

Just the Facts...

Colorado tick fever is a moderately severe tick-borne illness caused by the Colorado tick fever virus (CTFV) (an arbovirus, or **arthropod-borne virus**).

How is the Colorado tick fever virus transmitted?

The CTFV is transmitted by the bite of an infected tick, primarily the Rocky Mountain wood tick, *Dermacentor andersoni*. Immature *D. andersoni* acquire the CTFV when they feed on the blood of a reservoir animal (an animal that has the virus circulating in its bloodstream). Reservoirs for the CTFV include ground squirrels, porcupines, chipmunks, and mice of the genus *Peromyscus*. After the tick becomes infected, it maintains the virus transstadially (from stage-to-stage as it grows and molts), passing on the CTFV to another host (animal or human) while it feeds during its successive life stages. Adult female *D. andersoni* are responsible for most human infections. This is because the adults of this species most commonly come into contact with/bite people, and because it is the females that stay attached for a sufficient period of time to successfully transmit the virus. The virus is not transmissible from person-to-person, except in rare instances by transfusion. Since CTFV can remain viable in the blood for up to 4 months, blood should not be donated for at least this period of time following infection.



Photo: Oregon State University

Adult *Dermacentor andersoni* (Rocky Mountain wood tick), major vector for the Colorado tick fever virus. L to R: male, female

How common is Colorado tick fever?

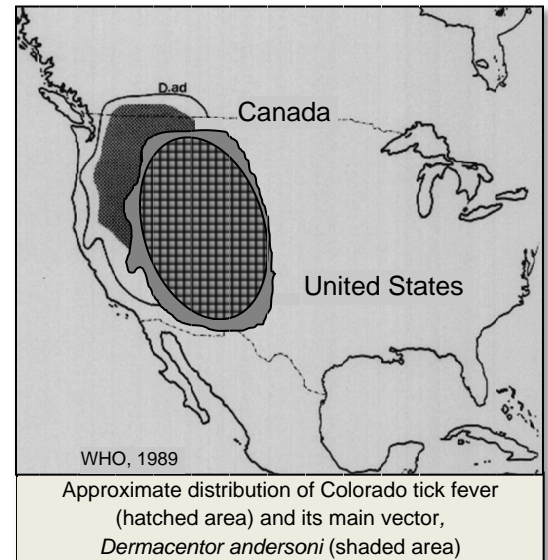
Colorado tick fever occurs in mountainous regions (above 5,000 feet) of the western United States and southwestern Canada, including: California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, South Dakota, Utah, Washington, and Wyoming, as well as southern Alberta and British Columbia. Colorado tick fever is not a nationally reportable disease, so the actual number of cases that occur is unclear; however, it is thought to be under-diagnosed. Risk factors include having an outdoor occupation or engaging in frequent or lengthy outdoor recreational activities in Rocky Mountain areas where the virus is known to be present during the period when the tick vector, *D. andersoni*, is most active (April through June). Travelers vacationing in these areas during the spring and early summer are also at risk.

What are the symptoms of Colorado tick fever?

Symptoms of Colorado tick fever usually begin suddenly 4-5 days following infection. Initial symptoms may include high fever, chills, joint and muscle pains, severe headache, eye pain and sensitivity to light, nausea, and vomiting. Rash is infrequent. Often after a brief remission period, symptoms recur for 2-3 days. Occasionally, more severe symptoms including encephalitis (infection of the brain), myocarditis (inflammation of the heart muscle), or hemorrhaging can occur. Death is rare.

How is Colorado tick fever diagnosed?

Colorado tick fever may be confused with tick-borne bacterial diseases such as Rocky Mountain spotted fever (without the rash), tularemia, relapsing fever, and Lyme disease (without the rash). It may also be difficult to distinguish from other arthropod-borne viral diseases such as St. Louis or Western equine encephalitis. Laboratory confirmation of CTFV infection may include isolation of the virus from blood that has been inoculated into mice or cell cultures, or by detection of antibodies in the blood.







How is Colorado tick fever treated?

