# Human Immunodeficiency Virus (HIV) & Acquired Immune Deficiency Syndrome (AIDS)

## CHAPTER CONTENT



Information for this chapter was adapted with permission from Alberta Health. For more information about Human Immunodeficiency Virus see: Alberta Public Health Disease Management Guidelines: Human Immunodeficiency Virus (HIV).

## 1. CASE DEFINITION

### Confirmed Case

- **Adults, Adolescents, and Children ≥ 18 months**
  - Detection of HIV antibody with confirmation (e.g., EIA screening with confirmation by Geenius™ HIV-1/2 Antibody Differentiation or another confirmatory test) ***OR***
  - Detection of HIV nucleic acid (e.g. DNA polymerase chain reaction [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 women, nucleic acid testing should be done within 2 weeks after birth and, if negative, repeated at 1 to 2 months and at 3 to 4 months of age. Any positive results should be repeated with a second specimen for confirmation.

For children of HIV-positive women and who 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 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.

**Probable Case**

- Children < 18 months (on a single sample)
  - Detection of HIV nucleic acid by quantitative or qualitative NAT

HIV Related Death
Any death, based upon clinical knowledge of the patient, which can be attributed directly or considered as a contributing factor to confirmed HIV infection. May include, but not limited to Acquired Immune Deficiency Syndrome (AIDS) defining illnesses and non-AIDS morbidity

## 2. DIAGNOSIS

- All diagnostic decision making should happen in conjunction with clinical assessment
- Clinical diagnosis of HIV requires a confirmatory test following a positive screening test result. The confirmation of a new diagnosis, informing the patient and appropriate clinical, public health and pharmacological management follow-up, usually require the involvement of a team of practitioners, including an Infectious Disease Specialist physician
- **Point of Care Tests (POCTs)**
  - In situations where a person is known to have a previously negative HIV screen OR has never been screened for HIV a POCT can be a useful tool for initial screening
  - All positive POCT should be followed up with confirmatory serology
- See bioLytical INSTI Multiplex Point of Care Testing Algorithm: HIV for more information
- Enzyme immunoassay (EIA) is the first screening test for HIV infection
- All positive EIA test results are confirmed by a Geenius™ HIV-1/2 Antibody Differentiation Assay, a specific test
- A positive Geenius™ HIV-1/2 Antibody Differentiation test supports the initial reactive (positive) EIA and is reported as positive
- **An indeterminate or not detected Geenius™ HIV-1/2 Antibody Differentiation result, requires follow-up serology for qualitative HIV NAT testing (i.e., an HIVQUAL)**
  - The ordering provider will be prompted to order HIVQUAL
- If HIVQUAL is negative and indeterminant AND patient has shown high risk behaviour in the last 4 weeks repeat HIV Testing in 3 months
- When to consult a laboratory or infectious disease specialist
  - An individual may be in the window period of HIV infection with a negative EIA, or a negative/indeterminate Geenius™ HIV-1/2 Antibody Differentiation
  - Rarely, infection with HIV-2 may explain a positive EIA and negative/indeterminate Geenius™ HIV-1/2 Antibody Differentiation
- The “window period” for HIV antibody development in non-immunocompromised hosts is usually less than a month with the current generation of screening tests
- Antibody development may be delayed if the subject is immunocompromised, or is coinfected with hepatitis C

- Genotyping, phenotyping, and serum levels of antiretrovirals are used to detect drug resistance, enabling appropriate antiretroviral drug combinations, and adjustment of dosage if required
- For more information see Annex A

**Infant Testing**

- **Consultation with a pediatric Infection Disease Specialist is required whenever HIV is suspected or diagnosed in infants and children**
- All diagnostic decision making should happen in conjunction with clinical assessment
- Detection of HIV nucleic acid (e.g., DNA PCR or Plasma RNA) is helpful for the diagnosis of HIV in infants
  - Qualitative NAAT is used to detect small amounts of nucleic acid in babies born to HIV-infected mothers, for individuals who may still be in the window period, and for those with advanced disease or marked compromised immunity
  - Quantitative NAAT (viral load testing) is used to monitor HIV-positive patients prior to and during antiretroviral therapy
- In infants < 18 months of age born to HIV-infected mothers, testing should be done within two weeks after birth and, if negative, repeated at 1- 2 months and at 3 - 4 months of age
- All positive results should be repeated with a second specimen for confirmation
- For children with negative nucleic acid results, antibody testing should be done at 12 and 18 months to ensure they have lost maternally derived antibodies
  - This is not used to determine 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
- For more information, please refer to:
  - Alberta Provincial Lab Guide to Services
  - Alberta Provincial Lab HIV Diagnostic Algorithm
  - Canadian Guidelines on Sexually Transmitted Infections

# 3. REPORTING

All HCPs must follow the NWT *Public Health Act*. Measures for contact tracing and legislative requirements are laid out within the *Reportable Disease Control Regulations* and reporting timelines are found in the *Disease Surveillance Regulations*.

