

Health

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Santé

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Dear Colleague:

Re: Tick-borne diseases in Manitoba:

- Lyme disease is a tick-borne infection caused by the spirochete *Borrelia burgdorferi* and transmitted in Manitoba by *Ixodes scapularis*, the blacklegged tick.
- Human Granulocytic Anaplasmosis (HGA) is a tick-borne infection caused by the bacteria *Anaplasma phagocytophilum* and is also transmitted by the blacklegged tick.
- Exposure to an infected blacklegged tick may be possible anywhere in Manitoba but most ticks have been found in southern Manitoba.
- Areas with established tick populations (endemic areas) have been identified in southern Manitoba. Early treatment based on clinical diagnosis is important for both Lyme disease and HGA.
- Clinical cases of Lyme disease are reportable using the attached form.
- On rare occasions, blacklegged ticks can also carry other infectious agents, such as *Babesia microti* or Powassan virus.

Epidemiology

- Through active surveillance, the following areas have been found to be endemic or suspected areas for established black legged tick (BLT) populations: The **southeastern corner of Manitoba**, the area surrounding the **Stanley/Thompson Trails** in south-central Manitoba, the **Pembina Valley (USA border to near La Rivière), St. Malo, Arbakka** (south of Vita) and **Beaudry Provincial Park** just west of Headingley.
- Other areas in southern Manitoba are currently under investigation. For more information on established tick populations see <http://www.gov.mb.ca/health/lyme/surveillance.html>
- In the last 3 years the numbers of infected BLTs tested through the surveillance programs has risen for both *Borrelia burgdorferi* and *Anaplasma phagocytophilum*. Some ticks were also co-infected with these agents. *Babesia microti* has now been found in 4 ticks in southern Manitoba.
- In the areas with established tick populations, the tick infection rates are higher and thus increase the risk of infection to human hosts.
- Since 2009 there have been 17 confirmed and 21 probably cases based on the Public Health Agency of Canada case definitions. The surveillance definition is more stringent than clinical criteria used for initiating treatment for presumed Lyme disease.

Lyme disease:

Early symptoms

- Erythema migrans (EM) appears in 60 to 80 per cent of patients within three to 30 days after exposure to an infected tick. EM is an expanding erythematous skin lesion, usually more than five cm in diameter, non-tender and non-pruritic and occurring at the site of the tick bite. EM skin lesions can vary in appearance. Some are homogeneously erythematous, whereas others have prominent central clearing or a target appearance; rarely vesicles or pustules can be present (<5%).
- The rash of EM is specific to Lyme disease and if recognized, is sufficient for a clinical diagnosis and initiation of treatment for Lyme disease. Additional early symptoms of Lyme disease may include rash other than EM, fatigue, chills, fever, headache, muscle and joint pain, and swollen lymph nodes in untreated infection, multiple

EM lesions which may be less than 5 cm may occur later, and are believed to be secondary to hematogenous spread.

For information on other symptoms of disseminated or late Lyme disease, please see the 2006 clinical practice guidelines of the Infectious Disease Society of America (<http://www.journals.uchicago.edu/doi/full/10.1086/508667>) and <http://www.idsociety.org/Content.aspx?id=16499>) or consult an infectious disease physician.

Laboratory Investigation

- For acute Lyme disease, both acute and convalescent serum samples (four weeks post diagnosis) are requested. Serologic tests for Lyme disease may be negative early in the infection, and some individuals who are treated early for Lyme disease may not seroconvert.
- For the diagnosis of late manifestations of Lyme disease, one serum sample is sufficient.
- Serologic testing involves a two-tier approach to measure antibodies: 1) ELISA (enzyme-linked immunosorbent assay); if positive, then 2) A Western Blot test is performed to confirm a positive test for Lyme disease.
- Travel history should be noted on the requisition. For example, travel to Europe or Asia requires a different test kit.

Treatment:

Early treatment is important to prevent development of late complications. Treatment should be initiated based on clinical suspicion of disease. Late stage disease requires lengthier treatment. Consultation with an infectious disease specialist is recommended.

Erythema Migrans*

Adults:

- Doxycycline¹ 100mg PO BID for two to three weeks **OR**
- Amoxicillin 500mg PO TID for two to three weeks **OR**
- Cefuroxime axetil 500mg PO BID for two to three weeks can be used for patients with penicillin allergies or who are unable to take tetracyclines

Children

- Amoxicillin 50mg/kg/day in three divided doses (max. 500mg/dose) for two to three weeks
- * For more information see IDSA guidelines <http://www.journals.uchicago.edu/doi/full/10.1086/508667>
- ¹ Contra-indicated in pregnant or lactating women or children < eight years old.

Reporting:

- Suspected cases of Lyme disease are to be reported using the tickborne disease clinical case report form (www.gov.mb.ca/health/lyme) and submitted by fax to the Manitoba Public Health Unit at (204) 948-2190 (secure fax line).
- All cases with positive serology or other positive laboratory tests (such as PCR, biopsy or culture results) are reportable to Public Health.
- Equivocal serology (defined as a positive ELISA, positive IgM Western Blot and negative IgG Western Blot) is also reportable to allow for public health investigation in the absence of convalescent serology.
- Public health practitioners may contact physicians/clinicians for further information on reported cases.

HGA

Symptomatic patients suspected of having HGA should be treated with antimicrobial therapy because of the risk of complications. Onset of illness occurs 5 days to 3 weeks after exposure to an infected tick. Common signs and symptoms include fever, chills, headache, arthralgia, nausea and vomiting, often in association with leukopenia,

thrombocytopenia and/or increased liver enzymes. Severe manifestations, such as pulmonary infiltrates, bone marrow hypoplasia, DIC, encephalitis or meningitis and renal failure can rarely occur. **Confirmation of the diagnosis is based on laboratory testing, but antibiotic therapy should not be delayed in a patient with a suggestive clinical presentation.**

Co-infections have been described and may be a consideration in patients who present with initial symptoms which are more severe than commonly observed with Lyme disease, especially when a high fever is present.

Laboratory Investigation:

- Acute and convalescent serum samples are required for diagnosis. Early samples are likely to be negative.
- PCR on whole blood – best in the first week of illness and usually disappears after antibiotic therapy, a negative result does not mean there is no HGA infection. Routine hospital blood cultures will not grow this organism. Contact an infectious disease specialist for other diagnostic procedures.

Treatment:

Adults:

- Doxycycline 100mg PO BID for seven to fourteen days (at least three days after fever subsides)

Children under 45kg:

- Consult a Pediatric Infectious Disease specialist

Other Tick-borne Infections

Most Babesiosis infections are asymptomatic. The clinical spectrum of symptomatic infection ranges from mild and self-limited to serious and prolonged. Severe infections are most common in patients who have had a splenectomy or are otherwise immunosuppressed. The risk of exposure in Manitoba is anticipated to be very low.

Encephalitis is reportable to Manitoba Health, but no reports of encephalitis due to Powassan virus have been made. Rocky Mountain Spotted Fever and tularemia are also reportable conditions in Manitoba but no cases related to exposure to Manitoba ticks have been identified at this time.

Tick Surveillance:

- Suspected blacklegged ticks may be sent to the Department of Entomology, University of Manitoba, for identification and testing. Further information can be found on the Manitoba Health website at www.gov.mb.ca/health/lyme.

Further Information:

- Patient educational facts, surveillance information, the clinical report form and public health management protocol for Lyme disease can be found on the Manitoba Health website at www.gov.mb.ca/health/lyme.
- For further information on clinical care, contact an infectious disease physician.

Thank you for your anticipated cooperation.

Sincerely,

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