



Tick-borne Relapsing Fever

The Vector-Borne Disease Section of the Division of Communicable Disease Control, California Department of Health Services, has prepared this information leaflet to answer questions about tick-borne relapsing fever in California and to suggest ways you can avoid getting this disease.

What is "Relapsing Fever"?

Relapsing fever (RF) is an infectious disease caused by bacteria called "spirochetes". In California, people get RF through the bite of ticks. Between 1970 and 1995, over 200 cases of RF were reported in California. Most of these people became infected while vacationing in rural mountain areas during the summer months, between May and September.

How is Relapsing Fever transmitted?

Individuals get RF when they are bitten by an infected tick. The ticks that transmit RF are called "soft ticks" and are different from "hard ticks" like the western black-legged tick which transmits Lyme disease. Soft ticks are found mainly in the mountains and foothills, between 3000 and 9000 feet elevation. Soft ticks live in dark, cool places such as rodent nests, within shaded wood piles outside buildings, and between walls or beneath floorboards inside. Soft ticks can survive for up to 20 years without feeding and spirochetes within them may remain infectious for over 10 years.

Like hard ticks, soft ticks attach to a warm-blooded host and take a blood meal. Soft ticks prefer to feed on rodents, including squirrels, chipmunks and mice, but may seek out other mammals, including humans, if rodents are scarce. Soft ticks will often actively search out a host to feed on, in contrast to hard ticks that will wait on grass or shrubs until an animal passes by. Soft ticks remain attached for only a few minutes while feeding, unlike hard ticks which may remain attached for several days. Finally, because soft ticks frequently feed at night, most people never realize that they were bitten.

What are the symptoms of Relapsing Fever?

Most people who are infected first feel ill about 7 days (range, 3 to 11 days) after they are bitten by the tick. Individuals experience a sudden fever (104-105° F), chills, headache, and muscle ache. Nausea, vomiting, abdominal pain, and rash may also occur. These symptoms continue for 3-5 days, then abruptly disappear. A few days later, the fever and other symptoms will recur ("relapse"). This cycle may continue for several weeks if not treated. Anyone who develops these symptoms should see their doctor. RF is not transmissible person-to-person.

How is Relapsing Fever diagnosed and treated?

Your doctor can usually diagnose RF by taking a blood sample and observing the spirochetes under a microscope. Spirochetes are most commonly seen in blood samples obtained during one of the periods of fever.

RF is easily treated with one to two weeks of antibiotics. Most individuals will lose their fever within 24 hours of starting antibiotic treatment and feel back to normal within a week. Long-term complications and death due to RF are extremely rare.

What can I do to avoid getting Relapsing Fever?

The most important action you can take is to educate yourself about where and how RF is likely to be acquired. Be especially aware of the potential risks when visiting or camping in mountain forests. If you're planning to stay in a cabin:

- C Check the sleeping areas for evidence of rodents--for example, holes in the floor or walls, shredded material from mattresses, and rodent feces on counters or in cupboards.
- C Avoid sleeping on the floor or on a bed that touches the wall.
- C If the dwelling has been unoccupied, change and wash all bedding before use.

Remember that a building does not have to be obviously rodent infested to pose a risk of RF. Although most RF cases occur in older, rustic cabins, people have also been infected in clean, modern homes.

Rodent control

Because rodents can pose a risk of other diseases such as plague and hantavirus pulmonary syndrome, household rodent control should be maintained at all times. In addition to eliminating the rodents currently in a residence, it is essential to take measures to prevent future reinfestation.

- Thoroughly check the outside walls and foundation of the building for any openings through which rodents might enter. Ensure that external doors and windows close with a tight seal.
- Keep all food and garbage in tightly sealed containers. Promptly clean up any leftover or spilled food.
- Avoid feeding squirrels, chipmunks, and other rodents around dwellings.
- Eliminate wood piles in or near the house. Store firewood outside, away from walls. Stack wood on pallettes or otherwise raised a few inches off the ground; this will discourage rodents from using these areas as nesting sites.

Tick control

Direct control of ticks in an infested building is necessary for comprehensive prevention of RF. Eliminating rodents without tick control may actually increase the risk of people becoming infected, because hungry ticks will seek out other mammals upon which to feed if rodents are unavailable. Contact a licensed professional exterminator to discuss appropriate tick control measures for your dwelling.

If you have other questions about relapsing fever, please contact your local health department, or the California Department of Health Services' Vector-Borne Disease Section.