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Your Health Connection

HealthFAX

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Lyme Disease and West Nile Virus Update 2017

Attention: Physicians, Emergency Departments, Infection Control Practitioners, Walk-In Clinics/Urgent Care Clinics, Nurse Practitioners

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In 2016, five cases of Lyme disease and one case of West Nile Virus were reported in the Simcoe Muskoka District Health Unit (SMDHU) catchment area. Only one of the five Lyme disease cases was determined to be locally-acquired. SMDHU remains below the provincial rates for both diseases. **Simcoe Muskoka is not a designated Lyme risk area, but blacklegged ticks are present in Simcoe Muskoka and over the years, a few have tested positive for *Borrelia burgdorferi*, the bacteria that causes Lyme disease.**

Lyme Disease

We recommend the following three documents on Lyme Disease:

- **Public Health Ontario Lyme Disease website**
- **Infectious Disease Society of America (IDSA) lyme disease guidelines**[1]
- **Clinical aspects of Lyme Disease in the Canada Communicable Disease Report (CCDR) May 28, 2014**[2]

We would also like to remind health care professionals of the following information regarding testing, prophylaxis and treatment of Lyme disease; and tick submissions processes:

Lyme Disease Laboratory Testing:

- A two-step protocol is used for serologic testing of Lyme disease in Ontario:
  1. The C6-peptide ELISA is sensitive for detecting IgG/IgM antibodies to *Borrelia* genospecies that develop within a few weeks of onset of erythema migrans.
  2. A Western immunoblot assay that is highly specific for *B. burgdorferi* antibodies is used as a confirmatory test for reactive or indeterminate ELISA specimens only.
- The two-step protocol is consistent with recommendations of the Public Health Agency of Canada, U.S. Centers for Disease Control and Prevention, and IDSA, to obtain the best balance between sensitivity and specificity.
- **Diagnosis and treatment should be based primarily on clinical assessment and history of possible exposure to blacklegged tick (see updated 2017 PHO Lyme disease risk areas map**[3]**, also attached below), particularly for early localized Lyme disease. Laboratory testing should only be used to supplement clinical findings.**
- Serology results may be negative in early stage Lyme disease before antibody development or in some patients previously treated with antibiotics who may lack a detectable serologic response at the time of testing.
- If the patient has a history of tick exposure in Europe: provide travel history and request testing for European Lyme disease. A Western blot specific for the *Borrelia* species that occurs in Europe will be used as the confirmatory test however the turnaround time is longer (21 days) as the test is only done at the National Microbiology Laboratory.

Prophylaxis

The efficacy for doxycycline prophylaxis is 87%, but there is a wide 95% confidence interval (25%–98%), reflecting the small number of patients in the 2001 randomized controlled trial[4]. A single 200 mg dose of oral doxycycline may be offered as per IDSA guidelines to adult patients and to children eight years of age and older, when all of the following conditions are met:

1. Adult or nymph of *I. scapularis* (blacklegged) tick was attached for more than 24 hours; AND
2. Prophylaxis can be started within 72 hours from the time that the tick was removed; AND

3. **Person was exposed in an area where ecologic information indicates that the rate of infection of ticks is >20%.** In Ontario, as per the corresponding local public health information, they include
   a. Rouge Park and Morningside Park in the Greater Toronto area
   b. Brighton
   c. Kingston and surrounding areas
   d. Thousand Islands, Brockville, Perth-Smiths Falls and surrounding areas
   e. Ottawa and surrounding areas
   f. Rondeau Provincial Park; AND
4. Doxycycline treatment is not contraindicated.

Note that the risk areas on the PHO risk map do not necessarily have a rate of infection >20%. Those with a known prevalence that meets the above criteria are listed above. Niagara region has a current rate of infection of 18.8%.

Doxycycline is relatively contraindicated for pregnant and breast-feeding women and for children less than eight years of age. In these cases, the patient and their provider should make an informed choice between a single dose of doxycycline and no prophylaxis. There is effective antibiotic treatment for early localized Lyme disease. Should prophylaxis not be indicated based on the above criteria, the health care provider should watch for signs and symptoms of Lyme disease and treat early.

Treatment

Early Lyme Disease: These cases refer to patients with symptoms including erythema migrans, fever, and/or arthritis and minimal or no comorbidities. These cases can be managed according to the table below.

Management Recommendations for Basic Lyme Disease in Patients without Significant Comorbidities

Medication	Adult Dose and Duration	Pediatric Dose and Duration
Doxycycline • preferred primary treatment • not recommended for pregnant women	100 mg po bid for 14 days	• Not recommended for children under 8. • Over 8 years: 4 mg/kg/day divided bid to max 100mg/dose
Amoxicillin	500 mg po tid for 14 days	50 mg/kg/day divided tid to max 500 mg/dose
Cefuroxime axetil	500 mg po bid for 14 days	30 mg/kg/day divided bid to max 500 mg/dose

