Management of Tick Bites and Investigation of Early Localized Lyme Disease

**Tick bite but asymptomatic**

- **No risk of Lyme disease**
  - Advise patient to monitor for signs and symptoms for 30 days

- **Risk of Lyme disease is low**
  - Advise patient to monitor for signs and symptoms for 30 days
  - Counsel patient on preventing exposure to ticks

- **At risk for Lyme disease, but post-exposure prophylaxis is not warranted**
  - Advise patient to monitor for signs and symptoms for 30 days

**Symptomatic (3–30 days following tick exposure)**

- **Fever, chills, headache, stiff neck, fatigue, decreased appetite, muscle and joint aches, swollen lymph nodes** (see Box 2)

**Does the patient have the following signs and symptoms compatible with Lyme disease?**

- **Expanding typical or atypical erythema migrans rash > 5 cm** (see Box 1)

**Was the patient exposed to ticks in the past 30 days?**

- **Yes, residence or travel to risk areas and contact with ticks through outdoor activities**
  - Clinical case of Lyme disease
    - Treat for early localized Lyme disease (see Box 8)
    - Lyme disease serology not indicated
    - If symptoms persist, refer patient to appropriate specialist

- **No residence or travel to risk areas but possible contact with ticks through outdoor activities**
  - Possible case of Lyme disease
    - Routine management of patient’s symptoms
    - Order Lyme disease serology (see Box 6)
    - Consider treating for early localized Lyme disease (see Box 8)
    - If symptoms persist, consider an alternative diagnosis. Consult Public Health to understand the local epidemiology. Refer patient to an appropriate specialist, as needed

- **No residence or travel to risk areas and no possible contact with ticks**
  - Low risk of Lyme disease, but do not rule out
    - Consider alternative causes of symptoms
    - Consider Lyme disease serology, if clinically indicated (see Box 6)

Please contact us at evidence@ontariohealth.ca or 1-877-280-8538 if you have any questions or feedback about this clinical guidance document.
Box 3. Blacklegged Ticks at Various Stages and Safe Tick Removal

- *Erythraea migrans* (typical - 70%)
- Headache 42%
- Fever/chills 39%
- Fatigue 54%
- Myalgia 44%

*As a disease of public health significance, Lyme disease is reportable in Ontario under the Health Protection and Promotion Act, R.S.O. 1990, c. H.5.*

Box 6. Laboratory Testing

- Laboratory testing is generally not indicated for asymptomatic patients.
- Serological testing may not yield positive results during early localized Lyme disease, so management should not be based on serological testing results during this phase.
- Antibiotic treatment in early disease may reduce seroconversion; testing should not be used to monitor treatment outcome.

For serological testing, please complete the requisition fully and submit it, along with samples, to a public health laboratory for testing.

- If European Lyme disease is suspected based on the patient’s travel history, please order serology testing.

Box 8. Recommendations for Treatment of Patients With Early Localized Lyme Disease

### Drugs

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Dosage for Adults</th>
<th>Dosage for Children</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Doxycycline</strong></td>
<td>100 mg twice a day for 10–21 days</td>
<td>Contraindicated for pregnant or lactating people</td>
</tr>
<tr>
<td><strong>Amoxicillin</strong></td>
<td>500 mg three times a day for 14–21 days</td>
<td>For children &lt; 18 years of age: 50 mg/kg/day orally, divided into 3 equal doses per day, maximum of 500 mg per dose for 14–21 days</td>
</tr>
<tr>
<td><strong>Cefuroxime</strong></td>
<td>500 mg twice per day for 14–21 days</td>
<td>For children &gt; 8 years of age: 30 mg/kg/day divided in 2 doses (maximum 500 mg/ dose) for 14–21 days</td>
</tr>
</tbody>
</table>

**For Allergy or Intolerance**

- **Asthymycin** 500 mg/day for 7–17 days
- **Clarithromycin** 500 mg twice a day for 14–21 days

*Doxycycline is considered to be the preferred antibiotic treatment option by some guidelines for early Lyme disease (erythema migrans) in both children and adults based on its ability to treat potential extracutaneous manifestations of infection (particularly neurological involvement) and potential confection or infection with *Anaplasma phagocytophilum* (anaplasmosis) or *Ehrlichia multiss-like agent*. **

**Recent guidelines, including one by the Canadian Paediatric Society, recommend a 10–day treatment duration with doxycycline in children of all ages and adults. A 2018 guideline** recommends a 21–day treatment duration with doxycycline in children over 5 years of age and adults based on concerns for low cure rates and a lack of clear evidence for shorter courses. In addition, a longer course may be reassuring for people being treated for early Lyme disease who continue to have symptoms and the evidence suggests that adverse event rates were not increased for longer courses. **

*Patients treated with macrolides should be closely monitored to ensure resolution of clinical symptoms as macrolides are less effective.*