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Provincial Health Services Authority

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BCCDC Non-certified Practice Decision Support Tool

Syphilis

SYPHILIS

BACKGROUND

In BC, the management of syphilis is centralized through the BCCDC Provincial STI Clinic. The overall management of cases occurs collaboratively with the physician (MD) or nurse practitioner (NP) in community who is overseeing the client's care, in coordination with the:

- BCCDC Provincial STI Clinic physicians: 604-707-5610
- BCCDC syphilis nurses: 604-707-5607

SCOPE

For **all** cases, RNs must consult with or refer to a MD or NP to confirm diagnosis and to receive a client-specific order for treatment.

ETIOLOGY

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

EPIDEMIOLOGY

From 2010 to 2019, rates of infectious syphilis in BC increased over 6-fold from 3.4 per 100,000 (154 cases) to 21.1 per 10,000 (1064 cases). Gay, bisexual, and other men who have sex with men (gbMSM) continue to be disproportionately affected.

In 2019, amongst cases of infectious syphilis in BC:

- 92% of cases identified as male (68% between ages 30-59 years)
- 74.7% occurred amongst gbMSM
- 58.6% cases were reported by VCH, 21.9% Fraser Health, 12.9% Island Health, 4.7% Interior Health and 1.0% by Northern Health
- 19 cases of infectious neurosyphilis
- 3 cases diagnosed during prenatal screening, 5 cases of congenital syphilis
- 19.7% primary syphilis, 17.2% secondary syphilis and 63.1% early latent syphilis

Note: the above is based on preliminary data and is subject to change. Please see the [BCCDC Reportable Diseases Data Dashboard](#) for current information.

Risk Factors

Level of infectivity is greatest in early stages and decreases over time in later stages of syphilis.

- **Sexual:** contact with syphilis lesions. These can present in or around the vagina, rectum/anus or mouth and can go unnoticed
 - even with the use of barriers, transmission can occur
 - repeated syphilis infections associated with dense gbMSM social networks
 - shared use of sex toys (*T.Pallidum* does not survive for long upon exposure to the environment)
- **Vertical:** mother-to-baby, in utero and during birth

CLINICAL PRESENTATION

Clinical presentation is highly variable and depends on the stage of infection. Syphilis lesions can present similarly to genital lesions caused by other STIs. Typical presentations are noted in the table below.

Neurosyphilis, optic syphilis and ocular syphilis can occur any time after initial infection, and can present with a wide range of symptoms, including:

- changes to vision and hearing
- otherwise unexplained headaches and changes to usual personality or memory

Case definitions can be found on the [BCCDC website](#).

Syphilis – Typical Clinical Presentation

		Syphilis Stage	Incubation Period	Symptoms	Diagnosis
Infectiousness	↑	Primary	Average of 3 to 4 weeks (range: 10 to 90 days)	<ul style="list-style-type: none"> solitary chancre (painless, indurated lesion) at site of inoculation regional lymphadenopathy 	Primary Syphilis
		Secondary	Average of 2 to 12 weeks (range: 2 weeks to 6 months)	Can affect virtually any organ. Systemic illness: <ul style="list-style-type: none"> malaise lymphadenopathy neurological symptoms (e.g., headaches, meningitis, visual or hearing changes) fever Dermatologic: <ul style="list-style-type: none"> 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) alopecia areata 	Secondary Syphilis
		Early Latent		<ul style="list-style-type: none"> asymptomatic 	Syphilis Early Latent (SEL)
		Probable Early Latent		<ul style="list-style-type: none"> asymptomatic 	Probable SEL (SEL-P)
		Late Latent		<ul style="list-style-type: none"> asymptomatic 	Syphilis Late Latent (SLL)
Not Infectious		Late Syphilis (more than 1 year or unknown)	Average of 15 years (range: 1 year to several decades)	Describes complications that can have multiple manifestations: <ul style="list-style-type: none"> cardiovascular gummatous disease (granulomatous disease of the skin and subcutaneous tissues, bones and/or viscera) 	
		Tertiary			

PHYSICAL ASSESSMENT

- assess the mouth, anus, and genital area for lesions and ulcers
- assess head-to-toe for rash and lymphadenopathy

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

DIAGNOSTIC AND SCREENING TESTS

As interpretation of syphilis serology can be complex and require a degree of expertise, all syphilis serology is reviewed by a BCCDC Provincial STI Clinic physician. The majority of syphilis testing in BC is centralized through the BCCDC Public Health Laboratory (PHL).

