How can I avoid contracting Lyme?

Most people contract Lyme disease from the bite of an infected deer tick. Not all ticks are infected; infection rates vary from one locality to another. Nymphal deer ticks are tiny, about the size of a poppy seed. Because their bite is painless, you may not notice them. The longer ticks are attached, the greater the risk for developing Lyme or other tick-transmitted diseases. Bites lasting less than 24 hours rarely cause disease but when infected ticks remain attached for their entire 3-4 day feeding period, the risk of infection is greater than 90%. Take these steps to reduce the risk of a bite or tick attachment lasting more than 24 hours.

- Reduce tick habitat where you live, work and play. On your property, remove fallen leaves, cut the grass short and keep wood piles neat. Ticks dry out easily, preferring areas that provide shade and moisture. Eliminating these areas should reduce tick numbers.
- Use sprays containing permethrin on your clothing, footwear, camping and hunting gear and 30% DEET or 20% picaridin on your skin.
- Check yourself and your animals for ticks immediately and for several days after being in tick habitat. Promptly put tick-exposed clothing into the dryer on high heat; use 15 min. for dry clothes, 60 min. for wet. Take a shower, vigorous scrubbing removes ticks that aren't fully attached.
- Carefully remove and save attached ticks for your doctor to identify.

If you are bitten in MN or WI, discuss using antibiotics to prevent disease with your doctor. A link to a medical paper on managing tick bites is available at www.mnlyme.org/prevention. Print the paper and have your doctor read it before discussing your options. It's important to know that:

- Waiting to see if an EM rash develops is risky because many patients never develop one
- A single dose of doxycycline isn't very effective
- Better options use longer courses of antibiotics.

Can I still have Lyme after treatment?

Yes, treatment sometimes fails and symptoms and/or signs of the infection remain or progress. If that should happen, another course of antibiotics may be necessary. Often, the use of a different antibiotic or lengthier treatment can provide symptomatic relief.

What is MLA?

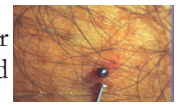
Minnesota Lyme Association is a 501(c)(3) non-profit organization dedicated to education, advocacy, and patient support. MLA works cooperatively with the national Lyme Disease Association (LDA) and other advocacy groups. Our monthly meetings alternate between speaker and support nights. Informational materials are available at each meeting.

For information on MLA, including non-metro chapters, please see our website: mnlyme.org

How should I remove a tick?

- Do not place any product on the
- tick to encourage it to "back out" on its own!
- Use tweezers or a special tick- removing tool.
- Grasp the tick as close to the skin as possible and pull straight out.
- Don't squeeze, twist, burn or squash the tick, or allow any blood to remain on your skin.
- Disinfect the bite area and wash your hands.
- Consult your physician about the need for preventive treatment.

CDC photo



Engorged nymph compared to pin

Where can I find more information?

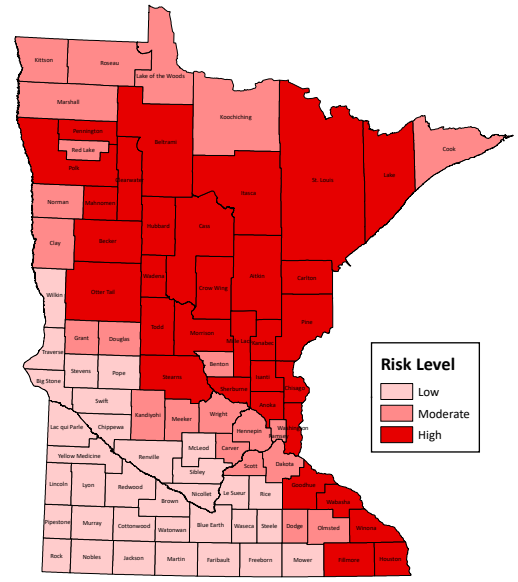
- Minnesota Lyme Association - mnlyme.org
- Lyme Disease Association - national nonprofit - lymediseaseassociation.org
- LymeDisease.org
- Canadian Lyme Disease Association - canlyme.org
- International Lyme & Associated Diseases Society - ilads.org
- Tick Management Handbook - http://goo.gl/MJj1WQ

Brochure content updated on March 2, 2019.

Lyme Disease

Minnesota's Hidden Epidemic

Tickborne Disease Risk in Minnesota



Risk is based on average incidence (cases/100,000 population) of Lyme disease, anaplasmosis, and babesiosis in Minnesota, 2007-2015.

MDH Minnesota Department of Health – Infectious Disease Epidemiology, Prevention and Control Division
(651) 201-5414 · TDD/TTY (651) 201-5797 · www.health.state.mn.us

Minnesota Lyme Association

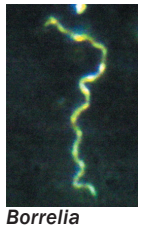
Minnesotans across the state are at risk for acquiring tick-borne diseases. The highest risk is in the southeast, east central and north central areas of the state. Grassy fields, brush-filled wooded landscapes and places where residential neighborhoods meet the forest edge are prime tick habitat. This brochure contains information to help you mitigate your risk for Lyme and other tick-borne diseases.