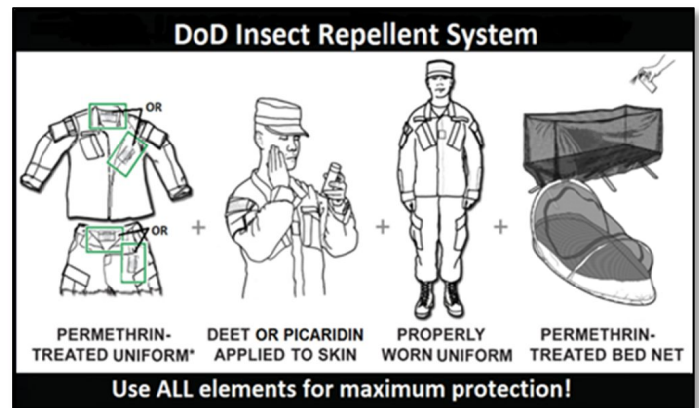
There is no specific treatment for Colorado tick fever. Symptomatic treatment includes efforts to manage pain and fever, as well as other supportive care as necessary. Recovery from CTFV infection confers long-lasting immunity.

What can I do to reduce my risk of becoming infected with Colorado tick fever virus?

There is no vaccine against Colorado tick fever. Therefore, in order to prevent Colorado tick fever, as well as other tick-borne diseases, you must protect yourself from tick bites. When in tick habitat (tall grass and weeds, scrubby areas, woods and leaf litter), follow these precautions:

-  Wear proper clothing as a physical barrier against ticks – long pants tucked into boots or tightly-woven socks; long sleeve shirt; shirt tucked into pants; and light-colored clothing so as to more easily spot ticks.
-  Check your skin and clothing periodically for ticks.
-  Use both skin and clothing repellents that have been approved by the Environmental Protection Agency (EPA). They are safe and effective. Always FOLLOW LABEL DIRECTIONS.
 - For your skin, use a product that contains 20-50% **DEET** (N, N-diethyl-meta-toluamide). **DEET** in higher concentrations is no more effective.
 - Use **DEET** sparingly on children, and don't apply to their hands, which they often place in their eyes and mouths.
 - Apply **DEET** lightly and evenly to exposed skin; do not use underneath clothing. Avoid contact with eyes, lips, and broken or irritated skin.
 - To apply to your face, first dispense a small amount of **DEET** onto your hands; then carefully spread a thin layer.
 - Wash **DEET** off when your exposure to mosquitoes, and other arthropods, ceases.
 - When using **DEET** and a sunscreen, apply the sunscreen first. After 30 minutes to an hour, apply the **DEET**. This allows the sunscreen time to penetrate and bind to the skin, and will not interfere with the efficacy of the **DEET**.
 - For your clothing, use a product that contains **permethrin**. **Permethrin** is available commercially as 0.5% spray formulations. Clothing that is factory-impregnated with permethrin may also be purchased commercially. Permethrin will withstand numerous launderings.
-  For optimum protection, soldiers should utilize the **DOD INSECT REPELLENT SYSTEM**. In addition to proper wear of the military field uniform (pants tucked into boots, sleeves down, undershirt tucked into pants), this system includes the concurrent use of both skin and clothing repellents:

- Standard military skin repellent: 33% **DEET** lotion, long-acting formulation, one application lasts up to 12 hours, **NSN 6840-01-284-3982**.
- Standard military clothing repellents: either IDA (impregnation kit), 40% **permethrin**, one application lasts the life of the uniform (approx. 50 washes), **NSN 6840-01-345-0237**; or aerosol spray, 0.5% **permethrin**, one application lasts through 5-6 washes, **NSN 6840-01-278-1336**. Factory permethrin-treated uniforms are also available via contract [Contact the Armed Forces Pest Management Board (AFPMB) for details, DSN 295-7476; CM (301) 295-7476].



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

Remove attached ticks as soon as they are found. Use fine-pointed tweezers to firmly grasp the tick's mouthparts up against the skin, and pull back firmly and steadily. Be patient – the tick's central mouthpart called the hypostome is covered with sharp barbs, sometimes making removal difficult. Never 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. Preserve the tick by placing it in a clean, dry jar, or other well-sealed container, and keeping it in your freezer. Should you develop disease symptoms, take the tick with you to the physician's office; identification of the tick species may assist the physician with your diagnosis and treatment. You may discard the tick after one month; all known tick-borne diseases will generally display symptoms within this time period.