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Popular Educational Material

Item (more items available at the LDF)	#	Final Price
• Tick-Borne Disorders brochure - 1-free, \$15 per 100	___	___
• Lyme Disease brochure - 1-free, \$15 per 100	___	___
• Everything You Need to Know about LD - book \$18	___	___
• LD: What you Should Know - video \$25	___	___
• Workplace Education - video/slides/booklet \$50	___	___
• '97 Scientific Conference Compendium - \$40	___	___

A wide range of other educational material is available, call us!

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I Want to Volunteer Send information on:

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|-----------------------|--------------------------|
| ___ Education, public | ___ Education, medical |
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Diagnosis

There is no test that can determine if a patient is infected with the LD bacterium and can then demonstrate that the patient has become bacterium-free. The LDF agrees with the Centers for Disease Control and National Institutes of Health that the diagnosis of LD is clinical, based on signs and symptoms, with test results being one piece of information in the complete picture. No test can "rule-out" Lyme disease.

Antibody Tests

Antibodies are the immune system's response to "fight off" infection. Tests strive to be both sensitive (detecting *any* LD antibodies) and specific (detecting *just* LD antibodies.)

False Negative tests occur due to: defects in test sensitivity; too low an antibody level to detect (e.g. they are bound to the bacteria, with too few free-floating; the patient taking antibiotics or other drugs; naturally low antibody production) the bacterium has changed, limiting recognition by the immune system; or bacterial strain variations.

False Positive tests occur due to: test failure or cross-reacting antibodies (e.g. syphilis, periodontal disease, ANA or RF).

- **Titer** (ELISA or IFA) tests measure the level of *Bb* antibodies in fluid. Laboratories use different detection criteria, cut-off points, types of measurements, and reagents.
- **Western blot** produces bands indicating the immune system's reactivity to *Bb*. Laboratories differ in their interpretation and reporting of these bands.

Direct Detection Tests

- **Antigen detection** tests detect a unique *Bb* protein in fluid (e.g. urine) of patients. This may be useful for detecting LD in patients taking antibiotics or during symptom flare-up.
- **Polymerase chain reaction** (PCR) tests multiplies the number of *Bb* DNA to a detectable level to measure.
- **Culturing** of the bacteria is difficult and can take months.
- **Staining** of tissue is time consuming and has a low yield.

Treatment

Treatment varies depending on how early a diagnosis is made. No definitive treatment regimens have been determined and failures occur with all protocols. Oral antibiotics may be sufficient for early stages of non-disseminated infection. Long-standing, disseminated disease responds best to one or several courses of intravenous antibiotics. Physicians and researchers agree that it is unethical not to treat people with demonstrated persisting infection. Therefore, some people receive retreatment or longer treatment.

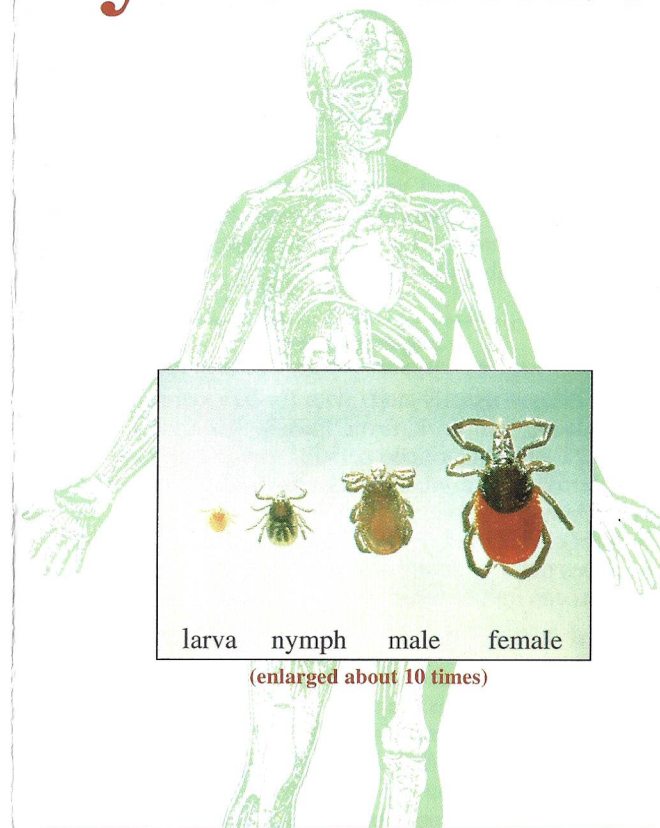
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Ask for a copy of our new
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Guide to Lyme Disease



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Lyme Disease is ...

