

Lyme Disease Frequently Asked Questions (FAQ)


Transmission

I've been bitten by a tick. Do I have Lyme disease? 

If you have not done so already, [remove the tick](#) with fine-tipped tweezers.

The chances that you might get Lyme disease from a single tick bite depend on the type of tick, where you acquired it, and how long it was attached to you. Many types of ticks bite people in the U.S., but only [blacklegged ticks](#) transmit the bacteria that cause Lyme disease. Furthermore, only blacklegged ticks in the [highly endemic areas](#) of the northeastern and north central U.S. are commonly infected. Finally, blacklegged ticks need to be attached for at least 24 hours before they can transmit Lyme disease. This is why it's so important to remove them promptly and to check your body daily for ticks if you live in an endemic area.

If you develop illness within a few weeks of a tick bite, see your health care provider right away. [Common symptoms](#) of Lyme disease include a rash, fever, body aches, facial paralysis, and arthritis. Ticks can also transmit [other diseases](#), so it's important to be alert for any illness that follows a tick bite.

Can Lyme disease be transmitted sexually? 

There is no credible scientific evidence that Lyme disease is spread through sexual contact. Published studies in animals do not support sexual transmission (Moody 1991; Woodrum 1999), and the biology of the Lyme disease spirochete is not compatible this route of exposure (Porcella 2001). The ticks that transmit Lyme disease are very small and easily overlooked. Consequently, it is possible for sexual partners living in the same household to both become infected through tick bites, even if one or both partners doesn't remember being bitten.

References:

Porcella SF, Schwan TG, 2001. [Borrelia burgdorferi and Treponema pallidum: a comparison of functional genomics, environmental adaptations, and pathogenic mechanisms.](#)  *J Clin Invest* 107: 651-6.

Woodrum JE, Oliver JH, Jr., 1999. [Investigation of venereal, transplacental, and contact transmission of the Lyme disease spirochete, Borrelia burgdorferi, in Syrian hamsters.](#)  *J Parasitol* 85: 426-30.

Moody KD, Barthold SW, 1991. [Relative infectivity of Borrelia burgdorferi in Lewis rats by various routes of inoculation.](#)  *Am J Trop Med Hyg* 44: 135-9.

Can Lyme disease be transmitted through breast milk? 

There are no reports of Lyme disease being spread to infants through breast milk. If you are diagnosed with Lyme disease and are also breastfeeding, make sure that your doctor knows this so that he or she can prescribe an antibiotic that's safe for use when breastfeeding.

Can Lyme disease be transmitted during a blood transfusion? ^

Although no cases of Lyme disease have been linked to blood transfusion, scientists have found that the Lyme disease bacteria can live in blood from a person with an active infection that is stored for donation. Individuals being treated for Lyme disease with an antibiotic should not donate blood. Individuals who have completed antibiotic treatment for Lyme disease may be considered as potential blood donors. The [Red Cross](#) ↗ provides additional information on the most recent criteria for blood donation.

Is it true that you can get Lyme disease anywhere in the U.S.? ^

No. Lyme disease is spread through the bite of a blacklegged tick (*Ixodes scapularis* or *Ixodes pacificus*) that is infected with *Borrelia burgdorferi*. In the United States, most infections occur in the following endemic areas:

- Northeast and mid-Atlantic, from northeastern Virginia to Maine
- North central states, mostly in Wisconsin and Minnesota
- West Coast, particularly northern California

Maps showing the distribution of human cases are based on where people live, which because of travel, is not necessarily where they became infected. Cases are sometimes diagnosed and reported from an area where Lyme disease is not expected, but they are almost always travel-related.

I live in the southeastern U.S. and get a lot of lone star tick bites. I've heard that I can get "southern Lyme disease". Is this true? ^

The lone star tick is primarily found in the southeastern and eastern United States. Lone star ticks do not transmit Lyme disease. However, you are correct to be concerned about this very aggressive species. The lone star tick (*Amblyomma americanum*) can spread human [ehrlichiosis](#), [tularemia](#), and [Southern Tick-Associated Rash Illness \(STARI\)](#).

