

Lyme disease - Possible Without Travel Outside of Toronto

Lyme disease is the most common vector-borne infection in North America and is also present in much of Europe and temperate Asia. Lyme disease in North America is caused by infection with *Borrelia burgdorferi*. In the northeastern and north-central United States, the black-legged tick (or deer tick, *Ixodes scapularis*) transmits Lyme disease. In the Pacific coastal United States, the disease is spread by the western black-legged tick (*Ixodes pacificus*). In Ontario, the disease is transmitted through the bite of an infected blacklegged tick (*Ixodes scapularis*). Most cases of Lyme disease occur in the late spring and summer but can occur until late autumn.

Until recently only one location in Ontario (the Long Point peninsula, Lake Erie) was recognized as a risk site for infection with Lyme disease. However, new ecological

and epidemiologic data show that, although rare, people can become infected with Lyme disease in Toronto or in any part of Ontario¹. Every year people in Ontario have laboratory-confirmed Lyme disease without a history of travel out of province. Last year there were three cases of Lyme disease reported in Toronto residents who did not leave the city. Blacklegged ticks carrying *Borrelia burgdorferi* are established in an expanding number of places in Ontario including the north shores of both Lake Erie (Point Pelee, Rondeau, Long Point and Turkey Point) and Lake Ontario (Prince Edward Point and Thousand Islands National Park). *Borrelia burgdorferi*-infected blacklegged ticks are transiently present all across southern Ontario, including Toronto, most likely

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Infectious Syphilis on the Rise

The syphilis outbreak, which began in Toronto in 2002, is on the rise again after two years of declining rates. Reported cases of infectious syphilis in 2008 increased 18 percent compared to 2007 and increased 50 percent for the first five months of 2009 compared to the same period in 2008. Of the 324 cases of infectious syphilis reported to Toronto Public Health (TPH) in 2008, 310 cases were male and men having sex with men (MSM) remains the key risk factor. The majority of cases occurred in men aged 35 to 44 and 33 percent of individuals were also infected with HIV. This is of serious concern because syphilis can facilitate both the transmission and acquisition of HIV infection.

The primary stage of syphilis is usually marked by the appearance of a painless genital ulcer or chancre, on average 21 days after infection. Signs of secondary syphilis occur four to ten weeks after the chancre and include a diffuse maculopapular rash (often involving the palms and soles), fever, malaise and lymphadenopathy. Untreated syphilis

can result in serious central nervous system damage and adverse pregnancy outcomes. HIV infected individuals may be at increased risk for neurological complications early in the infection.

All patients who are at higher risk for syphilis infection due to multiple or high risk sexual contacts (including men who have sex with men, commercial sex work or street involvement) should be screened every three to six months. The current screening test in Ontario is the chemiluminescent microparticle immunoassay (CMIA). Interpretation of syphilis serology can be difficult; advice

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carried by migrating birds - although the tick density and their infection rates with *Borrelia burgdorferi* are lower than in established areas. This means that Lyme disease cannot be ruled out just because someone has not left Toronto or Ontario.

The most common clinical sign of Lyme disease is erythema migrans.^{2,3} This is a round or oval expanding erythematous lesion that develops at the site of the infecting tick bite. The rash appears most commonly seven to 14 days (range three to 30 days) after the tick has detached or was removed and should be at least 5 cm for a secure diagnosis. These lesions are typically minimally tender or pruritic. The rash can vary in appearance and there can be smaller secondary skin lesions. Patients with erythema migrans may suffer from nonspecific symptoms such as fatigue, headache, arthralgias and neck pain. Respiratory or gastrointestinal symptoms are highly atypical. A rash appearing within 48 hours of tick detachment (or removal) is most likely a hypersensitivity reaction. In such cases it may be useful to mark the borders of the skin lesion with ink and then observe for one to two days without antibiotic therapy. If the rash does not increase in size or starts to disappear it most likely is not erythema migrans. Non-cutaneous manifestations of Lyme disease involve the joints (monoarticular or oligoarticular arthritis, typically involving the knee), nervous system (most commonly facial-nerve palsy) and heart (varying degrees of atrioventricular block).

Patients with a history of a tick bite should monitor themselves for signs and symptoms of Lyme disease for 30 days. They should seek medical attention if they develop a rash at the bite site or viral infection like-illness. Ticks can be sent to the Ontario Agency for Health Protection and Promotion Public Health Laboratory for identification. Infected blacklegged ticks that are promptly discovered and removed represent a much reduced risk of infection because *B. burgdorferi* is not transmitted until ticks have been feeding for 24-36 hours. To remove ticks use tweezers or forceps, as close to the skin as possible and pull straight up with even pressure; do not twist or rotate. Cleanse tick site with disinfectant.

