

Borrelia miyamotoi Disease

What is *Borrelia miyamotoi* disease?

Borrelia miyamotoi disease is one of many tickborne diseases in Minnesota. The disease agent is closely related to the bacteria that cause tickborne relapsing fever and distantly related to the bacteria that cause Lyme disease. It was first identified as a cause of human illness in 2011 with the first case reported in a Minnesota resident in 2016. Since then, low numbers of cases have been reported in Minnesota each year.

How do people get *Borrelia miyamotoi* disease?

People can get *B. miyamotoi* disease most likely through the bite of a blacklegged tick (deer tick) that is infected with the bacteria. Not all blacklegged ticks carry these bacteria and not all people bitten by a blacklegged tick will get sick. A tick needs to be attached to a person for a certain length of time before it can cause disease. While the minimum time interval is not known for *B. miyamotoi*, the disease agent can be transmitted within the first 24 hours of tick attachment.

Blacklegged ticks live on the ground in areas that are wooded or have lots of brush. The ticks search for hosts at or near ground level and grab onto a person or animal as they walk by. Ticks do not jump, fly, or fall from trees.

In Minnesota, the months of April through July and September through October are the greatest risk for being bitten by a blacklegged tick. Risk peaks in June or July

every year. Blacklegged ticks are small; adults are about the size of a sesame seed and nymphs (young ticks) are about the size of a poppy seed. Due to their small size, a person may not know they have been bitten by a tick.

What are the symptoms of *Borrelia miyamotoi* disease?

The spectrum of illness is still being described for this new disease. However, the most common symptoms reported to date include:

- **Fever or chills**
- **Headache**
- **Muscle aches**
- **Tiredness or weakness**

Similar to tickborne relapsing fever, some patients with illness due to *B. miyamotoi* have described recurring symptoms prior to diagnosis and treatment. Severe illness affecting the nervous system, such as meningoenephalitis (inflammation of the brain and membranes surrounding the brain), have also been reported.

How is *Borrelia miyamotoi* disease diagnosed?

If a person suspects *B. miyamotoi* disease, they should contact a doctor as soon as possible for diagnosis and treatment. The diagnosis is based on a history of exposure to tick habitat, a physical examination, and laboratory tests to confirm the diagnosis.

How is *Borrelia miyamotoi* disease treated?

Borrelia miyamotoi disease is treated with antibiotics. It is likely possible to get this tickborne disease more than once so continue to protect yourself from tick bites and contact your doctor if you suspect you may have symptoms of *B. miyamotoi* disease.

How can I reduce my risk?

There is currently no human vaccine available for *B. miyamotoi* disease. Reducing exposure to ticks is the best defense against tickborne diseases.

Protect yourself from tick bites:

- Know where ticks live and when they are active.
 - Blacklegged ticks live in wooded or brushy areas.
 - In Minnesota, blacklegged tick activity is greatest from April – July and September – October.
- Use a safe and effective tick repellent if you spend time in or near areas where ticks live. Follow the product label and reapply as directed.
 - Use **DEET**-based repellents (up to 30%) on skin or clothing. Do not use DEET on infants under two months of age.
 - Pre-treat clothing and gear with **permethrin**-based repellents to protect against tick bites for at least two weeks without reapplication. Do not apply permethrin to your skin.
- Wear light-colored clothing to help you spot ticks more easily. Wear long-sleeved shirts and pants to cover exposed skin.

- Tumble dry clothing and gear on high heat for at least 60 minutes after spending time in areas where ticks live.
- Talk with your veterinarian about safe and effective products you can use to protect your pet.

Check for ticks at least once a day after spending time in areas where ticks live:

- Inspect your entire body closely with a mirror, especially hard-to-see areas such as the groin and armpits.
- Remove ticks as soon as you find one.
- Use tweezers or your fingers to grasp the tick close to its mouth. Pull the tick outward slowly and gently. Clean the area with soap and water.
- Examine your gear and pets for ticks.

Manage areas where ticks live:

- Mow lawns and trails frequently.
- Remove leaves and brush.
- Create a barrier of wood chips or rocks between mowed lawns and woods.

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