Alberta Public Health Disease Management Guidelines

Syphilis

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Health and Wellness Promotion Branch

Public Health and Compliance Branch

Alberta Health

SYPHILIS | Alberta Health, Government of Alberta

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Table of Contents

Case Definition

Confirmed Case

Primary Syphilis

Laboratory confirmation of infection:

- Identification of *Treponema pallidum* by dark-field microscopy, fluorescent antibody or equivalent examination[(A)] of material from a chancre or a regional lymph node;

OR

- Molecular detection of *T. pallidum* nucleic acid [e.g., nucleic acid amplification test (NAAT)] in an appropriate clinical specimen[(B)];

OR

- Presence of one or more chancres, and reactive treponemal serology (*Treponema pallidum* particle agglutination assay (TPPA), regardless of non-treponemal test reactivity, in individuals with no previous history of syphilis;

OR

- Presence of one or more chancres and a fourfold or greater increase in the titre over the last known non-treponemal test (e.g., Rapid Plasma Reagin (RPR) in individuals with a past history of syphilis treatment.

Secondary Syphilis

Laboratory confirmation of infection:

- Identification of *Treponema pallidum* by dark-field microscopy, fluorescent antibody or equivalent examination of mucocutaneous lesions, condylomata lata and reactive serology (non-treponemal and treponemal);

OR

- Molecular detection of *T. pallidum* nucleic acid (e.g., NAAT) in an appropriate clinical specimen[(B)];

OR

- Presence of typical signs or symptoms of secondary syphilis (e.g., skin rash, low-grade fever, malaise, pharyngitis, alopecia, weight loss, arthralgias and painless lymphadenopathy) AND either:
  - a reactive serology (non-treponemal and treponemal),

    OR
  - a fourfold or greater increase in titre of the last known non-treponemal test (e.g., RPR).

Early Latent Syphilis (< 1 year after infection)

Laboratory confirmation of infection:

[(A)] In Alberta, diagnosis by this method is exceedingly rare and only available in specialized clinics.
[(B)] Guidance and direction on lab specimen collection can be found at Alberta Precision Laboratories here.

- An asymptomatic patient with reactive serology (treponemal and/or non-treponemal) who, within the past 12 months, had one or more of the following:
  - non-reactive serology,
  - symptoms suggestive of primary or secondary syphilis, and/or
  - exposure to a sexual partner with primary, secondary or early latent syphilis.

Late Latent Syphilis (> 1 year after infection or of unknown duration)

Laboratory confirmation of infection:

- An asymptomatic patient with persistently reactive treponemal serology (regardless of non-treponemal serology reactivity) who does not meet the criteria for early latent disease and who has not been previously treated for syphilis.

Neurosyphilis, Early (< 1 year after infection)

Laboratory confirmation of infection:

- Fits the criteria of a confirmed case of primary, secondary or early latent syphilis AND one or more of the following:
  - reactive CSF-VDRL in non-bloody cerebrospinal fluid (CSF),
  - molecular detection of *T. pallidum* nucleic acid (e.g., NAAT) in CSF or vitreous humor, or
  - clinical evidence of neurosyphilis AND either elevated CSF leukocytes OR elevated CSF protein in the absence of other known causes.

Neurosyphilis, Late (> 1 year after infection)

Laboratory confirmation of infection:

- Reactive treponemal serology (regardless of non-treponemal serology reactivity) but not fitting the criteria of a confirmed case of primary, secondary or early latent syphilis AND one or more of the following:
  - reactive CSF-VDRL in non-bloody cerebrospinal fluid (CSF), or
  - clinical evidence of neurosyphilis AND either elevated CSF leukocytes OR elevated CSF protein in the absence of other known causes.

Tertiary syphilis, other than Neurosyphilis

Laboratory confirmation of infection:

- Reactive treponemal serology (regardless of non-treponemal serology reactivity) together with characteristic late abnormalities of the cardiovascular system, bone, skin or other structures, in the absence of other known causes of these abnormalities (*T. pallidum* is rarely seen in these lesions although, when present, it is diagnostic)

AND

- No clinical or laboratory evidence of neurosyphilis.

