New Brunswick Clinician’s Guide to Syphilis Diagnosis and Treatment 2013

Based on the Canadian Guidelines on Sexually Transmitted Infections
ETIOLOGY
Syphilis is caused by the spirochete (bacteria) Treponema pallidum.

TRANSMISSION
The primary mode of transmission is by vaginal, anal and oral sexual contact. Needle sharing may result in transmission. Primary, secondary and early latent stages are considered infectious. Direct contact with lesions of primary and secondary syphilis pose the greatest risk of transmission. However, the lesions may not be readily apparent and as such, all patients with infectious syphilis should be considered potentially infectious regardless of presence or absence of obvious lesions. Infection during pregnancy may result in miscarriage, stillbirth or congenital infection.

EPIDEMIOLOGY
New Brunswick experienced an outbreak of infectious syphilis from 2009 to 2012 with 126 cases reported during that period of time. Cases have been mostly located in Fredericton, Moncton and Saint John with sporadic cases in rural areas. Cases have been primarily (but not exclusively) among men who have sex with men (MSM).

WHO SHOULD BE SCREENED?
1. Anyone with risk behaviours/potential exposures to infectious syphilis
   - Contacts of known syphilis cases
   - Men who have sex with men (MSM)
   - Street involved/homeless persons
   - Injection drug users
   - Those with multiple sexual partners
   - Those with history of STIs
   - Those originating from or having sex with an individual from a high prevalence country
   - Sexual partners of any of the above
2. Anyone with clinical signs suspicious for infectious syphilis
   - Current or past history of characteristic lesions or rash (see CLINICAL MANIFESTATIONS)

PREVENTION AND CONTROL
Persons presenting with concerns about syphilis provide an important opportunity for education and counseling about consistent practice of risk reduction behaviours. These practices include the proper and consistent use of barrier methods such as condoms and dental dams; reducing the number of sexual partners, syphilis screening of individuals at risk and routine screening of pregnant women. Safer sex counseling should include identifying barriers to prevention practices and the means to overcome them.
CLINICAL MANIFESTATIONS

Primary syphilis (infectious)
- 3 to 90 days after contact
- Chancre/lesion on genitals, anus or in the mouth (site of inoculation)
- Regional lymphadenopathy
- A high proportion of individuals fail to recall a primary chancre

Secondary syphilis (infectious)
- 2 weeks to 6 months after contact
- Rash (often on palms of hands, soles of feet), fever, malaise, lymphadenopathy, mucosal lesions, condyloma lata, patchy or diffuse alopecia, meningitis, headaches, uveitis, retinitis

Early latent syphilis (infectious)
- Duration varies from months to years
- Considered infectious within one year of contact
- Asymptomatic

Neurosyphilis
- Infectious in early stages
- <2 to 20 years after contact
- Ranges from asymptomatic to symptomatic with headaches, vertigo, personality changes, dementia, ataxia, presence of Argyll Robertson pupil

Congenital (infectious in early stage)
- Early congenital syphilis (onset <2 years of age) and late congenital syphilis (onset >2 years of age)
- 2/3 of patients may be asymptomatic
- Symptoms include fulminant disseminated infection, mucocutaneous lesions, osteochondritis, anemia, hepatosplenomegaly, neurosyphilis
- Infected infants may be seronegative if maternal infection occurred late in gestation

Co-infections with HIV
- Signs and symptoms may be modified in the presence of Human Immunodeficiency Virus (HIV)
DIAGNOSIS OF SYPHILIS INFECTION

Serology

- **Serological testing should always be performed.** Consider testing for patients with compatible signs, symptoms and risk factors. Interpretation of serology should be made in consultation with experienced colleagues.
- Both non-treponemal and treponemal tests are used to diagnose syphilis. Non-treponemal tests include rapid plasma reagin (RPR) and Venereal Disease Research Laboratory (VDRL) tests. Treponemal tests include enzyme immunoassays (EIA) to detect IgG and/or IgM antibodies and *T. pallidum* particle agglutination (TP-PA) test.
- Initial screening usually involves either a non-treponemal test or treponemal EIA test (depending on laboratory). Reactive screening tests are then confirmed by further testing (see figure below).
- NNT titres usually correlate with disease activity and are used to stage infection, to monitor response to treatment and to assess for re-infection.
- Serology can yield false negative results in the early stages, particularly in primary syphilis.
- In suspicious cases, serology should be repeated in 2 to 4 weeks.
- Refer to the Canadian Guidelines on Sexually Transmitted Infections for further interpretation of test results.

Cerebrospinal fluid (CSF)

- CSF examination is indicated in patients with suspected/confirmed syphilis with a presence of neurologic or ophthalmic signs and symptoms; congenital syphilis and previously treated patients who fail to achieve adequate serologic response to treatment. Referrals to Infectious Disease specialists are advised in these cases.

**Available syphilis testing protocols vary across New Brunswick. It is recommended that you check with your laboratory regarding local testing.**

**Figures:**

1. **RPR** → **RPR negative**
   - RPR positive: determine titre
   - TP-PA for confirmation
   - TP-PA: Non-reactive
   - • RPR false +
   - • Absence of syphilis

2. **EIA** → **EIA negative**
   - EIA positive
   - RPR and determine titre
   - TP-PA for confirmation*
   - TP-PA: Reactive
   - • RPR confirmed
   - • Diagnosis of syphilis
   - TP-PA: Non-reactive
   - • EIA false +
   - • Early Primary Syphilis
   - • Absence of syphilis
   - TP-PA: Reactive
   - • EIA confirmed
   - • Diagnosis of syphilis

* Not all laboratories in New Brunswick perform TP-PA for confirmation of EIA.

