simcoe muskoka
DISTRICT HEALTH UNIT

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HealthFAX

Lyme disease Update

Attention: **All Physicians, Emergency Departments, Walk- In Clinics/Urgent Care Clinics, Nurse Practitioners, Infection Control Practitioners**
Date: September 28, 2011

In the past few years, Ontario has seen an increase in human cases of Lyme disease and an increase in numbers and range of black-legged ticks, especially in southern Ontario. Lyme disease is a preventable disease caused by a *Borrelia burgdorferi* bacterial infection and transmitted through the bite of an infected tick. In Ontario, the black-legged tick (or deer tick) *Ixodes scapularis* is the sole vector of *B. burgdorferi.*

The numbers of Lyme disease human cases reported to the Simcoe Muskoka District Health Unit (SMDHU) from 1999 to 2010 ranged from 1 to 6 cases per year, with more cases noted from 2005 to 2010 vs. 1999 to 2004. The number of locally-acquired Lyme disease cases (those cases whose potential exposures to Lyme were in the Simcoe-Muskoka region) for 2005 to 2010 range from 0 to 3 cases per year. While SMDHU is not considered an endemic area for Lyme-carrying ticks, the vector can be found sporadically in our region. Since the start of the passive tick surveillance program in 2007, which relies on residents to submit ticks for identification, SMDHU has not had a blacklegged tick that was positive for Lyme disease. Nevertheless, health care providers are encouraged to remain vigilant for clients presenting with signs and symptoms compatible with Lyme disease.

Clinical Presentation

The incubation period for Lyme disease is usually 1 to 4 weeks after a bite from an infected tick. Early infection is characterized in 70 to 80 % of cases by erythema migrans, a skin lesion commonly known as a “bull’s eye rash”. Other early symptoms include fever, headache, muscle and joint pains, fatigue and stiff neck. Clinical diagnosis can sometimes be difficult as the symptoms can mimic many other diseases. If left untreated, Lyme disease can progress to an early-disseminated disease with multiple erythema migrans*, cranial nerve palsies, lymphocytic meningitis, conjunctivitis, arthralgia, myalgia, headache, fatigue, and heart block. If the disease continues, recurrent arthritis, further cardiac abnormalities, and central nervous system manifestations such as encephalopathy can result.

*Erythema migrans is a pathognomonic sign of Lyme disease. It is defined as a skin lesion that typically begins as a red macule or papule and expands over a period of days to weeks to form a round or oval expanding erythematous area. Some lesions are homogeneously

erythematous, whereas others have prominent central clearing or a distinctive target-like appearance. A single primary lesion must reach ≥ 5 cm in size across its largest diameter. On the lower extremities, the lesion may be partially purpuric. EM represents a response to the bacterium as it spreads intradermally from the site of the infecting tick bite. It appears 1-2 weeks (range 3-30 days) after infection and persists for up to 8 weeks, by which time the bacterium leaves the skin and disseminates haematogenously.

An erythematous skin lesion that presents while a tick vector is still attached or which 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. 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.

If a tick is still attached, it should be removed and submitted for identification through the health unit.

Laboratory Testing

Clinical information, detailed travel history (if applicable), date of onset, and any history of tick bites should be included on all laboratory requisitions. Serological testing should be ordered prior to treatment with antibiotics. Consider convalescent samples at > 30 days after exposure if acute serology taken early after tick exposure and ELISA is negative and/or antibiotics administered prior to serology.

Disease Test	Test Code	Specimens	Collection Kit	Test Available
Lyme Disease (Borrelia burgdorferi) ECM (Erythema Chronicum Migrans)	S 03	Blood, clotted or serum	BL-S	EIA, WB

Blood tests to support a diagnosis of Lyme disease are performed at the Ontario Public Health Laboratory. The diagnostic tests that are used are approved by federal regulators in Health Canada. The testing protocol follows the recommendations of the Canadian Public Health Laboratory Network, as well as the Centers for Disease Control (CDC) in the USA. The CDC and the Public Health Agency of Canada caution health care professionals and the public regarding the use of private laboratories offering Lyme disease testing in the USA, as these “for-profit” laboratories may not follow the same testing protocols as most Canadian provincial and federal or United States federal or state laboratories.

Lyme disease is reportable. **Please report any suspected or confirmed Lyme disease cases to the communicable disease team at 721-7520 or 1-877-721-7520 ext. 8809.**

Attached is a Lyme disease resource for clinicians. More information can be found on our website at www.simcoemuskokahealth.org.

Lyme disease is on the increase

Message from the Chief Medical Officer of Health

Ontario is seeing an increase in human cases of Lyme disease and an increase in numbers and range of black-legged ticks, especially in southern Ontario.

Reporting of all cases is critical.

Lyme disease is a preventable disease caused by a *Borrelia burgdorferi* bacterial infection and transmitted through the bite of an infected tick.

In Ontario, the black-legged tick (or deer tick) Ixodes scapularis is the sole vector of *B. burgdorferi.* People who spend time outdoors may encounter other tick species, but only the black-legged tick can transmit the Lyme disease bacteria. These ticks are small (3-5 mm) and people often do not realize they have a black-legged tick on them.

Risk Areas

The greatest risk of acquiring Lyme disease is found in areas where black-legged ticks carrying the bacteria are endemic (well-established).