Reporting Requirements

Physicians, Health Practitioners and Others

Note: This includes First Nations and Inuit Health Branch

- Physicians, health practitioners and others shall notify the Sexually Transmitted Infection (STI) Medical Director[(C)] via Sexually Transmitted Infection Centralized Services (STICS) of all confirmed cases within 48 hours (two business days) by forwarding a completed Notification of STI form.

Laboratories

- All laboratories shall report all positive laboratory results by mail, fax or electronic transfer within 48 hours (two business days) to the STI Medical director via STICS and the Chief Medical Officer of Health (CMOH) (or designate).

Alberta Health Services: STICS

Contact Information:	**Toll free: 1-855-945-6700 option 4** **Fax: 780-670-3624**

- The STI Medical Director/STICS are responsible for ensuring investigation and follow-up of all reported confirmed cases and contacts.
- The STI Medical Director/STICS shall forward the initial Notification of STI form of all confirmed cases to the CMOH (or designate) within two weeks of notification and the final Notification of STI form within four weeks.
- For out-of-province and out-of-country case reports, the following information (when available) should be forwarded to the CMOH (or designate) by phone, fax or electronic transfer as soon as possible:
  - name,
  - date of birth,
  - out-of-province health care number,
  - out-of-province address and phone number,
  - positive laboratory report, and
  - other relevant clinical/epidemiological information.
- For out-of-province and out-of-country contacts the following information (when available) should be forwarded to the CMOH (or designate) as soon as possible:
  - name,
  - date of birth,
  - date of exposure, and
  - out-of-province/country contact information.

[(C)] The STI Medical Director is the Provincial Medical Director of Alberta Health Services' Sexually Transmitted Infection Centralized Services (STICS) and is also a MOH.

Additional Reporting Requirements

In all cases, where a person under 18 is suspected or confirmed to have an STI, an assessment should be carried out by the clinician to determine if additional reporting is required.

To Alberta Child and Family Services

- The clinician should determine whether there are reasonable and probable grounds to believe that they are in contact with "a child in need of intervention" [as per Section 1 of the *Child, Youth and Family Enhancement Act (CYFEA)*] and shall report to a director pursuant to Section 4 of the *CYFEA*.[1]
- Reporting is done by contacting the local Child and Family Services office or calling the **CHILD ABUSE HOTLINE: 1-800-387-5437 (KIDS)**. For local office contact information see: www.humanservices.alberta.ca/services-near-you/15010.html.

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. However, the law identifies the exception for minors between 12 and 16 years as having the ability to consent, in "close in age" or "peer group" situations.[2]
- Reporting is done by contacting your local City Police Detachment or RCMP Detachment at: www.rcmp-grc.gc.ca/detach/en/find/AB.

For additional information:

- *Alberta Child, Youth and Family Enhancement Act* at: *Child, Youth and Family Enhancement Act*
- Age of Consent to Sexual Activity at: www.justice.gc.ca/eng/rp-pr/other-autre/clp/faq.html
- *Criminal Code* of Canada at www.laws-lois.justice.gc.ca/eng/acts/C-46/ [3]

Epidemiology

Etiology

Syphilis is caused by the spirochete *Treponema pallidum* ssp. pallidum, an extremely fragile organism that can survive for only a short period of time outside of the host. Unlike most bacteria, *T. pallidum*'s genome lacks apparent compatible elements with other bacteria, suggesting it is extremely conserved and stable. This may explain why it has remained exquisitely sensitive to penicillin for over 70 years.[4]

Clinical Presentation

Infection with *T. pallidum*, if left unnoticed, undiagnosed or untreated, progresses through several stages; primary, secondary, latent and tertiary stages. These stages are grouped into three categories:

- infectious syphilis (primary, secondary, early latent),
- non-infectious syphilis (late latent, tertiary), and
- congenital syphilis (transmission from an infected mother).

