



**Centers for Disease Control and Prevention**  
 CDC 24/7: Saving lives, protecting people, reducing health costs

## Signs and Symptoms of Lyme Disease

If you had a tick bite, live in an area known for Lyme disease or have recently traveled to an area where it occurs (</lyme/stats/index.html>), and observe any of these symptoms, you should seek medical attention!

### Early localized stage (3-30 days post-tick bite)

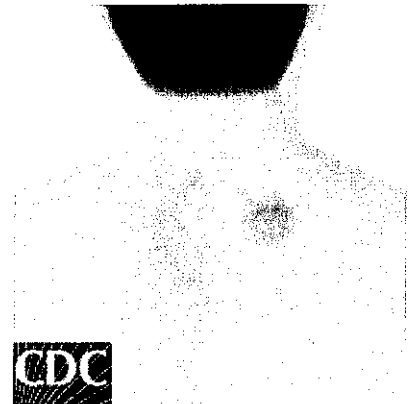
Red, expanding rash called erythema migrans (EM)  
 Fatigue, chills, fever, headache, muscle and joint aches, and swollen lymph nodes

Some people may get these general symptoms in addition to an EM rash, but in others, these general symptoms may be the only evidence of infection.

Some people get a small bump or redness at the site of a tick bite that goes away in 1-2 days, like a mosquito bite. This is not a sign that you have Lyme disease. However, ticks can spread other organisms (</ticks/diseases/index.html>) that may cause a different type of rash. (</ticks/symptoms.html>) For example, Southern Tick-associated Rash Illness (STARI) (</stari/index.htm>) causes a rash with a very similar appearance.

### Erythema migrans (EM) or "bull's-eye" rash

- Rash occurs in approximately 70-80% of infected persons<sup>1</sup> and begins at the site of a tick bite after a delay of 3-30 days (average is about 7 days).
- Rash gradually expands over a period of several days, and can reach up to 12 inches (30 cm) across. Parts of the rash may clear as it enlarges, resulting in a "bull's-eye" appearance.
- Rash usually feels warm to the touch but is rarely itchy or painful.
- EM lesions may appear on any area of the body.



### Early disseminated stage (days to weeks post-tick bite)

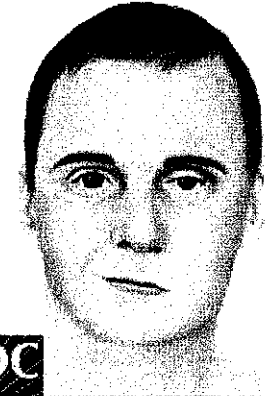
Untreated, the infection may spread from the site of the bite to other parts of the body, producing an array of specific symptoms that may come and go, including:

Additional EM lesions in other areas of the body  
 Facial or Bell's palsy (loss of muscle tone on one or both sides of the face)  
 Severe headaches and neck stiffness due to meningitis (inflammation of the spinal cord)  
 Pain and swelling in the large joints (such as knees)  
 Shooting pains that may interfere with sleep

Many of these symptoms will resolve over a period of weeks to months, even without treatment<sup>2</sup>. However, lack of treatment can result in additional complications, described below.

### Bell's (facial) palsy

Loss of muscle tone on one or both sides of the face is called facial or "Bell's" palsy.



### Late disseminated stage (months-to-years post-tick bite)

Approximately 60% of patients with untreated infection may begin to have intermittent bouts of arthritis, with severe joint pain and swelling. Large joints are most often affected, particularly the knees<sup>3</sup>. Arthritis caused by Lyme disease manifests differently than other causes of arthritis and must be distinguished from arthralgias (pain, but not swelling, in joints).

Up to 5% of untreated patients may develop chronic neurological complaints months to years after infection<sup>4</sup>. These include shooting pains, numbness or tingling in the hands or feet, and problems with short-term memory.

### Arthritis

Pain and swelling in the large joints (such as knees) can occur.

### Lingering symptoms after treatment (post-treatment Lyme disease syndrome)

Approximately 10-20% of patients with Lyme disease have symptoms that last months to years after treatment with antibiotics<sup>5</sup>. These symptoms can include muscle and joint pains, cognitive defects, sleep disturbance, or fatigue. The cause of these symptoms is not known, but there is no evidence that these symptoms are due to ongoing infection with *B. burgdorferi*.

This condition is referred to as Post-treatment Lyme disease syndrome (PTLDS) (</lyme/postLDS/index.html>). There is some evidence that PTLDS is caused by an autoimmune response, in which a person's immune system continues to respond, doing damage to the body's tissues, even after the infection has been cleared. Studies have shown that continuing antibiotic therapy (</lyme/diagnostictreatment/Treatment/>) is not helpful and can be harmful for persons with PTLDS.



### References

1. Correspondence. The Presenting Manifestations of Lyme Disease and the Outcomes of Treatment. N Engl J Med 2003; 348:2472-2474, June 12, 2003.