# Lyme Disease

FACT SHEET 18-011-1115

Just the Facts... *Lyme disease (LD) is an infectious disease that often begins with a characteristic rash, and which can later involve the joints, nervous system and/or heart. It is caused by a spiral-shaped bacterium (spirochete) called Borrelia burgdorferi that is transmitted to humans or domestic animals by the bite of an infected tick. It can sometimes become severely debilitating, but is rarely fatal.*


*Ixodes scapularis,* the blacklegged tick (also known as the "deer tick"), is the vector for *B. burgdorferi* in the East and Midwestern US.

**How exactly does a person get Lyme disease?**

You can get LD if you are bitten by a tick that is infected with *Borrelia burgdorferi*. Bacteria in the tick's saliva are transmitted to you while the tick is feeding. An infected tick must be attached to you for at least several hours (usually 48-72) in order for transmission to take place, so prompt removal of a tick will lessen your chance of getting sick. Also, not all ticks are infected, so a tick bite does not necessarily mean that disease will follow. In addition, you cannot get LD if an infected tick is just crawling on your skin or clothing. LD bacteria are NOT transmitted from person-to-person.

**What are ticks and where are they found?**

Ticks are small arachnids, relatives of spiders and insects. In order to grow and reproduce ticks must feed on the blood of animals. The main species of ticks which transmit Lyme disease in the United States are *Ixodes scapularis* (black-legged tick, a.k.a. deer tick) in the East and Midwest, and in the western U.S. *Ixodes pacificus* (western black-legged tick). In Europe *Ixodes ricinus* (sheep tick) is the predominant species and *Ixodes persulcatus* (taiga tick) is common in Asia. Ticks don't fly or jump. Rather, a tick climbs to the ends of blades of grass, shrubs or weeds and waits quietly with its front legs extended until it can grab onto a passing animal or human. Ticks are most common in woods, brushy areas and un-mown fields or any overgrown place. These are the areas where their animal hosts (such as mice and deer) live.

World distribution of Lyme disease
Map: CDC

**What are the symptoms of Lyme disease and how is it treated?**

The first symptom of LD is usually a skin rash called erythema migrans (EM) that occurs at the site of the tick bite within 3 days to one month following infection (usually 7-14 days). The tick itself may go undetected. The rash begins as a small red spot, which gradually enlarges. Often the lesion has partial clearing in the center so that it resembles a bull's-eye, and it usually expands to at least several inches in diameter, sometimes 12 inches or more. While the rash is red in color on light skin, it may appear more like a bruise on dark-skinned individuals. Up to 40% of people with LD may not have the early skin rash. Other common early signs of LD include flu-like symptoms such as significant fatigue, headache, sore and aching muscles and joints, fever, sore throat, stiff neck and swollen glands. If left untreated, these early symptoms of LD may disappear on their own over a period of weeks; however, this does not necessarily mean that the disease has cleared up, and serious complications could arise later. If promptly treated with appropriate antibiotics, the skin rash and flu-like symptoms go away within days, and complications can usually be avoided. If left untreated, infection can spread to joints, the heart, and the nervous system. If you experience the symptoms described above, seek medical attention.

**What should I do if I find a tick attached to my skin?**

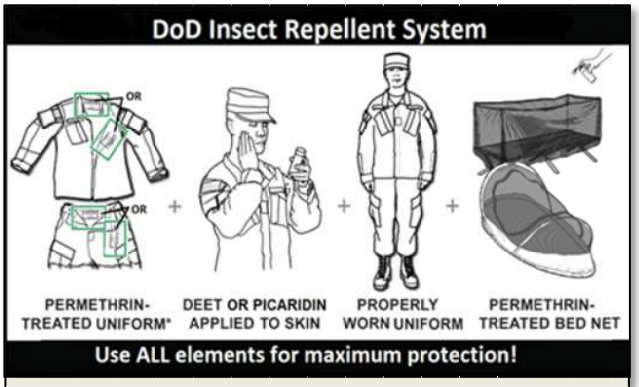
Remove attached ticks as soon as they are found. Use tweezers to firmly grasp the tick's mouthparts up against the skin, and pull back firmly and steadily. Don't pull back sharply, as this may tear the mouthparts from the body, leaving them embedded in the skin. If the mouthparts do break off, don't panic – the mouthparts alone cannot transmit disease because the infective body of the tick is no longer attached. However, to prevent secondary infection, remove the mouthparts as you would a splinter. Never

***Army Public Health Center (Provisional), Entomological Sciences Program***
***5158 Blackhawk Road, APG, MD 21010-5403***
***COM 410-436-3613 / DSN 312-584-3613 / Website: http://phc.amedd.army.mil***

squeeze the body of the tick or use such things as petroleum jelly, fingernail polish remover, or a lighted match: these methods could force more infective fluid into the skin. After removal, wash the wound site, and apply an antiseptic.

