

ADVISORY

SUBJECT:	Tickborne Diseases (Lyme Disease, Anaplasmosis, Babesiosis, Powassan Virus Infection)
Date:	July 5, 2023
Pages:	5
To:	Physicians, Primary Care Providers, Hospitals, Pharmacies
From:	Dr. Matthew Tenenbaum, Associate Medical Officer of Health

- On July 1, 2023, **Anaplasmosis**, **Babesiosis**, and **Powassan virus infection** were added to the provincial list of reportable diseases. **Lyme disease** is already reportable.
- Basic protective measures during outdoor activities, combined with tick checks afterward, can reduce the risk of Lyme disease. Attached ticks can be removed.
- Post-exposure prophylaxis for Lyme disease can be offered following a tick bite.
- Public Health Ontario and other groups provide further guidance regarding testing and treatment of tickborne diseases.
- Photos of ticks can be submitted to WDGPH for identification. WDGPH does not test ticks for the presence of disease-causing microorganisms.

Blacklegged ticks (*aka* deer ticks) may carry a number of pathogens that cause human disease and that can be transmitted following a tick bite. In response to increasing blacklegged tick populations across Ontario, WDGPH would like to provide information to providers regarding new and emerging tickborne diseases.

Reportable Tickborne Diseases

Lyme disease is already a reportable disease within Ontario. Fewer than 10 confirmed cases of Lyme disease are typically reported each year within WDGPH, though rates have increased for the past several years.

Effective July 1, 2023, three additional diseases have been added to the provincial list of reportable diseases:

• Anaplasmosis

(caused by Anaplasma phagocytophilum)

Babesiosis

(caused by *Babesia* species including *B. microti*)

• Powassan virus infection

Additional information, including clinical and laboratory criteria for each disease, are included in the <u>appendices from the Ministry of Health</u>.

In Ontario, all four reportable tickborne diseases are associated with blacklegged ticks. However, tick species and related diseases vary by geography. Ask for a patient's travel history when considering a potential tickborne disease.

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Preventing Tickborne Disease

Tickborne diseases are transmitted to human hosts following a tick bite, and while the tick is attached. Tick exposures typically occur during outdoor activities in brushy or wooded areas (e.g. hiking) and are most likely during the spring and summer.¹

Transmission risk increases the longer that a tick is attached.² Therefore, disease risk can be reduced both by preventing tick bites and by recognizing/removing ticks early.

While hiking outdoors, tick bites can be prevented by:

- Limiting exposed areas of skin;
- Keeping to the centre of hiking trails;
- Avoiding brushy areas with tall grass;
- Wearing DEET-containing insect repellant.¹

After spending time outdoors, individuals should examine their bodies and clothes for ticks. Ticks are easier to see on light-coloured clothing. A newly attached tick may be very small (<2mm) and may be in a difficult-to-see location (e.g., axilla).³

Properly Removing a Tick

If a tick is attached, you or the patient can safely remove it:

- 1. Use clean, fine-point tweezers to grasp the head as close to the skin as possible and slowly pull straight out.
 - a. Try not to twist or squeeze the tick. Ticks firmly attach their mouthparts into the skin requiring slow but firm traction to remove them.
- 2. If the mouthparts break off and remain in the skin, remove them with the tweezers. If you're unable to remove them easily, leave them alone and let the skin heal.
- Wash the bite area with soap and water or an alcohol-based sanitizer.⁴ (<u>Video</u>)

Do not try to remove a tick by burning it or applying substances like nail polish remover. These techniques may increase the risk of infection.⁴

Post-Exposure Prophylaxis

Following a tick bite, post-exposure prophylaxis (PEP) to reduce the risk of Lyme disease may be considered if:

- The tick was likely attached for >24 hours;
- The tick was acquired in a Lyme disease risk area;
 - It is important to note that blacklegged ticks feed on and are transported by migratory birds, meaning there is a possibility of encountering an infective blacklegged tick almost anywhere in Ontario.
- PEP can be offered within 72 hours of the tick being removed; and
- PEP is not contraindicated.⁵

