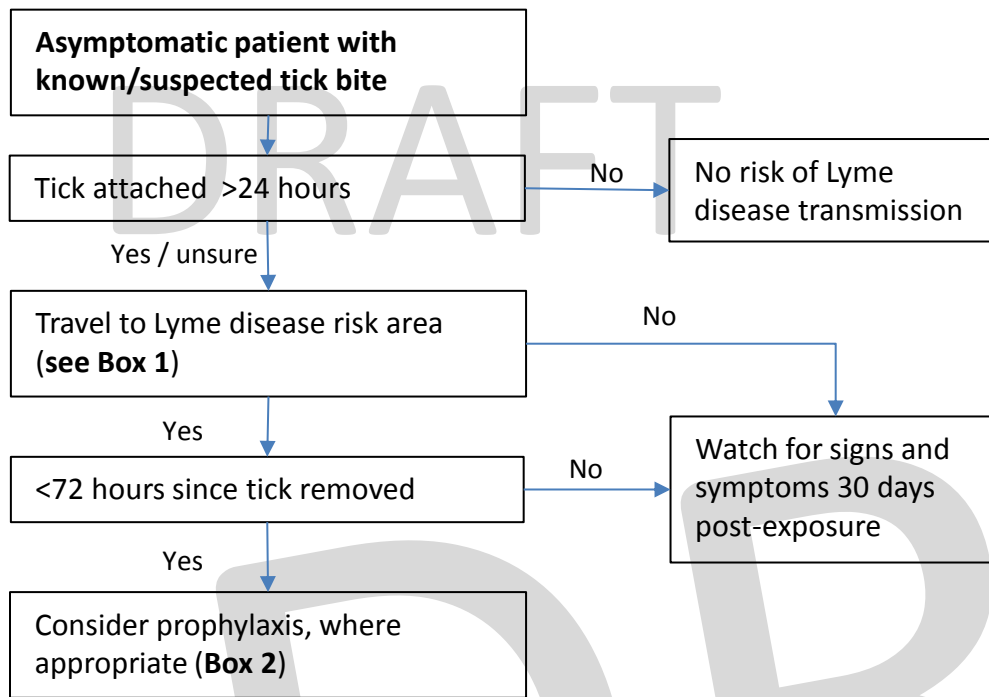


Lyme Disease Diagnostic Algorithm for Clinicians



Box 1: Lyme Risk Areas

- Peel Region does not contain endemic areas for Lyme disease and no populations of blacklegged ticks have been identified in the area.
- Individuals in Peel have on rare occasions been exposed to infected ticks transported on migratory birds (2 cases since 2012), so a very small but theoretical risk exists even without a travel history.
- Risk Areas in Ontario can be found on the following map: [publichealthontario.ca/en/eRepository/Lyme Disease Risk Areas Map 2015.pdf](http://publichealthontario.ca/en/eRepository/Lyme_Disease_Risk_Areas_Map_2015.pdf)
- Risk Areas in Canada (map): phac-aspc.gc.ca/id-mi/assets/images/tickinfo_map_lg-eng.jpg
- US Risk Areas: Highly endemic in northeastern and north-central states
- European Risk Areas: Endemic from southern Scandinavia to northern Mediterranean; highest incidence in central and Eastern Europe.

Potential European exposure must be specified on lab requisitions.

Suspect Lyme disease based on symptoms and exposure history (symptoms appearing 3-30 days after bite; see Box 1 for Lyme Risk Areas)

Early localized disease (<30 days)

- Erythema migrans (EM) rash (**Box 3**)
- Low-grade fever, fatigue, headache, arthralgia (may be intermittent)

Early disseminated disease (<3 months)

- Multiple EM rashes
- Low-grade fever, fatigue, headache, arthralgia (may be intermittent)
- Neurological (e.g. aseptic meningitis, cranial neuropathies – especially CN VII/Bell’s Palsy)
- Cardiac (e.g. 2/3^o AV block)

Late disseminated disease (≥3 months)

- Oligoarticular arthritis (especially large joints)
- Neurological (e.g. encephalopathy, polyradiculoneuropathy)
- Retinitis (rare)

Box 2. Prophylaxis
Adults: Doxycycline 200mg PO x 1 dose
Children ≥9 years: Doxycycline 4 mg/kg for patients < 45 kg
Doxycycline is contraindicated in pregnancy and for children <9 years

- Diagnosis based on clinical suspicion
- Laboratory testing of limited value in early localized disease
- See **Box 4** for treatment
- Consider serology if diagnosis uncertain
- If initial tests are negative AND symptoms persist, serology may be repeated after 4 weeks

- Order serologic testing (**Box 5**)
- Work up differential diagnosis
- Consider initiating treatment if clinical suspicion high
- Consultation with infectious disease specialist, and/or other specialists, as appropriate, strongly recommended

Box 3. Erythema Migrans (EM)

- Rash present in most cases (60-85%)
- Begins as red macule/papule at site of tick bite
- Rapidly enlarging to diameter >5 cm
- Often develops central clearing (Figure 1); some studies noted uncharacteristic variants of EM in 25-30% of cases, e.g. oval or irregular shape, no central clearing, dusky or bluish centre



Figure 1 – classical EM

Box 4. IDSA Guidelines for treatment of early localized Lyme disease

See complete IDSA guidelines for treatment of disseminated and late disease (available online at <http://www.idsociety.org/Lyme/>).

Consultation with ID is strongly recommended.

Adults	<ul style="list-style-type: none"> • Doxycycline 100 mg PO BID x 14-21 days (contraindicated in pregnancy) Alternatives: <ul style="list-style-type: none"> • Amoxicillin 500 mg PO TID x 14-21 days • Cefuroxime 500 mg PO BID x 14-21 days
Children ≥9 years	<ul style="list-style-type: none"> • Doxycycline 4 mg/kg/day divided BID (maximum of 100 mg per dose) x 14-21 days Alternatives: Amoxicillin or cefuroxime (doses below)
Children <9 years	<ul style="list-style-type: none"> • Amoxicillin 50 mg/kg/day, PO, divided TID (max 1.5 g/day) for 14-21 days Alternative: <ul style="list-style-type: none"> • Cefuroxime 30 mg/kg/day, PO, divided BID (maximum 1 g/day) for 14-21 days

Box 5. Laboratory testing for Lyme disease

- Testing is not indicated for asymptomatic patients
- Testing has limited value in early disease
- IgM usually within 2 weeks, IgG in most patients within 1 month
- Antibiotic treatment in early disease may reduce seroconversion
- Public Health Ontario Laboratory (PHOL) conducts two-tiered serologic testing to maximize sensitivity and specificity
- Specify on PHOL requisition:
 - Timing of exposure
 - Travel history/location of exposure
 - **NB: Providers who suspect European-acquired Lyme disease must indicate this on the requisition (different assay)**
- Clinical signs and symptoms

Box 6: Tick surveillance and submission

- **Do not rely on pending results from a tick submission for patient management.**
- Tick testing is most helpful for public health surveillance in identifying risk areas.
- Peel Public Health accepts ticks for submission; contact our vector borne disease team at 905-799-7700 (Caledon residents can call 905-584-2216) – more information here: peelregion.ca/health/vbd/lyme/prevention.htm
- Forms for tick submissions can be found under the “Laboratory” section at this website: publichealthontario.ca/en/BrowseByTopic/InfectiousDiseases/Pages/IDLandingPages/Lyme-Disease.aspx



DRAFT

Region of Peel
Working for you

Public Health

905-799-7700 (905-584-2216 in Caledon)

peelregion.ca/health/professionals