Alberta Public Health Disease Management Guidelines

Human Immunodeficiency Virus (HIV)

Alberta

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Health and Wellness Promotion Branch

Public Health and Compliance Division

Alberta Health

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Case Definition

Confirmed Case

Adults, Adolescents and Children ≥ 18 Months

- Detection of Human Immunodeficiency Virus (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

- Detection of HIV p24 antigen with confirmation by neutralization assay

OR

- Isolation of HIV in culture

Children < 18 Months (On Two Separate Samples)[A]

- Detection of HIV nucleic acid (e.g., DNA-PCR or plasma RNA)

OR

- Detection of HIV p24 antigen with confirmation by neutralization assay

OR

- Isolation of HIV in culture

Probable Case

The following definition is provided as a guideline to assist with case finding in perinatal transmission and public health management, and should not be reported to Alberta Health until final outcome is known.

Children < 18 Months (On a Single Sample)

- Detection of HIV nucleic acid by quantitative or qualitative NAT

[A] 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 one to two months and at three to four months of age. All positive results should be repeated with a second specimen for confirmation.

Reporting Requirements

Physicians, Health Practitioner and Others

Physicians, health practitioners and others listed in Section 22 of the *Public Health Act* shall notify the Medical Officer of Health (MOH) (or designate) of all confirmed cases by phone, fax, or electronic transfer within 48 hours (two days).

Laboratories

All laboratories (including the Canadian Blood Services [CBS] laboratory, insurance company laboratories, regional laboratories and the Public Health Laboratory [ProvLab]) shall report all positive laboratory results by mail, fax or electronic transfer within 48 hours (two days) to the:

- Chief Medical Officer of Health (CMOH) (or designate),
- MOH (or designate), and
- attending/ordering physician.

When reporting positive tests, laboratories shall include:

- name of individual,
- date of birth,
- personal health number,
- address of the individual,
- phone number of the individual,
- date of test, and
- name of laboratory performing test.

Alberta Health Services

The MOH (or designate) shall forward the preliminary Alberta HIV Case Report form of all confirmed cases to the CMOH (or designate) within six weeks of notification and the final amendments within ten weeks of notification.

- For out-of-province and out-of-country reports, the following information should be forwarded to the CMOH (or designate) by the mutually agreed upon reporting system within 48 hours (two days) including:
  - name,
  - date of birth,
  - out-of-province health care number,
  - out-of-province address and phone number,
  - attending physician (locally and out-of-province), and
  - positive laboratory report (faxed).
- For out-of-province and out-of-country contacts, the following information should be forwarded to the CMOH (or designate) by the mutually agreed upon reporting system within 48 hours (two days):
  - name,
  - date of birth,
  - personal health number, and
  - contact information (i.e., address and phone number).

Canadian Blood Services (CBS)

All newly diagnosed HIV positive persons ***must*** be reported by the MOH (or designate) to CBS within two working days of interview if the case has ever had a history of donating or receiving blood in Canada (CBS policy, November 23, 2007).

- A copy of the positive test result must accompany all reports, and all information should be sent to Lookback/Traceback Coordinator, CBS :
  - for Red Deer north via confidential fax number 780-433-1907 or phone 780-431-8712.
  - for south of Red Deer via confidential fax number 403-410-2797 or phone
  - 403-410-2711 (CBS policy, September 09, 2009).
- For donors the following information is required:
  - where and when the individual donated blood,
  - all names used (first and surnames), and
  - date of birth.
- For blood recipients (when blood transfusion is one of the risk factors identified), the following additional information is required:
  - year of transfusion,
  - hospital of transfusion, and
  - additional risk factors if applicable.

Citizenship and Immigration Canada (CIC)

- Out-of-country immigrants testing positive for HIV may be notified to Alberta Health Services (AHS) by CIC, dependent upon class and consent of immigrant.
- Alberta Health will forward a list of any HIV positive immigrants received from CIC to AHS.

