

# Tick-borne Infectious Disease



While not all ticks spread disease, some are known carriers of disease microorganisms that can be transmitted to humans and animals through the tick's bite. Cases tend to peak in the late spring through early fall when ticks are most active and people are outside. Different tick species seem to have distinct geographic distributions, possibly related to available food sources, host location, or vegetation type.

Incidence of tick-borne diseases has more than doubled over the past 20 years. Researchers believe this is linked to increasing tick populations, climate change that permits ticks to survive longer, and better disease surveillance. Ticks are most typically found in wooded and tall grass areas, sometimes dropping or crawling onto people who walk through. Once on a person, the tick may bite and can be difficult to detect and remove.

## WHAT DISEASES CAN BE TRANSMITTED BY TICKS?

**LYME DISEASE** is the most commonly reported tick-borne disease in the US, with most cases occurring in the Northeast and upper Midwest. Globally, a [Johns Hopkins case tracker](#) estimates that at least 52,000 cases occurred in 2023, though it's widely assumed that the number could be at least 10 times higher. Lyme disease is caused by the bacterium *Borrelia burgdorferi* which can infect black-legged ticks (i.e., deer ticks) and western black ticks then be transmitted to humans through a tick bite.

**BABESIOSIS**, which is caused by the parasite *Babesia microti*, has increased in recent years. A total of 16,456 cases of babesiosis were reported across 37 states in 2011–2019.

**EHRlichiosis**, caused by the bacteria *E. muris eaucلائrensيس*, had about 2,000 cases reported in the US in 2019. It most commonly occurs in the southeastern and south-central US, where the lone star tick is found.

**ALPHA-GAL SYNDROME (AGS)** is a potentially life-threatening allergic condition that occurs after a bite from a lone star tick. The bite triggers the production of antibodies against galactose- $\alpha$ -1,3-galactose, a sugar found in mammalian tissue. Symptoms subsequently occur after people eat red meat or are exposed to other animal products. AGS is also known as red meat allergy or tick bite meat allergy.

Though rare, ticks also can carry rocky mountain spotted fever, anaplasmosis, southern tick-associated rash illness, tick-borne relapsing fever, and tularemia, with some carrying more than one illness agent.

## SYMPTOMS OF TICK-BORNE DISEASE

At the site of the tick bite, there may be an expanding circular red rash, radiating out from the tick bite at the center. If this is observed, seek medical treatment. Antibiotics typically successfully treat cases, but prolonged symptoms can include fever, joint and muscle pain, headache and fatigue.

## HOW CAN I REDUCE TRANSMISSION OF TICK-BORNE DISEASE?

1. Preventing tick-borne diseases relies on avoiding areas where ticks may be found, such as wooded or grassy areas and using a safe and effective tick repellent (up to 30% DEET-base).
2. Wearing long pants and a long-sleeved shirt can prevent ticks from getting onto skin.
3. After spending time outdoors, promptly inspect your entire body closely for ticks, carefully remove any you find following the [CDC advice](#) for optimal removal, then monitor for a rash after tick removal.
4. Even if a tick is found attached to your skin, you have not necessarily been infected. Not all ticks carry disease, and even if it does, the disease isn't typically transmitted until about 36-48 hours after the tick latches on.

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