Diagnosis should be based on the clinical signs and supported, where possible, by laboratory tests (i.e., serology). For patients with obvious erythema migrans, the rash alone is sufficient to start treatment, especially if the patient has a history of outdoor activities in a wooded area in southern Ontario or has visited one of the locations where *B. burgdorferi* is endemic. However, it is still useful for surveillance purposes to test for Lyme disease

using serology. A negative initial test should be followed up three to four weeks later with a second test. Prompt antibiotic treatment of a seronegative patient may prevent seroconversion so a negative test in a treated patient does not rule out the initial diagnosis of Lyme disease. Treatment of erythema migrans consists of two week oral regimens of doxycycline (100 mg bid), amoxicillin (500 mg tid) or cefuroxime axetil (500 mg bid).

Non cutaneous Lyme disease should be diagnosed and managed in consultation with an infectious disease specialist.

References

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should be sought from the Sexually Transmitted Infections (STI) Program at TPH or a colleague experienced in this area. Please report all cases of syphilis to TPH at 416-392-7411.

Long acting Benzathine Penicillin G remains the therapy of choice; 2.4 million units IM once for individuals with primary, secondary or early latent syphilis or contacts of cases and 2.4 million units IM each week for three weeks for late latent syphilis. All sexual partners of infected persons should be notified, tested and treated. Bicillin is once again available for use in Ontario, please note that it must be kept refrigerated.

For more information or to order medications, please call the TPH STI Program at 416-338-2373.

References

- Public Health Agency of Canada, Canadian Guidelines on Sexually Transmitted Infections, 2008 Edition. http://www.phac-aspc.gc.ca/std-mts/sti_2006/sti_intro2006-eng.php
- Centres for Disease Control and Prevention, Sexually Transmitted Diseases Treatment Guidelines, 2006, *MMWR* 2006;55 (RR-11).

Managing Bat Exposures: New Recommendations for Rabies Post-Exposure Prophylaxis

The Ontario Ministry of Health and Long Term Care (MOHLTC) bat exposure policy changed July 30, 2008. The MOHLTC now recommends rabies post-exposure prophylaxis (RPEP) ONLY for persons who have had direct contact with a bat.¹ This should be used together with individual risk assessment, and the professional judgment of clinicians and public health professionals. This is not consistent with the current National Advisory Committee on Immunization (NACI) recommendation for managing non-contact bat exposures.^{2,3}

Background

Exposure to bat-variant rabies has been associated with the majority of human rabies cases in Canada and the United States since 1980.⁴ Following an exposure, human rabies disease is preventable through wound washing, avoidance of suturing, and timely administration of RPEP. For unimmunized individuals, RPEP consists of one dose of rabies immune globulin, and a five-dose regimen of an approved cell culture vaccine.²

Thirty-six human cases of bat rabies were acquired in Canada and the United States between 1990 and 2007. Seventeen of these were not associated with direct contact with a bat, including 11 cases with no reported bat sighting.⁴ Assuming that household exposure to a bat occurred in these 17 cases, the risk of rabies following household exposure to a bat was 1 per 318 million person-years. This translates into one case per year for Canada and the United States combined.

The majority (81%) of RPEP administered following exposure to a bat in Quebec from 2004 to 2006 was due to household bat exposure without direct contact.⁵ However, data from Canada and the United States suggest that only a small proportion of all eligible individuals with household exposure to a bat received RPEP from 1990 to 2007.⁴

Definition of 'Direct Contact'¹

The MOHLTC defines bat-to-human 'direct contact' as a situation in which a bat is observed to touch or land on a person, AND:

- a bat bite or scratch occurs, OR
- a bat bite or scratch, or entry of saliva from a live bat into an open wound or mucous membranes can not be eliminated.

Scenarios in Which RPEP is No Longer Recommended¹

If no direct contact occurs, as defined above, the MOHLTC no longer recommends RPEP, for example, if a bat sighting occurs in a room where a person is sleeping unattended, or in close proximity to a young

child or an individual who is cognitively impaired.

In addition, RPEP is not recommended after a bat lands on the clothing of a person, if they are sure that a bite or scratch did not occur and saliva from the bat did not contact an open wound or mucous membranes. Management of bat exposures while exploring caves requires special consideration.

The MOHLTC has prepared a question and answer resource for health care providers regarding this policy change.⁶ Please contact Toronto Public Health at 416-338-7600 if you have further questions.

References

1. Recommendations for Rabies Post-Exposure Prophylaxis with Respect to Bat Exposures. Ontario Ministry of Health and Long Term Care. 2008 Jul 30.
2. Public Health Agency of Canada. Rabies Vaccine. Canadian Immunization Guide, 7th edition, 2006. Available at: <http://www.phac-aspc.gc.ca/publicat/cig-gci/p04-pneu-eng.php#sched>.
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4. De Serres G, Dallaire F, Côte M, Skowronski DM. Bat Rabies in the United States and Canada between 1950 and 2007: human cases with and without bat contact. *Clinical Infectious Diseases* 2008;46:1329–37.
5. Huot C, De Serres G, Duval B, Maranda-Aubut R, Ouakki M, Skowronski DM. The cost of preventing rabies at any cost: post-exposure prophylaxis for occult bat contact. *Vaccine*. 2008 Aug 18;26(35):4446-50.
6. Rabies Vaccine: Questions and Answers for Health Care Providers. Ontario Ministry of Health and Long Term Care. 2008. Available at: http://www.health.gov.on.ca/english/providers/pub/disease/rabies_qa.html.

