

Lyme disease: What it is, who's at risk, and how you can avoid it

by *Alexandra Foley-Eby*

Lyme disease is a tick-borne illness caused by infection of the Lyme Borreliosis group of bacteria. First isolated in 1982 by William Burgdorfer, the bacterium has developed an international reputation as a scourge of good health and the source of a silent epidemic. Lyme disease research is full of daily developments, heated arguments, and stark contradictions. This article will attempt to present a few of the most widely-accepted facts, however the reader is encouraged to read further, think critically, and ask questions. A good online source to start your search is CanLyme.com, the website of the Canadian Lyme Disease Foundation. The website of the public health agency of Canada can also be consulted.

“How do you get Lyme?” There is ongoing research into the diversity of possible vectors and methods of transmission, however most sources will say that Lyme disease is spread in Canada by only two vectors, both of which are ticks. *Ixodes pacificus* and *Ixodes scapularis* are the only two species which are recognized by the Canadian government as being able to carry and transmit *B. burgdorferi*. As the name would suggest, *I. pacificus* has a western distribution, and you are not likely to find one in your backyard in the Maritimes. What you might find, however, is *I. scapularis*. But if you are bitten by this tick, you may not notice the bite itself. This is thanks to an anaesthetic used by the tick for this exact purpose. On top of this, ticks will often bite in areas where you are less likely to see them, such as the groin, armpits, and scalp. Ticks have highly specialized mouthparts that consist of a barbed harpoon-like structure called a hypostome ending in a pair of scissor-like chelicerae. The tick will scrape and then puncture the skin with the chelicerae. The tick then begins to flex them, pushing the hypostome into the skin. The barbs prevent the tick from being dislodged, allowing the tick to stay attached for many days. One problem the tick then faces is the dilute nature of blood. Ticks are not interested in the watery part of human blood, and to cope with this the tick has developed a method of filter feeding. The tick regurgitates the unwanted parts back into the host and this is, unfortunately,

the way ticks transmit bacteria. The *Borrelia* bacteria normally sits in the tick's midgut, attached to the wall. When blood is ingested, the bacterium releases its attachments and migrates to the salivary glands of the tick. When the tick spits the liquid from your blood back into you, the bacteria are transmitted. Most sources will state that 24-48 hours is the length of time a tick must be attached in order to transmit the bacteria but there are reports of more rapid transmission, and other diseases which are also carried by ticks are transmitted much more quickly – so the sooner you get a tick off you, the better!

“Where can you get Lyme?” In order to answer this question, it is important to give a definition of “endemic”, a common word appearing in the literature surrounding Lyme. Endemic, in this sense (as defined by the Government of Canada), means that (within a given area) all three life



stages of ticks have been found multiple times and that Lyme disease has been found in the local ticks and/or animals. Does this mean you cannot get Lyme anywhere else? Absolutely not. Ticks do not recognise human made borders or boundaries and ticks may be transported to novel areas by animals such as birds, deer and mice, and there are few areas of the Maritimes that are not visited by birds or mice. Additionally, annual studies show that endemic areas are not constant and are expanding.

“How do I avoid getting Lyme?” The easiest way to prevent yourself from

getting Lyme disease is to change your habits. If you are hiking, hunting, fishing, golfing, gardening, etc. you should be aware of the risks. As a Lyme researcher, I am often amazed at the number of people walking unprotected through wooded and grassy areas. Simple activities like walking your dog, pulling weeds, etc. need to be considered. If you are going to be walking in grassy or wooded areas between April and December, you should be prepared. This preparation includes wearing long pants tucked into socks, solid shoes/boots, long sleeved shirts, and bug spray. The bug sprays you buy at your local drug store are not very effective at repelling ticks and after walking outside, you should always check for ticks. If a tick has just recently attached, it will be small and may be mistaken for a freckle. While sesame seed shaped when non engorged, fully engorged ticks are the shape and size

of small grapes. Removing the tick before it becomes engorged is key to preventing the transmission of Lyme.

“What do you do if you have been bitten by a tick?” If the tick is attached, it will need to be removed. Using (clean) tweezers, grasp the tick as close to the skin as you possibly can. Pull the tick slowly, perpendicular to the skin surface. Do not twist or crush the tick. Wash the area with soap and water. If you experience any difficulty, you can go to your healthcare provider for assistance. Depending on which province you live in, your healthcare provider or public

health office may be able to offer advice on getting the tick tested. Regardless, it is a good idea to save the tick in case you develop health problems later. The tick should be placed in a sealed container in the freezer until you submit it. You can meet with your family doctor to discuss potential tests or prophylactic treatment (usually limited to endemic areas). If you develop a rash, headache, fever, chills, fatigue, muscle spasms or weakness, numbness or tingling, swollen lymph nodes, dizziness, abnormal heartbeat, muscle or joint pain, paralysis, mental confusion, rage or other any other abnormal nervous system symptoms, you should immediately report them to your physician, along with details of when and where you were bitten. Many of these symptoms are vague and could be indicative of any number of diseases. This, along with people not noticing or finding the tick that bit them, is one of the largest problems in diagnosing and obtaining prompt treatment for Lyme disease.

“Am I at risk?” If you are walking or standing outside in grassy or forested areas anywhere in the Maritimes (and indeed Southern Canada) between April and December, you are at risk. When the snow cover is gone and frosts become less frequent, you should start to check yourself for ticks. This also extends to children and to your pets. Pets are also at risk of being infected. Children need and love to be outside, but they should also be dressed properly (as described previously). It is important to teach them the importance of checking, as well as how to do it. This is as important when coming in from school recess as when children are at summer camp. We are privileged to live in one of the most beautiful places in the world and we should be outside enjoying it. The risk of illness from a tick bite is real and increasing but with a few simple changes in our awareness and behaviour much of the risk can be avoided.

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