

Exposed to Ticks in Your Working Environment?



As the summer season starts and the weather continues to heat up, with outdoor activity the exposure to tick bite has increased. In addition many District's require employees to work in outdoor environments where employees can be exposed to ticks. The following article provides some general information on tick bites and the resulting Lyme disease condition.

The black-legged tick is on the move.

And as it continues to expand its range into the southern and western U.S. and into Canada, it's likely that the number of Lyme disease cases in North America will climb, experts say. A recent CDC study found that cases of Lyme increased more than 80% between 2004 and 2016 -- from 19,804 to 36,429.

Those are the reported cases. The CDC estimates there are more than 300,000 cases of Lyme infection in the U.S. each year -- or 10 times as many as what is reported. "There's obviously year-to-year bouncing around, but the trend line is upward," says John Aucott, MD, director of the Johns Hopkins Lyme Disease Clinical Research Center in Baltimore. "It won't stop in the foreseeable future."

Most cases are clustered in 14 states in the Northeast and Upper Midwest, but Lyme has been reported as far south as

Florida and Mexico, and increasingly, in Canada. The black-legged tick (*Ixodes scapularis*), also known as the deer tick, carries the bacteria that causes Lyme infection. The same tick also can spread other diseases, including babesiosis, anaplasmosis, and Powassan virus -- other diseases on the rise in the U.S.

Here's more about the disease and what to expect this year and beyond.

What is Lyme disease?

Lyme disease is caused by bacteria, *Borrelia burgdorferi* that are transmitted to humans through a bite from an infected black-legged or deer tick. Symptoms can occur anywhere from 3 to 30 days after the bite and can be wide-ranging, depending on the stage of the infection. In some cases, symptoms can appear months after the bite.

The chances you might get Lyme disease from a tick bite depend on the kind of tick, where you were when the bite occurred, and how long the tick was attached to you, the CDC says. Black-legged ticks must be attached to you for 36 to 48 hours to transmit Lyme disease. If you remove the tick or ticks within 48 hours, you aren't likely to get infected, says Cleveland Clinic infectious disease specialist Alan Taeye, MD.

What are the symptoms of Lyme disease?

Early signs and symptoms include fever, chills, headache, fatigue, muscle and joint pain, and swollen lymph nodes -- all common in the flu. In up to 80% of Lyme infections, a rash is one of the first symptoms, Aucott says.

Without treatment, symptoms can progress. They might include:

- Severe headache or neck stiffness
- Rashes on other areas of the body
- Arthritis with severe joint pain and swelling, particularly in the knees
- Loss of muscle tone or "drooping" on one or both sides of the face.
- Heart palpitation or an irregular heartbeat
- Inflammation of the brain and spinal cord
- Shooting pains, numbness, or tingling in the hands or feet

What does the rash look like?

About 20% to 30% of Lyme rashes have a "bull's-eye" appearance -- concentric circles around a center point -- but

most are round and uniformly red and at least 5 centimeters (about 2 inches) across, Aucott says.

“Most are just red,” he says. “They do not have the classic ring within a ring like the Target logo.”

The rash expands gradually over a period of days and can grow to about 12 inches across, the CDC says. It may feel warm to the touch, but it rarely itches or is painful, and it can appear on any part of the body.

How small are ticks?

Ticks come in three sizes, depending on their stage of life. Larvae are the size of grains of sand, nymphs the size of poppy seeds, and adults the size of an apple seed.

How is Lyme disease diagnosed?

Doctors diagnose it based on symptoms and a history of tick exposure. Two-step blood tests are helpful if used correctly. But the accuracy of the test depends on when you got infected. In the first few weeks of infection, the test may be negative, as antibodies take a few weeks to develop. Tests aren't recommended for patients who don't have Lyme disease symptoms. Aucott says the most promising development in the fight against Lyme disease are better diagnostic tests that are accurate in the first few weeks after exposure. The earlier the treatment, the less likely the disease will progress. Aucott says he expects the tests to be available soon.

Doctors may not recognize symptoms, especially those who practice in areas where Lyme infection isn't prevalent, and up to 30% of the infections are not accompanied by a rash.

What are the stages of Lyme infection?

There are three stages:

- Early localized Lyme: Flu-like symptoms such as fever, chills, headache, swollen lymph nodes, sore throat, and typically a rash that has a “bull’s-eye” appearance or is uniformly round and red and at least 5 centimeters in size
- Early disseminated Lyme: Flu-like symptoms that now include pain, weakness or numbness in the arms and legs, vision changes, heart palpitations and chest pain, a rash, and facial paralysis (Bell’s palsy)
- Late disseminated Lyme: This can occur weeks, months, or years after the tick bite. Symptoms might include arthritis, severe fatigue and headaches, vertigo, sleep disturbances, and mental confusion.

