

FACTSHEET TICK-BORNE DISEASES

Key aspects briefly summarized

- Only a few tick species bite and spread pathogens that cause disease in humans.
- The diseases transmitted in an area depend on the local tick species.
- Ticks live in grassy, brushy, or wooded areas and on animals.
- Outdoor activities like walking your dog, camping, gardening, or hunting increase risk of exposure—even in your own yard.
- Get vaccinated against tick-borne encephalitis (TBE) if in an affected area.



Disease

Depending on the geographical region and the species, ticks may carry and transmit different pathogens. Diseases include the human ehrlichiosis, Lyme disease, tularemia, babesiosis, tick-borne relapsing fever, Rocky Mountain spotted fever, other rickettsioses, some arboviral diseases, and several flaviviruses causing encephalitis such as tick-borne encephalitis (TBE). Some ticks may also cause tick paralysis.

In Europe, commonly transmitted disease by ticks include Lyme disease (borreliosis), tick-borne encephalitis and tularemia. In the US (and less so in South America) important tick-borne diseases represent babesiosis, anaplasmosis and ehrlichiosis, Powassan disease and severe fever with thrombocytopenia syndrome (SFTS).

Other important pathogens transmitted by ticks are bacterial organisms causing rickettsial diseases, which are found throughout the world. Among returned travelers, rickettsial diseases have been estimated to be the fourth most common cause of fever, with symptoms such as rash, abdominal pain, and a dry, black/dark scab at the site of the infecting bite.

Transmission

Tick-borne diseases are commonly transmitted by the bite of infected ticks. Risk of getting tick-bites is generally increased for travelers who engage in extensive outdoor activities (such as hunting, hiking, camping, or field work in forested or brushy areas or gardening near such areas) where tick reservoirs are abundant. Risk of acquiring rickettsial infections is particularly present for travelers who go on safaris in the wilderness of Africa (especially southern Africa). Risk of acquiring murine typhus is greatest for travelers in risk areas who are exposed to flea-infested cats and dogs or who reside in areas infested with rodents. Some diseases (such as babesiosis) also present other transmission modes. Babesiosis can also be transmitted through blood transfusions and from a pregnant woman to her unborn child.

Occurrence / Risk areas

Tick-borne diseases may occur worldwide, but distribution is based on geographical location (see map).

Areas with increased risk of TBE include central and eastern Europe and the Baltic and Nordic countries. TBE is also prevalent in Russia all the way from the western border with Europe to its eastern border.

Lyme borreliosis is the most prevalent tick-transmitted infection in temperate areas of Europe, North America and Asia, and its geographic distribution is ever-increasing. Central Europe is the region with the highest tick infection rates (young ticks/nymphs >10%; adult ticks >20%) in Europe, specifically in Austria, Czech Republic, southern Germany, Switzerland, Slovakia and Slovenia.

Babesiosis is found in certain regions of North America and forested areas in Europe and East Asia. **Anaplasmosis** is common in North America, Europe, and China.

Ehrlichiosis is common in the US, certain areas of Europe, South America, and Africa.

Powassan disease is found in the northeastern US and far eastern Russia, whereas **Severe Fever with Thrombocytopenia Syndrome (SFTS)** occurs in the US and Asia-Pacific region.

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Rickettsial infections are present worldwide. African Tickbite Fever (ATBF) is the most commonly reported rickettsial infection acquired during travel and occurs in southern Africa (especially Botswana, South Africa, and Zimbabwe). Mediterranean Spotted Fever (MSF), reported among returning US and UK travelers, occurs over much of Africa, Europe, India, and the Middle East; whereas Rocky Mountain Spotted Fever (RMSF) is commonly found throughout Canada, parts of Central and South America, and the US.

Crimean-Congo hemorrhagic Fever (CCHF) is a rare but serious viral disease transmitted by tick bites or contact with infected animal blood. It is the most widespread viral hemorrhagic fever, found in Eastern and Southern Europe, the Mediterranean, northwestern China, central Asia, Africa, the Middle East, and the Indian subcontinent. Healthcare workers and those handling livestock face higher risk.

Symptoms

The symptoms vary according to the pathogen transmitted by the tick. The leading symptom is usually fever, sometimes in combination with specific skin findings (such as rash and/or dark scab at the bite site). Some infections are mild, whereas TBE, for instance, can lead to infection of the brain (encephalitis) or lining of the brain and spinal cord (meningitis). In Lyme disease the progression to neurological motor or sensory impairment is particularly feared. Among the rickettsial diseases, spotted fevers may be fatal in 20%–60% of untreated cases, while other species cause only mild infections. For CCHF, see [CDC LINK](#).

Treatment

There is a specific antibiotic treatment against most bacterial tick-borne pathogens, including Lyme disease (borreliosis), rickettsial diseases, babesiosis, and tularemia. Though there is no specific treatment against most viral tick-borne pathogens (such as TBE).

Prevention

The key to prevent tick-borne diseases is to protect yourself from tick bites (see also fact-sheet "[Mosquito and tick bite prevention](#)"):

- Use insect repellent
- Wear long-sleeved shirts, pants and socks
- Treat clothing and gear with 0.5% permethrin
- Perform thorough tick checks after spending time outdoors. Important: with some pathogens, attachment time of the tick is key for successful disease transmission, and quick riddance may therefore prevent infection.

The best prevention against tick-borne encephalitis (TBE) is to get vaccinated; this is recommended if living or travelling in an endemic area. The vaccine protects against all virus subtypes.

Important

- In risk areas, make sure you have good tick protection: Wear skin-covering clothing and closed shoes and use repellents.
- After spending time in risk areas: check your body for ticks remove them immediately, and disinfect the bite.
- Monitor the bite site and see a doctor if symptoms appear. For post-travel symptoms, consult a tropical medicine specialist.
- Vaccination against TBE is recommended for all residents of an endemic areas and for travelers visiting such areas, especially those engaging in outdoor activities.

Further Information

- [Bundesamt für Gesundheit](#)
- [CDC](#)
- [ECDC](#)
- [TripPrep Tick-Borne Diseases](#)
- [TripPrep Arthropod Infestation and Envenomation in Travelers](#)
- [Global Health Press](#)