BC Centre for Disease Control
Provincial Health Services Authority

BCCDC Non-certified Decision Support Tool: Syphilis

Background

In British Columbia, the management of syphilis is centralized through the BCCDC Provincial STI Clinic.

This includes the diagnosis, staging, treatment recommendations, and in most instances, the ongoing follow-up of cases along with partner notification.

This is done in collaboration with the managing primary care provider (physician, nurse practitioner, or midwife), infectious disease physicians or pediatric infectious disease physicians where indicated, and registered nurses who may be offering follow-up care or treatment.

BCCDC Provincial STI Clinic physicians: 604-707-5610

BCCDC syphilis nurses: 604-707-5607

Scope

For **ALL** cases, registered nurses (RNs) must consult with or refer to a physician or nurse practitioner to obtain a diagnosis and receive a client-specific order for treatment.

RN(C)s do **not** require a client-specific order to provide treatment for individuals identified as **contacts** to a case of syphilis (see the Certified Practice Treatment of STI Contacts DST).

Etiology

Venereal syphilis is a bacterial infection caused by *Treponema pallidum* (subspecies pallidum).

Epidemiology

Cases of infectious syphilis have steadily increased in Canada and BC in the last 10 years. For comparison, in the year 2022 in BC, there were 37.1 cases of infectious syphilis per 100,000 people, up from 3.4 cases per 100,000 in 2010. Initially, this increase occurred largely among gay, bisexual, and other men who have sex with men (gbMSM), who continue to be disproportionately affected by syphilis. In recent years, however, the landscape of infectious syphilis has changed, with a rise in infectious syphilis cases among females and heterosexual men coupled with a dramatic increase in congenital syphilis cases.

Transmission

Syphilis is transmitted by direct skin to skin contact with an infectious lesion or through vertical transmission during pregnancy.

Primary, secondary and early latent stages are considered infectious.

The primary mode of syphilis transmission is by genital, anal and oral sexual contact. Other routes of transmission (e.g., kissing and needle-sharing) are rare.

Risk Factors

- barrierless sexual activity involving contact with genital, anal or oral mucosa
- sexual contact with a known case of syphilis or other STBBI
- previous syphilis infection or other STBBI
- substance use, including chemsex
- population groups and/or communities experiencing high prevalence of syphilis (and other STBBI)
- having experienced homelessness and/or street involvement

Clinical Presentation

Clinical presentation is highly variable and depends on the stage of infection.

Typical presentations are noted in the tables below.

Infectious Syphilis – Typical Clinical Presentation

Stage	Incubation Period	Symptoms	Notes
Primary	Average of 3 – 4 weeks (range: 10 – 90 days)	• chancre (syphilis lesion) – often a painless, localized, indurated ulcer • regional lymphadenopathy	Chancre • typically appears at site of contact with sexual partner's infectious lesion (genital, anal or oral) • may go unnoticed • usually spontaneously heals within a few weeks • can present similarly to lesions caused by other STIs
Secondary	Average of 2 - 8 weeks (range: 2 weeks - 6 months)	Dermatologic • rash – typically maculopapular but can take on different forms; may be generalized, or isolated to palms, soles, of feet and/or genitals • mucous patches (oral or genital) • condylomata lata (large lesions on genitals, perianal or anal area; present similarly to genital warts) Systemic illness • malaise • lymphadenopathy • fever • sore throat • alopecia areata	Can affect any organ but generally starts with the development of a rash. Symptoms will resolve with or without treatment, however without treatment, the infection will progress to the latent and possibly tertiary stages of disease
Early Latent	Less than 1 year duration	• asymptomatic	Can occur between the primary and secondary stages or after the resolution of secondary-stage symptoms.

Stage	Incubation Period	Symptoms	Notes
Latent Syphilis of Unknown Duration		• asymptomatic	Insufficient information to determine the duration of infection. This stage may or may not be infectious.

Non-infectious Syphilis – Typical Clinical Presentation

Stage	Incubation Period	Symptoms	Notes
Late Latent		• asymptomatic	More than 1 year duration

Neurosyphilis, optic syphilis and **ocular syphilis**

Can occur any time after initial infection, and can present with a wide range of symptoms, including but not limited to:

- changes to vision and hearing
- otherwise unexplained headaches, stroke-like syndromes, and changes to mental status (e.g., confusion, usual personality, memory, decision-making)
- muscle weakness or paralysis

Tertiary syphilis

Is rare and develops in a subset of untreated infections. It can appear 10 to 30 years after a person gets the infection and can be fatal. Tertiary syphilis can affect multiple organ systems, including:

- brain
- nerves
- eyes
- heart
- blood vessels

- liver
- bones
- joints

Symptoms of tertiary syphilis vary depending on the organ system affected.

