The prevalence in Ottawa of Borrelia burgdorferi (bacteria causing Lyme Disease) in local Ixodes scapularis (blacklegged tick) is now high enough that Ottawa Public Health is recommending post-exposure prophylaxis in certain cases. Other areas currently deemed “High Risk” areas include the following: 1) Eastern Ontario Health Unit (includes counties of Stormont, Dundas, Glengarry, Prescott, Russell, and the city of Cornwall), 2) Kingston, Frontenac, Lennox and Addington (includes Kingston, Napanee, Cloyne, and Sharbot Lake), 3) Lanark, Leeds and Grenville Health Unit (includes Gananoque, Perth, Smiths Falls, Carleton Place, and Brockville), 4) Hastings-Prince Edward Health Unit (includes the County of Prince Edward, Hastings County, Quinte West and Belleville) See Ref 4 & 8.

**Prophylaxis for Lyme Disease:**
- **≥ 8 years:** Doxycycline 200 mg PO once
  - <50 kg, 4 mg/kg to a maximum of 200 mg once

**Ticks can be submitted through Ottawa Public Health for tick speciation. Call 311 or (613) 580-6744 ext 26301 or email healthsante@ottawa.ca to make an appointment to have the patient submit the tick. Testing ticks for B. burgdorferi is only for surveillance purposes and not for clinical management (due to long turn-around time and possible false negative results).**
**Approach to the Pediatric Patient with Suspected Early Lyme Disease**

**Known or suspected tick bite**

**Time from tick detachment**
- (Tick attached for > 24 hours)

**< 3 days**
- Rash < 5 cm at site of tick bite
- Systemically well and improving
- Most likely tick saliva hypersensitivity reaction
- NO TREATMENT REQUIRED

**≥ 3 – 30 days**
- Classic EM rash: Single erythematous expanding rash +/- central clearing > 5 cm at site of tick bite, +/- flu-like symptoms. If multiple lesions or other symptoms of Lyme Disease* - ID consult is recommended.
- Start empiric therapy
- No serology required
- Send serology now and in 6 weeks*f

**Consider empiric therapy**

**No rash**
- Flu-like symptoms, headache, fatigue
- Send serology now and in 6 weeks

**Possible Early Disseminated Lyme Disease**
- Skin: Multiple EM lesions
- Neuro: facial palsy, meningitis, meningoradiculoneuritis
- Cardiac: AV block, myopericarditis
- Joints: arthritis

**Possible Late Lyme Disease**
- Joint: Chronic, intermittent arthritis
- Neuro: peripheral neuropathy, encephalomyelitis

Can occur months/years after known or potential exposure

**Areas currently deemed "High Risk":**
- City of Ottawa, Renfrew District Health Unit (includes the County of Renfrew, the City of Pembroke, the Township of South Algonquin and most of Algonquin Provincial Park), Eastern Ontario Health Unit (includes counties of Stormont, Dundas, Glengarry, Prescott, Russell, and the city of Cornwall), Kingston, Frontenac, Lennox and Addington (includes Kingston, Napanee, Cloyne, and Sharbot Lake), Lanark, Leeds and Grenville Health Unit (includes Gananoque, Perth, Smiths Falls, Carleton Place, and Brockville), Hastings-Prince Edward Health Unit (includes the County of Prince Edward, Hastings County, Quinte West, and Belleville)

**Table:**

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Antibiotic</th>
<th>Dosage</th>
<th>Max dose</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 8</td>
<td>Doxycycline</td>
<td>4 mg/kg/day PO div BID</td>
<td>100 mg po BID</td>
<td>14 days</td>
</tr>
<tr>
<td></td>
<td>(max 200 mg)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Amoxicillin</td>
<td>50 mg/kg/day PO div TID</td>
<td>500 mg PO TID</td>
<td>14 days</td>
</tr>
<tr>
<td>&lt; 8</td>
<td>Amoxicillin</td>
<td>50 mg/kg/day PO div TID</td>
<td>500 mg PO TID</td>
<td>14 days</td>
</tr>
<tr>
<td>&lt; 8 and pen-allergic</td>
<td>Cefuroxime axetil</td>
<td>30 mg/kg/day div BID</td>
<td>500 mg PO BID</td>
<td>14 days</td>
</tr>
</tbody>
</table>

*If contraindicated – consult ID

**Lyme serology is done by two-tier testing as recommended by the Canadian Public Health Laboratory Network:** 1st step: ELISA to detect total antibodies against *B. burgdorferi*. If reactive/indeterminate, Western Blot is performed to further test for IgM and IgG specific antibodies and confirm result.

**If tick bite acquired in Europe – please specify on requisition to test for European Lyme.** Serologic testing is often negative in the first 2-4 weeks after infection, therefore not useful in the diagnosis of Early Lyme Disease.

False positive results may occur with autoimmune disorders, inflammatory conditions, or infections (syphilis, CMV, EBV, HBV, HCV and Parvovirus). (Ref 10).

**Notify Public Health**

613-580-6744 ext 24224

Last revised: June 2017, CHEO, Division of Infectious Diseases
The estimated risk areas are calculated as a 20-kilometre radius from the centre of a location where blacklegged ticks were found through drag sampling.

While low, there is a probability of encountering blacklegged ticks almost anywhere in the province.

Within estimated risk areas, blacklegged ticks are mainly found in woody and/or brushy areas.

The closer to an estimated risk area, the higher the estimated risk of encountering a blacklegged tick.

For more information, please visit www.publichealthontario.ca/lymedisease

June 2017

See Reference 8
**Quick Clinical Pearls**

- The vector and bacteria of Lyme Disease is **present** in Ottawa. Over the years, the prevalence of *B. burgdorferi* in blacklegged ticks has increased and currently at a level that warrants post-exposure prophylaxis.
- Black-legged ticks are present in Ottawa and transmission of Lyme disease from infected ticks is known to occur here.
- The overall risk of acquiring Lyme disease following an *I. scapularis* tick bite in a **high-risk area** is approximately 2.2%.
- If prophylaxis is given, the overall risk of progression to Lyme Disease is 0.2% (data based on systematic review and meta-analysis of antibiotic prophylaxis) (Ref 2)
- Transmission < 24 hours of tick attachment is **highly unlikely**. Based on animal models, there is almost invariably a delay of at least 36 hours between the time of tick attachment and transmission of *B. burgdorferi*.
- **Prevention is key**: Avoid ticks, wear appropriate protective clothing, use insect/tick repellent (DEET), check body daily for ticks, remove attached tick promptly (within 24 hours).
- Treatment of early Lyme disease with appropriate antimicrobials is easy and effective (> 95%).
- Lyme disease is **not** transmitted by dog (*Dermacentor variabilis*) or groundhog ticks (*Ixodes cookei*).

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**References and Resources:**