

Ticks and Early Lyme Disease: Information for Patients

This resource has been developed for patients who have been bitten by a tick or diagnosed with early Lyme disease. Healthcare providers looking for guidance on how to diagnose and treat early Lyme disease should refer to the complementary [provider tool](#).

What is Lyme disease?

Lyme disease is caused by being bitten by a blacklegged tick (deer tick) that is infected with the Lyme disease bacteria (*B. burgdorferi*).¹ To get Lyme disease from a blacklegged tick, it must feed on you for many hours (usually more than 24 hours).¹ Your healthcare provider will ask about your symptoms and your risk of being infected when diagnosing Lyme disease.² Lyme disease is treated successfully with antibiotics, but symptoms can be long-lasting if untreated.^{2,4} It is important to treat Lyme disease as early as possible.



Section A: How do I remove a tick?



Section B: I have been bitten by a tick - will I get Lyme disease?



Section C: I have been diagnosed with early Lyme disease - now what?



Section D: How do I prevent tick bites?



Section E: Where am I at risk?

Section A: How do I remove a tick?

Follow these tips to safely remove an attached tick.^{3,5} If the tick's head breaks off and remains in the skin, remove it. You can visit your healthcare provider to remove it.

✓ Do

- Use clean, fine-tipped tweezers to pull the tick straight out, slowly.
- Wash the affected skin with soap and water or an alcohol-based sanitizer.
- Record the date that you removed the tick (e.g. in your phone or on a calendar).
- Watch for symptoms of Lyme disease. Review [Section B: I have been bitten by a tick - will I get Lyme disease?](#)
- Review [Section D: How do I prevent tick bites?](#)

✗ Don't

- Crush or squeeze the tick's body.
- Use a twisting or jerking motion to remove the tick.



Testing ticks? The results from testing a tick should not be used by your healthcare provider when diagnosing you.⁵ Results will only be used to help healthcare providers better understand where patients are at risk of Lyme disease. Contact your local public health department to find out if ticks can be submitted for testing in your area.⁵

SECTION B: I have been bitten by a tick - will I get Lyme disease?

- There are many types of ticks found in Canada. Only blacklegged ticks (deer ticks) can spread Lyme disease.¹ (See picture below.)
- To give you Lyme disease, a blacklegged tick must feed on you for several hours (usually more than 24 hours).¹
- You can get Lyme disease in many parts of Canada. The risk is greater in Nova Scotia, Ontario, Quebec, Manitoba and British Columbia.⁶ See [Section E: Where am I at risk?](#) for information about risk areas for Lyme disease.
- If you find a loose tick on your body, then the Lyme disease bacteria was likely not spread to you. A tick must be firmly attached to your skin to feed on you and spread the Lyme disease bacteria.¹

What does a blacklegged tick look like?⁷

Blacklegged ticks (deer ticks) are much smaller than dog ticks (wood ticks). They also do not have white markings on top. The average size for an adult blacklegged tick is 3mm, or about the size of a sesame seed. Immature ticks are even smaller, about the size of a poppy seed. Immature ticks are called 'nymphs'. Adults and nymphs can both spread Lyme disease. For more information, visit the Public Health Agency of Canada's [website on Blacklegged \(deer\) ticks](#).



← Blacklegged ticks (deer ticks)

← American dog ticks (wood ticks)

How do I know if a tick fed on me?⁷

As they feed on blood, a tick's stomach gets bigger. This is called 'engorgement'. When fully fed, a tick becomes egg-shaped and much larger than an unfed tick. Ticks can engorge to over twice their normal size when fully fed, as seen in the images below.



Engorgement in immature ticks (left) and adult ticks (right).



What are the symptoms of Lyme disease?^{2,4}

It takes 3 to 30 days for Lyme disease symptoms to develop. The most common sign of Lyme disease is a red circular rash that gets bigger. The rash, which is called erythema migrans (EM), looks like a bullseye on some people. Not everyone with Lyme disease will get a rash. Watch for Lyme disease symptoms in the weeks following a tick bite. If symptoms are present, contact your healthcare provider right away.

Symptoms include:

- | | |
|------------------------------|----------------|
| • Erythema migrans (EM) rash | • Tiredness |
| • Fever | • Headache |
| • Joint pain | • Muscle aches |



Erythema migrans (EM) rash on people with early Lyme disease.²



Some symptoms are not seen with Lyme disease. If you have an itchy or painful rash, stomach problems, sore throat, runny nose or cough, then you probably do not have Lyme disease.

