



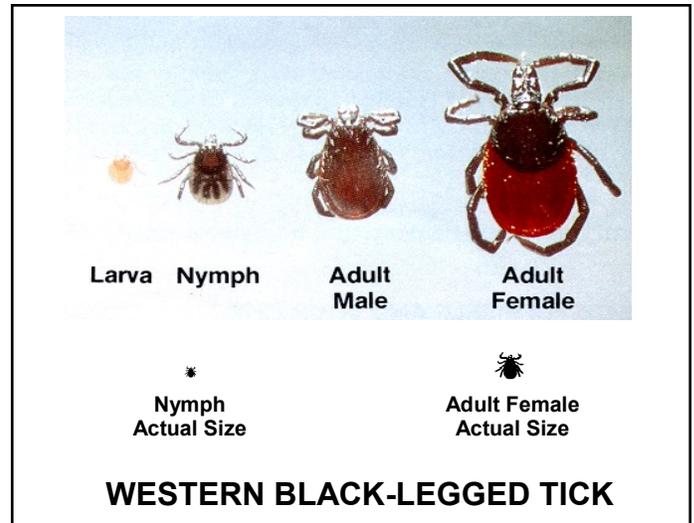
LYME DISEASE

General Information

Lyme Disease or Lyme Borreliosis is a very debilitating disease that is caused by a spirochete (spiral-shaped bacterium) called *Borrelia burgdorferi* and is spread by certain species of ticks of the genus *Ixodes*. This disease occurs in North America, Europe, and northern Asia. In the United States, Lyme Disease was first found near the town of Old Lyme, Connecticut, hence the name Lyme Disease. It has since been reported from many eastern, northern, and western states, including California.

Lyme Disease is responsible for about 95% of all known human cases of vector-borne disease in the United States. Approximately 12,500 new cases are reported every year. The greatest number of these cases occur in the Northeast and the upper Midwest where the disease is vectored by the Black-Legged or Deer Tick (*Ixodes scapularis*, formerly *Ixodes dammini*). In some areas, approximately 25% to 50% of the ticks are infected with Lyme Disease spirochetes. Of the 49 species of ticks found in California, the only known vector of Lyme Disease is the Western Black-Legged Tick (*Ixodes pacificus*). The Western Black-Legged Tick has been reported from 50 of California's 58 counties, but is most common in the humid coastal regions and on the western slope of the Sierra Nevada range. The infection rate of this tick with Lyme Disease in California is about 1% to 2%. Since 1982 there have been over 1,600 **confirmed** human cases of Lyme Disease reported in California, including several in Santa Barbara County. Infected ticks have been found at Vandenberg Air Force Base.

The Western Black-Legged Tick is active all year, however adult ticks are most abundant during the cooler months from October through May. Nymphs (immature ticks) are active from March until August. Human cases of Lyme Disease occur throughout the year in California, but are most frequent in spring and summer. This suggests that the nymphs are much more important than adults in Lyme Disease transmission. Further research is necessary to



confirm this, but the theory may help explain why Lyme Disease patterns are different in California than elsewhere.