Epidemiology

Etiology

HIV is a retrovirus of which two types have been identified: type 1 (HIV-1) and type 2 (HIV-2). These viruses are serologically, geographically and epidemiologically distinct.[1] In Alberta HIV-1 is the predominant virus, with HIV-2 being extremely uncommon (B. Lee, personal communication, September 03, 2009).

HIV is a fragile virus.[2] The virus is susceptible to many disinfectants and drying, causing the reduction (90–99%) in HIV concentration within several hours.[3]

Clinical Presentation

Adults

Within seven to 10 days of infection with HIV, approximately 30–70% of persons usually develop a non-specific influenza-like illness (i.e., fever, malaise, pharyngitis, anorexia, weight loss, lymphadenopathy, fatigue)[4] that may last an average of two weeks.[5] The average time to the development of an AIDS-defining illness is eight to 15 years. New advances in anti-retroviral therapy may increase the latency period between time of HIV infection and the development of AIDS.[1]

Clinical illness may include opportunistic infections (e.g., *Pneumocystis jiroveci* [formerly *Pneumocystis carinii*] pneumonia, disseminated *Mycobacterium avium* complex [MAC] disease), primary neurologic disease (e.g., AIDS dementia) and malignancy (e.g., lymphoma, Kaposi sarcoma).[1,5] Effective early treatment reduces the mortality related to HIV and progression to an AIDS-defining illness.[5,6]

Children

The median time to disease progression of treated perinatally-infected children is unknown at this time, however, is likely similar to that of adults. Ten to twenty per cent of perinatally-infected children who are untreated will present with moderate to severely symptomatic disease within the first year of life. With treatment, disease progression is markedly delayed.[7]

Diagnosis

In Alberta, the majority of diagnostic serological testing for HIV-1 and HIV-2 is done at the ProvLab (North and South). Private laboratories perform third-party HIV tests, and all positive tests are forwarded to ProvLab for confirmation. A sensitive commercial EIA test kit is the initial screening test. All positive EIA test results are confirmed by an HIV-1 Western blot (WB), a specific test. A negative confirmatory HIV WB test negates the initial reactive EIA, and is reported as negative. A positive WB supports the initial reactive EIA, and is reported as positive. An indeterminate WB result cannot be interpreted as either negative or positive and requires repeat and possibly supplementary testing, the latter guided by risk factors for HIV infection. Occasionally, an individual may be in the window period of HIV infection with a negative EIA, or a negative/indeterminate WB. Rarely, infection with HIV-2 may explain a positive EIA and negative/indeterminate WB. Consultation with the laboratory or infectious diseases specialist is warranted if such clinical scenarios are identified.

Detection of HIV nucleic acid (e.g., DNA PCR or Plasma RNA) can facilitate an HIV diagnosis. In infants less than 18 months of age born to HIV-infected mothers, testing should be done within two weeks after birth and, if negative, repeated at one to two months and at three to four 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. (G. Zahariadis, personal communication, November 17, 2009).

The “window period” for HIV antibody development in non-immunocompromised hosts is usually less than a month with the current generation of screening tests.[8,9]

However, antibody development may be delayed if the subject is immunocompromised, or is co-infected with hepatitis C.[10]

Treatment

- This is an increasingly complex area with rapid changes in optimal therapy as new research becomes available.
- Recommendations should be made in collaboration with a physician experienced in HIV/AIDS care and treatment.
- Encourage and support people who are HIV positive to take the medications prescribed for them. A directly observed treatment (DOT) program may be considered for populations who have unstable social situations and where such programs are available.
- Positive pregnant women should:
  - be advised of evidence regarding antiretroviral drugs in preventing perinatal transmission, and
  - receive antiretroviral therapy prenatally (typically at the start of the second trimester) and during labor and delivery.

Reservoir

Humans.