**Note:** the only acceptable methods of reporting to the OCPHO are outlined below. Information provided outside of these methods will not be considered reported unless otherwise stated by a CPHO delegate.

**Health Care Professionals**

For **Part 1** Call immediately and written report within 24 hours

- Confirmed cases are to be reported **Immediately** after diagnosis is made or opinion is formed to the Office of the Chief Public Health Officer (OCPHO) by telephone (867) 920-8646 ***AND***
- Within **24 hours** complete and fax (867) 873-0442 the **NWT Sexually Transmitted Infections Case Investigation Form** **(complete section 1,2, 6 and contact tracing form; contact OCPHO for additional reporting requirements)** to the OCPHO

**Laboratories**

- Report all positive results to the OCPHO by fax (867) 873-0442 within **24 hours**

**Additional Reporting Requirements**

- The clinician should determine whether there are reasonable and probably grounds to believe that they are in contact with a "child who needs protection" as per *Section 7(3)* of the *NWT Child and Family Services Act* and shall report to a Child Protection Worker, or peace officer/authorized person if a Child Protection Worker is not available, pursuant to *Section 8* of the *NWT CFSA Act*.

**To Law Enforcement Agency**

- Consent is a key factor in determining whether any form of sexual activity is a criminal offence. Children under 12 do not have the legal capacity to consent to any form of sexual activity.
- The law recognizes that the age of consent for sexual activity is 16. The law also identifies close in age exceptions for minors between 12 and 15 years. Please refer to: Age of Consent to Sexual Activity.
- Reporting is done by contacting your local RCMP Detachment.
- For additional information see:
  - Age of Consent to Sexual Activity at: https://www.justice.gc.ca/eng/rp-pr/other-autre/clp/faq.html
  - Criminal Code of Canada at: The Criminal Code of Canada (justice.gc.ca)
  - The *Northwest Territories Child and Family Services Act*

## 4. OVERVIEW

**Causative Agent**

- HIV is a retrovirus of which two types have been identified: type 1 (HIV-1) and type 2 (HIV-2).
  - HIV-1 is most common in Canada, accounting for 89.9% of analyzed samples
- These viruses are serologically, geographically, and epidemiologically distinct
- HIV is a fragile virus and is susceptible to many disinfectants and drying causing the reduction (90–99%) in HIV concentration within several hours

## Clinical Presentation and Major Complications

For information regarding HIV clinical presentation and complications see Alberta Public Health Notifiable Disease Management Guidelines: Human Immunodeficiency Virus (HIV)

## Transmission

- Transmission of HIV is from person to person
  - Common modes include sexual contact, sharing of HIV-contaminated needles, syringes, and other equipment for drug injection
  - Rare modes of transmission include the transfusion of blood or blood products and through organ or tissue transplants
- The HIV virus is most commonly found in and transmitted through blood, body fluids containing blood and other body fluids (i.e., semen) with a high viral titre
- It has been isolated from urine, saliva, tears, and bronchial secretions, however, transmission from these fluids has not been reported
- Concurrent sexually transmitted infection (STI), especially ulcerative STI, greatly facilitates the transmission of HIV
- Infection may be transmitted vertically from mother to child during pregnancy, delivery, or through breastfeeding
- Occupational exposures in healthcare or high-risk settings also represent possible transmission settings
- The risk of transmission from oral sex is not easily quantifiable but is presumed to be low

## Incubation Period

- Variable – the time frame from infection to detectable antibodies is generally less than 1 month but can range from 2 - 3 weeks to 6 months
  - For more information see: Saskatchewan Communicable Disease Control Manual Section 6-40
- Infectiousness is highest during the initial infection and rises with increasing immune deficiency.

## Clinical Guidance

- For patient specific clinical management consult your local healthcare professional, paediatrician, infectious disease specialist,
- Treatment should be made in collaboration with a physician experienced in HIV/AIDS care and treatment.

