

Appendix A: Disease-Specific Chapters

Chapter: Lyme Disease

Revised January, 2012

Lyme Disease

- Communicable
 Virulent

**Health Protection and Promotion Act:
Ontario Regulation 558/91 – Specification of Communicable Diseases**

**Health Protection and Promotion Act:
Ontario Regulation 559/91 – Specification of Reportable Diseases**

1) Aetiologic Agent:	Lyme disease is a tick-borne zoonotic disease caused by the bacterium, <i>Borrelia burgdorferi</i> (<i>B. burgdorferi</i>), a spirochete first identified in North America in 1982 (1, 2).
2) Case Definition:	
Surveillance Case Definition	See Appendix B
Outbreak Case Definition	Not applicable
3) Identification:	
Clinical Presentation	<p>Lyme borreliosis is generally divided into 3 stages in which infected persons may experience any of the following symptoms: (1,2)</p> <ul style="list-style-type: none">• Early localized disease<ul style="list-style-type: none">• Erythema migrans (EM) or “bull’s eye” rash at the site of a recent tick bite, fever, malaise, headache, myalgia, neck stiffness, and arthralgia• Early disseminated disease<ul style="list-style-type: none">• Multiple erythema migrans in approximately 15% of people occurs several weeks after infective tick bite, cranial nerve palsies, lymphocytic meningitis, conjunctivitis, arthralgia, myalgia, headache, fatigue, carditis (heart block)• Late disease<ul style="list-style-type: none">• May develop in people with early infection that was undetected or not adequately treated. Involves the heart, nervous system and joints; arrhythmias, heart block, significant myocardial dysfunction; recurrent arthritis affecting large joints (i.e. knees); peripheral neuropathy; central nervous system manifestations – meningitis; encephalopathy (i.e. behavior changes, sleep disturbance, headaches)
Diagnosis	See Appendix B
	Note: Diagnosis is based on clinical findings and epidemiological

	<p>findings supported by two-stage serological tests, ELISA and then Western blot.</p> <p>Serological evidence using the two-tier ELISA and Western Blot criteria (as described by the guidelines of the Canadian Public Health Laboratory Network) is confirmatory, providing, for reasons of positive predictive value, that the patient has EM or objective signs and symptoms of disseminated Lyme disease.</p>
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4) Epidemiology:

Occurrence	<p>Lyme disease has been found in the USA, Canada, Europe, the former Soviet Union, China and Japan (1). Epidemiologic data for Ontario indicate that infection occurs primarily during summer, with a peak in June and July, but may occur throughout the year, depending on seasonal abundance of the tick locally.</p> <p>While cases can occur anywhere in Ontario, the following areas have been identified as endemic for Lyme disease: the north shore of Lake Erie, particularly in areas around Long Point, Turkey Point and Rondeau Provincial Park and the St. Lawrence Islands National Park area. New endemic areas are being investigated.</p>
Reservoir	<p>Deer and small mammals such as rodents serve as important hosts to the tick vector, <i>Ixodes scapularis</i>, the primary <i>B. burgdorferi</i> vector in eastern Canada and Ontario. This tick is commonly known as a deer tick or blacklegged tick (1).</p>
Modes of Transmission	<p>Tick-borne: transmission usually does not occur until the tick has been attached for at least 24 hours (1).</p>
Incubation Period	<p>For EM rash, from 3 - 32 days after tick exposure with a mean of 7 - 10 days; early stages of the illness may not be apparent and the person may present with later manifestations (1).</p>
Period of Communicability	<p>There is no evidence of person to person spread (1).</p>
Susceptibility and Resistance	<p>All persons are probably susceptible, particularly persons that live in or travel to Lyme disease endemic areas (1).</p>

5) Reporting Requirements:

To local Board of Health	<p>Confirmed and suspected cases shall be reported to the medical officer of health by persons required to do so under the <i>Health Protection and Promotion Act</i>, R.S.O. 1990.</p>
To Public Health Division (PHD)	<p>Report only case classifications specified in the case definition with exposure information to PHD.</p> <p>Cases shall be reported using the integrated Public Health Information System (iPHIS), or any other method specified by the Ministry within five (5) business days of receipt of initial notification as per <i>iPHIS Bulletin</i> Number 17: Timely Entry of Cases (3).</p>

	<p>The minimum data elements to be reported for each case is specified in the following:</p> <ul style="list-style-type: none"> • <i>Ontario Regulation 569</i> (Reports) under the Health Protection and Promotion Act (HPPA); • The disease-specific User Guides published by the Ministry, and • Bulletins and directives issued by the Ministry.
6) Prevention and Control Measures:	
Personal Prevention Measures	<p>Provide public education and advice on preventative measures including: (1, 2)</p> <ul style="list-style-type: none"> • Education about the mode of tick transmission and the means for personal protection such as tucking pants into socks, wearing light coloured, long sleeve shirts and long pants in wooded areas; use of tick repellents that contain DEET. A light coating will do. The concentration of DEET should be no greater than 30% for adults and no greater than 10% for children • Avoiding tick-infested areas when possible • Removing ticks from domestic animals
Infection Prevention and Control Strategies	<p>The board of health shall develop and utilize a local vector-borne management strategy in order to mitigate risk. This strategy shall include measures such as:</p> <ul style="list-style-type: none"> • Local risk assessments • Public education and source reduction when and where applicable <p>For more information on vector-borne management strategies refer to the CDC Vector Borne Infections Division Available from: http://www.cdc.gov/ncidod/dvbid/Lyme/index.htm</p>
Management of Cases	<p>Refer to <i>Ontario Regulation 569</i> for relevant data to collect and determine the most likely location of exposure. Inquire about:</p> <ul style="list-style-type: none"> • Travel to endemic area and activities in previous 32 days • Outdoor recreational activities and outdoor occupations • Symptoms and date of symptom onset and presence or history of EM-like rash; and • Date of tick bite <p>Treatment is under the direction of the attending health care provider. Provide education about the infection and how it is acquired.</p>
Management of Contacts	None
Management of Outbreaks	Not applicable

<p>7) References</p>	<p>(1) Heymann D, editor. Control of communicable diseases manual. 18th ed. Washington: American Public Health Association; 2004.</p> <p>(2) Pickering LK, Baker CJ, Long SS, McMillan JA, editors. Red book: 2006 report of the Committee on Infectious Diseases. 27th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2006. Section 3, Summaries of infectious diseases; p. 428-33.</p> <p>(3) Ministry of Health and Long-Term Care. Timely entry of cases. iPHIS Bulletin. 2012 January;14.</p>
<p>8) Additional Resources</p>	<p><i>Health Protection and Promotion Act</i>, R.S.O. 1990, c. H.7. Available from http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90h07_e.htm.</p> <p>Statement on immunization for Lyme disease (ACS-3). An Advisory Committee Statement (ACS). National Advisory Committee on Immunization (NACI). Can Commun Dis Rep. 2000;26:1-11. Available from http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/00pdf/acs26-3-4-5.pdf.</p> <p>Division of Vector-Borne Infectious Diseases [Internet]. Atlanta: Centres for Disease Control and Prevention; 2008. Lyme disease; 2008 [cited 2008 Jul 23]. Available from: http://www.cdc.gov/ncidod/dvbid/Lyme/index.htm.</p>