In 15–40% of untreated cases, it may progress to involve the central nervous system, heart or other organs. Syphilis is commonly referred to as the 'great imitator' or the 'great impostor' due to the extensive variability of symptoms. However, many cases are asymptomatic and may only be diagnosed if screening for syphilis is conducted using serologic tests. [4–9]

Primary Syphilis

Individuals with primary syphilis typically presents as a single, painless ulcer (chancre) at the site of inoculation 2–6 weeks after infection, but multiple, painful ulcers may also occur. Up to 30% of primary infections are asymptomatic. Individuals with primary syphilis may also be co-infected with herpes simplex virus. The chancre marks the point of entry of *T. pallidum* and exudes a clear fluid containing numerous spirochetes. Invasion of the bloodstream precedes the initial lesion. Painless regional lymphadenopathy is frequently present. Without treatment the resolution of symptoms occurs in 4–6 weeks.[4,6,7]

Secondary Syphilis

There may be no clear demarcation between primary and secondary syphilis. A primary chancre is still present in as many as 1/3 of patients with secondary syphilis. Clinical signs of secondary syphilis appear on average between 2–12 weeks and up to six months after an untreated primary stage. This is considered the most bacteremic stage of infection. Presentation may include a skin rash, low-grade fever, malaise, pharyngitis, alopecia, weight loss, arthralgias and painless lymphadenopathy. Enlargement of the epitrochlear lymph nodes is a unique finding in secondary syphilis. The rash is often generalized and bilateral and is frequently present on the palms and soles but may be so faint as to go unnoticed. The lesions are highly infectious. The rash will disappear with or without treatment. The disease then becomes latent, although recurrences of lesions can occur.[4,6,7]

During both primary and secondary stages, infection of the central nervous system or cerebrospinal fluid are common, although most patients have no neurological manifestations. Further, co-infection with HIV can alter

the appearance and presentation of lesions, often having increased areas affected by lesions. Co-infected patients also have a higher risk of neurosyphilis if left untreated.[4–7]

Early Latent Syphilis

Early latent syphilis is disease that has been acquired within the preceding year. There are no signs or symptoms but without treatment the person remains infectious due to a 25% chance of relapse to the secondary stage in untreated cases in the first year after infection. Neurological manifestations including acute syphilitic meningitis may occur.[4,6,7]

Late Latent Syphilis

Late latent syphilis is syphilis acquired more than one year prior. Cases are asymptomatic but will have reactive treponemal serology. Relapse to the secondary stage is very unlikely.[6,10]

Neurosyphilis

Neurosyphilis occurs when there is evidence of central nervous system infection; CSF abnormalities must be present.[5]

Tertiary Syphilis, Other Than Neurosyphilis

This stage refers to the presence of gummas and cardiovascular syphilis which may present as aortitis or gummatous changes of the bones, viscera or skin occurring years to decades after the primary infection.[5]

Diagnosis

Diagnosis of syphilis requires combination of history including epidemiologic risk factors or exposure, physical examination and laboratory tests, as there is no single optimum diagnostic criterion. A lab confirmation is made by identifying the spirochete from fluid taken from ulcers[D] in primary and secondary syphilis and/or by serologic testing.

Two forms of serologic testing are available; non-treponemal antibody tests and treponemal antibody tests. In September 2007, the syphilis enzyme immunoassay (EIA), a treponemal test, replaced the non-treponeal Rapid Plasma Reagin (RPR) as the screening test for syphilis in Alberta. The RPR helps with staging, monitoring the response to treatment and diagnosing re-infection. The RPR is automatically performed in Alberta if the EIA is reactive.[7,8,11] Interpretation of the serology is dependent on history, clinical findings, treatment and repeat serology.[E]

[D] Ulcers should also be tested for herpes simplex virus. If epidemiologically appropriate, testing for Chancroid and/or Lymphogranuloma venereum may be considered after consultation with an STI expert and/or Public Health Laboratories (ProvLab).