Congenital syphilis

Can cause miscarriage, stillbirth, intrauterine growth restriction, fetal hydrops, fetal malformation, and neonatal death.

Most infants present with no symptoms at the time of delivery.

For infants born with symptoms, these can present as:

- deformed bones
- severe anemia (low blood count)
- enlarged liver and spleen
- jaundice (yellowing of the skin or eyes)
- brain and nerve problems, like blindness or deafness
- meningitis
- skin rashes
- developmental delays

Physical Assessment

Asses:

- mouth, anus, and genital area for syphilis lesions
- head-to-toe for rash and lymphadenopathy

If presenting with neurologic symptoms (e.g., otherwise unexplained headache, visual or hearing changes) refer to primary care provider for neurological assessment. A more immediate referral to a specialist is recommended if changes are new and/or acute in onset.

If congenital syphilis is suspected consult the BCCDC STI clinic physician (604-707-5610) and paediatric infectious disease at BC Children's Hospital (604-875-2161).

Diagnostic and Screening Tests

The majority of all syphilis testing in BC is centralized through the BCCDC Public Health Laboratory (PHL).

Laboratory Testing – Serology

Serological tests for syphilis can be ordered along with regular bloodwork and do not require a special requisition.

Order: Syphilis Enzyme Immune Assay (EIA)

This may appear on the requisition as, or will be written directly on the requisition as:

- Syphilis Antibody – routine (non prenatal)
- Perinatal Syphilis
- Syphilis Serology
- Syphilis EIA

If syphilis EIA is reactive, rapid plasma regain (RPR) and *T. Pallidum* particle agglutination (TPPA)* are done reflexively at the BCCDC PHL.

*TPPA once positive, will not be repeated on any subsequent testing

Laboratory Testing – Molecular

Nucleic Acid Amplification (NAAT)*/Polymerase Chain Reaction (PCR) tests can be used to detect *Treponema pallidum* (TP) in mucosa and skin lesions (including genital, oral, and rectal sites) of suspected primary and secondary syphilis.

*You may see the following used to describe syphilis NAAT testing: syphilis PCR, TP NAAT, TP PCR. These all indicate the same testing.

If a syphilitic lesion is suspected, collect samples based on the different STIs that may cause them. This could include three separate swabs:

Syphilis

Order: syphilis NAAT

This may appear on the requisition as, or be written directly on the requisition as:

- *Treponema pallidum* Nucleic Acid Testing
- Syphilis NAAT swab
- Syphilis PCR swab
- TP NAAT swab
- TP PCR swab

Acceptable swabs for syphilis NAAT testing include:

- Plain sterile swab in BCCDC lysis buffer solution (typically available at high-volume STI clinics)
- Aptima multitest or unisex swab
- Universal Transport media (UTM) swab

Herpes simplex virus

Refer to the Herpes simplex virus non-certified practice DST

Chlamydia for LGV

Refer to the Lymphogranuloma Venereum (LGV) non-certified practice DST

*Consider Mpox NAAT where clinically and epidemiologically appropriate

SWAB + SEROLOGY gives a more adequate picture for diagnosis, treatment and follow-up

A pregnancy test is recommended for those of childbearing age.

Refer to the eLab Handbook for current and complete specimen collection information.

Remember to include testing for all STIs (especially HIV where indicated)

Management

Diagnosis and Clinical Evaluation

In BC, a diagnosis and staging of syphilis infection is a collaborative process involving the person who tested positive, the managing primary care provider (physician, nurse practitioner, midwife) and the Syphilis Team at BCCDC (physician, laboratory staff, and syphilis nurses).

Establishing accurate diagnosis and staging is complex and includes consideration of an individual's current and previous test results, sexual health history and presentation, history of previous treatment.

RNs must obtain a diagnosis and client-specific order **prior to** proceeding with treatment and follow-up care.

In cases of high clinical suspicion where an individual may benefit from presumptive treatment, consult the STI Clinic physicians at BCCDC.

For BC syphilis case definitions, see the BCCDC website.