Syphilis Serology

Order routine (non-prenatal) syphilis antibody testing. The lab report will show a *T. pallidum* Enzyme Immune Assay (EIA) result.

If EIA is reactive, rapid plasma reagin (RPR) and confirmatory *T. Pallidum* particle agglutination (TPPA) are done. Confirmatory testing is reflexively performed at the BCCDC PHL (see [Appendix A](#) for test information).

Lesion Specimen Collection

Direct PCR testing of suspect syphilis lesions using a NAT swab is another way to detect syphilis infection. In some situations, it can detect a primary syphilis infection before serology. If a syphilitic lesion is suspected, collect samples based on the different STIs that can cause genital ulcers. This could include collecting three separate swabs:

- 1. Syphilis** (use any NAT swab used for vaginal or urethral/cervical CT/GC collection)
 - If a NAT swab is used and not accessioned via the BCCDC PHL, write on the lab req: “*Lesion swabbed for syphilis PCR testing. Send to BCCDC PHL, attn: Dr.Morshed*”
 - Select high volume testing sites can use the BCCDC “Lysis Buffer for Syphilis Swab”
- 2. Chlamydia** (use any NAT swab used for vaginal or urethral/cervical CT/GC collection)
 - To ensure that the swab is sent to the National Microbiology Lab (NML) for LGV testing if CT positive, write on the lab req: “*Send for LGV testing if CT positive*”
- 3. Herpes simplex virus**

As the testing of PCR swabs has superior sensitivity and specificity, Direct Fluorescent Antibody *T. pallidum* (DFA-TP) and Dark Field (DF) tests for syphilis are no longer routinely recommended in BC.

A pregnancy test is recommended for those of childbearing age.

Refer to the [eLab Handbook](#) for current and complete specimen collection information.

MANAGEMENT

Diagnosis and Clinical Evaluation

In BC, a diagnosis of syphilis is determined by the managing MD or NP, in collaboration with a BCCDC Provincial STI Clinic physician. RNs must obtain a diagnosis and client-specific order prior to proceeding with treatment and follow-up care.

Establishing accurate staging is complex, and is based upon the individual's risk factors, clinical history and presentation, and current and previous test results. This is crucial in determining a diagnosis and case management plan.

For BC syphilis case definitions, see the [BCCDC website](#). For information about lab testing and diagnosis, see the [BCCDC 'Guide to interpreting Syphilis Lab Test Results'](#).

Note: 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](#)).

Consultation and Referral

For *all* cases, RNs must consult with the managing MD or NP in the community 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 MD or NP managing the case in the community. With consultation and a client-specific order, RNs can administer treatment to pregnant people and 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

Consult with a BCCDC Provincial STI Clinic physician and the MD or NP providing prenatal care in the hospital and/or community.

Treatment

Practitioner Alert!

Bicillin® L-A is a long-acting form of penicillin G benzathine that is recommended as the first choice treatment for syphilis infections. From the BCCDC Pharmacy, it comes as **2 divided doses, one** to be given IM into each ventrogluteal (preferred) or dorsogluteal site, at the **same** visit. Medication errors have occurred when only one dose has been administered.

Short acting formulations of penicillin are **not** adequate for the treatment of syphilis infections (SEL or SLL). 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.

For **all** cases, RNs must consult with a MD/NP to obtain a diagnosis and client-specific order for treatment. All **Bicillin® L-A** given in community settings is supplied by the BCCDC.

Contact the BCCDC syphilis nurses to arrange for the delivery of client-specific **Bicillin® L-A**: 604-707-5607.

