

Introduction

Special points of interest:

- Left untreated, Lyme disease can cause a multitude of serious symptoms, including joint pain/swelling, speech problems, and cognitive issues.
- A “bullseye” rash is a sure sign of Lyme disease.
- Not all persons affected with Lyme disease get the characteristic “bullseye” rash.

Lyme disease is a bacterial infection spread through the bite of the blacklegged, or deer, tick. These ticks are found primarily in wooded, bushy or grassy areas in heavily tick populated areas. The ticks get the bacteria from biting infected mice and deer, and then harbor the bacterium *Borrelia burgdorferi* in their stomachs. The blacklegged tick is most active from May to August and into September. Lyme cases have been reported in all 50 states but concentration is heaviness in Northeast and upper mideastern parts of United States. Lyme disease has also been reported in 60 other countries.



Lyme disease was first reported in 1975, when mothers of a group of children who lived near each other in Lyme, Connecticut, made researchers aware that their children

all were diagnosed with Rheumatoid Arthritis. This unusual grouping of illness led researchers to identify the bacterial cause and named it “Lyme disease” in 1982.



According to the CDC, Lyme disease is the fastest growing vector-borne infectious disease in the United States, affecting approximately 300,000 people a year. The bacterium (*Borrelia burgdorferi*) has five subspecies, over 100 strains in the US and 300 strains worldwide. This is thought to contribute to it’s ability to evade the immune system and antibiotic therapy, leading to chronic infection. Less than 50% of people infected can recall a tick bite or a signature rash, which indicates they were not significant enough for them to notice. Currently there is no vaccine available.

Symptoms

In 60% - 80% of cases, the infected person will develop a rash. It may initially resemble a bruise, spider bite, ring worm, or cellulitis, and may enlarge in the days/weeks after. The person may also develop multiple rashes; however, this does not indicate more than one tick bite. If the person develops the signature “bull’s eye” shaped rash (a dark red center, lighter ring, then darker ring), this is a definite sign of Lyme disease and they need to seek immediate treatment. There are three stages of Lyme disease:



- ⇒ Stage 1 or Early Localized LD. Symptoms can include a fever/chills, headache, fatigue or muscle and/or joint pain, stiff neck, rash as mentioned above. This stage occurs before the infection as has spread throughout the body.
- ⇒ Stage 2 or Early Disseminated LD. Symptoms can include paralysis or weakness in the muscles of the face, muscle pain in general, pain or swelling in large joints (knees the most common), heart problems such as palpitations, chest pain and shortness of breath.
- ⇒ Stage 3 or Late Disseminated LD. Symptoms can include most commonly muscle and joint pain, abnormal muscle movement, joint swelling, numbness and tingling, speech problems and cognitive problems.

Diagnostic Tests

- ⇒ A blood test to check for antibodies to the bacteria
- ⇒ Most commonly the ELISA for Lyme disease test.
- ⇒ A Western blot test is done to confirm ELISA results.
- ⇒ In areas where Lyme disease is more common, your health care provider may be able to diagnose early disseminated Lyme disease (Stage 1) without doing any lab tests.
- ⇒ In the first few weeks, when the person has the rash the tests are expected to be negative as antibodies take a few weeks to develop. Also, if a person received antibiotics during this period they may not have developed antibodies as yet. If the person were to be tested 4-6 weeks later it is likely to be positive if they have Lyme disease.

Other tests that may be done, when the infection has become more widespread, include:

- ⇒ Electrocardiogram
- ⇒ Echocardiogram to look at the heart
- ⇒ Spinal tap (lumbar puncture examine spinal fluid)
- ⇒ MRI of the brain

Treatment

Antibiotics are used to treat Lyme disease. Oral antibiotics are standard treatment for early-stage Lyme disease. Doxycycline (Vibramycin), Amoxicillin (Amoxil) and Cefuroxime (Ceftin) are the most common choices. Doxycycline cannot be used in pregnant women and children under age 8. Antibiotic treatment resolves the “Bull’s Eye” rash within one to two weeks. Later illness such as nervous system disease might require intravenous antibiotics such as Rocephin. A

small number of people still experience some symptoms after treatment, such as muscle aches and fatigue. The cause of these continued symptoms is unknown and treating with more antibiotics does not help. It is believed by some experts that some people who get Lyme disease are predisposed to develop an autoimmune response that contributes to these symptoms.