Is there a blood test for Lyme disease?

Blood tests cannot test if the Lyme disease bacteria is in your body.² Blood tests show if your immune system has started to fight an infection, and so the tests are not always accurate in the early stage of the disease.^{2,3} Blood tests are not always needed to diagnose and treat Lyme disease.² For example, if your doctor determines that you have the Lyme disease rash, then blood tests are not needed.²

Things to know about blood tests:²

- In the first few weeks of infection, there is a chance that the test will be negative (suggesting that you don't have Lyme disease) even if you do have Lyme disease. This is called a "false negative".
- There is also a chance that the test will be positive (suggesting that you do have Lyme disease) even if you do not have Lyme disease. This is called a "false positive".
- Only test results from Canadian laboratories are accepted by your healthcare provider to aid diagnosis.
- You should not have a blood test if you do not have symptoms of Lyme disease.

SECTION C: I have been diagnosed with early Lyme disease - now what?

Treatment and recovery^{2,3}

If you are diagnosed with early Lyme disease, you will be prescribed an antibiotic. Rest and take them as prescribed by your healthcare provider. Do not stop antibiotics early, even if you feel better.

In most cases, Lyme disease can be cured by taking antibiotics for three weeks. Some symptoms will go away quickly. Others, like tiredness or aches, may take weeks or longer to go away. Your healthcare provider may book a check-up for when your antibiotics are finished to see if your symptoms are gone.

If you have symptoms after finishing your antibiotics, your healthcare provider might:

- Give you more of the same antibiotics.
- Give you different antibiotics.
- Think of other causes of your symptoms (different from Lyme disease).



See your healthcare provider if you have symptoms after finishing your antibiotic treatment. If you do not have a check-up scheduled, ask for one.

There is no test to know if you are cured of Lyme disease. Repeating a blood test after being treated will not give you new information. The available blood tests show if your immune system has seen an infection. A positive result could mean that you had an infection that is no longer there. It does not mean that you still have Lyme disease.²

Section D: How do I prevent tick bites?

You do not become immune to Lyme disease once you've had it, so you can still get re-infected from another tick bite. Follow these tips to help prevent another bite.

Options for protecting you and your family from tick bites:⁸

- Check for ticks after outdoor activity. Ticks can hide under the armpits, behind the knees, in the hair and in the groin.
- Use bug spray containing DEET or icaridin (also called picaridin) on skin and clothing (always follow the directions on the label).
- Wear light-coloured, long-sleeved shirts and pants to spot ticks more easily.
- Tuck your shirt into your pants, and pull your socks over your pant legs.
- Shower as soon as possible after spending time outdoors.
- Tumble clothes in a dryer on high heat for 10 minutes to kill ticks on dry clothing after you come indoors. If the clothes are damp, more time may be needed.
- Do a tick check on your outdoor gear and your pets. They could carry ticks inside your home.
- Treat pets that are commonly exposed to ticks with oral or topical acaricides (as recommended by your veterinarian).

Options for keeping your yard tick-free:⁸

- Mow the lawn often to keep the grass short.
- Remove leaf litter, brush and weeds at the edge of the lawn and around stone walls and woodpiles.
- Stack firewood neatly and in a dry area.
- Put barriers around your home to keep out deer.
- Seal walls and small openings to discourage rodent activity to keep out rodents.
- Place children's playground sets, as well as patios and decks away from yard edges and trees. Place them on woodchips or mulch and in a sunny area, if possible.

Section E: Where am I at risk?

Risk areas in Canada

Lyme disease is becoming more common in Canada. Cases of Lyme disease have been reported in every province. Yet, the chance of getting Lyme disease varies by province, and also varies depending on which part of a province you are in.⁶ There have been no reported cases of Lyme disease in the territories.⁶

The table below lists the Canadian provinces and territories. It shows the overall risk of Lyme disease in each area. The columns give the following information:

- The first column (to the left) lists the provinces. If you view this table on a computer, click on the province of interest to get more risk information.
- The middle column shows the risk of getting Lyme disease in each province. This risk is an estimate. It depends on the number of new Lyme disease cases reported to the Public Health Agency of Canada in that province.⁶
- The last column (to the right) tells you if a province has regions with a higher risk than the provincial average. For more details on these higher risk regions, click on the province title in the first column.