[E] If serology testing is done in early **primary syphilis**, it may be negative and should be repeated in three to four weeks if lesions are PCR negative and/or if no treatment has been given. Serologic tests are almost always positive in **secondary syphilis**; rare exceptions include patients with a severe immunocompromising condition (e.g., advanced HIV or bone marrow transplant recipients) who may be unable to mount an antibody response.[7,8,11]. **Early or late latent syphilis**: Clinical evaluation, including neurological and cardiovascular examination to assess for signs of tertiary syphilis. Lumbar puncture may be appropriate. **Tertiary syphilis:** CSF examination is recommended in addition to testing.[8,11]

CSF examination for cells, protein and VDRL is recommended to establish a diagnosis of neurosyphilis and is indicated in certain cases, e.g., neurologic including ocular and ear involvement, congenital syphilis, etc.[8]

Dark-field microscopy testing is not reliable for oral/rectal lesions and is no longer used as a standard mechanism for syphilis diagnosis in Alberta.[12]

The possibility of a prozone reaction should be considered in individuals who are suspected of having secondary syphilis but whose non-treponemal test is non-reactive. A prozone reaction refers to a false negative non-treponemal test resulting from overwhelming antibody titres which interfere with the proper formation of the antigen-antibody lattice network that is necessary to visualize a positive flocculation test. If this situation is suspected then the lab should be asked to check for a prozone phenomenon and/or the test should be repeated two to four weeks later. Note that Alberta currently uses a treponemal test for screening for syphilis.

Treatment

- Past history of treatment, medical and case consultation, including treatment, is available through **STICS** at 780-735-1466 or toll free 1-888-535-1466.
- Patients with HIV co-infection should be co-managed with an HIV specialist.

Pregnant Women and Neonatal Cases

- Consult with STICS and Pediatrics Infectious Disease Specialist.
- For pregnant women with reactive syphilis serology and infants born to mothers with reactive serology, follow up will depend on maternal and neonatal history; advice should be sought from STICS.

Refer to the current ***Alberta Treatment Guidelines for STIs in Adolescents and Adults***

Pediatric Cases

- When a case is diagnosed in an infant, the mother and her sexual partner(s) should be examined and tested.
- It is recommended that all children < 14 years of age be referred to a pediatrician and, because of the high risk of sexual abuse (except for congenitally acquired infections), be managed in consultation with a referral centre.

Edmonton:

Child and Adolescent Protection Centre,
Stollery Children's Hospital, 1C4.24
Walter Mackenzie Health Sciences Centre
8440-112 Street
Edmonton, AB T6G 2B7
Tel: 780-407-1240

Calgary:

Child Abuse Service
Child Development Centre
Suite 200, 3820-24 Ave NW
Calgary, Alberta, T2N 1N4
Tel: 403-955-5959

Reservoir

Humans are the only known reservoir.[4]

Transmission

Transmission is by direct contact with infectious exudates from moist early lesions of skin and mucous membrane of an infected person. Syphilis is primarily acquired through sexual contact. Primary and secondary syphilis are considered to be the most infectious stages.[5]

It is possible to contract syphilis by having non-sexual contact with the infectious lesions. Rare instances of transmission by occupational exposure and blood/organ donation have been documented. Persons potentially exposed in these circumstances should be examined clinically and assessed for the need of post exposure prophylaxis and follow up.[7,8,13,14]

Syphilis can also be transmitted vertically from infected pregnant woman to the fetus. Congenital syphilis infection primarily occurs in utero, however infection can occur via contact with an infectious lesion during delivery.[6,15]

Please see the Congenital Syphilis Disease Guideline for more information.