Increasing Capacity for H1N1 Assessment, Treatment and Referral

Toronto Public Health (TPH) is continuing its work on pandemic preparedness in Toronto, including planning for a novel H1N1 vaccine. Health care providers are asked to consider how they can maximize their capacity to see a potential increase in patients (extending office hours, scaling back non-essential assessments etc.). TPH is compiling a roster of primary care physicians comfortable assessing patients of all ages who may be interested in providing physician services at flu centres, should these centres be required. For more information, please contact **Dr. Irene Armstrong** at iarmstr@toronto.ca or **Dr. Lisa Berger** at lberger@toronto.ca.

Changes to Reporting of Pertussis PCR Results

As of January 1, 2009, the Ontario Agency for Health Protection and Promotion Public Health Laboratory changed the interpretation and reporting for Bordetella pertussis polymerase chain reaction (PCR) results¹. Pertussis (or whooping cough) is tested by a nasopharyngeal (NP) swab. In the past, the only test available for pertussis was culture. Culture tests can take up to two weeks and lack sensitivity and therefore may miss many true positive cases. The PCR test, introduced in 2005, detects B. pertussis DNA and has a high sensitivity. Even low level amounts of B. pertussis DNA can be detected, sometimes equivalent to less than one organism. Clinical significance for these low level detections is unknown.

The PCR results will now be interpreted as:

- Positive - if DNA is detected at up to 35 cycles of amplification
- Indeterminate - if the DNA is detected at low levels (36 to 40 cycles of amplification) and
- Negative – if there is no DNA detected

The term “indeterminate” is used because, although pertussis DNA has been detected in the laboratory, the clinical significance of such levels is currently not known and will need to be clarified by further studies. Possible reasons for indeterminate PCR results include B. pertussis infection, asymptomatic transient colonisation in an individual who is immunized, dead vs viable organism detection or laboratory contamination².

Since 2006, there has been a dramatic increase in the number of pertussis cases reported to Toronto Public Health (TPH). Whereas the five year average from 2001-2005 was 94 cases a year, from 2006 to 2008, there has been an average of 545 reported cases a year. This increase in reported cases may be related to a number of factors including a more sensitive PCR test or accepting a positive PCR alone for a clinical diagnosis without correlation to the patient’s clinical symptoms.

Toronto Public Health follows up all reported cases of pertussis. The goal is to prevent cases from occurring among high risk populations (namely infants less than one year of age, especially newborns, and pregnant women in the third trimester) through the provision of antibiotic chemoprophylaxis. Classic symptoms of pertussis include one or more of:

- cough lasting two weeks or longer,
- paroxysmal cough of any duration,
- cough with inspiratory “whoop” and/or
- cough ending in vomiting or gagging or associated with apnea.

Only patients with a clinical suspicion of pertussis should undergo testing with PCR³. If a patient has an indeterminate PCR pertussis result and does not have classic symptoms of pertussis TPH may request a second NP swab be collected after two weeks of cough.

For more information about PCR testing for pertussis, please visit www.health.gov.on.ca/english/providers/pub/disease/pertussis.html.

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2. Lievano FA, Reynolds MA, Waring AL, Ackelsberg J, Bisgard KM et al. Issues Associated with and Recommendations for Using PCR To Detect Outbreaks of Pertussis. J Clin Microbiol. 2002 August; 40(8): 2801–2805.
3. CDC. Outbreaks of Respiratory Illness Mistakenly Attributed to Pertussis --- New Hampshire, Massachusetts, and Tennessee, 2004--2006. MMWR, August 24, 2007. www.cdc.gov/mmwr/preview/mmwrhtml/mm5633a1.htm

Contact Information

Reportable/communicable diseases for all areas of Toronto should be reported to our central Communicable Disease Surveillance Unit (CDSU) at:

CDSU, 277 Victoria St., 10th Floor
Toronto, ON M5B 1W2
Phone: 416-392-7411 After hours: 416-690-2142
Fax: 416-392-0047

To order hepatitis A or B or Pneumococcal Conjugate Vaccine, please call:

North Region – 416-338-8400 South Region – 416-338-7790
East Region – 416-338-7492 West Region – 416-338-1521

To report vaccine adverse events, please call:

Vaccine Information Line for Physicians at 416-338-2030.

For information about STIs or to order medications for treatment, please call:
STI Program at 416-338-2373.

For information about TB or to order medications for treatment, please call:
TB Program at 416-338-7600.

Communiqué

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