The endemic areas in Ontario include:

- Long Point Provincial Park (northwest shore of Lake Erie near Port Rowan)
- Point Pelee National Park (near Leamington)
- Prince Edward Point National Wildlife Area (located at the southeastern tip of Prince Edward County)
- St. Lawrence Islands National Park (near Brockville)
- Rondeau Provincial Park (southeast of Chatham)
- Turkey Point Provincial Park (near Port Rowan)
- Wainfleet Bog Conservation Area (in Port Colborne)

The black-legged tick also feeds on birds and can be transported to almost anywhere in the province; therefore, Lyme disease can be acquired almost anywhere in the province.

When a person is showing signs and symptoms of Lyme disease, health care professionals should consider this diagnosis even if the person is not from, or has not visited, an endemic area.

Persons can come into contact with ticks is from early spring to the end of fall. The ticks can also be active in the winter in areas with no snow and mild temperatures (>4°C).

Highlights:

- Since 2005, there has been an increasing trend in the number of Lyme disease cases acquired in Ontario.

REPORT:

- Lyme disease is a reportable disease as per O. Reg. 559. Clinically diagnosed Lyme disease, even in the absence of laboratory confirmation, should be **reported** to your local public health unit.

TEST:

- While the probability is low, it is possible to acquire Lyme disease almost anywhere in Ontario. If you suspect Lyme disease, have the patient **tested**.

TREAT:

- Early **treatment** with appropriate antibiotics is important.

Information for Clinicians

Clinical Presentation

The incubation period for *B. burgdorferi* is usually one to four weeks after a bite from an infected tick. Early infection is characterized in 70 to 80 per cent of cases by erythema migrans, a skin lesion commonly known as a "bull's eye rash" (see picture, right).

Other early symptoms include fever, headache, muscle and joint pains, fatigue and stiff neck. Clinical diagnosis can sometimes be difficult as the symptoms can mimic many other diseases.

If left untreated, Lyme disease can progress to an early-disseminated disease with migraines, weakness, multiple skin rashes, painful or stiff joints, cardiac abnormalities and extreme fatigue. If the disease continues, arthritis, along with neurological symptoms such as headaches, dizziness, numbness and paralysis can occur.

(see over)

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Lyme Disease is on the increase

Treatment

If treated early with appropriate antibiotics, patients can expect to make a full recovery[1]. People should seek medical attention if symptoms develop within 30 days of suspected tick exposure. If the patient still has the tick, or a health care professional removes it, submit the tick to the local public health unit where it will be sent for identification and Lyme bacteria testing (black-legged ticks only species tested). If the initial infection is not treated, then infection can become difficult to treat and patients may experience joint, heart and neurological symptoms.

Testing

Laboratory testing is used to support the diagnosis of Lyme disease and should be used in conjunction with clinical signs and symptoms[2]. It is up to the attending physician to make the diagnosis and determine treatment. Patients tested during early infection may not have developed antibodies (negative serology) to the bacteria, making detection difficult; therefore, testing patients again in four weeks is recommended. Health Canada-approved blood tests are performed at the Ontario Public Health Laboratory and follow the recommendations of the Canadian Public Health Laboratory Network.

Testing patients for Lyme disease can be requested by writing "Lyme Serology" on the requisition form and providing clinical background.

The Centers for Disease Control and Prevention in the United States and the Public Health Agency of Canada caution health care professionals and the public regarding the use of private laboratories offering Lyme disease testing in the USA. These "for-profit" laboratories may not follow the same testing protocols as most provincial, state and federal laboratories in Canada and the USA.

Removing a Tick

- Using fine-tipped tweezers, carefully grasp the tick as close to the skin as possible. Pull it straight out, gently but firmly.
- Do not squeeze the tick. Squeezing can accidentally introduce Lyme bacteria into the body.
- Do not put anything on the tick, or try to burn the tick off.
- After tick removal, place it in a screw-top bottle (pill vial or film canister) and submit it to your local health unit for identification and testing. Establishing the type of tick will help assess the risk of acquiring Lyme disease.
- It is important to remember where the person most likely acquired the tick. It will help public health workers to identify areas of higher risk.
- Thoroughly cleanse the bite site with rubbing alcohol and/or soap and water.

If the tick is removed soon after its attachment, it will help to prevent infection as not all black-legged ticks are infected. An infected black-legged tick has to be feeding for at least 24 hours before it can transmit the bacteria to the human host.

For Further Information:

1. Canadian Family Physician: Lyme Disease, a zoonotic disease of increasing importance to Canadians. http://www.cfp.ca/cgi/reprint/54/10/1381.pdf
2. The laboratory diagnosis of Lyme borreliosis: Guidelines from the Canadian Public Health Laboratory Network. http://www.pulsus.com/journals/abstract.jsp?HCtype=Physician&sCurrPg=abstract&jnlKy=3&atlKy=7231&isuKy=711&isArt=t&fromfold=&
3. Erythema Migrans Lesions of Lyme Disease Photos. http://www.cdc.gov/ncidod/dvbid/lyme/ld_LymeDiseaseRashPhotos.htm
4. Ontario Lyme Disease Fact Sheet http://www.health.gov.on.ca/en/public/publications/disease/lyme.aspx
5. Health Canada, It's Your Health: Lyme Disease http://www.hc-sc.gc.ca/hl-vs/alt_formats/pacrb-dgapcr/pdf/iyh-vsv/diseases-maladies/lyme-eng.pdf
6. Public Health Agency of Canada: Ticks and Lyme Disease. http://www.phac-aspc.gc.ca/id-mi/tickinfo-eng.php

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