While experts don't understand it, roughly 10% of people treated for Lyme infection do not shake the disease. They may go on to have three core symptoms -- joint or muscle pain, fatigue, and short-term memory loss or mental confusion. This is called post-treatment Lyme disease syndrome. It's considered controversial because its symptoms are shared with other diseases and there isn't a blood test to diagnose it, Aucott says. There are theories as to why Lyme symptoms become chronic. One is that the body continues fighting the infection long after the bacteria are gone, much like an autoimmune disorder.

How is Lyme disease treated?

Antibiotics are used to treat early stage Lyme infection. Patients typically take doxycycline for 10 days to 3 weeks, or amoxicillin and cefuroxime for 2 to 3 weeks. In up to

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90% of cases, the antibiotic cures the infection. If it doesn't, patients might get other antibiotics either by mouth or intravenously.

For early disseminated Lyme disease, which may happen when a Lyme infection goes untreated, oral antibiotics are recommended for symptoms such as facial palsy and abnormal heart rhythm. Intravenous antibiotics are recommended if a person has meningitis, inflammation of the lining of the brain and spinal cord, or more severe heart problems. In late-stage Lyme, a patient may receive oral or intravenous antibiotics. Patients with lingering arthritis would receive standard arthritis treatment.

There is no treatment for post-treatment Lyme disease syndrome. "Ten percent of people don't get better after antibiotics," Aucott says. "We think it's very significant if 30,000 people a year don't get better."

Who is likeliest to get Lyme disease?

Infection is more common in males up to age 15 and between the ages of 40 and 60, says Taege. "These are people who are more likely to play outside, and go camping, hunting, and hiking," he says. Aucott adds that Lyme infection drops off in older teens and those in their 20's "because they're inside on their computers." Older adults, he says, tend to have more time to work in their backyards, which is where most Lyme infection is transmitted.

What's driving tick expansion?

Scientists point to a variety of causes for the spread of Lyme infection. Among them are reforestation, especially in the Northeast U.S., where Lyme disease is more prevalent; climate change and temperature extremes; suburbanization; and more exposure to the white-tailed deer, which is the black-legged tick's

favorite mode of travel.

"Ticks have a pretty long life cycle, lasting 2-3 years, and typically don't move very far within their lifetime, so it takes a while to see large changes," he says.

Deer and white-footed mice, which transmit Lyme disease to ticks that bite them, are moving closer to humans as their habitats disappear, says Taege. Ticks don't mind dogs, either, which carry them into homes and spread them to their humans.

Another reason: Warmer weather and mild winters may bring more people outside, raising their chances of being bitten, particularly in Lyme-prone areas, Taege says.

"Whether you believe in global warming or not, we have longer, warmer summer months, and people are outdoors more," says Taege. "We've seen an expansion [of ticks] in areas in which the vectors live, and we've slowly seen



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more Lyme disease.” That doesn’t mean you should be afraid of outdoor activities, as long as you take precautions to avoid tick bites, Aucott says.

What’s the best way to prevent a tick bite?

Ticks can’t fly or jump, but instead live in shrubs and bushes, and grab onto someone when they pass by. To avoid getting bitten:

- Wear pants and socks in the woods, areas with lots of trees, and while handling fallen leaves
- Wear a tick repellent on your skin and clothing that has DEET, lemon oil, or eucalyptus.
- For even more protection, use the chemical permethrin on clothing and camping gear.
- Shower within 2 hours after coming inside, if possible.
- Look at your skin and wash ticks out of your hair.
- Put your clothing and any exposed gear into a hot dryer to kill whatever pests might remain.



How do you know if you’ve been bitten?

Given that the ticks are the size of a poppy seed, you’ve got to have pretty good eyes. The CDC recommends that if you’ve been walking in the woods, in tall grass, or working in the garden, check your skin afterward, ideally in the shower or bath. That way, you’ve removed your clothes, which may carry ticks, too.

What do you do if there’s a tick under your skin?

Remove it with a pair of fine-tipped tweezers as soon as possible, pulling upward with steady pressure. If parts of the tick remain in the skin, also try to remove them with the tweezers. After everything is out, clean the bite area with rubbing alcohol or soap and water.

Mead says you’re not likely to get infected if you remove the tick within 36 to 48 hours.

Some people have an allergic reaction to ticks, so they’ll notice a bite right away.

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Please contact SDRMA Chief Risk Officer Dennis Timoney, if you have any questions.