LYME DISEASE

Lyme disease is a preventable bacterial disease transmitted by the bite of a Western Black-legged Tick. It is caused by a spirochete (a spiral-shaped bacterium). The effects of the disease may persist in the human body for several years. The natural history of this disease is not completely understood and the illness it produces takes many forms. Because of varied symptoms, diagnosis can be difficult. This newly recognized disease was first noted in 1975 at Old Lyme, Connecticut, and was first seen in California in 1978.

Lyme disease is now recognized as an important tick-borne disease throughout the northeastern USA from Massachusetts to Delaware; in the midwest in Minnesota and Wisconsin; in some southeastern states; and in the west in California, Oregon, and Nevada, as well as in many European countries.

The purpose of this leaflet is to alert and inform the public of the occurrence of this emerging disease in California, and to provide information on how individuals can protect themselves.

SYMPTOMS

Early symptoms may include a characteristic spreading rash accompanied by flu-like symptoms, fever, and aches. Possible complications in the heart, and/or nervous system may occur as well as severe joint pain. The disease commonly has these three stages, but these stages may not all occur or they may overlap.

Stage 1

The first recognizable symptom may be a slowly enlarging red rash, known as erythema migrans (EM), that occurs 3 to 30 days (average 7-9 days) after the bite of an infected tick. This rash occurs in about 60% of the cases. EM is a red, blotchy, circular, expanding rash that may grow to several inches in diameter and clears centrally, producing a ring-like appearance. One or more EM lesions may occur, not necessarily at the tick bite site. EM may be preceded or accompanied by flu-like symptoms. These symptoms may persist, change, disappear and reappear intermittently for several weeks.

Stage 2

During this stage, patients may experience migratory pain in joints, tendons, muscles, and bones, often without joint swelling or redness.

Some infected persons may develop long-term complications weeks to months after the initial symptoms. These complications may include disorders of the heart or nervous system. Abnormalities of the heart include varying degrees of blockage of the heart muscle. Nervous system abnormalities include meningitis, encephalitis, facial paralysis (Bell's palsy) and other conditions involving peripheral nerves.

Stage 3

Months to years after disease onset, patients may develop joint pain that appears and disappears intermittently for several years. Large joints, especially the knees, are most often affected. Lyme arthritis may become chronic, with erosion of cartilage and bone. Chronic neurologic symptoms and chronic skin conditions may also occur.

THE VECTOR OF LYME DISEASE IN CALIFORNIA

The Western Black-legged Tick *(Ixodes pacificus)* is the major carrier of Lyme disease in California. The adult female is reddish brown with black legs, about 1/8 of an inch long, males are smaller and entirely brownish-black. Ticks that have taken a blood meal (called "engorged") will appear much larger, grayish color and are the size of a pea. Ticks in their immature stages can be as small as the head of a pin.

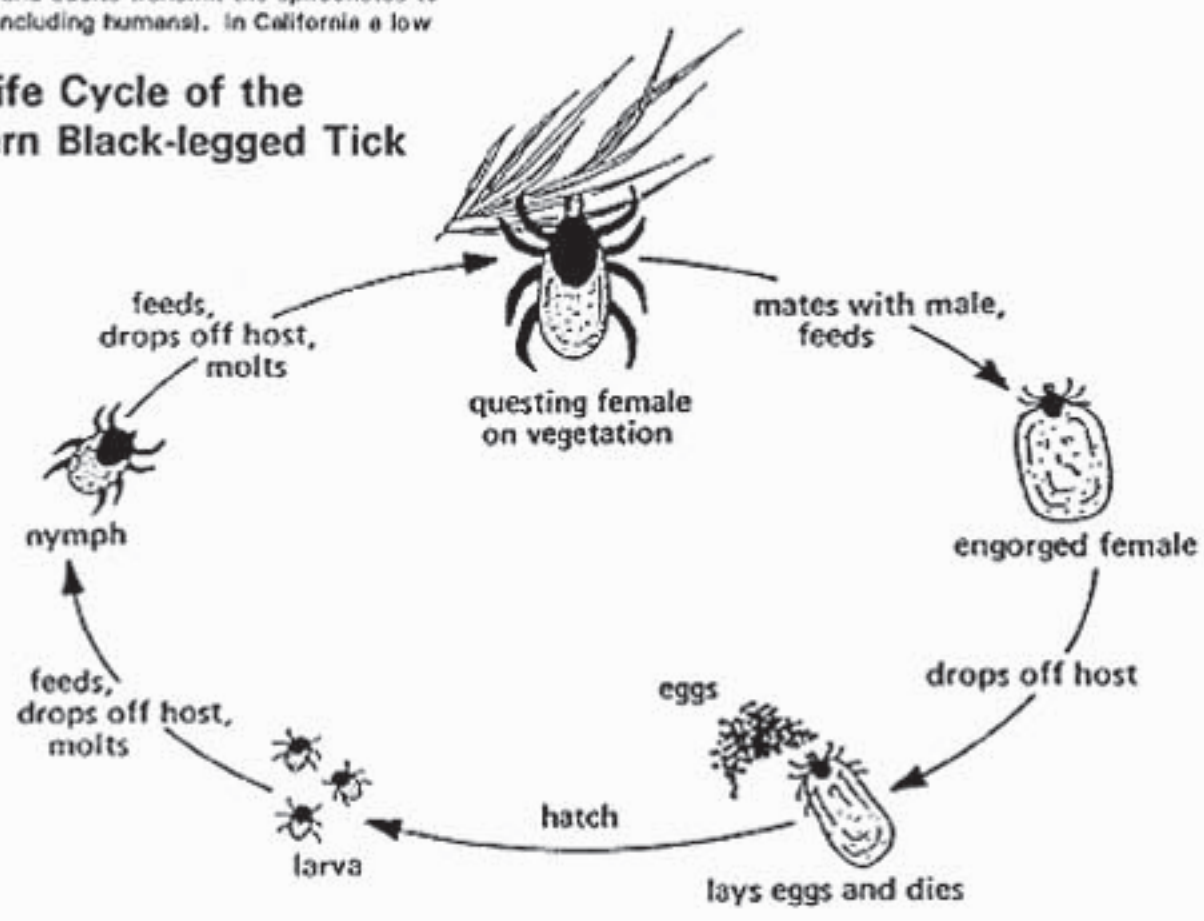
The tick has three active life stages. The two immature stages (larvae and nymphs) feed on small rodents, rabbits, lizards, birds, and occasionally large mammals. The adults feed on large mammals, including deer, dogs, and humans. All stages feed by imbedding their mouth-parts into the skin of a host and taking a blood meal.

