

# Management of tick bites and tick-borne diseases in British Columbia

**T**icks are known vectors for transmission of tick-borne diseases in British Columbia. Tick bites and concern about tick-borne diseases are common presenting complaints to primary care and urgent care settings, especially during warmer months.<sup>1</sup> This article aims to inform clinicians about the ticks most commonly encountered in BC and the diseases they may transmit to humans.

## Ticks and tick-borne diseases in BC

The prevalence of ticks and tick-borne diseases varies by geography.<sup>2</sup> In BC, *Ixodes pacificus* and *Ixodes angustus* ticks are predominant in the southern coastal regions, while *Dermacentor andersoni* are more common in the Interior and Northern regions.<sup>1</sup> *Ixodes* ticks are capable of transmitting *Borrelia burgdorferi*, *Anaplasma phagocytophilum*, and *Babesia* spp., while *Dermacentor* ticks are associated with Rocky Mountain spotted fever, tularemia, and tick paralysis [Table].<sup>3</sup>

## Management of tick bites

Ticks found on patients should be removed promptly using forceps. Although the vast majority of tick bites in BC do not result in illness, patients should be advised to look for early symptoms of tick-borne diseases, such as fever, rash, fatigue, and aches. A localized rash within the first 48 hours after a tick bite is more likely to be a local reaction to the bite rather than an infection. While antibiotic post-exposure prophylaxis for Lyme disease may be indicated following a tick bite in geographic regions with high

**TABLE.** Summary of tick-borne diseases known to exist in BC ticks. Incidence is based on illnesses reported to or infections detected at the BCCDC.

Disease and pathogen	Ticks known to carry the pathogen in BC	Annual human incidence with BC-only exposure
Lyme disease <i>Borrelia burgdorferi</i>	<i>Ixodes</i> spp.	1–14 cases
Anaplasmosis <i>Anaplasma phagocytophilum</i>	<i>Ixodes</i> spp.	No reported cases*
Babesiosis <i>Babesia</i> spp.	<i>Ixodes</i> spp.	No reported cases*
Tularemia <i>Francisella tularensis</i>	<i>Dermacentor</i> spp.	0–2 cases
Rocky Mountain spotted fever <i>Rickettsia rickettsii</i>	<i>Dermacentor</i> spp.	0–3 cases
Tick paralysis (toxin mediated)	<i>Dermacentor</i> spp.	Not reportable, but known to occur rarely
Tick-borne relapsing fever <i>Borrelia hermsii</i>	<i>Ornithodoros hermsi</i>	0–7 cases per year

\* While there are no reported human cases in BC, there have been locally acquired cases of babesiosis and anaplasmosis in Washington State.<sup>3</sup>

prevalence of *B. burgdorferi*, it is not usually required for tick exposures originating in BC due to the low prevalence (typically < 1%) of *B. burgdorferi* in BC ticks.<sup>1,4,5</sup> In comparison, highly endemic areas in central and eastern Canada have tick positivity rates greater than 20%.<sup>6</sup> The main reason for this difference is that *Ixodes scapularis*, found in eastern North America, is a more efficient carrier of *B. burgdorferi* compared with *Ixodes pacificus*, which is the predominant vector in BC.<sup>7</sup>

Photos of ticks may also be submitted for free by providers or patients to eTick ([www.eticck.ca](http://www.eticck.ca)), a public platform for image-based identification of ticks. They will identify the tick species and inform users about pathogens the tick may carry. Clinicians can also send ticks to the BCCDC Public Health Laboratory for free identification and pathogen analysis.<sup>8</sup>

## Management of tick-borne diseases

If symptoms develop following a tick bite, clinical features and laboratory test results can guide diagnostic assessment and empiric treatment. Lab confirmation should be sought to determine the suspected cause of illness. Information about laboratory tests available at the Public Health Laboratory can be found at [www.elabhandbook.info](http://www.elabhandbook.info). ■

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**To learn more**

You can reach a medical advisor at WorkSafeBC through a RACE request by phone or app. Visit [www.raceconnect.ca](http://www.raceconnect.ca) for more information.

If you have questions about registering with WorkSafeBC or about your coverage, contact WorkSafeBC’s Assessment Department at 1 888 922-2768, Monday to Friday, 8:30 a.m. to 4:30 p.m. You may also complete a Physician Registration Application (Form 1800PHPC),<sup>9</sup> and a WorkSafeBC representative will respond. ■

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**BOX. Guidance for health care workers on the assessment of risk and medical management of exposures.**

The purpose of this article is *not* to detail the medical management of occupational blood and body fluid exposures.

For information on the appropriate risk assessment and clinical management recommendations for persons exposed to blood or body fluid in a health care or community setting, refer to the “Blood and Body Fluid Exposure Management” section in the British Columbia Centre for Disease Control *Communicable Disease Control* manual. ([www.bccdc.ca/health-professionals/clinical-resources/communicable-disease-control-manual/communicable-disease-control](http://www.bccdc.ca/health-professionals/clinical-resources/communicable-disease-control-manual/communicable-disease-control))

For guidance on handling exposures in other settings, refer to the British Columbia Centre for Excellence in HIV/AIDS *HIV Post-Exposure Prophylaxis (PEP) Guidelines*. ([www.bccfe.ca/publications/centre-documents/hiv-post-exposure-prophylaxis-pep-guidelines](http://www.bccfe.ca/publications/centre-documents/hiv-post-exposure-prophylaxis-pep-guidelines))

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