

# TICK BORNE DISEASES

## COMMON SIGNS AND SYMPTOMS OF TICK BORNE DISEASE

- Fever/Chills
- Aches and Pains
- fatigue
- Rash
  - Lyme disease, STARI, Rocky Mountain spotted fever, ehrlichiosis, and tularemia can cause distinctive rashes.
  - Patients bitten by the lone star tick though will occasionally develop a circular (bull's-eye) rash similar to the rash of early Lyme disease.
- Tick Paralysis: Thought to be caused by a toxin in the saliva of ticks and may lead to muscle weakness and paralysis that moves up the body and can resemble other neurological conditions such as botulism and Guillain-Barre Syndrome. Usually resolves in 24 hours after tick removal

## RASH FORMATION

### LYME DISEASE

Lyme disease is the most common vector-borne disease in the United States and can cause fever, headaches, fatigue, and a skin rash named erythema migrans, but it always appears as a bull's-eye. If untreated the infection can spread to joints, the heart and the nervous system. The rash appears similar to the rash formed in STARI but the bacterium *Borrelia burgdorferi* causes Lyme disease, not STARI. Lyme disease can be treated with antibiotics.



Sources:  
CDC. 2021. Signs and symptoms of Lyme Disease. Retrieved from [https://www.cdc.gov/lyme/signs\\_sympoms/index.html](https://www.cdc.gov/lyme/signs_sympoms/index.html)  
CDC. 2023. Lyme disease rashes and look-alikes. Retrieved from [https://www.cdc.gov/lyme/signs\\_sympoms/rashes.html](https://www.cdc.gov/lyme/signs_sympoms/rashes.html)

## GET IN TOUCH

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UNMC College of Public Health  
984388 Nebraska Medical Center  
Omaha, NE 68198-4388



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## SOUTHERN TICK-ASSOCIATED RASH ILLNESS (STARI)

The rash forms as an expanding bull's-eye lesion that develops around the site of the lone star tick bite. The rash appears similar to the rash that forms in early Lyme disease, but is not caused by the same bacteria. The exact cause of STARI is unknown, no diagnostic blood tests have been developed so observing signs and symptoms is vital. The rash expands to a diameter of 3 inches or more.



Source:  
CDC. 2018. Southern Tick-Associated Rash Illness, symptoms, diagnosis and treatment. Retrieved from <https://www.cdc.gov/stari/symptoms/index.html>

## ROCKY MOUNTAIN SPOTTED FEVER (RMSF)

The rash forms 2 to 4 days after fever presents, and changes in appearance over the course of the infection. Some resemble red splotches and others small dots. The rash usually does not form until the latter part of the infection, making RMSF difficult to diagnose. Symptoms include fever, headache, nausea, rash, muscle pain, and vomiting. RMSF can be life threatening and lead to permanent damage such as amputation of distal extremities, paralysis, or mental disability.



Source:  
CDC. 2019. Rocky Mountain Spotted Fever (RMSF), signs and symptoms. Retrieved from <https://www.cdc.gov/rmsf/symptoms/index.html>

## TULAREMIA

Tularemia is caused by infection with the bacteria *Francisella tularensis*. Physical symptoms differ based on transmission route and location on the body. It can be transmitted by tick and deer fly bite, inhalation of infected aerosols, ingestion, bioterrorism, and skin contact with infected animals. Fairly rare infection. The CDC reports approximately 250 cases annually. Incubation period is around 3-5 days, with a range of 1-21 days. Symptoms include fever/chills, headache, malaise, fatigue, loss of appetite, muscle pain, cough, chest discomfort, vomiting, diarrhea, and abdominal pain.



Ulcerating lymphadenitis colli due to tularemia infection



Ulcer caused by *Francisella tularensis*

Source:  
Reintjes, R., Dedushaj, I., Gjini, A., Jorgensen, T. R., Cotter, B., Lieftucht, A....Humolli, I. (2002). Tularemia Outbreak Investigation in Kosovo: Case Control and Environmental Studies. *Emerging Infectious Diseases*, 8(1), 69-73. <https://doi.org/10.3201/eid0801.010131>