**How can Lyme disease be prevented?**

AVOID TICK BITES! The best method of protection from ticks and mosquitoes is the use of the DOD Insect Repellent System. It incorporates permethrin repellent on the uniform, DEET or picaridin repellent on exposed skin, a properly worn uniform and sleeping under a permethrin-treated bed net. Uniforms factory-treated with permethrin will have a garment label similar to the one shown on the right. Routinely check your skin and clothing for ticks while you are outdoors in tick habitat, and do a careful check of your whole body once you come indoors. The ticks can be very small. Look for new "freckles" or moving specks of dirt. Remove attached ticks as soon as they are found.




Combined use of all elements of the DOD Insect Repellent System provides maximum and safe protection from ticks that carry Lyme disease. It is DOD policy that Soldiers use the DOD Insect Repellent System when the threat of vector-borne disease transmission is likely. Diagram: VID, APHC

**What can I use to treat my clothing with permethrin?**

Army Combat Uniforms (ACUs) that are factory-treated with permethrin (ACU Permethrin) are now available to all Soldiers. The ACU Permethrin will have a sewn-in label on both the trouser and the blouse indicating the uniform has been factory-treated with permethrin. If not factory-treated, apply permethrin to uniforms in the field before wearing using either the IDA Kit (NSN 6840-01-345-0237), which can last up to 50 washings, or aerosol can (NSN 6840-01-278-1336), which lasts 5-6 washings. Other aerosol products containing 0.05% permethrin and permethrin-impregnated garments are also commercially available for civilian use.

**What are the standard military insect repellent products available for use on exposed skin?**

Approved military insect repellents for use on exposed skin come in a variety of formulations. Always refer to the label to determine frequency of repellent application based on activity. **Do not apply repellent to eyes, lips, or to sensitive or damaged skin**. Available military repellents are:

- **Ultrathon™** (NSN 6840-01-284-3982) 33% controlled-release DEET lotion; one application protects for 12 hours.
- **Ultra 30 Insect Repellent Lotion** (NSN 6840-01-584-8393) contains 30% Lipo DEET; one application protects for up to 12 hours.
- **Cutter® pump spray** (NSN 6840-01-584-8598) contains 23% DEET; one application protects for up to 8 hours.
- **Sunsect** combination sunscreen & repellent (6840-01-288-2188) contains 20% DEET and SPF 15 sun protection.
- **Natrapel® pump spray** (NSN 6840-01-619-4795) contains 20% picaridin; provides improved protection against Anopheles mosquitoes (carriers of malaria).


Standard military insect repellents for use on exposed skin come in a variety of formulations (left). All standard skin repellents contain the active ingredient DEET or picaridin and are registered by the USEPA. These products are safe to use and effective at repelling ticks that carry Lyme disease.
Photo: VID, APHC

**What is considered a "properly worn uniform"?**

Worn properly, your uniform acts as a physical barrier against ticks and insects. Wear the sleeves rolled down. Close all openings in your clothing that might provide access to insects: tuck your pants into your boots and your undershirt into your pants. Wear your uniform loosely since mosquitoes can bite through fabric that is pulled tight against the skin.

**What are the standard bed nets available to help protect Soldiers from tick bites while sleeping?**

Treated bed nets provide a barrier between a sleeping soldier and pests (e.g., mosquitoes/ticks). Lightweight, Self-Supporting, Pop-Up Bed Nets factory-treated with permethrin are available in Coyote Brown (NSN 3740-01-518-7310) or OD Green (NSN 8415-01-516-4415). Untreated Mosquito Bed Nets (NSN 7210-00-266-9736) should be treated with permethrin aerosol and set-up by properly tucking in and kept off the ground.