Consultation and Referral

For ***ALL*** cases, RNs must consult with the managing primary care provider and/or a BCCDC Provincial STI Clinic physician (**604-707-5610**). The BCCDC syphilis nurses (**604-707-5607**) may also be contacted for additional support.

Pregnant or Breast-/Chest-feeding

Consult with a BCCDC Provincial STI Clinic physician and/or the managing primary care provider. With consultation and a client-specific order, RNs can administer treatment to pregnant or breast-/chest-feeding people.

Practitioner Alert!

Congenital transmission can occur in utero and during delivery.

All pregnant individuals should have syphilis screening:

1. During first trimester of pregnancy or at first prenatal visit
2. At time of admission for delivery, or any time after 35 weeks for those planning home births

Refer to the Perinatal Services BC website for current guidelines and further information.

Neonatal

If congenital syphilis is suspected consult the BCCDC STI clinic physician (604-707-5610) and paediatric infectious disease at BC Children’s Hospital (604-875-2161).

Treatment

Practitioner Alert!

Bicillin® L-A is the trade name for long-acting penicillin G benzathine that is recommended as the first-choice treatment for primary, secondary, early latent, latent syphilis of unknown duration and late latent syphilis.

It comes in pre-filled syringes, and as such reconstitution is NOT needed.
Each pre-filled syringe of Bicillin® L-A contains 1.2 million units of medication.
A complete dose of 2.4 million units intramuscularly (IM) requires TWO syringes – one syringe (1.2 million units) IM to the left AND right VENTROGLUTEAL (preferred) muscle or DORSOCLUTEAL muscle only.

Medication errors have occurred when only one syringe has been administered.
Short-acting penicillin G sodium is **not** adequate for the treatment of syphilis. Medication errors have occurred when short-acting benzylpenicillin products have been administered. Be aware of drug names that sound very similar.

Rule out pregnancy in those of child-bearing age prior to administration of treatment, as recommended follow-up will differ.

Stage of Infection	Treatment	
Infectious Syphilis • Primary • Secondary • Early Latent	**First Choice**	• Long-acting penicillin G benzathine (**Bicillin® L-A**) 2.4 million units IM • given as **TWO** divided doses of 1.2 million units IM injections – one into each (right and left) ventrogluteal (preferred) or dorsogluteal site
	Secondary Choice	• doxycycline 100 mg PO BID for 14 days
Latent Syphilis of Unknown Duration or Late Latent	**First Choice**	• long-acting penicillin G benzathine (**Bicillin® L-A**) 2.4 million units IM weekly for **THREE** weeks • given as **TWO** divided doses of 1.2 million units IM – one into each (right and left) ventrogluteal (preferred) or dorsogluteal site; weekly for THREE weeks
	Secondary Choice	• doxycycline 100mg PO BID for 28 days

Considerations

For **ALL** cases, registered nurses (RNs) must consult with or refer to a physician or nurse practitioner to obtain a diagnosis and receive a client-specific order for treatment.

RN(C)s do **not** require a client-specific order to provide treatment for individuals identified as **contacts** to a case of syphilis (see the Certified Practice Treatment of STI Contacts DST).

Long-acting penicillin G benzathine (Bicillin® L-A) is provided **FREE OF CHARGE** on request by the BCCDC pharmacy to any clinician, clinic, or hospital for the treatment of syphilis. Alternative drug therapies may be available upon consultation with an STI clinic physician.

Treatment can be ordered directly from the BCCDC pharmacy using the STI Drug Order Request Form.

Syphilis is a reportable infection. Once treatment is provided, fill out the Syphilis Treatment Form and complete with patient and treatment details.

Bicillin

DO NOT USE if history of anaphylaxis or immediate reaction to penicillins. If pregnant, neurosyphilis, at risk for repeat syphilis infections, or if follow-up cannot be ascertained, discuss referral for penicillin desensitization followed by penicillin treatment with primary care provider (see dropthelabel.ca for information on penicillin allergies).

DO NOT ADMINSTER in the deltoid or quadricep muscle.

Consult/refer if cosmetic hip/gluteal implants.

Allow the medication to warm to room temperature prior to injection.

After administration, request the person wait 15 minutes prior to leaving to monitor for any allergic reactions.

Post-treatment side effects can include:

- pain, redness and swelling at the injection site
- diarrhea

If these effects persist or worsen, contact with a health care provider is recommended.