Transmission

Transmission of HIV is from person to person. Common modes include sexual contact and sharing of HIV-contaminated needles, syringes, and other equipment for drug injection. Less common modes of transmission include the transfusion of blood or blood products, and through organ or tissue transplants. These latter modes of transmission are extremely rare in Canada due to very sensitive screening tests for HIV.[11] 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.[12] It has been isolated from urine, saliva, tears, and bronchial secretions, however, transmission from these fluids has not been reported.[7] Concurrent sexually transmitted infection (STI), especially ulcerative STI, greatly facilitates the transmission of HIV.[12] Infection may be transmitted vertically from mother to child during pregnancy, delivery or through breastfeeding.[7]

Incubation Period

The incubation period is variable. The time frame from infection to detectable antibodies can range from two to three weeks to six months.[13]

Period of Communicability

Epidemiological evidence suggests that transmissibility begins early after the onset of HIV infection and extends throughout life.[7] Infectiousness is highest during the initial infection and rises with increasing immune deficiency. The presence of other STIs, especially ulcerative STIs, increases the likelihood of transmission.[5,6,12]

Host Susceptibility

Susceptibility is presumed to be general. Absence of male circumcision[14-16], and the presence of STI, especially those with ulcerations, increases susceptibility to HIV.[5] Individuals who are co-infected with *M. tuberculosis* and HIV develop active tuberculosis at an increased rate,[14] especially with advancing immunosuppression due to HIV.[17]

Incidence

General

AIDS was first recognized in 1981; however, researchers have been able to trace the origins of HIV as far back as the 1930s.[18] AIDS has been documented in virtually all countries of the world, among all races, ages, and social classes. The

Joint United Nations Programme on HIV/AIDS (UNADS) estimated that in 2007, globally, 33.2 million people were living with HIV, 2.5 million became newly infected, and 2.1 million people died of AIDS.[19]

For more information refer to the World Health Organization (WHO) website.

Canada

AIDS in Canada was first recognized in the early 1980s, and testing programs became available in 1985.[20] Cumulative to December 31, 2009, a total of 69,844 HIV positive individuals have been reported nationally.[21] Distribution of HIV cases by exposure category and gender has changed over the years.

When HIV reporting began in 1985, men having sex with men (MSM) accounted for over 80% of all positive test reports. This percentage has diminished significantly since that time. In 2009, MSM accounted for 41.8% of all positive tests, though remains the greatest number of new infections nationally.[21]

The proportion of new infections attributed to heterosexual exposure has increased steadily over the last two decades, reaching 30.7% in 2009.[21]

The percentage of new infections attributed to injecting drug use (IDU) steadily increased from 1981, peaking in 1997 at roughly 33.5 %; however, incidence estimates indicate that the IDU proportion has decreased from 26% in 2000 to 21.6% in 2009.[21]

There has been a significant increase in the number of women living with HIV (including those living with AIDS). Women constituted 11.7% of positive reports in the period between 1985 and 1999. Since then the number of incident HIV cases among women has steadily increased to approximately 26.2% of total reported cases in 2008.[21]

Indigenous persons (including Inuit, Métis and First Nations) are over-represented among the total of new HIV cases. Although this group represents only 3.8% of the total Canadian population, 12.5% of total new cases of HIV in Canada in 2008 were in Indigenous persons.[21]

For more information refer to Government of Canada website.

Alberta

The first HIV positive person was identified in Alberta in 1979.[22] AIDS became reportable in 1983. and HIV became a notifiable disease on May 1, 1998.

Between May 1, 1998 and December 31, 2009, there have been 2270 new cases of HIV reported in Alberta.[23] The three most common risk categories for HIV infection in Alberta are MSM, IDU, and heterosexual endemic[24] (defined as people who were born in a country in which the predominant means of HIV transmission is heterosexual contact). The proportion of cases where heterosexual exposure is considered the most likely means of acquiring HIV infection is increasing and is linked to rising STI rates in the province, especially of infectious syphilis.