Incubation Period

The incubation period for primary syphilis is 3–90 days, averaging about three weeks.[8]

Period of Communicability

The infection is communicable during the primary, secondary and early latent stages of syphilis. Late latent and tertiary syphilis are not infectious.[5,6,8] Close serological monitoring is required post treatment to determine successful cure.[16]

Host Susceptibility

Susceptibility is universal, though only approximately 30% of exposures result in infection. Various factors impact risk of transmission i.e., stage of infection, open lesions, duration and nature of contact. Persons who have been successfully treated for syphilis remain at risk for re-infection.[5,14]

Incidence

Once rarely reported in Alberta, syphilis rates have been increasing dramatically and provincial outbreaks were declared in 2007 and again in 2019. This parallels the trend seen nationally and internationally as well.

See the Interactive Health Data Application and the most recent Alberta STI Report for more information.

Public Health Management

Key Investigation

Diagnosis and treatment of syphilis is performed by clinicians. All syphilis case files are reviewed by a STI Medical Consultant to ensure accurate staging and management.

The diagnosis of syphilis depends on a combination of epidemiologic history, signs and symptoms and past history of syphilis and/or treatment for syphilis. The interpretation of serology is done in conjunction with STICS.

- Determine the presence or absence of symptoms.
- Determine if behaviors that increase risk for syphilis are present:
  - sexual contact with syphilis infected person(s),
  - unprotected sex in geographical areas experiencing outbreaks of infectious syphilis,
  - new sexual partner or more than two sexual partners in preceding year,
  - previous STI,
    - injecting drugs,
    - incarceration,
    - exchanging goods for sex,and/or
  - street-involved.
- Offer testing for HIV and other STI.
- Counsel and identify partners, including locating information.

Management of a Case

- Because of the complexity of this disease, each case is individually staged by STICS or STICS designated physician (e.g., Primary, Late Latent) to determine appropriate action. Consultation with STICS is required for all cases.
- To obtain the phone number for your designated **Partner Notification Nurse,** or for advice on management of your case**,** call **STICS Toll free: 1-855-945-6700 option 4.**
- All patients with a notifiable STI qualify for provincially funded medications.
  - The treating practitioner is responsible to complete a Notification of STI form.
- Past history of treatment for syphilis may be available from STICS and will help guide current management.
- Cases should be interviewed for history of exposure, risk assessment, and sexual partner(s) identification.
- Persons known to be infected with syphilis (especially infectious cases) should receive appropriate treatment as quickly as possible.
- Individuals with documentation of adequate treatment in the past need not be retreated unless there is clinical or serological evidence of re-infection.
- All cases should be instructed about infection transmission. Patients should be counseled about the importance of abstaining from unprotected intercourse until seven days after completion of treatment by both case and partner(s).

- All cases should be provided with individualized STI prevention education, targeted at developing knowledge, skills, attitudes and behaviors to reduce the risk and prevent recurrences of STI.
- Sexual assault in adults should be managed in conjunction with local Sexual Assault services and other appropriate community support services.
- Immunization against hepatitis A, B, and HPV may be recommended. Refer to Alberta Immunization Policy for immunization eligibility.
- Recalcitrant Patients:
  - The *Public Health Act*[17] (sections 39 through 52) authorizes detention of recalcitrant patients for medical examination, treatment and/or counselling.
  - The CMOH [or designate (section 13(3) of the *Public Health Act*)] or MOH may issue a certificate to detain an individual who is believed to be infected and refuses or neglects to comply with treatment.
  - There must be proof of infection, or contact with an infected person and documentation of failure to comply with prescribed treatment and medical examination, or non-compliance for testing and/or treatment.

Additional Case Follow-up

Testing Recommendations

- For **infectious syphilis** (primary, secondary and early latent), repeat syphilis RPR should be obtained at 1, 3, 6, 12 months following therapy. RPR should be repeated at 24 months in HIV positive individuals.
- Repeat HIV testing should be done in all **primary syphilis** cases since syphilis increases the risk of acquisition of HIV; HIV testing along with RPR, should be done at 1 and 3 months.
- For **late latent syphilis** with a reactive RPR value, RPR needs to be repeated at 12 and 24 months post therapy.

