

# Protect Yourself Against Tick-Borne Disease

**D**ifferent kinds of ticks present in the U.S. may be infected with bacteria, viruses and parasites that can be transmitted to people and cause at least 10 diseases. While there are treatments approved by the Food and Drug Administration (FDA), prevention is the easiest, cheapest and most effective approach to combat these serious, sometimes fatal diseases.

Some disease-bearing ticks are the size of a poppy seed. Steps to prevent infection include:

- When walking in grassy, wooded areas that are tick-prone, use an insecticide that is effective against ticks and cover up with long shirts and long pants tucked into socks.
- Ticks must stay attached for more than 36 hours to transmit the parasite, according to the Centers for Disease Control and Prevention (CDC), so a full body check soon after being outdoors in a tick-prone area, even a suburban lawn, is urged.
- Taking a shower within two hours of being in an area with ticks has been shown to be helpful and provides a good time to check for ticks on your body.
- When checking for ticks, include hard-to-see areas such as between toes, between legs and on the head.
- Remove any ticks with pointed



Photo courtesy of CDC, by Jim Gathany

Commonly called a “deer tick,” this tick can transmit Lyme disease and a malaria-like disease called babesiosis. When in the larvae stage it is the size of a poppy seed, so checking your body for ticks requires close examination.

tweezers, grabbing ticks by their mouth parts, close to your skin.

Lyme disease and Rocky Mountain spotted fever are the two best-known serious diseases transmitted through tick bites in the U.S. Each year since 2002, about 20,000-30,000 people in the U.S. have been diagnosed with Lyme disease. During that same time period, between 1,400 and 2,500 cases of Rocky Mountain spotted fever have been reported each year.

More recently, health officials have documented the emergence of babesiosis, a disease caused by single-cell parasites called *Babesia*. The parasites are carried by the same kind of ticks that carry Lyme disease.

Young, healthy adults infected with *Babesia* may have no symptoms, mild symptoms or flu or malaria-like symptoms. However, Babesiosis can be severe or even fatal among the elderly, newborns and those with weak immune systems. It is treated with a combination of FDA-approved antibiotics and anti-malaria medicines.

“Public awareness is critical, because most cases of babesiosis can be prevented by avoiding tick bites,” said Mark O. Walderhaug, Ph.D., an author of a study of babesiosis among the elderly. Walderhaug is the associate director for risk assessment in FDA’s Center for Biologics Evaluation and Research (CBER).

### Number Diagnosed

Elderly people living in Connecticut, Rhode Island, New York and Massachusetts were found to suffer the highest rates of babesiosis in the study published in 2012 by scientists at FDA and their collaborators. Babesiosis also seems to be on the rise in Maryland, Virginia and the District of Columbia, the study concluded.

The FDA scientists, led by Mikhail Menis, PharmD, M.S. and aided by the Centers for Medicare and Medicaid Services and a consulting firm, used the novel approach of exploring large health-care databases, includ-

ing Medicare records and those kept by skilled nursing homes. (To protect privacy, names were not included in the study.)

“Indications are that clinical cases reported are only the tip of the iceberg,” said Walderhaug. “In some areas, up to 1.5 percent of the population tests positive for *Babesia* antibodies, meaning they have been infected at some point in the recent past.”

In 2011, health departments in 18 states conducting babesiosis surveillance began using a standard case definition developed jointly by the Council of State and Territorial Epidemiologists and the CDC.

A total of 1,124 confirmed and probable cases were reported in 15 of the 18 states surveyed; 97% of these cases were reported from seven states—the four states showing the highest rates among the elderly in FDA’s study plus New Jersey, Minnesota and Wisconsin.

Although most people who get babesiosis are infected through tick bites, rare cases of transmission from mother to baby during pregnancy or delivery have been reported. The parasites also can be transmitted through blood transfusions.

There are no FDA-approved tests for screening blood donors for evidence of *Babesia* infection. However, scientists from FDA and other institutions are working to develop such tests. FDA has taken several steps, including holding a public workshop and convening a blood products expert advisory committee meeting.

“Finding ways to protect the blood supply from this parasite is critical,” said Sanjai Kumar, Ph.D., chief of FDA’s Laboratory of Emerging Agents in CBER.

Kumar is also one of the FDA scientists involved in the study of babesiosis among those ages 65 and over. Potential blood donors currently are asked if they’ve ever been diagnosed with babesiosis. If they answer yes, they are deferred from donating blood indefinitely.

### Risks and Symptoms

The parasite that causes babesiosis is typically spread by the tick while in its young nymph stage, when the tick is about the size of a poppy seed.

Symptoms of babesiosis can include fever, chills, sweats, headache, body aches, loss of appetite, nausea, fatigue and a type of anemia that can lead to jaundice and dark urine.

Among the elderly, newborns, or people with a weak immune system or without a spleen, babesiosis can be life threatening, with symptoms including low blood pressure, severe anemia and a low blood platelet count, a condition that can lead to blood clots, bleeding and malfunction of vital organs.

Patients with active symptoms can be tested for the disease through blood smears; multiple types of tests may be needed to detect low levels of parasites. The parasites, after entering the human body, live and grow inside red blood cells.

In the study of the elderly, FDA found that whites were more likely than African Americans or Latinos to get babesiosis, and the rates are higher for men than for women. White men by far had the highest rates of infection.

“We don’t know if there are genetic links, but white males, many of whom spend more time outdoors, hunting, hiking, fishing and such, are more likely to be exposed to ticks,” said Walderhaug. “People of both sexes and all ages and ethnic groups who go into tick-prone areas should be cautious.”

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