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PEP consists of:

- For adults: Doxycycline 200 mg PO x 1 dose;
- For children (no minimum age): Doxycycline 4 mg/kg (maximum 200 mg) PO x 1 dose.⁵

As of January 1, 2023, both physicians and pharmacists may prescribe PEP to eligible patients.⁶

Testing for Tickborne Diseases

Public Health Ontario's laboratory offers the following testing:

Disease	Test Requested	Specimen Type(s) Accepted	
	Borrelia PCR	CSF or synovial fluid or fresh tissue	
	Borrelia serology	Whole blood or serum	
Lyme disease	Borrelia CSF Serology	Requires fresh serum <u>AND</u> CSF	
		(submit both)	
	European Lyme serology	Whole blood or serum	
	<u>(B. garinii, B. afzelii)</u>		
Anaplasmosis	Anaplasma Serology	Blood or serum	
Babesiosis	Babesia microscopy	Unstained blood slides AND	
		EDTA blood (submit both)	
	Babesia PCR	EDTA blood	
	<u>Babesia serology</u>	Blood or serum	
Powassan	Powassan virus PCR	Plasma or serum or CSF	
Virus infection	Powassan virus serology	Blood or serum	

Anaplasmosis, babesiosis, and Powassan Virus infection all require laboratory evidence of infection, according to the <u>disease-specific appendices</u> from the Ministry of Health.

Lyme disease does not require laboratory confirmation if a patient has early localized disease (i.e., erythema migrans) and a history of exposure to blacklegged ticks (including time spent in risk areas). In these scenarios, a physician can make a clinical diagnosis and provide empiric treatment. Lyme serology has poor sensitivity in the early localized disease phase.⁷

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Treatment for Tickborne Diseases

The Center for Effective Practice (CEP) offers the following treatment recommendations for patients with early localized Lyme disease (erythema migrans).⁸

Antibiotic treatment of early localized Lyme disease ⁸ (adapted from CEP)							
Age	Line	Drug	Dosage	Frequency	Maximum	Duration	
Adults (≥ 18)	1 st	Doxycycline	100 mg PO	Twice per day			
	2 nd	Cefuroxime axetil	500 mg PO	Twice per day	N/A	21 days	
		Amoxicillin	500 mg PO	Three times			
				per day			
Children (< 18)	₁ st	Doxycycline	4 mg/kg PO	Daily,	100 mg		
	I			2 divided doses	per dose		
	2 nd	Amoxicillin	50 mg/kg PO	Daily,	500 mg		
				3 divided doses	per dose		
		Cefuroxime axetil	50 mg/kg PO	Daily,	500 mg		
				2 divided doses	per dose		

Patients with more advanced Lyme disease should be managed in consultation with an Infectious Disease specialist.

There are no Canadian guidelines for the treatment of anaplasmosis, babesiosis, or Powassan Virus infection. For these diseases, consider the following resources:

Disease	Resource
	Refer to Diagnosis and Management of Tickborne
	Rickettsial Diseases: Rocky Mountain Spotted Fever
Anaplasmosis	and Other Spotted Fever Group Rickettsioses,
	Ehrlichioses, and Anaplasmosis — United States: A Practical
	Guide for Health Care and Public Health Professionals
	Refer to Clinical Practice Guidelines by the Infectious
Babesiosis	Diseases Society of America (IDSA): 2020 Guideline on
	Diagnosis and Management of Babesiosis
Powassan Virus Infection	No specific treatment; management is supportive.9

Reporting Ticks to Public Health

After removing a tick, patients or health care providers can take a photo and send it to WDGPH for identification using the **new** <u>Online Tick Photo Submission Form</u>. Photos are reviewed by a Public Health inspector within 1-2 business days.

Submitting tick photos helps identify blacklegged ticks to collect local data on where blacklegged ticks are being found and how often. <u>Public Health does not test ticks for the presence of harmful microorganisms (like Lyme disease).</u>

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