

# Colorado Tick Fever



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Colorado tick fever (CTF) is a disease caused by an RNA virus, Colorado tick fever virus (CTFV).

Symptoms, which are often non-specific, begin 3 to 5 days after the bite with an abrupt onset of fever and any of these: headaches, chills, malaise, photophobia, myalgias, nausea, vomiting, diarrhea and abdominal pain. In 5 to 15% of cases a rash occurs. Neurologic complications may also occur. 50% of patients have single recurrence of fever ("saddleback" fever).

IFA titers for diagnosis. PCR (Polymerase Chain Reaction) is the test most often used to diagnose the disease. CTF is transmitted by *Dermacentor andersoni* (Rocky Mt. wood tick) which causes illness from the Western Black Hills to the West Coast in the USA. Some cases of transmission through blood transfusion have been reported. Treatment consists of supportive care.

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# STARI (Southern Tick-Associated Rash Illness)

Southern Tick-Associated Rash Illness (STARI) is also known as Masters Disease. STARI is a disease that looks and acts and is treated like Lyme disease.

The causative agent of STARI is unknown, although some people think the bacterium, *Borrellia lonestari*, could be the causative agent, and others think it is another form of Lyme disease.



Symptoms are similar to Lyme disease and can include a rash that looks like the bull's eye rash of Lyme.

There is no generally accepted test for STARI at this time.

It is often found in the South and Midwest where *Amblyomma americanum* (lone star), the tick that transmits STARI, is prevalent. STARI can also be found in the Northern portions of the USA.

The treatment is generally the same as for early Lyme disease, doxycycline.

For more information on STARI visit the Lyme and Tick-Borne Diseases Research Center Columbia University Medical Center Web site [www.columbia-lyme.org/patients/tbd\\_stari.html](http://www.columbia-lyme.org/patients/tbd_stari.html)

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## Tularemia



Tularemia is caused by a bacterium, *Francisella tularensis*, transmitted by ticks.

It can also be transmitted by contact with infected animal, contaminated water, contaminated aerosols or agricultural dust, bioterrorism.

Symptoms can include headache, chilliness, vomiting, aching pains, fever, swollen glands, sweating, weight loss, debility, infection site developing into an ulcer.

Treatment can include streptomycin or gentamicin.

Ticks that transmit tularemia include *Ixodes scapularis* (black legged/deer tick), *Amblyomma americanum* (lone star), *Dermacentor variabilis* (American dog) and *Dermacentor andersoni* (wood).

## Q Fever

Q fever is caused by *Coxiella burnetti* (Cb). Disease can be tick-borne, but most cases result from inhaling Cb-containing dust. Cattle, sheep and goats are the primary reservoirs.



Symptoms include high fevers up to 105°F, severe headache, malaise, myalgia, chills and/or sweats, cough, nausea, vomiting, diarrhea, abdominal pain, chest pain, and may include endocarditis, encephalitis, pneumonia, hepatitis, splenomegaly.

Acute symptoms include hepatitis and pneumonia or chronic endocarditis.

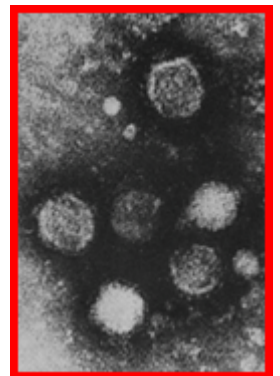
IFA titers are used for diagnosis. Usually treated with doxycycline. Ticks that transmit Q fever include *Amblyomma americanum* (lone star tick) and *Dermacentor andersoni* (Rocky Mountain wood tick).

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## Powassan (POW)

Powassan (POW) is caused by a flavivirus. There are two virus types. One virus type is transmitted by the deer tick/blacklegged tick (*Ixodes scapularis*): lineage 2 POW virus (“deer tick virus”). The other virus type is transmitted by other *Ixodes* ticks – *Ixodes marxi* (squirrel tick), and *Ixodes cookei* (woodchuck tick–found E. of Rockies into New England & Canada): lineage 1 POW virus. The Rocky Mountain Wood tick (*Dermacentor andersoni*) and *Ixodes spinipalpus* can also transmit the virus.



Humans are “dead end” hosts (ticks can’t pick up disease from them).

Transmission time can be within minutes of the bite. Incubation period is 1 week to 1 month after a bite.

Symptoms include headache, fever, nausea, vomiting, stiff neck, and sleepiness, breathing distress, confusion, tremors, seizures, paralysis, and possible coma. Encephalitis and meningitis can occur – 10% of encephalitis cases result in death.

Survivors of POW: 50% have permanent neurologic problems – Headaches, muscle wasting, memory problems

Supportive treatment is the only available treatment.

Tests for POW: Serum or CSF to detect virus-specific IgM & neutralizing antibodies

“Powassan could become epidemic like Lyme disease. Because it can be a serious disease causing fatalities and there is no treatment for it, Powassan has the potential to become a greater of a public health threat than Lyme disease.” – *Professor Emeritus of Epidemiology at the Yale School of Public Health, Durland Fish, PhD.*

Powassan Virus photo: *Canad. Med Assn. J. 5-2-64*

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## **Rocky Mountain Spotted Fever**

Rocky Mountain spotted fever (RMSF) is caused by the bacterium *Rickettsia rickettsii*.



Symptoms include fever, headaches, myalgia; characteristic spotted rash\* begins on wrists, ankles, palms, and soles, and may be absent early in the disease. Treatment is usually doxycycline. \*RMSF rash photo courtesy of Ed Masters, MD.