Visit our website at: www.mnlyme.org
email: lyme@mnlyme.org

MLA is a Lyme Disease Association, Inc. affiliate. Brochure design courtesy of LymeDisease.org

MLA

What is Lyme disease?



Borrelia burgdorferi

Lyme disease is a bacterial infection, spread by ticks, that can involve any part of the human body. The nervous and musculoskeletal systems are frequently involved. In MN, the infection is caused by the spirochetes *Borrelia burgdorferi* and *Borrelia mayonii.*

Key facts in Minnesota

- Minnesota is a high-risk state for Lyme disease, anaplasmosis and babesiosis. The state consistently ranks in the top 10 states for reported cases of Lyme disease.
- Lyme disease is carried by the Eastern black-legged tick, Ixodes scapularis, also known as the deer tick. Ticks have four life stages: egg, larva, nymph and adult. Ticks may feed on hosts that harbor Lyme disease bacteria three times during their life cycle. Typical hosts include mice, squirrels, rabbits, ground-feeding birds and deer.
- Ticks easily survive our harsh winters and are active whenever temperatures reach 38 degrees. Deer ticks, with the potential to carry Lyme disease and co-infections, have expanded their range into most of Minnesota's 87 counties.
- Because deer ticks are tiny, nymphs are the size of a poppy seed, and a tick bite is painless, many people don't realize they've been bitten.

What are the symptoms?

Lyme disease has been called the "Great Imitator" because it can look like other diseases. Many people with Lyme disease have been misdiagnosed with more familiar conditions such as fibromyalgia or chronic fatigue syndrome. When the brain is involved, doctors may think a patient has MS, ALS, ADHD, Parkinson's, or a mental illness. Below is a partial list of symptoms. Symptoms typically come and go and worsen over time if not treated.

- Flu-like illness
- Rash (in less than 70% of cases)
- Extreme fatigue
- Sick feeling (malaise)
- Stiff aching neck
- Headache, new onset migraine
- Joint pain, joint swelling
- Muscle pain, muscle twitching, "growing pains"
- Dizziness, ringing in ears, light or sound sensitivity, conjunctivitis
- Bell's palsy (facial paralysis)
- Palpitations, chest pain
- Cognitive problems, difficulty concentrating
- Depression, irritability, mood swings, extreme panic attacks
- Forgetfulness, poor short-term memory
- Insomnia
- Abdominal pain, nausea, diarrhea
- Shortness of breath
- Tingling, burning, shooting pains, numbness

What blood tests should I have?

Depending on the circumstances, blood tests are not always appropriate. In cases of a known tick bite or when an EM rash is present, testing is not helpful. That's because the common Lyme disease tests look for human antibodies to the bacteria and it can take several weeks for those antibodies to appear.

If your symptoms have been present for several weeks or longer, ask your doctor to order IgM and IgG Western blot tests. The initial tests can be done by the doctor's usual lab, but if negative, a new blood sample should be tested by a lab specializing in testing for tick-borne infections. One such lab is IGeneX, 797 San Antonio Road, Palo Alto, CA, 94303, 800-832-3200.

Be sure to get a copy of the detailed lab report of your test results; do not rely on reports describing the results simply as "positive" or "negative." There are several valid ways to interpret Lyme disease Western blot results but most doctors and labs follow the criteria established by the Centers for Disease Control and Prevention (CDC).

The CDC lab criteria help identify patients who meet the CDC's **strict surveillance case definition**; however, most cases of Lyme disease do not meet the CDC surveillance case definition. For example, some people never test positive for Lyme disease even though they are infected. That's why Lyme disease is a clinical diagnosis – based on a patient's history and physical exam – and why the CDC cautions doctors not to limit Lyme disease diagnoses to only those patients who meet the CDC lab criteria.

What about the rash?

An expanding rash called Erythema migrans (EM) develops around the tick bite in 35-59% of patients who contract Lyme disease. This rash usually becomes evident 2 to 30 days after the bite. Roughly 80% of all EMs are solid red ovals. The "bull's eye" or target-like rash is the easiest EM to recognize, but it's not commonly seen. On dark skin, an EM can look like a bruise. Some patients have multiple EMs. Photograph suspected EM rashes and see a doctor as soon as possible.

Photo courtesy Paul Auerbach, MD

Photo courtesy MA Patmas, MD

Photo courtesy Michael Patmas

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Photo courtesy Ed Masters, MD and the Lyme Disease Assn.

How is Lyme disease treated?

Lyme disease is treated with antibiotics. New treatment guidelines for Lyme disease were developed by the International Lyme and Associated Diseases Society (ILADS) and published in the Sept. 2014 issue of Expert Reviews in Anti-infective Therapy. They recommend a wide range of options, making it easier for doctors to individualize care for their patients. The guidelines can be downloaded for free at http://goo.gl/2N1VRd