Preliminary studies show that white-footed mice and deer may be the primary reservoirs of Lyme disease in California. Larval and nymphal ticks acquire spirochetes from the blood of infected mammals as they feed; the infected nymphs and adults transmit the spirochetes to other mammals (including humans). In California a low percentage of the ticks tested are infected with the Lyme disease spirochete.

Lyme disease can be contracted during any season of the year because the ticks feed at various times of the year including winter. Adult ticks are most commonly found from November through April, during the period of the year when humidity is usually high. The nymphal tick (immature stage) is usually present early spring to late summer.

This tick can be found on grasses and brush in association with host animals in both urban and rural settings which receive afternoon shade. These ticks do not like sunny, open areas. Ticks do not fly, jump, or drop from trees. Instead they climb to the tips of vegetation, typically along animal trails or paths, and wait for a host to brush against them. This behavioral method of finding a host is called questing.

Life Cycle of the Western Black-legged Tick



LYME DISEASE IN PETS

Lyme disease has been reported in dogs (rarely in cats), horses, and cattle, as well as a number of wild animals. Symptoms may include fever, loss of appetite, arthritis, intermittent paralysis, and lack of energy (no rash).

TICK AVOIDANCE

Personal

- Avoid trail margins, brush, and grassy areas when in tick country.
- Wear long pants and long-sleeved clothing.
- Tuck pants into boots or socks, and shirt into pants.
- Wear light-colored clothing so ticks can easily be seen, before they attach to the skin.
- Apply insect repellent on shirts, pants, socks, and shoes. There is no repellent registered specifically for use against ticks in California. Most repellents contain the same active ingredient: Deet (N, N-diethyl-meta-toluamide).
- Check yourself, your children, pets, and others frequently.

Environmental

- Mow grass along trails, buildings, and camping areas.
- Remove brush along rails or other areas of high human activity.
- Area application of insecticides is not effective for tick control.

SINCE IT USUALLY TAKES MORE THAN A DAY FOR THE TICK TO FEED, PROMPT REMOVAL OF TICKS SHOULD PREVENT DISEASE TRANSMISSION.

REMOVAL OF ATTACHED TICKS

1. Grasp the tick with a tissue or tweezers, (NEVER WITH YOUR BARE HANDS!) as close to your skin as possible. If ticks are crushed with bare fingers, exposure to the tick body fluids may lead to transmission of the disease organisms.
2. GENTLY pull the tick from the skin. DO NOT TWIST OR "UNSCREW" THE TICK. DO NOT ATTEMPT TO REMOVE BY BURNING WITH CIGARETTE OR BY APPLYING VASELINE, KEROSENE, ETC.
3. Apply an antiseptic to the bite area after removing the tick. Wash your hands with soap and water.
4. SAVE THE TICK FOR IDENTIFICATION! Submit the tick to your doctor or contact the Vector Surveillance and Control Division of the County, Department of Health Services to determine if the tick is the one capable of transmitting Lyme disease.
5. If the tick cannot be removed or part of it is left in the skin, consult your physician.

WHAT TO DO IF YOU THINK YOU HAVE LYME DISEASE

Early recognition of Lyme disease is important. If you have found a tick attached to your skin or if you were in an area where ticks are known to occur and if you have any of the symptoms listed in this leaflet, tell your physician immediately of your suspicions and save the tick. This information, together with a blood test, will help your physician make a diagnosis. Blood tests have been used in addition to evaluating clinical symptoms for diagnosis, but the test alone is not sufficient for diagnosis. The blood test should not be obtained until several weeks after the tick bite because the blood test is not very sensitive in the early phase of the disease. The blood measures antibody levels against the bacteria in the blood. Treatment with antibiotics during early stages may cure the infection and prevent complications associated with stages 2 and 3. Antibiotic treatment of the later stages of Lyme disease is often, but not always, successful.

A new vaccine is now available for persons 15 to 70 years of age that may have frequent contact with infected ticks. Consult your physician. For information call: 1-888-LYMERIX ext. 600