MANAGEMENT

Clinicians are encouraged to discuss clinical management of cases with an Infectious Disease specialist

- Presumptive treatment should be considered for sexual contacts < 90 days in addition to syphilis testing and testing for other STIs if there is a concern about follow-up or in an outbreak situation.
- All sexual or perinatal contacts within the appropriate time periods (3 months for primary, 6 months for secondary, 12 months for early latent syphilis) must be located, tested and treated if necessary.
TREATMENT

Long-acting benzathine penicillin G (Bicillin-LA) as single dose of 2.4 million units IM is the preferred treatment for non-pregnant adults with primary, secondary and early latent syphilis

- Alternatives for penicillin-allergic patients:
  - Doxycycline 100 mg PO bid for 14 days
  - Ceftriaxone 1 g IV or IM daily for 10 days (exceptional circumstances only).
- Treatments for neurosyphilis, infections ≥1 year and congenital syphilis are listed in the Canadian Guidelines for STIs.
- Every effort should be made to obtain and document prior history of treatment for syphilis and prior serologic results in order to avoid unnecessary re-treatment.
- Presumptive treatment regime is benzathine penicillin G as a single dose of 2.4 million units IM.
- All patients should be made aware of the possible Jarisch-Herxheimer reactions to treatment.

Serological monitoring at 3, 6 and 12 months for early syphilis and at 12 and 24 month for late latent and tertiary syphilis is necessary to ensure adequate serological response after treatment.

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<tr>
<th>Stage</th>
<th>Adequate serological response</th>
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<tbody>
<tr>
<td>Primary</td>
<td>4-fold drop at 6 months 8-fold drop at 12 months 16-fold drop at 24 months</td>
</tr>
<tr>
<td>Secondary</td>
<td>8-fold drop at 6 months 16-fold drop at 12 months</td>
</tr>
<tr>
<td>Early latent</td>
<td>4-fold drop at 12 months</td>
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SPECIAL CONSIDERATIONS

For pregnant women and newborns

- Universal screening of all pregnant women continues to be important and remains standard of care.
- Initial screening (ideally) in the first trimester. For high-risk women: repeat screening at 28-32 weeks and at delivery.
- Any woman delivering hydropic or stillborn infants at ≥20 weeks gestations should be tested for syphilis.
- Infants presenting with signs and symptoms compatible with early congenital syphilis should be tested even if mother was seronegative.

For persons co-infected with HIV

- Persons co-infected with HIV will require shared care with the appropriate specialist.
- CSF examination may be indicated for HIV patients with neurologic signs and symptoms, RPR ≥1:32 dilutions, CD4 <350 cells/μL or treated syphilis with suboptimal decline in VDRL/RPR titre. Some experts recommend CSF examination in all HIV-infected individuals.
Consideration of other STIs

- All patients with reactive syphilis serology should be tested for HIV. Persons co-infected with HIV may require a longer course of treatment, as well as closer and longer follow-up.
- Testing for other STIs, including chlamydia and gonorrhea, should be performed.
- Genital ulcers should be tested for HSV and/or chancroid and/or lymphogranuloma venerum, depending on epidemiologic risk.
- Immunize against hepatitis B if not already immune. Immunization against hepatitis A may be indicated. Discuss HPV vaccination with women.

REPORTING

Syphilis (infectious and non-infectious) is reportable in New Brunswick.

Please notify your Regional Public Health office of any new or suspected case(s) of syphilis. They can assist with determining the trace-back period and contact tracing.

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<tr>
<th>Region</th>
<th>Contact</th>
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<tbody>
<tr>
<td>Moncton (Zone 1)</td>
<td>Phone: 506-856-3220 Fax: 506-856-3544</td>
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<tr>
<td>Saint John (Zone 2)</td>
<td>Phone: 506-658-5188 Fax: 506-643-7894</td>
</tr>
<tr>
<td>Fredericton (Zone 3)</td>
<td>Phone: 506-444-5905 Fax: 506-444-4877</td>
</tr>
<tr>
<td>Edmundston (Zone 4)</td>
<td>Phone: 506-735-2065 Fax: 506-735-3142</td>
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<tr>
<td>Campbellton (Zone 5)</td>
<td>Phone: 506-789-2266 Fax: 506-789-2349</td>
</tr>
<tr>
<td>Bathurst (Zone 6)</td>
<td>Phone: 506-547-2062 Fax: 506-547-7459</td>
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<tr>
<td>Miramichi (Zone 7)</td>
<td>Phone: 506-778-6104 Fax: 506-778-6756</td>
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REFERENCES AND OTHER RESOURCES


New Brunswick Office of the Chief Medical Officer of Health (Public Health):
- http://www2.gnb.ca/content/gnb/en/departments/ocmoh/cdc/content/sexually_transmitteddiseasesandinfections.html

Office of the Chief Medical Officer of Health
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