# Lyme Disease

## Traveler Summary

### Key Points

- Lyme disease is a bacterial infection occurring in the US, Europe, and parts of Asia that is acquired through the bite of an infected tick.
- Risk is increased for travelers who engage in extensive outdoor activities, such as hiking or camping in forested or brushy areas of affected countries.
- Symptoms may include a well-defined circular rash, fatigue, chills, fever, headache, muscle and joint aches, and swollen lymph glands.
- Consequences of infection include chronic rash, ongoing joint problems, mood disorders, arthritis, and/or neurological or cardiac involvement.
- Prevention includes wearing long, light-colored trousers tucked into boots when hiking and observing personal protective measures against tick bites.
- No vaccine or preventive drugs are available.
- Self-treatment includes a single dose of doxycycline taken orally within 72 hours of a tick bite.

### Introduction

Lyme disease is a bacterial infection occurring in the US and Europe that is transmitted through the bite of an infected ***Ixodes*** tick (hard tick).

### Risk Areas

Lyme disease is common in North America and Europe; however, cases have been reported from parts of northern Asia and provinces in China. Lyme disease is common during the warmer months, with two-thirds of the cases occurring in the summer months (June, July, and August) when ticks are most active.

In Canada, Lyme disease is most notably present in the Maritimes, in southern, eastern, and northwestern Ontario, and in southern Manitoba. In Europe and parts of northern Asia, Lyme disease occurs in southern Scandinavia, the northern Mediterranean countries of Greece, Italy, and Spain, and eastward from the British Isles into central Russia, with most cases concentrated in central Europe, specifically in Austria, Czech Republic, southern Germany, Switzerland, Slovakia, and Slovenia.

### Transmission

Lyme disease is transmitted to humans through the bite of hard ticks (***Ixodes*** ) in brushy, woodland, or forested regions of affected areas when the ticks acquire the bacteria from various animals. Pets can also bring ticks into the home. Ticks often attach themselves in hard-to-see areas such as the scalp, neck, armpit, groin, or navel. Risk of transmission increases the longer the tick is attached, but about 36 to 48 hours of attachment are usually required before the disease is transmitted.

### Risk Factors

Risk is increased for travelers who engage in outdoor activities such as hiking, hunting, berry picking, and camping in forested or brushy areas where tick reservoirs (such as deer and mice) abound.

### Symptoms

Symptoms of Lyme disease most commonly appear approximately 3 to 30 days following exposure and include a well-defined circular rash, which expands slowly and eventually develops a central clearing that produces the characteristic "bull's-eye" appearance. Fatigue, chills, fever, headache, muscle and joint aches, and swollen lymph glands commonly accompany the rash. Sometimes these general symptoms occur without the rash.

### Consequences of Infection

Lyme disease may lead to chronic rash, ongoing joint problems, mood disorders, arthritis, and/or neurological or cardiac involvement.

## Need for Medical Assistance

Persons who develop symptoms of Lyme disease should seek urgent medical attention. A dose of doxycycline may be considered for self-treatment if medical care will not be available within 72 hours of the exposure; consult a medical provider before traveling to determine if this is an option.

## Prevention

### Nonvaccine

Wear long, light-colored trousers tucked into boots when hiking and observe personal protective measures against tick bites. See ***Insect Precautions***.

### Tick Avoidance

People living in or entering tick-infested areas should:

- Wear long, light-colored pants tucked into socks.
- Use a DEET insect repellent on skin and/or an insect repellent containing permethrin on clothes.
- Check for ticks daily while in the risk area and for a few days after leaving the area.
  - Shower and check for adult ticks and nymphs, especially on the neck, scalp, groin, armpits, and navel.
  - Pets should also be inspected, especially in the ears.
- Remove attached ticks immediately with fine-tipped tweezers, grasping the tick as close to the skin surface as possible and pulling directly upwards, steadily, without twisting or jerking. If possible, save the tick in a glass container for identification.
  - Clean the site with an alcohol swab or soap and water.
  - Avoid handling the tick with bare hands.
  - Inspect site of tick attachment for signs of rash every day for 30 days; the rash may occur without other symptoms present.
- If possible, stay on well-cleared trails when crossing wooded areas.

These precautions reduce, but do not eliminate, the risk of tick bites.

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