BICILLIN MEDICATION HANDOUT

Doxycycline

DO NOT USE

- if allergy to doxycycline or other tetracylines
- if pregnant

Take with food and water to avoid potential adverse gastrointestinal effects.

DOXYCYCLINE MEDICATION HANDOUT

NOTE: Call BCCDC STI physician if there are concerns regarding first or second choice treatments listed above

Jarisch-Herxheimer reaction

A **Jarisch-Herxheimer reaction** can occur following treatment and is not considered an allergic reaction.

Symptoms include fever, headache, chills, and rigor that resolve within 24 hours.

Recommend acetaminophen to treat symptoms.

If pregnant, a Jarisch-Herxheimer reaction can cause fetal distress and induce premature labour. Treatment should not be delayed given the serious and potentially fatal sequelae of congenital syphilis. Advise to seek obstetric attention if any fever, contractions or decreased fetal movements present.

DoxyPEP

Recent clinical trials show that doxycycline post-exposure prophylaxis (doxyPEP) is efficacious in preventing certain STIs in gbMSM and transgender women (TGW) with a recent history of bacterial STI (i.e. in the previous year). To read more about doxyPEP and consultation around its use see the BCCDC Position Statement on Doxycycline as Prophylaxis for Sexually Transmitted Infections.

Monitoring and Follow-up

Due to the complexity of diagnosis and staging for syphilis, monitoring and follow-up recommendations are provided by the BCCDC STI Clinic Syphilis Physicians. This may be done in collaboration with Infectious Disease Physicians or Pediatric Infectious Disease Physicians for congenital syphilis cases.

General follow-up recommendations following the diagnosis, staging and treatment of a positive syphilis case is noted below.

Stage of Infection	Follow-up Syphilis Serology
Primary	Recommended every 3 months post-treatment until the RPR titre is less than 1:8. Ideally the RPR titre will drop 4 fold (2 dilutions) 6-12 months post-treatment AND below 1:8 by 2 years after treatment.
Secondary	
Early Latent	
Latent syphilis of unknown duration	
Late latent	Consider follow-up syphilis serology 12 months post-treatment or dependent on exposure factors.

Neurosyphilis and Congenital Syphilis

Guidance will be provided by Infectious Disease and BCCDC teams.

Partner Notification

RN(C)s do **not** require a client-specific order to administer treatment to contacts (see the Treatment of STI Contacts DST).

The table below provides **Guidance and Trace-back Periods for Partner Notification.**

Stage of Infection	Guidance and Trace-back Period
Primary	Test and treat all sexual contact within the last 90 days (3 months) of the date of diagnosis or onset of symptoms.
Secondary	Test and treat all sexual contacts within the last 90 days (3 months) of the date of diagnosis or onset of symptoms. For sexual contacts between 90 days (3 months) and 180 days (6 months), testing only is required.
Early Latent **Latent syphilis of unknown duration**	Test and treat all sexual contacts within the last 90 days (3 months) of the date of diagnosis. For sexual contacts between 90 days (3 months) and 1 year (12 months)*, testing only is required. **or as per the BCCDC Syphilis Team*
Late latent	Test only (do not treat): • all long term sexual contacts • children whose gestational parent has a late latent syphilis diagnosis

Note: If a person has given birth within one (1) year of a diagnosis of syphilis, consult the BCCDC STI physicians.

Potential Complications

If left untreated, syphilis infections may lead to serious complications in any organ system after infection (e.g., brain, nervous system, eyes, heart, liver, bones and joints).

Untreated syphilis in pregnancy may lead to stillbirth, neonatal death, prematurity, low birth weight, and life-long health problems for the affected infant.

Additional Education

- return for assessment if initial symptoms have not resolved within 2 to 4 weeks.
- abstain from sexual contact for 7 days after receipt of single-dose Bicillin® L-A (2.4 MU), and where applicable until lesions have completely healed. For LSUD, abstain from sexual contact for 7 days after receipt of the first set of Bicillin® L-A (2.4 MU). For alternate treatment regimens (e.g. doxycycline), abstain from sexual contact until treatment is completed.
- abstain from sexual contact with all partners from within the identified partner notification period, until they have all been tested and/or treated as recommended.
- Standard Education for Sexually Transmitted & Blood-Borne Infection (STBBI)
- offer HIV-PrEP if eligible
- if pregnant, offer additional education:
- Perinatal Services BC – Syphilis in pregnancy. Information for women and their partners.

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