Canadian Blood Services

Canadian Blood Services refers all positive screens from blood donor clinics for further investigation. All blood samples are forwarded to Alberta Public Laboratories for further testing. A referral is forwarded to STICS for treatment and follow up, including partner notification.[17]

Management of Contacts

Partner Notification

It is mandated under the *Communicable Disease Regulation* that every attempt is made to identify, locate, examine and treat partners/contacts of all cases.

Healthcare providers are required to provide partner names and locating information on the Notification of STI Form and forward to STICS.

- Partner notification will identify those at risk, reduce disease transmission/re-infection and ultimately prevent disease sequelae.

- If testing and/or treatment of partner(s) are not confirmed on the Notification of STI Form, STICS will initiate follow up by a Partner Notification Nurse (PNN).
  - PNNs are specially trained to conduct notification of partners and contacts in a confidential manner that protects the identity of the index case.
  - The phone number for your designated PNN is available by calling **STICS Toll free: 1-855-945-6700 option 4**.
- All contacts should be screened for HIV and other STI.
- All contacts should be instructed about infection transmission.
- All contacts should be provided with individualized STI prevention education, targeted at developing knowledge, skills, attitudes and behaviors to reduce the risk and prevent recurrences of STI.
- STICS will follow-up on any incoming referrals of cases and partner(s) from all out of province/country referrals.

Additional Considerations

Primary Syphilis

- All contacts in the last three months, regardless of symptoms or signs, must be located, examined, tested and treated. It may be necessary to extend this time period if no partners are identified or if partners test negative.
- Named contacts should be offered treatment prophylactically.
- If the contact refuses treatment, repeat serology monthly until three months has elapsed since last sexual contact with infected individual.
- Sexual partners must be treated at the same time to prevent re-infection.

Secondary and Early Latent Syphilis

- All contacts of secondary syphilis in the last six months and early latent syphilis in the last 12 months regardless of symptoms or signs, must be located, examined, tested and treated if applicable. It may be necessary to extend this time period if no partners are identified or if partners test negative.
- All individuals with contact should be offered treatment prophylactically.
- If the contact refuses treatment repeat serology monthly until three months has elapsed since last sexual contact with infected individual.

Late Latent Syphilis

- When appropriate, a serologic test for syphilis should be performed on long-term sexual partners. Children born to women with late latent syphilis should be tested, regardless of current age of child, based on estimated duration of infection in the mother.

Preventative Measures

Include the following information when educating the public on the following.

- Information about risk for STI during pre-travel health counseling.
- The methods of personal protective measures, in particular the correct and consistent use of condoms and discuss safer sex options including:
  - delaying onset of sexual activity,
  - developing mutually monogamous relationships,
  - reducing the numbers of sexual partners, and
  - encouraging behaviors which prevent the acquisition and transmission of STI.

Screening

- Syphilis screening is recommended for the following groups:
  - individuals with risk factors for syphilis infections: sexual contact with syphilis-infected person(s), new sexual partner or more than two sexual partners in preceding year, previous STI, vulnerable populations (e.g., people who inject drugs, incarcerated individuals, exchange of goods/money for sex, street-involved youth);
  - all pregnant women – see *Alberta Prenatal Screening Program For Select Communicable Diseases*; and
  - victims of sexual assault
- Screening may be more frequent based on local epidemiology.

Appendix 1: Revision History

Revision Date	Document Section	Description of Revision
September 2021	Complete Document	• Updated references where available
	Case Definition	• Updated testing to reflect current lab practice in Alberta
	Reporting Requirements	• Adjustment of reporting structure to reflect AHS STICs role
	Epidemiology	• Link to IHDA added
	Management of a Case	• Partner Notification Nurses contact information
	Treatment of Case	• Removal of specific treatment recommendations and indication of appropriate consultation needed • Link to Alberta STI Treatment Guidelines
	Preventive Measures	• Modernization of safer sex education
	Screening	• Link to Alberta Prenatal Screening Guidelines
	General	• Diagnosis and Treatment section moved to Epidemiology • Updated web links

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