Emerging tick-borne diseases in Canada

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Surveillance highlights

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Tick-borne diseases are becoming a significant public health concern in many parts of Canada. As climate changes, tick populations are growing in abundance and expanding into regions where they were previously uncommon. As a result, an increasing number of Canadians are being exposed to ticks that may carry different pathogens.

Learning points

Here are six tick-borne diseases that paediatricians should be aware of. If any of these conditions are suspected or diagnosed, consider involving a paediatric infectious diseases specialist for advice on further management.

- **Anaplasmosis**, caused by the bacterium *Anaplasma phagocytophilum*, is transmitted by the bite of an infected *Ixodes* species tick. Anaplasmosis is one of the fastest growing tick-borne diseases in Canada; as of March 2026, human cases have been reported in Manitoba, Ontario, Quebec, New Brunswick, and Nova Scotia. Symptoms resemble Lyme disease without the rash and can include gastrointestinal symptoms such as nausea, vomiting, and diarrhoea. Laboratory findings include anaemia, leukopenia, thrombocytopenia, and transaminitis. During the first week of illness, a morula (microcolony of *Anaplasma* bacteria) can be seen within granulocytes on peripheral blood smear. Diagnosis is made by blood polymerase chain reaction (PCR) and/or acute and convalescent serology. Treatment is with doxycycline for 10 days, regardless of the patient's age (1).
- **Babesiosis**, caused by the protozoa *Babesia microti*, *B. divergens*, and *B. duncani*, is transmitted by the bite of an infected *Ixodes scapularis* tick. While uncommon, human cases have been reported in Manitoba, Ontario, Quebec, and Nova Scotia where *I. scapularis* ticks have been established. Signs and symptoms include flu-like symptoms, haemolytic anaemia, and hepatosplenomegaly. Diagnosis is made by thick and thin Giemsa-stained blood smear or blood PCR. Treatment is with a combination of azithromycin and atovaquone for 7 to 10 days, or longer, depending on the patient's immune status and parasite clearance (1).
- **Powassan virus** is a type of flavivirus transmitted by the bite of an *Ixodes* species tick. While rare, it can cause severe neurologic disease with fulminant meningoencephalitis. Human cases have been reported in Manitoba, Ontario, Quebec, and New Brunswick, and the virus has been detected in ticks found in Nova Scotia (2). Initial symptoms are non-specific and may include fevers, chills, malaise, followed by altered sensorium, focal neurologic deficits, seizures, and paresis. Diagnosis is made by cerebrospinal fluid PCR and/or acute and convalescent serology. There is no antiviral therapy, and survivors may experience permanent neurologic sequelae (1).
- **Relapsing fever** is transmitted by an infected hard tick, *I. scapularis* in eastern Canada, or an infected soft tick, *Ornithodoros hermsi* in southwestern British Columbia. Hard tick relapsing fever is caused by the bacterium *Borrelia miyamotoi*, and soft tick relapsing fever is caused by the bacterium *Borrelia hermsii*. Both conditions are rare and can cause flu-like symptoms with recurrent fever episodes. Diagnosis is made by blood PCR and treatment is with doxycycline for 10 to 14 days (3).
- **Rocky Mountain spotted fever (RMSF)** is caused by the bacterium *Rickettsia rickettsii* and transmitted by the bite of an infected *Dermacentor* species tick. A small number of cases are reported each year in Western Canada. Notably, two human cases were reported in Ontario in 2025, representing the first locally acquired cases in Ontario in nearly 50 years. Signs and symptoms of RMSF include fever, headache, nausea, myalgia, and rash. The rash typically begins as a maculopapular rash on the wrists, forearms, and ankles and may involve the palms and soles. The rash spreads to the trunk and becomes

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petechial over time. A small proportion of patients do not develop the rash, making recognition of this disease difficult. Diagnosis is made by blood PCR and/or acute and convalescent serology. This infection is life-threatening if not treated promptly. Treatment is with doxycycline for 5 to 7 days, regardless of the patient's age (4).

- **Tick paralysis** is a rare, life-threatening condition found primarily in Western Canada and is caused by a neurotoxin released in the saliva of *Dermacentor* species ticks during prolonged attachment. Symptoms include paraesthesia and weakness in the legs and can progress in an ascending pattern. Diagnosis is made by the presence of an attached tick, and treatment is prompt removal of the tick. Rapid symptom resolution occurs within hours after tick removal (5).

A national Canadian Paediatric Surveillance Program study (June 2026 to May 2029) on tick-borne diseases other than Lyme disease aims to better characterize the burden of these diseases in children across Canada. This study will also identify geographic areas of risk and describe clinical patterns of presentation, management, and outcomes. For more information on the surveillance study, please visit https://cpsp.cps.ca/surveillance/study-etude/tick-borne-diseases-excluding-lyme-disease.

Attributes

- Tick-borne diseases
- Paediatrics
- Communicable diseases, emerging

Potential Conflicts of interest

The authors reported no conflicts of interest. All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest.

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