Lyme disease (LD) is a bacterial infection caused by a spirochete named *Borrelia burgdorferi* (Bb). There are about 100 U.S. and 300 worldwide strains of the bacterium. The bacteria have been in the U.S. for over 100 years. The spirochetes are maintained by animals in nature, where certain ticks bite infected animals, ingest the bacteria, then transmit the infection through subsequent feedings. Humans and pets are incidental hosts to ticks.

Transmitters of the bacteria include the Western black-legged tick in the West, the black-legged tick and potentially the lone star tick in the rest of the country. These ticks can be anywhere - woods, seashore, even the backyard. While ticks can bite year-round, peak tick season in the northeast is April to September, and on the West coast is November to April.

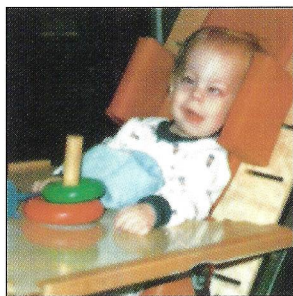
LD accounts for 90% of vector-borne infections in the U.S. From 1980 to 1997 about 100,000 cases have been reported, with a total estimate of 1.5 - 2 million people having LD and costing society about \$18 billion.

Symptoms

Lyme disease usually starts with flu-like symptoms (headache, stiff neck, fever, muscle aches, or fatigue). About 60% of light-skinned patients notice a unique Lyme rash, referred to as erythema migrans (EM), days to weeks after the bite. Some people do not notice these early indicators of infection. Early symptoms usually disappear, and serious multi-systemic problems may start later. LD symptoms can imitate other diseases and can be misdiagnosed.

General Fatigue, flu-like symptoms, headache, fever(s).

Brain Nerve conduction defects (weakness/paralysis of limbs, loss of reflexes, tingling sensations of the extremities), severe headaches, stiff neck, meningitis, cranial nerve involvement (e.g. change in smell/taste; difficulty chewing, swallowing, or speaking; hoarseness or vocal cord problems; facial paralysis; dizziness/fainting; drooping shoulders; inability to turn head; light or sound sensitivity; **LD eye and facial paralysis** change in hearing), stroke, abnormal brain waves or seizures, sleep disorders, cognitive changes (memory problems, confusion, decreased concentration), behavioral changes (depression, personality changes).



Vanderhoof-Forschner, BS, MBA

Eyes Vision changes, including blindness, retinal damage, optic atrophy, red eye, conjunctivitis, "spots" before eyes, inflammation of various parts of the eye, pain, double vision, deviation of eyeball (wandering or lazy eye), drooping eyelid, light sensitivity.



Masters, MD

Single rash on dark skin



Paparone, DO

Multiple rash on lighter skin

Skin One or more rashes (EM) - This skin discoloration varies in size and shape; usually has rings of varying shades, but can be uniformly discolored; may be hot to the touch or itch; ranges in color from reddish to purple to bruised-looking; and can be necrotic (crusty/oozy). Multiple rashes per bite or rash(es) not at the bite-site are an indication of disseminated disease. Later skin problems include lymphocytoma, which is a benign nodule or tumor, and acrodermatitis chronica atropicans (ACA) which is discoloration/degeneration usually of the hands or feet.

Heart & Blood Vessels Irregular beats, heart block, myocarditis, chest pain, vasculitis.

Joints Pain - intermittent or chronic, usually not symmetrical; sometimes swelling; TMJ-like pain in jaw.

Liver Mild liver function abnormalities.

