LYME DISEASE

Case Definition

Confirmed Case:
Clinical evidence of illness with laboratory confirmation by one of the following methods:

- Isolation of *Borrelia burgdorferi* (B. burgdorferi) from a clinical specimen as specified by current guidelines. [1, 2]
  OR
- Detection of *B. burgdorferi* DNA by testing on synovial fluid, cerebrospinal fluid, EM tissue biopsies or blood and by methods specified by current guidelines. [1, 2]
  OR
- Clinical evidence of illness with a history of residence in, or visit to, a Lyme disease risk area* and with laboratory evidence of infection in the form of a positive serologic test[3,4]

Probable Case:
Clinical evidence of illness without a history of residence in, or visit to, a Lyme disease risk area*; and with laboratory evidence of infection in the form of a positive serologic test as defined above under confirmed cases.
OR
Clinician-observed erythema migrans without laboratory evidence but with history of residence in, or visit to, a Lyme disease risk area.*

* A Lyme disease risk area in Canada is defined as a locality in which there is evidence for the occurrence of reproducing populations of known tick vector species (particularly Ixodes scapularis and Ixodes pacificus) and the likely transmission of B. burgdorferi as determined by methodology outlined in the PHAC case definition (reference). The entire province of Nova Scotia is a risk area.

Clinical Evidence

Objective evidence of early Lyme disease includes the following when an alternative explanation is not found:

Erythema migrans (EM): a round or oval expanding erythematous area of the skin **greater than 5 cm** in diameter and enlarging slowly over a period of several days to weeks. It appears one to two weeks (range 3-30 days) after infection and persists for up to eight weeks. Some lesions are homogeneously erythematous, whereas others have prominent central clearing or a distinctive target-like appearance.

On the lower extremities, the lesion may be partially purpuric. Signs of acute or chronic inflammation are not prominent. There is usually little pain, itching, swelling, scaling, exudation or crusting, erosion or ulceration, except that some inflammation associated with the tick bite itself may be present at the very centre of the lesion.

Note: An erythematous skin lesion present while a tick vector is still attached or that has developed within 48 hours of detachment is most likely a tick bite hypersensitivity reaction (i.e. a non-infectious process), rather than erythema migrans. Tick bite hypersensitivity reactions are usually < 5 cm in largest diameter, sometimes have an urticarial appearance and typically begin to disappear within 24-48 hours. Diagnosis of EM requires careful examination by a physician to eliminate alternative types of skin rash. Note that it is recommended that physicians would normally treat patients with EM without recourse to serological testing as specific antibodies are often not detectable in early Lyme disease.[2]

OR

Objective evidence of disseminated Lyme disease includes any of the following when an alternative explanation is not found:

- **Multiple erythema migrans:** EM lesions, similar to the single erythema migrans lesions described above, but in multiple locations on the body and **may be smaller (< 5cm).**
- **Neurological**
- **Musculoskeletal**
- **Cardiac**

OR

Non-Specific Febrile Illness including fever, myalgias, arthralgias

Reporting Requirements

- Report confirmed or probable cases to DHW Surveillance Team via Panorama.
- When an individual is reported with a second Lyme disease episode, report the second episode as a new case (i.e. a reinfection) only if the presentation includes a new erythema migrans which developed at a different site on the body compared to the erythema migrans observed in the first Lyme disease episode.

Additional Forms

None.

Data Entry

Complete data entry in Panorama.

References

1. Canadian Public Health Laboratory Network. The laboratory diagnosis of Lyme borreliosis: guidelines from the Canadian Public Health Laboratory Network. Can J Infect Dis Med Microbiol 2007;18:145-8.

2. Wormser GP, Dattwyler RJ, Shapiro ED et al. The clinical assessment, treatment, and prevention of Lyme disease, human granulocytic anaplasmosis, and babesiosis: clinical practice guidelines by the Infectious Diseases Society of America. Clin Infect Dis 2006; 43:1089-134.

3. Hatchette TF, Lindsay LR on behalf of the Lyme Disease Diagnostics Working Group. Modified two-tiered testing algorithm for Lyme disease serology: The Canadian context. Can Commun Dis Rep 2020;46(5):125–31.

4. Mead P, Peterson J, Hinckley A. Updated CDC Recommendation for Serologic Diagnosis of Lyme Disease. MMWR Morb Mortal Wkly Rep 2019;68.703.