The rash of STARI is a red, expanding "bull's eye" lesion that develops around the site of a lone star tick bite. The rash usually appears within seven days of tick bite and expands to a diameter of 8 centimeters (3 inches) or more. The rash should not be confused with much smaller areas of redness and discomfort that can occur commonly at tick bite sites. Unlike Lyme disease, STARI has not been linked to arthritis, neurological problems, or chronic symptoms. Nevertheless, the similarity between the STARI bull's eye rash and the Lyme disease bull's eye rash has created much public confusion. The pathogen responsible for STARI has not been identified.

In contrast, Lyme disease in North America is caused by a specific type of bacteria, *Borrelia burgdorferi*, which is transmitted by two species of blacklegged ticks, *Ixodes scapularis* and *Ixodes pacificus*. While blacklegged ticks exist in the southern U.S., their feeding habits in this region make them much less likely to maintain, sustain, and transmit Lyme disease.

Diagnosis, Testing, and Treatment

I have heard that the diagnostic tests that CDC recommends are not very accurate. Can I be treated based on my symptoms or do I need to use a different test? ^

You may have heard that the [blood test for Lyme disease](#) is correctly positive only 65% of the time or less. This is misleading information. As with serologic tests for other infectious diseases, the accuracy of the test depends upon how

long you've been infected. During the first few weeks of infection, such as when a patient has an erythema migrans rash, the test is expected to be negative.

Several weeks after infection, FDA cleared tests have very good sensitivity.

It is possible for someone who was infected with Lyme disease to test negative because:

1. Some people who receive antibiotics (e.g., doxycycline) early in disease (within the first few weeks after tick bite) may not have a fully developed antibody response or may only develop an antibody response at levels too low to be detected by the test.
2. Antibodies against Lyme disease bacteria usually take a few weeks to develop, so tests performed before this time may be negative even if the person is infected. In this case, if the person is retested a few weeks later, they should have a positive test if they have Lyme disease. It is not until 4 to 6 weeks have passed that the test is likely to be positive. This does not mean that the test is bad, only that it needs to be used correctly.

I am pregnant and think I might have Lyme disease. What should I do?

If you are pregnant and suspect you have contracted Lyme disease, contact your physician immediately.

Untreated Lyme disease during pregnancy can lead to infection of the placenta. Spread from mother to fetus is possible but rare. Fortunately, with appropriate antibiotic treatment, there is no increased risk of adverse birth outcomes.* There are no published studies assessing developmental outcomes of children whose mothers acquired Lyme disease during pregnancy.

* Silver HM. [Lyme disease during pregnancy](#) . *Infect Dis Clin North Am.* 1997 Mar;11(1):93-7.

If I have been diagnosed with Lyme disease, is it possible that I also have other tickborne diseases (co-infections)?

Blacklegged ticks can spread germs that cause Lyme disease and several [other tickborne diseases](#). A person who has more than one tickborne disease at a time is said to have a co-infection. The frequency of co-infections varies widely from place-to-place and over time.

The most common co-infections that occur with Lyme disease are [anaplasmosis](#) and [babesiosis](#). In general:




- Co-infection with Lyme disease and anaplasmosis happens from 2 to 12% of the time.¹⁻⁴
- Other co-infections, including babesiosis, [Powassan virus disease](#), and [Borrelia miyamotoi disease](#), occur less frequently. Additional research is needed to know how often these co-infections occur.


Lyme disease and anaplasmosis are treated with the same antibiotic, so a person getting treatment for Lyme disease will be treated for anaplasmosis at the same time, regardless of whether additional tests were run. Babesiosis is a parasitic disease that is [treated](#) with different medications. If your Lyme disease symptoms do not seem to be going away after taking antibiotics, see your healthcare provider.

Although some providers test patients for [Bartonella](#) or [Mycoplasma](#) co-infections, there is no evidence that these germs are spread by ticks.^{5,6} If you have been diagnosed with co-infections, you may consider getting a second opinion. CDC recommends finding a board-certified infectious disease specialist, internist, or pediatrician affiliated with a university teaching hospital. Learn more about [how to select a healthcare provider](#).