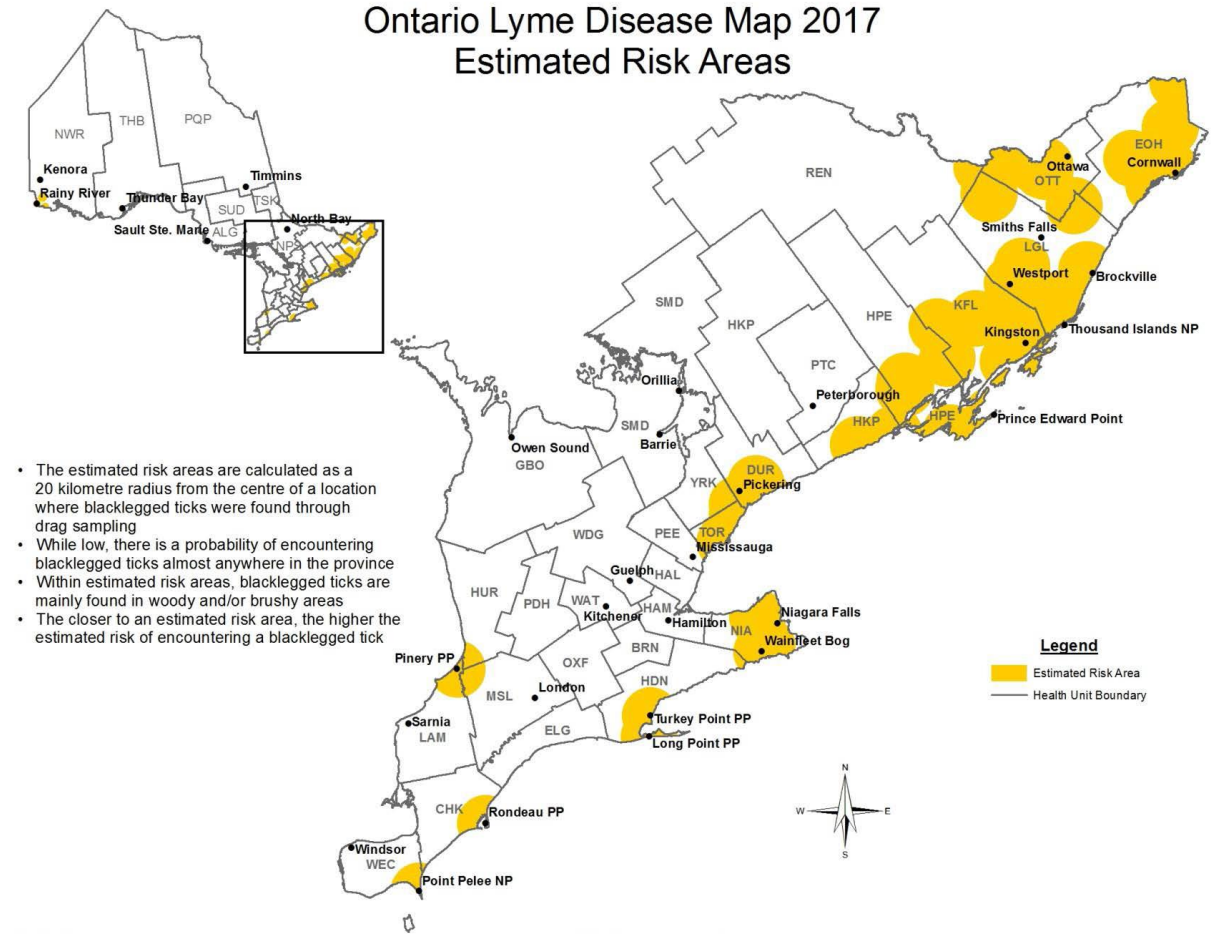
Tick Submission Process

SMDHU encourages Healthcare Providers to submit ticks for identification and testing once they have been removed from a patient. Public Health Ontario provides a surveillance form that is to be filled out and submitted along with the tick. The identification and bacterial testing of ticks is not to support the clinical diagnosis of Lyme disease, but allows public health to better understand the type and distribution of ticks throughout the province. This surveillance data informs local risk assessment, communication and education of the risks associated with Lyme disease among Simcoe Muskoka residents.

Prevention

Ticks that carry Lyme disease live in woodland areas, tall grasses and bushes. Key prevention measures for Lyme disease include: use insect repellant containing DEET or Icaridin on clothes and exposed skin, wear light-colored clothing (makes ticks easier to see) and long-sleeved shirts tucked into long pants and tuck pants into socks. When hiking and walking stay on the center of trails, check clothes and body for ticks (especially groin, naval, armpits, scalp and behind knees and ears) and shower as soon as possible after

being outdoors to more easily find and wash off ticks. Further information for the public is available at: http://www.simcoemuskokahealth.org/Topics/Environment/westnilevirusEEEVlyme/lyme.aspx



West Nile Virus

The period of greatest risk for human WNV acquisition is from mid-July to the end of August. To better determine the risk of WNV within Simcoe Muskoka and provincially, adult mosquito trapping programs work to identify the presence of WNV within the adult mosquito population. To date, there have been no reports of mosquitoes or humans testing positive for the virus within the province for 2017. It is important to note that although 80% of infected cases are asymptomatic, health care providers are encouraged to remain vigilant for clients presenting with signs and symptoms consistent with WNV.