Humans and pets may contract RMSF. RMSF maybe life threatening. Need to get early appropriate treatment.

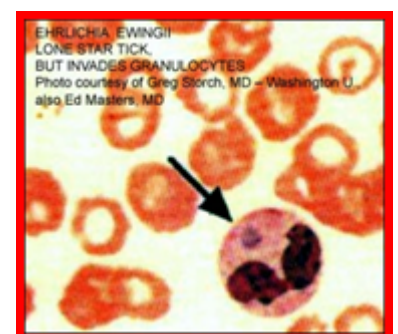
Ticks that transmit Rocky Mountain spotted fever include *Dermacentor variabilis* (American dog), *Dermacentor andersoni* (wood tick), *Rhipicephalus sanguineus* (brown dog), and possibly *Amblyomma americanum* (lone star).

Also see [American Dog Ticks, Bears, & RMSF](#) [/index.php/lda-news-a-updates/1450-america-dog-ticks-bears-a-rmsf](#)

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## Ehrlichiosis/Anaplasmosis

Scientists used to separate ehrlichiosis into two entities caused by the bacterium *Ehrlichia*: Human Monocytic Ehrlichiosis (HME) and Human Granulocytic Ehrlichiosis (HGE). After further study, they determined that HGE is actually caused by a bacterium, *Anaplasma phagacytophilum*.



HME is caused by a bacterium, *Ehrlichia chaffeensis*.

Symptoms of ehrlichiosis/anaplasmosis include: fever, malaise, headaches, chills, severe muscle aches, vomiting, anemia, lung infection, decreased white blood cells and platelets, elevated liver enzymes, seizures, encephalopathy, meningitis, confusion, ataxia and cranial nerve palsy. Co-infection with Lyme can cause more severe symptoms. Death can result.

Treatment is with doxycycline.

Ticks that transmit anaplasmosis include *Ixodes scapularis* (deer tick or black legged tick) and *Ixodes pacificus* (western black legged tick).

Ticks that transmit ehrlichiosis (HME) include *Amblyomma americanum* (lone star) and *Dermacentor variabilis* (American dog). *Ixodes scapularis* (deer tick or black legged tick) and *Ixodes pacificus* (western black legged tick) ticks have been shown to carry the ehrlichiosis bacterium, but to date, transmission is still in question.

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## **Bartonellosis (AKA Bartonella Illness)**



Bartonellosis is a disease caused by several Bartonella species transmitted either by a flea or a tick bite, cat scratch or lice. (Bartonella Henselae and/or perhaps other spp.)



When tick-borne, symptoms includes visual problems, headaches, significant lymph node enlargement, resistant neurological deficits and the new onset of a seizure disorder.

Diagnosis is based on acute and convalescent antibody titers (IFA) and/or positive PCR analysis.

Treatment may be combination macrolides, TCNs, rifamycin, (also possible Bactrim or fluoroquinolones). Treatments vary, examples provided as information only.

Ticks that transmit Bartonella include Ixodes Scapularis (also called the blacklegged tick or deer tick) and Ixodes Pacificus (western black legged tick), both of which also transmit Lyme disease. More than one co-infection can be transmitted from the same tick bite.

Click album below for photos of Bartonella rashes  
</index.php/resources/medical-photos/category/27-bartonella>

[2002 Paper by Martin D Fried MD and Aswine Bal MD](#)

Bartonella henselae is associated with heartburn, abdominal pain, skin rash, mesenteric adenitis, gastritis and duodentis in children and adolescents.

The link below is a video clip from the LDA/Columbia University 2005 Medical Conference, Lyme & Other Tick-Borne Diseases: Emerging Tick-Borne Diseases, held in Philadelphia. Brian Fallon, MD, Columbia University College of Physicians & Surgeons is the session chair providing introductions.

Bartonella: A Clinicians' Viewpoint – Joseph Burrascano, MD

DVD (1, approximately 40 minutes) Joseph Burrascano, MD, Bartonella: A Clinician's Viewpoint, Philadelphia 2005, is now available. \$10

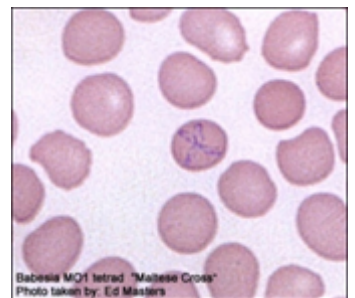
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## Babesiosis

Babesiosis is a Malaria-like illness caused by a parasite, either *Babesia microti*, *B. duncani*, *B. divergens*, MO-1.



It is sometimes fatal in the elderly or those with no spleen. Babesiosis may be more severe in patients with co-existing Lyme disease.

Symptoms include: fever, chills, fatigue, headache, muscle pain, sweats and anemia.

Tests for Babesiosis: blood smears, IFA (IgG & IgM), FISH (Flourescent in-situ Hybridization) and PCR may be ordered.\*

\* These tests were developed & performance characteristics determined by independent labs. They have not been cleared or approved by the FDA; however, the FDA has determined such clearance is not necessary. They are designed for clinical purposes and should not be regarded as investigational or for research.

Treatment is often atovaquone with azithromycin or clindamycin and oral quinine. Treatments vary, examples provided as information only.

Ticks that transmit babesiosis include *Ixodes Scapularis* (also called blacklegged tick or deer tick) and *Ixodes Pacificus* (western blacklegged tick) both of which also transmit Lyme disease. Multiple infections may be transmitted from the bite of the same tick.

Babesiosis has also been transmitted to humans through blood transfusions. In 2018, the FDA approved a test to screen the blood supply for *Babesia microti*.

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