Your state health department is typically the best source of information about tickborne diseases that occur your area.

References:

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2. Krause PJ, McKay K, Thompson CA, Sikand VK, et al. [Disease-specific diagnosis of coinfecting tickborne zoonoses: babesiosis, human granulocytic ehrlichiosis, and Lyme disease](#)  . *Clin Infect Dis*. 2002 May 1;34(9):1184-91.
3. Belongia EA, Reed KD, Mitchell PD, et al. [Clinical and epidemiological features of early Lyme disease and human granulocytic ehrlichiosis in Wisconsin](#)  . *Clin Infect Dis*. 1999 Dec;29(6):1472-7.
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5. Lantos PM, Wormser GP. [Chronic coinfections in patients diagnosed with chronic Lyme disease: a systematic review](#)  . *Am J Med*. 2014 Nov;127(11):1105-10.
6. Telford SR, Wormser GP. [Bartonella transmission by ticks not established](#). *Emerg Infect Dis*. 2010 Mar;16(3) 379-84.

I have been sick for a few years with joint and muscle pain, fatigue, and difficulty thinking. I was tested for Lyme disease using a Western Blot test. The “IgM” Western Blot test was positive but the “IgG” Western Blot test was negative. Is Lyme disease the cause of my symptoms? 


Probably not. First, you should only have an immunoblot (such as an FDA-approved Western Blot or striped blot) test done if your blood has already been tested and found reactive with an EIA or IFA.

Second, the IgM Western Blot test result is only meaningful during the first four weeks of illness. If you have been infected for longer than 4 to 6 weeks and the IgG Western Blot is still negative, it is highly likely that the IgM result is incorrect (e.g., a false positive). This does not mean that you are not ill, but it does suggest that the cause of illness is something other than the Lyme disease bacterium. For more information, see the in-depth discussion regarding [testing for Lyme disease](#).


Where can I get a test to make sure that I am cured? 

As with many infectious diseases, there is no test that can “prove” cure. Tests for Lyme disease detect antibodies produced by the human immune system to fight off the bacteria (*Borrelia burgdorferi*) that cause Lyme disease. These antibodies can persist long after the infection is gone. This means that if your blood tests positive, then it will likely continue to test positive for months or even years even though the bacteria are no longer present.


A research tool called PCR can detect bacterial DNA in some patients. Unfortunately, this is also not helpful as a test of whether the antibiotics have killed all the bacteria. Studies have shown that DNA fragments from dead bacteria can be detected for many months after treatment. Studies have also shown that the remaining DNA fragments are not infectious. Positive PCR test results are analogous to a crime scene – just because a robbery occurred and the robber left his DNA, it doesn’t mean that the robber is still in the house. Similarly, just because DNA fragments from an infection remain, it doesn’t mean the bacteria are alive or viable.

My serologic (blood) test for Lyme disease is still positive even though I finished three weeks of antibiotics. Does this mean I am still infected? 

No. The tests for Lyme disease detect antibodies made by the immune system to fight off the bacteria, *Borrelia burgdorferi*. Your immune system continues to make the antibodies for months or years after the infection is gone. This means that once your blood tests positive, it will continue to test positive for months to years even though the bacteria are no longer present. Unfortunately, in the case of bacterial infections, these antibodies don’t prevent someone from getting Lyme disease again if they are bitten by another infected tick.



I heard that if I get Lyme disease I will always have it. Is that true? 

No. Patients treated with antibiotics in the early stages of the infection usually recover rapidly and completely. Most patients who are treated in later stages of the disease also respond well to antibiotics, although some may have suffered long-term damage to the nervous system or joints. It is not uncommon for patients treated for Lyme disease with a recommended 2 to 4 week course of antibiotics to have lingering symptoms of fatigue, pain, or joint and muscle aches at the time they finish treatment. In a small percentage of cases, these symptoms can last for more than 6 months. These symptoms cannot be cured by longer courses of antibiotics, but they generally improve on their own, over time.