West Nile Virus Clinical presentation:

- There are three clinical manifestations of WNV; asymptomatic, non-neurological and neurological. The majority of WNV cases are asymptomatic.
- About 20% of infected persons develop the usually less severe symptom complex known as WNV non-neurological syndrome. This presents with a mild flu-like illness with fever, headache and body aches, occasionally with a skin rash and swollen lymph nodes or other non-specific symptoms that last several days. Other symptoms may include nausea, vomiting, eye pain or photophobia.
- WNV neurological symptoms can present as an encephalitis illness as well as conditions similar to acute flaccid paralysis, and Parkinson's disease. Less than 1% of infected people will develop neurological symptoms.

West Nile Virus Laboratory Testing:

- Serologic testing of clotted or serum blood is the preferred method of testing for WNV. Specimens for West Nile virus-(WNV) IgG and IgM serology are performed using ELISA.
- On the requisition please include mosquito bite history, symptoms, onset date, relevant travel history and history of Japanese virus vaccination or yellow fever vaccination.
- Specimens may also undergo plaque reduction neutralization testing (PRNT) which is highly specific for WNV.
- Indeterminate results for any of the WNV assays may be due to the presence of low-level antibodies or non-specific reactions.
- If considering molecular testing, contact PHOL Customer Service to speak to a microbiologist for approval.

For more information on vector borne diseases of interest in Simcoe Muskoka please visit the Primary Care Portal at www.smdhu.org/HPPortal

Note: SMDHU has launched its **new interactive Reportable Disease Toolkit** which provides easier access to disease specific testing, treatment recommendations and patient and clinician resources. Available at: http://www.smdhu.org/reportablediseaselist

References

1. The Clinical Assessment, Treatment, and Prevention of Lyme Disease, Human Granulocytic Anaplasmosis, and Babesiosis: Clinical Practice Guidelines by the Infectious Diseases Society of America available at https://academic.oup.com/cid/article-lookup/doi/10.1086/508667
2. Clinical aspects of Lyme Disease in the Canada Communicable Disease Report (CCDR) May 28, 2014 available at http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/14vol40/dr-rm40-11/assets/pdf/14vol40_11-eng.pdf
3. Ontario Lyme Disease Map 2017 Estimated Risk Areas (Public Health Ontario) available at https://www.publichealthontario.ca/en/eRepository/Lyme_disease_risk_areas_map.pdf
4. Nadelman RB, Nowakowski J, Fish D, et al., for the Tick Bite Study Group. Prophylaxis with single-dose doxycycline for the prevention of Lyme disease after an Ixodes scapularis tick bite. N Engl J Med. 2001 Jul 12;345:79-84. Available at http://www.nejm.org/doi/pdf/10.1056/NEJM200107123450201
5. Public Health Ontario Lyme Disease website https://www.publichealthontario.ca/en/BrowseByTopic/InfectiousDiseases/Pages/IDLandingPages/Lyme-Disease.aspx

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For laboratory use only	
Date received yyyy / mm / dd	PHOL No.

Surveillance Form for Tick Identification

NOTE: Tick testing will be used for surveillance activities. As per Infectious Disease Society of America (IDSA) guidelines, tick testing should not be used for diagnosis and management of Lyme disease.

ALL Sections of this form must be completed

Submitter

Courier code

Provide Return Address:

Name
Address
City & Province
Postal Code

Clinician Initial / Surname and OHIP / CPSO Number

Tel: _____ Fax: _____

Client Information

Date of Birth: yyyy / mm / dd	Sex: ☐ Male ☐ Female
Last Name: (per health card)	First Name: (per health card)
Phone number: (AREA CODE) ###-####	
Address: _____	
City:	Postal code:
Submitter lab no. (if applicable):	
Public Health Unit Investigation No.:	

Tick Information

*The information in fields a) and b) is mandatory and is essential to the tick surveillance program. Failure to provide this information may result in delays and/or rejection of the tick for testing.

a) "Where was the tick most likely acquired (Be as specific as possible, e.g., town, park, province, or city):

Province _____ Town _____ Other: _____

b) Did you travel in the previous two weeks? (Check one)*:

☐ Yes ☒ No travel ☐ Unknown

If yes, which localities were visited? (Be as specific as possible, e.g., town, park, province, or city):

Please indicate all travel locations: _____

c) When was the tick collected or removed?: yyyy / mm / dd _____

d) Was the tick attached (feeding)

☒ Yes ☐ No ☐ Unsure

e) How long was the tick attached (feeding) _____ (state hours or days)

PHO does not perform tick testing on ticks removed from non-human sources (e.g., dogs).

The personal health information is collected under the authority of the Personal Health Information Protection Act, 2004, s.36 (1)(c)(III) for the purposes specified in the Ontario Agency for Health Protection and Promotion Act, 2007, s.1 and will be used for surveillance and other public health purposes. If you have questions about the collection of this personal health information please contact the PHOL Manager of Customer Service at 416-235-6556 or toll free 1-877-604-4567.

Ontario