCV positive and not already immune to hepatitis A and hepatitis B are eligible for the publicly funded vaccine.
- Discuss the HPV vaccine with women as per the recommendations outlined in the *National Advisory Committee on Immunization (NACI) statement on Human papillomavirus vaccine*.
- Offer immunization as recommended in the [Canadian Immunization Guide](#) and the [New Brunswick Eligibility Criteria for Publicly Funded Vaccine and Biologics](#).

Contact Management

Contact management, treatment and follow-up should be initiated according to the [Canadian Guidelines on Sexually Transmitted Infections](#) or as directed by the Regional Medical Officer of Health.

Education

- Provide pre-test education and counselling as per the [Canadian Guidelines on Sexually Transmitted Infections](#)
- Provide education and encouragement for the adoption of reduced risk behaviours such as sexual abstinence, reduced number of sexual partners, proper use of barrier methods, and precautions with IDU.
- Advise contacts not to breastfeed and to use formula instead, until receipt of negative blood test results.

Investigation

- Tracing of contacts should be based on the estimated duration of infection. If the date of seroconversion is known, all partners in the six months prior to the positive testing should be identified. If the seroconversion date is unknown, all partners should be identified, as far back as practical.
- All contacts should be encouraged to be tested for HIV, given specific details on where to be tested and how it will be reported if results are positive for HIV.
- Inform contacts of the importance of testing for other STIs.
- A Public Health-initiated internet or text messaging notification may be used to obtain the contact information, to notify the partner, and to offer testing and/or treatment as per protocol. A patient-initiated internet or text messaging notification can be used to inform partners of their potential exposure, with a recommendation to follow-up with public health. These methods may be particularly helpful in reaching anonymous partners.

Infants

- Children born to HIV-positive mothers should be referred to a pediatric infectious disease specialist for assessment as soon as possible after delivery.
- For infants born to HIV-positive mothers who have not taken antiretroviral prophylaxis, perinatal transmission can still be significantly reduced by starting antiretroviral therapy as soon as possible, preferably within one to four hours after birth. A specialist in pediatric infectious diseases should be consulted in all cases.

Social Distancing/Exclusion

- Contacts should abstain from unprotected sexual activities and take actions to prevent exposure of others to blood and body fluids.
- Contacts should abstain from blood, tissue and organ donations until negative results are obtained.
- Contacts should take standard blood and body fluid precautions until negative results are obtained.

Prophylaxis

- Post-Exposure Prophylaxis (PEP) is usually given for work-related exposure (e.g., needle stick injuries). Please refer to employee protocols.
- It may be appropriate to provide non-occupational PEP to persons in certain situations (sexual contacts, injection drug use and other non-occupational exposure) on a case-by-case basis.
- PEP should be started as soon as possible after exposure to HIV, ideally within 24 – 72 hours following high-risk exposure.
- Safer sex practices and/or using non-contaminated injection drug equipment should be practiced during and after receiving PEP.
- As an effort to reduce the risk of becoming infected with HIV Pre-Exposure Prophylaxis (PrEP) may be indicated as part of a comprehensive prevention strategy. PrEP should be supplemented with monthly HIV testing, risk reduction counseling, the provision of condoms, the treatment of any STI, and regular monitoring for the development of renal or bone toxicity.
- Individuals should be informed that PrEP does not protect them against other STIs (e.g., gonorrhea, chlamydia, herpes, and syphilis), and that their presence may decrease the ability of PrEP to prevent HIV infection.

Management of Special Situations

Healthcare workers

In any situation in which a worker, who is HIV positive, is uncertain about the potential transmission risks of HIV or proper practices to minimize the risk of transmission to others, he or she should consult with an employee/occupational health professional or an infection prevention and control professional.

Outbreak Management

Activate the regional outbreak plan when an outbreak is declared.