Stage of Infection	Treatment	
Early Syphilis <ul style="list-style-type: none"> • Primary • Secondary • Syphilis Early Latent (SEL) 	First Choice	benzathine penicillin G (Bicillin® L-A) 2.4 MU IM as a single dose Give as two x 1.2 MU IM injections, one into each ventrogluteal (preferred) or dorsogluteal site, at the same visit. ¹⁻³
	Second Choice	doxycycline 100 mg PO BID for 14 days ^{1,4}
Probable Syphilis Early Latent (SEL-P) or Syphilis Late Latent (SLL)	First Choice	benzathine penicillin G (Bicillin® L-A) 2.4 MU IM as a single dose, weekly for three weeks (three doses, 7 days apart) Give as two x 1.2 MU IM injections, one into each ventrogluteal (preferred) or dorsogluteal site, at the same visit. ¹⁻³
	Second Choice	doxycycline 100 mg PO BID for 28 days ^{1,4}

Notes

1. Review information on the [BCCDC Medication Handouts](#) and your agency's drug reference database, including:

- Allergies, interactions and side effects
- How to take the medication
- After-care information

2. See [Appendix B](#) or the [BCCDC website](#) (Vaccine and Pharmacy Services) for the Syphilis Treatment Form.

3. 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 MD/NP (see [antibioticwise.ca](#) for information on penicillin allergies).
- Bicillin® L-A 2.4 MU comes is as two separate injections (1.2 MU each). Give one Bicillin® L-A 1.2 MU IM into each ventral- (preferred) or dorsal-gluteal sites at the same visit, for a total of Bicillin® L-A 2.4 MU.
- 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.
- Post-treatment, pain, redness and swelling can occur at the injection site, as can diarrhea. If these effects persist or worsen, the client should contact their health care provider.
- 3-dose series is considered adequate so long as there are no less than 5 days and no more than 14 days between doses, and that dosing is completed within a 4-week period.
- **Note:** Bicillin® L-A is a higher dose, long-acting formulation of penicillin. There are no significant concerns about potential interactions with tetracyclines, as there could be with other forms of penicillin given for different infections.

4. Doxycycline

- **DO NOT USE** if allergy to doxycycline or other tetracyclines, or if pregnant.
- Take with food/water to avoid potential adverse gastrointestinal effects.

Monitoring and Follow-up

Due to the complexity of diagnosis and centralized management of syphilis cases, follow-up recommendations for all cases is provided by the BCCDC STI Clinic syphilis team. For SEL and SEL-P, a 4-fold drop (or 2 dilutions, e.g. 1:32 to 1:8) in RPR titres is expected within the year following completion of treatment. General follow-up guidance is noted below.

Diagnosis/Status		Syphilis Serology	
		Immediate screening	Future screening (1 year+ post-treatment)
Early Syphilis	Primary Syphilis	3, 6, 9 and 12 months post-treatment	Offer with routine STI screening every 6 to 12 months. If at on-going risk, screen every 3 to 6 months.
	Secondary Syphilis		
	Syphilis Early Latent (SEL)		
	Probable Early Syphilis (SEL-P)		
Syphilis Late Latent (SLL)		Consider 12 months post-treatment, depending upon risk.	

Partner Counselling and Referral

Rule-out pregnancy in contacts of child bearing age. If pregnant, consult with or refer to a MD or NP to obtain a client-specific order to treat. RN(C)s do **not** require a client-specific order to administer treatment to contacts (see the [Treatment of STI Contacts DST](#)).

Diagnosis/Status		All sexual contacts	
		Test (syphilis serology)	Treat
Early Syphilis	Primary syphilis	Within the 3 months preceding the start of symptoms*	Within the 3 months preceding diagnosis*,▲
	Secondary syphilis	Within the 6 months preceding the start of symptoms*	
	Syphilis Early Latent (SEL)	Within the 12 months preceding diagnosis, or as directed by a BCCDC physician*	
	Probable Syphilis Early Latent (SEL-P)		
Syphilis Late Latent (SLL)		<ul style="list-style-type: none"> all long-term sexual contacts children of any age, whose mother has a SLL diagnosis, as per the direction of the BCCDC STI Clinic physician 	Only if syphilis serology is reactive
Congenital		Mother and sexual partner(s) based on diagnosed stage*,▲	

* If no sexual contacts within the specified time period, then recommend testing/treatment of the last sexual contact.

▲ Treat regardless of serology results.