Prevention

People should take precautions to avoid direct contact with ticks especially during warmer months. Whenever possible avoid wooded or bushy areas, or areas with high grasses and leaf litter where ticks are known to be found. Walk in the center of trails. Check yourself, children and pets frequently for ticks after walking in these areas. Wear long pants and long sleeves when walking through heavy brush, tall grass and densely wooded areas. Tuck pant legs into your socks to prevent ticks from crawling up inside. Keep your shirt tucked into pants. Wear light-colored clothes to spot ticks easily.

Spray all exposed skin and clothing with insect repellent. Skin repellents with DEET are the most common and popular and last up to 7 hours. Picaridin is another type of repellent that works as well as

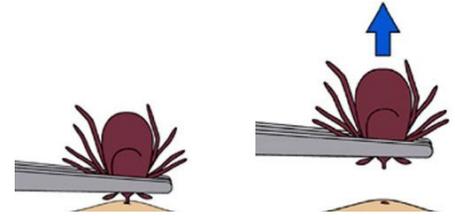
DEET but only lasts four hours. If using both sunscreen and insect repellent, apply the sunscreen first and wait 30 minutes to apply the insect repellent. Apply repellent to clothing rather than skin whenever possible.

To avoid toxicity from repellents, first read the label for that particular product. In general, apply sparingly to exposed skin, keep out of eyes, never breathe in or swallow repellents and wash repellent off after risk of being bitten is gone.

Repellents **should not** be used on children’s hands as they are likely to rub their eyes or put fingers in their mouths; children under 2 months old; children 2 months to 2 years should not have insect repellent applied more than once in a 24-hour period.

Tick Removal

1. Use fine-tipped tweezers to grasp the tick as close to the skin's surface as possible.
2. Pull upward with steady, even pressure. Don't twist or jerk the tick; this can cause the mouth-parts to break off and remain in the skin. If this happens, remove the mouth-parts with tweezers. If you are unable to remove the mouth easily with clean tweezers, leave it alone and let the skin heal.
3. After removing the tick, thoroughly clean the bite area and your hands with rubbing alcohol, an iodine scrub, or soap and water.
4. Dispose of a live tick by submersing it in alcohol, placing it in a sealed bag/container, wrapping it tightly in tape, or flushing it down the toilet. Never crush a tick with your fingers.



Helpful Hint

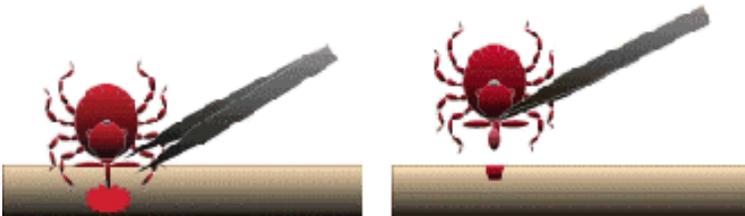
Avoid folklore remedies such as "painting" the tick with nail polish or petroleum jelly, or using heat to make the tick detach from the skin. Your goal is to remove the tick as quickly as possible--do not wait for it to detach.

<http://www.cdc.gov/lyme/removal/index.html>



If a tick bites you:

- ⇒ **Don't** squeeze, twist or squash it. Don't burn it with a match or cover it with Vaseline.
- ⇒ **Do** use fine-point tweezers or a special tick-removing tool. Grasp the tick as close to the skin as possible. If you don't have tweezers, protect your fingers with a tissue.



- ⇒ Pull the tick straight out with steady, even pressure.
- ⇒ Disinfect the bite area and wash your hands.
- ⇒ Save the tick for testing (alive if possible) in a small bottle or plastic bag with a green leaf or damp piece of tissue.
- ⇒ Label it with your name, date, site of bite and how long tick was attached.