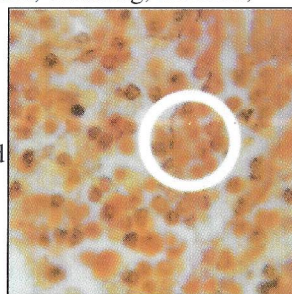
Lungs Difficulty breathing, pneumonia.

Muscle Pain, inflammation, cramps, loss of tone.

Stomach, Intestines Nausea, vomiting, diarrhea, loss of appetite, anorexia.

Spleen Tenderness, enlargement.

Pregnancy Miscarriage, premature birth, stillbirth, and neonatal deaths (rare). Congenital LD has been described in medical literature.



Duray, MD

LD Bacteria in newborn spleen

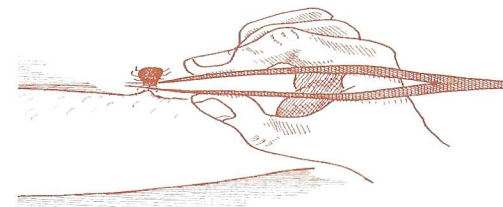
How to Protect Yourself

Reduce tick bites by following these simple steps:

- Avoid tick-infested areas, avoid sitting directly on the ground, and stay in the center of paths.
- Wear light-colored long pants and long sleeves when you venture into grass, woods, garden or beach areas so you can more easily see the ticks. Tuck shirt into pants and pants into socks to thwart a tick's effort to crawl onto your skin.
- Use EPA-approved tick repellents. Wash-off repellents when you return inside.
- Do frequent tick-checks, including a visual inspection and a naked, full body exam upon returning inside.

How to Remove a Tick

Tick's mouthparts have reverse harpoon-like barbs, designed to penetrate and attach to skin. Ticks secrete a cement-like substance that helps them adhere firmly to the host.



If bitten by a tick...

- ① Use a fine-point tweezer to grasp the tick at the place of attachment, as close to the skin as possible.
- ② Gently pull the tick straight out.
- ③ Place the tick in a small vial labeled with the victim's name, address, and the date.
- ④ Have the tick identified/tested by a lab, health department or veterinarian.
- ⑤ Wash your hands, disinfect the tweezer, and the bite site.
- ⑥ Call your doctor to determine if treatment is indicated.

Cautions

- Children should be taught to seek adult help for tick removal.
- If you must remove the tick with your fingers, use a tissue or leaf to avoid contact with infected tick fluids.
- Do not prick, crush, or burn the tick as it may release infected fluids.
- Do not try to smother the tick (e.g. petroleum jelly, nail polish) as the tick has enough oxygen to complete feeding.

What is the Lyme Disease Foundation?

The Lyme Disease Foundation (LDF) is a national non-profit organization - a partnership between the scientific community, businesses, government, and grass roots community efforts to find solutions to tick-borne disorders.

The LDF is the first and foremost organization working towards prevention, detection, treatment, and ultimately, cure of these illnesses.

The LDF board of directors includes the discoverer of the LD bacterium, executives, government leaders, physicians, researchers, patients, and public health officials.



How Does the LDF Help People?

The LDF provides many free services to the public:

- Informs millions of people through media campaigns, and provides information to about 800,000 people a year. The 24-hour Hotline provides information to 80,000 people each year. Also, the LDF provides free educational programs to each state library system.
- Educates millions of children using an award-winning video, distributed free to thousands of schools across the U.S., bilingual materials, and produces educational programs broadcast via PBS stations nationwide.
- Conducts annual medically accredited international scientific conferences keeping scientific dialogue open.
- Publishes the *Journal of Spirochetal and Tick-borne Diseases*, a peer-reviewed scientific journal dedicated to a variety of medical/scientific topics.
- Produces workplace education programs, to help reduce employee exposure to these diseases.
- Publishes the *LymeLight* quarterly newsletter.
- Supports/trains Self-Help Groups and Community Educators.
- Educates federal and state government to the issues surrounding tick-borne disorders.
- Watch-dogs federal funds for appropriateness and efficiency.