# 5. PUBLIC HEALTH MEASURES

### Key Investigations

- Complete the STI Case Investigation Form (sections 1,2,6 and contact tracing form) and contact OCPHO for additional reporting requirements to capture details around patient risk factors:
    - Non-Sexual
        - injection drug use (including steroids),
        - sharing of needles or other paraphernalia
        - receipt of blood/tissue/organ between 1978 and 1985,
        - receipt of blood/tissue/organ at any time in a developing country,
        - skin piercing procedures (e.g., tattooing, body piercing, acupuncture),
        - workplace or occupational exposure,
        - recent invasive medical or dental procedures.
    - Sexual - Assess sexual relationships and high-risk sexual behaviors including:
        - all persons with new, anonymous or multiple sex partners,
        - sexual assault,
        - sexual partner of a person with confirmed HIV,
        - persons and patrons of those who exchange goods/services for sex,
        - sex with partners from a HIV-endemic country or with partners with any of the above non-sexual and sexual risk factors.
- Ascertain status of co-infection with other sexually transmitted infections (STIs) and bloodborne infections (BBIs)
- If female, determine pregnancy status
- Determine donation of blood, tissue, or organs

### Case Management

- Refer to HIV Specialist
- Determine and follow up with contacts
- Provide resources for case
- Assess the risk of associated STIs such as Hepatitis B and Hepatitis C
- Educate the case about the modes of transmission and reducing the risk of transmission to others, including informing the case about the duty to disclose status to sexual and/or drug partners (IDU and non-IDU partners)
- Initiate immediate follow-up of all pregnant women

- Screen for Tuberculosis
- Offer immunizations as per the NWT Immunization Schedule

**Contact Management**

- Tracing of partners should be based on the estimated duration of infection
  - If the date of seroconversion is known, all partners in the 6 months prior to the positive testing should be identified
  - If the seroconversion date is unknown, all partners, as far back as practical, should be identified
- Partners should be traced based on estimated duration of infection in index case. Contacts include:
  - Needle-sharing partners
  - Persons who share sharps and other items potentially contaminated with blood e.g., razors, toothbrushes
  - Other persons with an identified exposure to blood or other body fluids capable of producing HIV infection
  - Long-term and short-term sexual partners
  - Survivors of sexual assault
  - Children born to HIV-positive mothers
- It is recommended to meet with the contacts in person
- Collaboration between the primary care physician, public health personnel, social services (if relevant), and infectious disease physicians is essential
- Public health personnel should be available to assist physicians with partner notification and help with appropriate referral for clinical evaluation, testing, treatment, and health education
- Both the physician and public health personnel conducting contact tracing, should provide partners with information that includes:
  - Modes of transmission
  - Disease process
  - How to modify risk behaviors
- All partners should be tested for HIV and given specific details on where to be tested, and how it will be reported if positive
- Post Exposure Prophylaxis should be considered for significant exposures follow your facility's infection, prevention, and control policies for further information
- One negative HIV antibody test may be inadequate due to the possibility of being in the "window period" or having ongoing risk behaviour
- If the contact is found to be HIV positive, immediate referral should be made to a HIV specialist
- The Office of the Chief Public Health Officer (OCPHO) will assist with contacting partners living out of the territory
- Individuals exposed to blood and other body fluids capable of producing HIV infection:
  - Should be notified of potential HIV exposure

- Should be assessed by an infectious disease physician for chemoprophylaxis

Pregnant Contacts

- Pregnant female contacts should be given priority for follow-up
- Based on continued risk behaviour, it is recommended that additional testing be performed during pregnancy and/or prior to delivery
- If the woman does not return for retesting, public health personnel and/or the primary care physician should make every effort to contact her and provide additional information and/or support
- In addition to standard HIV testing, an HIV specialist should be consulted regarding additional tests (e.g., HIV RNA) and/or further HIV antibody testing

Infant Contacts

- It is essential that children born to HIV-positive women should be referred to a specialist in pediatric infectious diseases for as soon as possible after delivery
- For infants of HIV-positive mothers who have not taken antiretroviral prophylaxis, perinatal transmission can still be significantly reduced
- In consultation with a pediatric infectious disease specialist, consider starting antiretroviral therapy as soon as possible after birth, preferably within 1 - 4 hours
- HIV-positive mothers should not breastfeed