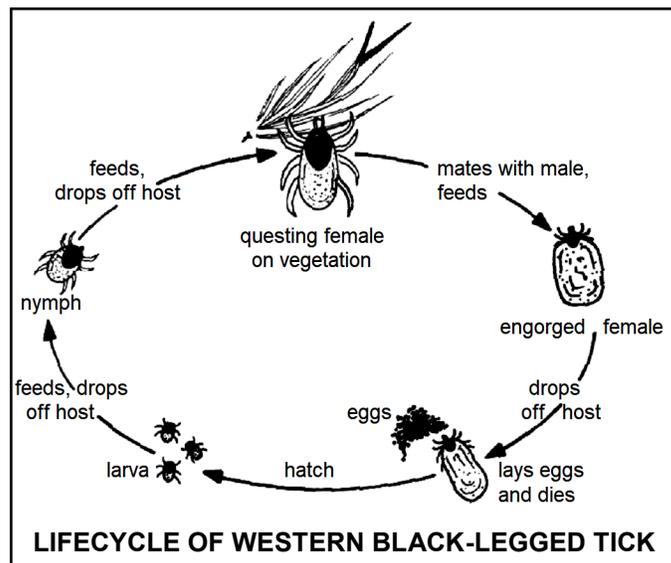
How to Avoid Lyme Disease

The best way to prevent Lyme Disease is to avoid ticks. When outdoors, wear light colored clothing and tuck pants into boots or socks, and shirt into pants. Avoid trail margins, brush, and grassy areas. When possible, mow grass along trails and around buildings and camping areas, and prune or remove brush around areas of human activity. Nymphal Western Black-Legged Ticks also prefer leaf litter under trees, especially oak leaf litter. Check yourself, children, and pets frequently. Ticks like to attach themselves on the scalp, to arms and legs, or where clothing binds the skin, such as around the beltline and collar. Western Black-Legged Tick nymphs are very tiny, slightly larger than the period at the end of this sentence, so it is necessary to check extra closely for them. If a tick becomes attached, prompt removal can prevent the transmission of Lyme Disease, as it can take several hours to pass the disease to the host. DO NOT apply Vaseline, kerosene, etc. or try to burn the tick with a cigarette or match; this may cause the tick to regurgitate, forcing spirochetes (and other disease organisms) into the wound. Use a pair of fine pointed forceps to grab the tick's head as close to the skin

pointed forceps to grab the tick's head as close to the skin as possible, and slowly but steadily pull it straight out. DO NOT twist or "unscrew" the tick because the mouth parts may break off and cause a secondary infection. Avoid squeezing the tick because its body can act like a syringe and inject spirochetes into the skin. Try not to crush the tick; the body fluids may contain spirochetes which can enter the wound or even penetrate unbroken skin. Clean the wound with soap and water then apply a mild antiseptic if available. Save the tick for later identification.

Lyme Disease Symptoms

Lyme Disease is a very complex disease and is extremely difficult to diagnose, as at least 41 possible symptoms have been identified. Indeed, it has been called "The Great Imitator" because its symptoms mimic so many other diseases. Yet, a few or even many symptoms may be completely absent in some victims. The disease occurs in 3 forms, but not every victim suffers from all 3 forms. **The first form**, has the **most characteristic symptom**, a rash called *erythema migrans* that develops around the site of the tick bite 3 to 30 days following the bite. This rash is a red, blotchy, irregular, expanding rash that may grow to several inches in diameter. It may clear centrally, producing a ring-like appearance. Satellite rashes may appear on different parts of the body. Victims may also experience flu-like symptoms such as fever and chills, malaise, fatigue, headache, stiff neck, sore and aching muscles and joints, backache, nausea, sore throat, and swollen glands. The **second form** can occur weeks or months after the bite, and may involve long term neurological and heart problems as well as intermittent arthritis. Heart palpitations arise from irregular heart beat and heart blockage. Nervous system abnormalities can include pain and tingling of extremities, prickling, burning, numb sensation of skin, facial paralysis (Bell's Palsy), meningitis (characterized by severe headache and pain and stiffness of the neck), encephalitis, memory loss, extreme fatigue, depression, sleep disorders, seizures. The **third form** occurs months to years after disease onset, usually manifests itself as



memory loss, extreme fatigue, depression, sleep disorders, seizures. The **third form**, occurring months to years after disease onset, usually manifests itself as arthritis (particularly of large joints such as knees) that appears and disappears intermittently. Lyme arthritis can become chronic, with erosion of cartilage and bone. Children are sometimes misdiagnosed as having Juvenile Rheumatoid Arthritis. LYME DISEASE IS MOST READILY CURABLE IN THE EARLY STAGES, so it is very important to see a physician as soon as symptoms appear. INFORM THE PHYSICIAN OF POSSIBLE EXPOSURE TO LYME DISEASE.

Pets and livestock (dogs, horses, cows, etc.) are also susceptible to Lyme Disease. Infected animals may develop symptoms including arthritis or lameness, lethargy, loss of appetite, and disease of the lymph nodes. Consult a veterinarian if pets or livestock are suspected of being infected.

On rare occasions, ticks in California transmit other diseases such as Ehrlichiosis, Relapsing Fever, Rocky Mountain Spotted Fever, Colorado Tick Fever, and Tularemia to humans.

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