Can you recommend a doctor who is familiar with diagnosing and treating Lyme disease? 

In areas where Lyme disease is common, most family practice physicians, general practitioners, and pediatricians are familiar with diagnosing and treating Lyme disease. If you have symptoms that suggest Lyme disease, or any other tick-borne infection, tell your doctor all these facts. Many doctors may not consider tick-borne diseases in diagnosing your illness unless you:

- Report being bitten by a tick, or
- Live in, or have recently visited, a tick-infested area.

In areas where Lyme disease is **not** common or for more complicated cases of Lyme disease, infectious disease specialists are often the best type of doctor to see. Please note that CDC cannot evaluate the qualifications and competence of individual doctors; however, the [National Institutes of Health provides information about how to choose a doctor](#).  Additionally, your [state medical board](#)  can help you find out if your health care provider is in good standing.


What is "chronic Lyme disease?" 

Lyme disease is caused by infection with the bacterium *Borrelia burgdorferi*. Although most cases of Lyme disease can be cured with a 2- to 4-week course of oral antibiotics, patients can sometimes have symptoms of pain, fatigue, or difficulty thinking that last for more than 6 months after they finish treatment. This condition is called "[Post-Treatment Lyme Disease Syndrome](#)" (PTLDS). The term "chronic Lyme disease" (CLD) is also sometimes used; however, this term has been used to describe a wide variety of different conditions and therefore can be confusing. Because of the confusion in how the term CLD is employed, experts do not support its use ([Feder et al., 2007](#) ). For more information, see the [National Institutes of Health — "Chronic Lyme Disease"](#) .

Surveillance Questions

How many people get Lyme disease? 

Please see: [How many people get Lyme disease?](#)

How are cases reported to CDC? 

As with most other [reportable diseases](#), reporting requirements for Lyme disease are determined by state laws or regulations. In most states, Lyme disease cases are reported by licensed health care providers, diagnostic laboratories, or hospitals. States and the District of Columbia remove all personally identifiable information, then share their data with

CDC, which compiles and publishes the information for the Nation. **CDC has no way of linking this information back to the original patient.**

CDC summarizes national surveillance data based on these reports. Data through 2015 can be found in the [MMWR Summary of Notifiable Diseases](#). Data from 2016 forward are found in [CDC WONDER](#).

The goal of Lyme disease surveillance is not to capture every case, but to systematically gather and analyze public health data in a way that enables public health officials to look for trends and take actions to reduce disease and improve public health.

Are more recent numbers available?

Final annual case counts are published when the year is over and all states and territories have verified their data, typically in the fall of the following year. Data through 2015 can be found in the [MMWR Summary of Notifiable Diseases](#). Data from 2016 forward are found in [CDC WONDER](#). Selected Lyme disease [statistics, tables and charts](#) are also available on the CDC Lyme disease website.

What is a surveillance case definition?

Reporting of all nationally notifiable diseases, including Lyme disease, is based on standard surveillance case definitions developed by the Council of State and Territorial Epidemiologists (CSTE) and CDC. The usefulness of public health surveillance data depends on its uniformity, simplicity, and timeliness. Surveillance case definitions establish uniform criteria for disease reporting and should not be used as the sole criteria for establishing clinical diagnoses, determining the standard of care necessary for a particular patient, setting guidelines for quality assurance, or providing standards for reimbursement. [The national surveillance case definition for Lyme disease is available on CDC's web site.](#)

CDC—Specific Questions

What is CDC doing about Lyme disease?

CDC has a program of service, research, and education focusing on the prevention and control of Lyme disease. Activities of this program include:

- Maintaining and analyzing national surveillance data for Lyme disease
- Conducting epidemiologic investigations
- Offering diagnostic and reference laboratory services
- Developing and testing strategies for the control and prevention of this disease in humans
- Supporting education of the public and health care providers

In addition, the [TickNET program](#) supports research that contributes to the understanding of tickborne diseases.