From 2000 to 2009, MSM (42%) and heterosexual transmission (30%) have accounted for the majority of newly diagnosed HIV infections in males. The percentage of cases attributed to IDU has decreased steadily over this same period.[23]

From 2000 to 2009, heterosexual endemic (32%) and IDU (29%) accounted for the majority of cases in females.[23]

Between 2000 and 2004, 31% of cases were Aboriginal; between 2005 and 2009, Aboriginals persons accounted for 21% of cases.[23]

Refer to the Interactive Health Data Application for more information.

Public Health Management

Key Investigation

- Determine the reason for the test (from the case or physician).
- Assess potential risk factors for infection including:
  - IDU drug use,
  - sharing of needles or other paraphernalia (e.g., straws, spoons for illicit/street drugs, pipes used for inhalation of illicit/street drugs),
  - incarceration,
  - 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 non-occupational exposure,
  - recent invasive medical or dental procedures,
  - history of medical procedure in an HIV-endemic country, and
  - sex with partners with any of the above risk factors.
- Assess sexual relationships and high-risk sexual behaviors including:
  - alcohol and non-IDU prior to sexual activity,
  - MSM,
  - participation in unprotected anal, vaginal and/or oral sex outside of a mutually monogamous relationship,
  - multiple sex partners (including sex trade workers), and
  - sex with partners from a HIV-endemic country or with partners with any of the above risk factors.
- Ascertain status of co-infection with other sexually transmitted infections (STIs) and blood borne infections (BBIs).
- If female, determine pregnancy status.
- Determine donation of blood, tissue, or organs.
- Identify household and other intimate contacts for potential blood exposure from the case. 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,
  - victims of sexual assault, and
  - children born to HIV-positive mothers.

Management of a Case

- Public health personnel should contact the physician within two working days of receipt of positive test result to determine who will initiate completion of the HIV Case Report form and to make them aware of the need for:
  - public health follow-up including client education,
  - follow-up of contacts,
  - provision of resources,
  - obtaining additional epidemiological information, and
  - assessing the risks associated with other STIs, 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 (See *Alberta Prenatal Screening Program for Select Communicable Diseases*).

- Screen for TB based on the *Alberta TB Prevention and Control Manual* and the *Recommendations for screening and prevention of tuberculosis in patients with HIV and for screening for HIV in patients with tuberculosis and their contacts* (Canadian Medical Association).
- Encourage regular follow-up with a physician experienced in HIV/AIDS care and treatment.
- Offer immunization to this at-risk group as recommended in the current *Alberta Immunization Policy*, including pneumococcal, hepatitis B series (if non-immune), and annual influenza immunization.

Management of Contacts

Reference 25 applies to this section.

- It is a public health responsibility to ensure that partner notification and follow-up take place. All HIV-positive individuals are assumed to be infectious and capable of transmitting the virus through exchange of blood and body fluids. They must, therefore, be interviewed to identify and disclose names of their sexual and needle-sharing partners.
- Partner notification and follow-up of drug sharing and sexual partners must be undertaken on all reported cases of HIV infection and AIDS.
- In order to protect the identity of the source, neither the source identity, the date, nor the nature of the exposure should be revealed to the contact.
- Tracing of partners 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, as far back as practical, should be identified.
- All identifiable partners should be notified within one month of the case disclosing contact information.
- It is recommended to meet with the contact in person.
- Collaboration between the primary care physician, public health personnel and the infectious disease physician 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 always provide partners with information that includes:
  - modes of transmission,
  - disease process,
  - how to modify risk behaviors, and
  - telephone numbers and addresses of support agencies and testing clinics.
- All partners should be encouraged to be tested for HIV and given specific details on where to be tested, and how it will be reported if positive.