Tick mouthparts have reverse barbs so they cannot be easily removed except by firmly pulling straight out, preferably with fine-tipped tweezers. Do not squeeze, twist, burn, attempt to "unscrew" or "smother" a tick.



Myth Busters!

Folk remedies, such as touching the tick with a lit cigarette or smothering it with Vaseline, might have worked to remove American dog ticks, but the most common ticks people are likely to encounter these days are blacklegged (deer) ticks and Lone Star ticks. In their adult stages, these two tick species attach with great resolve. They insert their longer hypostomes, which have more backward pointing barbs, deeper into the skin than dog ticks. Deer ticks also secrete a substance that glues them into the skin of the host. After feeding, they secrete enzymes to dissolve the glue, allowing them to detach. Attached nymphal stage ticks, which also attach quite firmly, are simply too small to touch with a lit cigarette without risking a skin burn. This could also cause the tick to regurgitate into the bite site, putting you at greater risk of contracting Lyme disease. Sharply pointed tweezers, which allow you to grab even poppy-seed sized nymphs close to the skin, have consistently proven to be the most reliable way to remove all species and stages of ticks safely. Even if the hypostome breaks during extraction, the germs that can make you sick are further back in the tick's body, in the salivary glands and gut.

http://www.tickencounter.org/prevention/how_not_to_remove_a_tick

Lyme Disease Test

Name: _____

Role/Title: _____

Agency: _____

Date: _____

Please provide contact information (email address, fax number, or mailing address) where you would like your certificate to be sent:

You must submit your completed test, with at least a score of 80%, to receive ½ **hour** of training credit for this course.

- * To submit via fax, please fax the test and evaluation to 814-728-8887. Please fax only the test and evaluation, not the entire training packet.
- * To submit via email, please send an email to HCQUNW@MilestonePA.org. Please put "(Topic) Test" in the subject line, and the numbers 1—? along with your answers, in the body of the email, OR scan the test and evaluations pages and email as attachments.
- * To submit via mail, send the test and evaluation pages to Milestone HCQU NW, 247 Hospital Drive, Warren PA 16365.

Knowledge Assessment:

1. Lyme disease is caused by a virus called a spirochete. **True False**
2. Lyme disease is carried by deer flies and infect humans when they bite. **True False**
3. Lyme disease is completely curable by anti-viral medications. **True False**
4. The insect that carries Lyme disease is dark colored so wearing light colored clothing will help you see them better. **True False**
5. If you find the insect that causes Lyme disease on you, swat and smash them right away. **True False**

Home Study Evaluation

Training Title: Lyme Disease Date: _____

- Provider Administrator/
- Direct Support Professional Supervisor
- Program Specialist Provider Clinical Staff
- Consumer/Self-Advocate Family Member
- Support Coordinator Support Coordinator Supervisor
- PCH Staff/Administrator County MH/MR/IDD
- FLP/LSP Other (please list): _____

Please circle your PRIMARY reason for completing this home-study training: _____

- It's mandatory interested in subject matter need training hours convenience

Please circle the best response to each question.

5 = Strongly Agree 4 = Agree 3 = Undecided 2 = Disagree **1 = Strongly Disagree**

- | | | | | | |
|---|---|---|---|---|---|
| 1. As a result of this training, I have increased my knowledge. | 5 | 4 | 3 | 2 | 1 |
| 2. I learned something I can use in my own situation. | 5 | 4 | 3 | 2 | 1 |
| 3. This training provided needed information. | 5 | 4 | 3 | 2 | 1 |
| 4. The training material was helpful and effective. | 5 | 4 | 3 | 2 | 1 |
| 5. Overall, I am satisfied with this training. | 5 | 4 | 3 | 2 | 1 |
| 6. I am glad I completed this training. | 5 | 4 | 3 | 2 | 1 |

Suggestions for improvement: _____

Additional information I feel should have been included in this training: _____

I would like to see these topics/conditions developed into home-study trainings: _____