**Prevention**

- Prevention and public health programs should be offered to reduce HIV transmission through Injection Drug Use (IDU) (e.g., needle exchange programs and harm reduction strategies)
- Confidential HIV testing should be made available where possible and where HIV transmission is high (i.e., correctional facilities, tuberculosis clinics, drug treatment centers, family planning and prenatal clinics, establishments that offer services to men who have sex with men, homelessness shelters, and group homes)
- Healthcare practitioners should recommend to all STI cases and contacts that they be tested for HIV
- HIV testing is recommended in all pregnant women
  - All pregnant women should be counseled regarding HIV testing and prenatal blood work should include HIV screening unless the woman opts out
    - For more information see: NWT Prenatal Record.
  - Those found to be positive should be advised of the recommendation for prophylactic antiretroviral medications for client and baby
- Screen all donations of blood, blood products, tissues, organs, and semen for HIV
- Provide public education about the safe handling of blood, body fluids, and sharps disposal
- Focus on methods to reduce high risk sexual behaviors that may lead to HIV or STIs (e.g., safer sex education)

- Pre-exposure prophylaxis (PrEP)
  - PrEP involves the use of antiretroviral medications by confirmed HIV **negative** individuals with ongoing risk of HIV acquisition
  - PrEP is covered by some, but not all insurance plans in the NWT
  - Guidance for PrEP eligibility, risk assessment and procedures is available at: Alberta HIV Pre-Exposure Prophylaxis Guidelines
- School health programs should focus on basic and accurate information about STIs, safer sex, HIV, and unplanned pregnancies
- Provide hepatitis B vaccine for those at increased risk of infection due to risk factors common to HIV infection
- Anyone considering tattooing, body piercing, or acupuncture should be counselled to ensure that these practices are carried out with sterile equipment, preferably single-use equipment
- Recalcitrant individuals
  - Educate the individual about the modes of transmission and reducing the risk of transmission to others, and their public health and legal responsibility (duty to disclose to sexual and/or IDU partners)
  - People who are unwilling or unable to take appropriate precautions to prevent the spread of HIV should be reported to the OCPHO
    - ➢ See Annex B for more information

## 6. PUBLIC & HEALTH PROFESSIONAL EDUCATION

- NWT Health and Social Services: HIV and AIDS
- Government of Canada: HIV resources and professional development
- Government of Canada: HIV and AIDS Symptoms and Treatment
- Public Health Agency of Canada: Sexual Health and Sexually Transmitted Infections
- Centers for Disease Control and Prevention: CDC/HIV
- World Health Organization: WHO/HIV

## 7. EPIDEMIOLOGY

- For more information on the epidemiology of HIV in the Northwest Territories (NWT) see: Epidemiological Summary of Communicable Diseases HSS Professionals.

## 8. REFERENCES

Information for this chapter was adapted with permission from Alberta Public Health Disease Management Guidelines: Human Immunodeficiency Virus (HIV).

Additional resources used in this chapter include:

1. Alberta Health, Alberta guidelines for post-exposure management and prophylaxis HIV: Hepatitis B, Hepatitis C, and sexually transmitted infection: https://open.alberta.ca/publications/9781460143360
2. Alberta HIV Pre-Exposure Prophylaxis (PrEP) Guidelines: https://www.albertahealthservices.ca/assets/info/hp/srh/if-hp-srh-hiv-prep-guidelines.pdf
3. Saskatchewan Ministry of Health Communicable Disease Control Manual: Section 6-40 Human Immunodeficiency Virus (HIV): https://www.ehealthsask.ca/services/Manuals/Pages/CDCManual.aspx
4. Saskatchewan Ministry of Health Guidelines for the Management of Exposures to Blood and Body Fluids: https://www.ehealthsask.ca/services/Manuals/Pages/hiv-guidelines.aspx

# 9. Annex A-Diagnostic Protocol for HIV Testing in the NWT

NWT Clinician's Desk Reference: Guiding principles for Planning and Undertaking Voluntary HIV testing and Protocol for HIV testing and Case Management

# 10. Annex B- Management of Recalcitrant People

Report to the Chief Public Health Officer (CPHO) or designate concerning a patient who is potentially unwilling or unable to prevent HIV transmission

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Counsel and support the patient to encourage disclosure and cessation of risk behaviour.

- Assess the patient's knowledge and capacity to comply
- Refer to treatment of services as necessary
- Report assessment to CPHO

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CPHO (or designate) confirms details of report and HIV status of the patient and issues a written report containing:

- Conditions of HIV disclosure
- Protection of partners
- No sharing of needles or donation of blood/tissue
- Regular meetings scheduled with Health Professionals
- Compliance with medical treatment and counseling

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When Risk Behaviour Persists, CPHO (or designate) imposes a public health order which places limitations on the patient, relevant to transmission. Limits may include

- Movement within the community
- Participation in activities or events
- Interaction with certain individuals

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When risk behaviour persists, CPHO (or designate) initiates an Apprehension Order

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In the event of extreme risk to others, the patient may be charged under the Public Health Act and/or the Criminal Code