Pregnant Women

- Pregnant female contacts should be given priority for follow-up.
- One negative HIV antibody test may be inadequate due to the possibility of being in the “window period”, or having ongoing risk behaviour. Therefore, 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 attempts to contact her and provide additional information and/or support.
- In addition to standard HIV testing, a HIV specialist should be consulted regarding additional tests (e.g., HIV RNA) and/or further HIV antibody testing. If the contact is found to be HIV positive, immediate referral should be made to a HIV specialist. (See *Alberta Prenatal Screening Program for Select Communicable Diseases*).

Infants

- Children born to HIV-positive women should be referred to a specialist in pediatric infectious diseases 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 after birth, preferably within one to four hours following birth.
- A specialist in pediatric infectious diseases should be consulted in all cases (See *Alberta Prenatal Screening Program for Select Communicable Diseases*).
- HIV-positive mothers should not breastfeed. Provincially-funded infant formula can be obtained through the Northern or Southern Alberta HIV Programs.

Other Contacts

- Individuals exposed to blood and other body fluids capable of producing HIV infection should be:
  - notified of potential HIV exposure, and
  - assessed by an infectious diseases physician for chemoprophylaxis.

Preventive Measures

- Prevention and public health programs should be offered to reduce HIV transmission through IDU (e.g., needle exchange programs and harm reduction strategies).
- Confidential HIV testing should be made available in facilities where HIV is common (i.e., correctional facilities, TB clinics, drug treatment centers, family planning and prenatal clinics, STI clinics, establishments that offer services to MSM, homeless shelters, and group homes).
- Health care practitioners should recommend to all STI cases and contacts that they be tested for HIV.
- HIV testing is recommended for 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. Those found to be positive should be advised of the recommendation for prophylactic antiretroviral medications for herself and the 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).
- HIV post-exposure prophylaxis (PEP) should be considered for non-occupational exposures and sexual assaults as outlined in the *Alberta Guidelines for Post-Exposure Management and Prophylaxis: HIV, Hepatitis B, Hepatitis C and Sexually Transmitted Infections*. When eligibility criteria are met, the antivirals are available free of charge from Alberta Health.
- School health programs should centre on basic and accurate information about STIs, safer sex, HIV, and unplanned pregnancies.
- Provide provincially-funded hepatitis B vaccine for those at increased risk of infection due to risk factors common to HIV infection.
- Family physicians should be targeted for education to increase testing and to increase awareness about the changing epidemiology of HIV/AIDS.
- **Skin piercing procedures** – 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

Reference 26 applies to this section.

- 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 are to be reported to the MOH for the zone. This requires assessment by the HIV designate nurse.
  - These individuals should be handled as per regional protocol.
  - For further information refer to the *Public Health Act, Section 39(1)*.

Health Care Workers

- In any situation in which a health care worker (HCW) who is HIV positive, is uncertain about the potential transmission risks of HIV or proper practices to minimize the risk to clients, he or she should consult with employee health or an infection control practitioner or patient safety group responsible for the quality of care for the clients.
- In addition, HCWs who are HIV positive should contact the Zone MOH or designate to discuss the potential risks of transmission to clients. Upon assessment by the Zone MOH, a worker may or may not be referred to the Alberta Expert Review Panel for Blood Borne Viral Infections in Health Care Workers for further assessment services, if indicated.
- The Panel is established to review circumstances of HCWs who are found to have a blood borne viral infectious disease. The panel may receive referrals from MOHs regarding HCWs who perform exposure-prone procedures when there is uncertainty as to whether continued or modified professional practice is indicated.

Appendix 1: Revision History

Revision Date	Document Section	Description of Revision
November 2021	General	• Updated Template • Etiology, Clinical Presentation, Diagnosis and Treatment sections moved to Epidemiology • Key Investigation section moved to Public Health Management (formerly called Control) • Updated web links • Added web links where applicable
	Reporting Requirements	• Updated to reflect current processes
	Incidence	• Added weblinks to surveillance sites.

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