

6.4 Lyme Disease

<http://www.phac-aspc.gc.ca/id-mi/lyme-eng.php>

http://www.health.gov.nl.ca/health/publichealth/cdc/lyme_disease.pdf

Case Definition

Confirmed Case

Clinical evidence of illness with laboratory confirmation:

- isolation of *Borrelia burgdorferi* from an appropriate clinical specimen

OR

- detection of *B. burgdorferi* DNA by polymerase chain reaction (PCR)

OR

- Clinical evidence of illness with a history of residence in, or visit to, an endemic area² and with laboratory evidence of infection:

Positive serologic test using the two-tier ELISA **AND** Western Blot criteria

Probable Case

Clinical evidence of illness without a history of residence in, or visit to, an endemic area* and with laboratory evidence of infection:

- positive serologic test using the two-tier ELISA and Western Blot criteria,

OR

- clinically-observed erythema migrans without laboratory evidence but with history of residence in, or visit to, an endemic area

Clinical Presentation

Erythema migrans, a circular rash that may appear in the shape of a target or in a solid color, is one of the first symptoms observed in a case of Lyme disease. The rash first appears between 3-32 days after initial infection and lasts until 8 weeks following infection. Fatigue, fever, headache, and neck stiffness may also present during the initial stages of infection. If not treated, neurological problems (e.g. encephalitis), cardiac problems (e.g. atrioventricular heart block), and Lyme arthritis can manifest in later stages of the infection. These symptoms can last weeks to years after initial infection of the disease. Lyme disease is rarely fatal.

Diagnosis

Blood tests should not be interpreted without considering the patient's clinical symptoms. False negative results from blood tests are more likely to occur during

² An endemic area consists of a known breeding population of *Ixodes scapularis* or *Ixodes pacificus*. Both are tick vectors that are instrumental in the transmission of *B. burgdorferi* in that area

the early phase of the disease. Blood tests become more accurate during the later stages of the disease.

Epidemiology

Occurrence

A high prevalence of Lyme disease coincides with the seasonality and habitat of the blacklegged tick. The most common source of infection is nymphal ticks, infecting humans during the summer. However, adult ticks infect during cooler parts of the year.

In North America, tick vectors primarily inhabit areas of southern Canada and New England. Cases have also been detected in China, Europe, Japan, and Russia. However, these ticks can travel on migratory birds to regions where this species of tick do not usually inhabit. The incidence of Lyme disease is increasing in Canada, however. Canadian rates are not available as the disease has been nationally notifiable since 2009.

In NL, it has been noted that about 20% of the ticks sampled in the province carry the bacteria that causes Lyme disease. However, the total number found per year remains low (approximately 25-35). While the risk of Lyme disease is considered low, residents are encouraged to take preventive measures to protect themselves from tick bites. Since 1996, a total of 7 cases of Lyme disease have been reported in the province, all of which were travel-related. Six of these cases have been reported since 2004.

Reservoir

Mainly migratory birds, deer, and wild rodents; other small mammals can be infected with this bacteria.

Transmission

Tickborne; transmission by the species *Ixodes scapularis* and *Ixodes pacificus* (blacklegged ticks) generally does not occur unless the tick has been attached for 24 hours or more to experimental animals. This may also be true for humans. Transmission can also occur person-to-person; blood donations should not be accepted from people with Lyme disease.

Incubation Period

If erythema migrans presents, it will appear between 3 and 32 days after tick exposure.

Period of Communicability

There has been no epidemiological evidence of person-to-person or maternal-fetal transmission.

Control Measures

Management of Cases

Supportive care and antibiotic therapy in the early stages of the disease are instrumental in achieving a full recovery. Treatment is less likely to result in complete recovery in the later stages of Lyme disease.

Management of Contacts

Contact investigation should be initiated and a search for the source of the infection.

Management of Outbreaks

An outbreak management team should be established to address infection prevention and control measures.

Education and Preventive Measures

- Education regarding transmission of *B. burgdorferi* and means of personal protection against its acquisition
- Avoidance of known or suspected tick-infested areas
- If in a tick-infested area, wear light-colored clothing that covers arms, neck, and legs so that ticks will be more visible. Pants should be tucked into socks, and repellent should be applied to the skin and/or clothing
- Perform body searches for ticks; use tweezers to remove ticks and apply soap and water to former tick attachment site. Image of how to properly remove ticks can be found at <http://healthycanadians.gc.ca/diseases-conditions-maladies-affections/disease-maladie/lyme/ticks-removal-enlever-tiques-eng.php#a2>
- Perform risk assessment in geographical area where cases of Lyme Disease are believed to have originated from
- Provide fact sheet regarding species of ticks that carry *B. burgdorferi* in this province
http://www.faa.gov.nl.ca/agrifoods/animals/health/pdf/ds_08_006.pdf
- Provide fact sheets at http://www.health.gov.nl.ca/health/publichealth/envhealth/lyme_disease_nr.pdf and <http://www.phac-aspc.gc.ca/id-mi/lyme-fs-eng.php>

Reporting Requirements and Procedures

- Physicians, laboratories and communicable disease control nurses (CDCNs), and infection control practitioners (ICPs) must immediately report suspect or confirmed cases to the Regional Medical Officer of Health (RMOH)
- RMOH office will notify local physicians, nurse practitioners, environmental health officers, community health nurses, CDCNs, and ICPs, in the particular region as required for case investigation and follow-up.
- Perform lab analyses to determine species of tick that may be responsible for acquisition of Lyme Disease; please visit

http://www.health.gov.nl.ca/health/publichealth/cdc/infectioncontrol/lyme_disease.pdf for more information

- RMOH reports to provincial office as per list B
- CDCN enters the case into the electronic reporting system and completes an outbreak report form if indicated
- Provincial Disease Control
 - Reports the identified case to other health regions
 - Reports the identified case to Public Health Agency of Canada
 - Provides an analysis of the case/s with reports in the Communicable Disease Report (CDR)