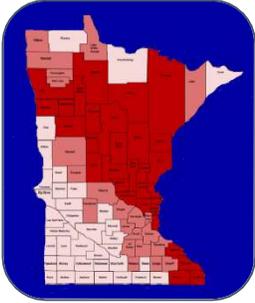


Lyme Disease: Awareness and Prevention

Elizabeth Maloney, MD

Lyme disease is a bacterial infection that may develop after a bite from a Lyme-infected blacklegged tick. The CDC estimates that more than 300,000 new cases of Lyme disease occur annually in the US, which is 10 times higher than the number of reported surveillance cases. If this ratio holds true for Minnesota, then 12,000 – 15,000 Minnesotans will be infected each year.

Lyme Awareness: Risk



Many areas of the country are at high-risk for Lyme disease; this is especially true for wooded or forested regions that provide suitable tick habitat. Forest fragmentation and high acorn production are associated with an increased risk. This map, from the Minnesota Department of Health, depicts the risk of contracting Lyme disease/anaplasmosis (another tick-borne illness) by county; the darker the color, the higher the risk.

People who live/work/recreate in Lyme-endemic areas may be exposed to disease carrying ticks in a variety of settings – camp sites, parks, golf courses, and their own back yards. Pet ownership is associated with an increased risk. Age-related risk is greatest in school-aged kids and lowest in young adults.

Lyme Awareness: Disease basics

Lyme infections can cause significant illness for some, producing serious and chronic symptoms that result in substantial short- and long-term disabilities. Lyme disease is multi-staged but not every patient experiences each stage. A wide variety of symptoms are possible and symptom patterns differ from person to person. In a given individual, symptoms may come and go, vary in intensity, or progress. These variations can make it difficult to recognize the infection.

- **Early Lyme disease** begins within 2-30 days of a bite and only the skin is infected. In 70% of CDC reported cases, patients developed a rash at the site of the tick bite while 30% had no rash. Lyme rashes, commonly called EMs (short for the medical term “erythema migrans”), are usually oval-shaped and solid-colored. The classic “bull’s-eye” is seen in less than 20% of cases. Patients may also have fever, chills, muscle and joint pains, neck stiffness, headaches, fatigue and sore throat. When the EM rash is absent, these flu-like symptoms may be the only clue of the infection. Some patients are asymptomatic in early disease.



Masters E.

- **Late Lyme (or disseminated) disease** develops weeks - years after a bite. In this stage, the infection has spread beyond the skin to other body sites. Within weeks, multiple EM rashes, fatigue, muscle and joint pain, generalized pain, severe headaches and stiff necks (indicating meningitis), facial nerve palsy (looks like Bell’s palsy), sleep and/or concentration difficulties may be seen. A small percentage of patients experience abnormalities in their heart rate.

Months - years after the bite, patients may notice several seemingly unrelated problems, including arthritis, nervous system abnormalities and non-specific problems such as fatigue, headaches, generalized pain, joint or muscle pain, recurrent fevers, difficulty thinking and changes in mood.

- Persistent or chronic Lyme disease is marked by persistence and/or development of new symptoms of Lyme disease despite prior antibiotic therapy.

Lyme Awareness: A Tricky Diagnosis

Because symptoms are variable and lab tests are not always reliable, Lyme disease can be a tricky diagnosis to make. If you spend time in tick habitat or areas known to have Lyme disease or co-infections and develop symptoms of these infections, be sure to let your doctor know about your exposures.

Lyme Prevention: Avoid Ticks

The best way to prevent Lyme disease is to avoid ticks. Stay out of tick habitat, especially areas with long grass, lots of brush or leaf litter. Stay in the center of hiking and biking trails; don't sit on fallen logs. Many people become infected around their home. Clear away brush and fallen leaves, keep your grass short. Place lawn furniture and play structures in sunny areas of the yard. Bird feeders and wood piles attract tick-carrying mice so keep them far from the house. Don't feed deer or use plants that attract them. Pets that go outdoors can bring ticks indoors, perform tick checks and ask your veterinarian for a list of appropriate tick products for your pets.



Lyme Prevention: Use Insecticides and Repellents

Insecticides and repellents reduce the risk of a tick bite. Insecticides kill ticks; repellents encourage them to leave before biting. Look for products with:

- **Permethrin** is an insecticide essential to all prevention plans; its importance cannot be over-emphasized. Apply it to clothing, sleeping bags, tents and other gear, but not skin, before entering tick habitat. It remains effective for 2-6 weeks and through multiple washings. Permethrin-embedded clothing retains its effectiveness through 70 washings; tick gaiters are also useful. Permethrin products are sold at outdoor stores and on-line.
- **Picaridin** is a newer repellent that's as effective as DEET, use concentrations of 20%. Apply it to unbroken skin, fabrics and materials. It is non-toxic and safe for children of all ages.
- **DEET** is the best known repellent, use concentrations of 30% or higher. DEET is safe to apply to unbroken skin, wool and cotton but it can damage other fabrics and materials, such as leather or rubber. The EPA considers DEET to be safe for kids more than 2 months old but Canada's health department recommends against using DEET on children.
- **IR3535** is relatively new to US yet has been used extensively in Europe.
- **2-undecanone** is derived from wild tomato plants. It can be used as an insecticide and repellent but it needs to be reapplied every 4.5 hours.

Lyme Prevention: Tick Checks are Vital

Check for ticks frequently while in tick habitat and for 1-2 days after potential exposure. Promptly remove and save attached ticks in a re-sealable container so your doctor can examine them.

The risk of contracting Lyme disease depends on how long the tick was attached and how likely it is to be infected. Few infected ticks transmit Lyme in less than 24 hours. At 48 hours, roughly 20% will transmit; at 60 hours, 50% pass on the infection and when infected ticks feed until full, 94% will transmit Lyme disease. In many high-risk areas, more than half of the deer ticks are infected with Lyme. Ticks may be infected with other diseases and these infections, often called co-infections, are also transmitted through bites.



EL Maloney

Lyme Prevention: Antibiotic Treatment of Deer Tick Bites

Certain antibiotics may reduce the risk of Lyme disease if taken within 2 days of a bite. Contact your doctor immediately after a bite to discuss this strategy. Following a "wait and see" strategy is risky because 30% of patients never develop a Lyme rash. Basing treatment decisions on blood tests done shortly after a bite is a bad idea because the results are unreliable. Antibiotic approaches are changing; ask your doctor to review this paper published in April, 2011 in the Wisconsin Medical Journal and available at: <http://www.wisconsinmedicalsociety.org/WMS/publications/wmj/pdf/110/2/78.pdf>.