Potential Complications

Syphilis infections may cause serious complications in all organ systems at any time after infection (e.g., brain, nervous system, eyes, heart, liver, bones and joints).

Congenital Transmission

Outcomes depend on how long the mother has been infected and if/when treatment was completed. If left untreated, complications may include:

- infant death in up to 40% of cases
- stillbirth
- death shortly after birth
- developmental delay
- prematurity or low birth weight
- seizures
- lifelong problems with eyes, ears, teeth, bones, organs, blood and joints

Refer to the [Perinatal Services BC](#) website for current guidelines and further information.

If pregnant, offer additional education:

- [Perinatal Services BC – Syphilis in pregnancy. Information for women and their partners.](#)
- [Congenital Syphilis – CDC Fact Sheet](#)

Additional Client Education

Counsel client:

- to return for MD or NP assessment if initial symptoms have not resolved within 2 to 4 weeks.
- to abstain from sexual contact for 14 days after the onset of treatment with **Bicillin® L-A** or until 14 days of doxycycline treatment has been completed.
- to abstain from sexual contact with all prior partners from within the identified partner notification period, until they have all been tested and/or treated as recommended according to diagnosis stage.
- [Standard Client Education for Sexually Transmitted Infections and Blood-Borne Infections \(STBBI\)](#)

APPENDIX A

Syphilis Serology

For information about lab testing and diagnosis, see the [BCCDC ‘Guide to Interpreting Syphilis Lab Test Results’](#).

Test		When/how to order	Description
Nontreponemal	Rapid Plasma Reagin (RPR)	<ul style="list-style-type: none"> • prior to 2014, was the first serology test to be performed when syphilis screening was ordered • reflexively performed if the initial EIA is reactive 	<ul style="list-style-type: none"> • nonspecific antibody immunoglobulin G (IgG) and M (IgM) levels in response to lipoidal material (cardiolipin is the main one) released from damaged tissue; spirochetes may release this as well • used to stage infection and to monitor treatment response • usually correlates with disease activity • manual pipetting of serial dilutions, labour intensive
Treponemal	T. Pallidum Enzyme Immune Assay (EIA)	<ul style="list-style-type: none"> • initial routine screening test done for all serologic specimens following the “reverse” screening algorithm that was implemented in 2014 	<ul style="list-style-type: none"> • measures either IgM or IgG antibodies specific to <i>T.pallidum</i> • generally remains reactive for life, even after treatment • may serorevert if treated during a primary infection • greater standardization of testing
	T. Pallidum particle agglutination (TPPA)	<ul style="list-style-type: none"> • may be reflexively done as the confirmatory treponemal test, depending on prior testing history, if a specimen is EIA positive 	
	Line immunoassay (LIA)	<ul style="list-style-type: none"> • may be reflexively done depending on TPPA result 	
	Fluorescent treponemal antibody adsorbed (FTA-ABS)	<ul style="list-style-type: none"> • only done for CSF cases • more sensitive at detecting primary syphilis but requires subjective microscopic reading 	

APPENDIX B

See the [BCCDC website](#) (Vaccine and Pharmacy Services) for the Syphilis Treatment Form, or click on the image below.

Syphilis Treatment Form

Penicillin G benzathine (**Bicillin® L-A**) is a long-acting form of penicillin treatment for syphilis infection. **Each dose is given as two IM injections of Bicillin® L-A 1.2 million units (total of 2.4 million units), one injection in each hip/buttock.** Depending on clinical staging, either one or three doses of Bicillin® L-A will be indicated (one dose = two injections, or three doses given once weekly = two injections each week = six total injections).

Refer to your agency's drug reference database and review the BCCDC penicillin G benzathine (**Bicillin® L-A**) medication handout with the client and prior to administration.

Once the client has completed treatment, please fax this form to the BCCDC syphilis nurses to ensure optimal case management: **Fax: 604-707-5604**

Patient information			
Name (Last, first)		Date of Birth (yyyy/mm/dd)	
Phone		PHN	
Email		Sex	

Dose	Date of administration (yyyy/mm/dd)	Comments
1		
2		
3		

Health care provider information			
Name (Last, first)		Clinic Name	
Address		Phone	
		Fax	

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