Province / territory	Overall provincial risk ⁶	Medium or higher risk areas within province?
British Columbia	Lowest risk	yes
Alberta	Lowest risk	no
Saskatchewan	Lowest risk	no
Manitoba	Medium risk	yes
Ontario	Medium risk	yes - including very high risk areas
Quebec	Medium risk	yes
New Brunswick	Medium risk	yes
Newfoundland and Labrador	Lowest risk	no
Nova Scotia	Higher risk	yes - including very high risk areas
Prince Edward Island	Medium risk	yes
Northwest Territories / Yukon / Nunavut	There have been no reported cases of Lyme disease in the territories since the Public Health Agency of Canada began tracking cases in 2009.	

Risk categories, based on population size and the number of new Lyme disease cases

Less than 1 case per 100,000 people	Between 1 and 19 cases per 100,000 people	Between 20 and 49 cases per 100,000 people	At least 50 cases per 100,000 people
Lowest risk	Medium risk	Higher risk	Very high risk

International risk areas^{9,10}

The table below lists international risk areas for Lyme disease. Overall, there is a higher risk in the United States⁹ and parts of Europe¹⁰ than there is in Canada.⁶

	Risk	Country / state
United States	Medium risk	Illinois, Indiana, Iowa, Maryland, Massachusetts, Michigan, New York, North Dakota, Ohio, Virginia, Washington D.C.
	Higher risk	Connecticut, Delaware, Minnesota, New Jersey, West Virginia, Wisconsin
	Very high risk	Maine, New Hampshire, Pennsylvania, Rhode Island, Vermont
Europe	Medium risk	Belarus, Belgium, Bulgaria, Croatia, Finland, Hungary, Norway, Poland, the Russian Federation, Serbia, Slovakia
	Higher risk	the Czech Republic, Estonia, Lithuania
	Very high risk	Slovenia

References

- [1] Public Health Agency of Canada. Causes of Lyme disease [Internet]. 2017 [cited 2019 Mar 1]. Available from: <https://www.canada.ca/en/public-health/services/diseases/lyme-disease/causes-lyme-disease.html>
- [2] Public Health Agency of Canada. For health professionals: Lyme disease [Internet]. 2018 [cited 2019 Mar 1]. Available from: <https://www.canada.ca/en/public-health/services/diseases/lyme-disease/health-professionals-lyme-disease.html>
- [3] National Health Service. Lyme disease [Internet]. 2018 [cited 2019 Dec 14]. Available from: <https://www.nhs.uk/conditions/lyme-disease/>
- [4] U.S. Centers for Disease Control and Prevention. Signs and symptoms of untreated Lyme disease [Internet]. 2019 [cited 2019 Oct 15]. Available from: https://www.cdc.gov/lyme/signs_symptoms/index.html
- [5] Public Health Agency of Canada. Removing and submitting ticks for testing [Internet]. 2015 [cited 2019 Oct 15]. Available from: <https://www.canada.ca/en/public-health/services/diseases/lyme-disease/removing-submitting-ticks-testing.html>
- [6] Public Health Agency of Canada. Surveillance of Lyme disease [Internet]. 2015 [cited 2019 Mar 1]. Available from: <https://www.canada.ca/en/public-health/services/diseases/lyme-disease/surveillance-lyme-disease.html>
- [7] Public Health Agency of Canada. Blacklegged (deer) ticks [Internet]. 2015 [cited 2019 Dec 14]. Available from: <https://www.canada.ca/en/health-canada/services/pest-control-tips/blacklegged-deer-ticks.html>
- [8] Public Health Agency of Canada. Prevention of Lyme disease [Internet]. 2015 [cited 2019 Dec 14]. Available from: <https://www.canada.ca/en/public-health/services/diseases/lyme-disease/prevention-lyme-disease.html>
- [9] U.S. Centers for Disease Control and Prevention. Lyme disease data tables: Historical data [Internet]. 2019 [cited 2019 Dec 10]. Available from: <https://www.cdc.gov/lyme/stats/tables.html>
- [10] European Centre for Disease Prevention and Control. Lyme borreliosis in Europe. 2014. Available from: <http://www.euro.who.int/en/media-centre/sections/fact-sheets/2014/03/fact-sheets-world-health-day-2014-vector-borne-diseases/fact-sheet-lyme-borreliosis-in-europe>