

## EHRlichiosis

*Ehrlichia chaffeensis* is principally transmitted by the lone star tick (*Amblyomma americanum*). White-tailed deer are a major host of lone star ticks and appear to represent one natural reservoir for *E. chaffeensis*.

Patients with Ehrlichiosis generally visit a physician in their first week of illness, following an incubation period of about 5-10 days after the tick bite. **Initial symptoms** generally include fever, headache, malaise, and muscle aches. **Other signs and symptoms** may include nausea, vomiting, diarrhea, cough, joint pains, confusion, and occasionally rash. In contrast to Rocky Mountain spotted fever, rash is relatively uncommon in adult patients with human monocytic ehrlichiosis (HME), and is rarely reported with human granulocytic (HGE). However, rash has been described in approximately 60% of pediatric patients infected with *E. chaffeensis*.

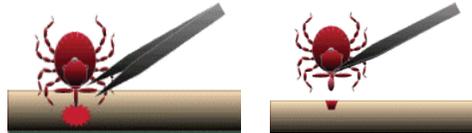
Ehrlichiosis can be a severe illness, especially if untreated, and as many as half of all patients require hospitalization. Severe manifestations of the disease may include prolonged fever, renal failure, disseminated intravascular coagulopathy, meningoencephalitis, adult respiratory distress syndrome, seizures, or coma. It is estimated that 2%-3% of patients may die from the infection. Preliminary evidence suggests that *E. chaffeensis* infection may become more severe than other ehrlichial infections.



Lone Star tick

## STRATEGIES TO REDUCE TICK ABUNDANCE

The number of ticks in endemic residential areas may be reduced by removing leaf litter, brush and wood piles around houses and at the edges of yards, and by clearing trees and brush to admit more sunlight and reduce the amount of suitable habitat for deer, rodents, and ticks. Tick populations have also been effectively suppressed through the application of pesticides to residential properties.



### HOW TO REMOVE A TICK

1. Use tweezers. Grasp the tick by the head as close as possible and pull upward with steady, even pressure. **DO NOT TWIST, JERK OR SQUEEZE THE TICK.**
2. Thoroughly wash the bite site with soap and water and disinfect it. Wash your hands.
3. Keep the tick for identification, in case symptoms of a tick-borne disease occurs.
4. **NEVER** remove a tick with fingernail polish, alcohol or hot matches.



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American dog tick, carrier of RMSF



## Tick-borne Diseases



Black-legged tick, carrier of Lyme disease

**Ticks** are found in grassy, brushy areas where they wait for a host to pass by. They are especially prevalent along paths used by animals. Ticks are not choosy about their host and often get onto a person's leg. They crawl upward on the body, looking for a place to attach. Their populations are higher in the spring and summer following a mild winter.

**Ticks** have a 4-stage life cycle: egg, larva, nymph and adult. The nymph and adult forms are able to attach to humans and other animals and possibly transmit diseases.

A tick bite is not painful and may go unnoticed. In most cases, the tick simply bites, draws blood for its nourishment, and drops off. If the tick happens to be infected, the infectious agent is transmitted during the feeding process. It is important to realize the majority of ticks are not infected.

### HOW TO PROTECT YOURSELF

- Avoid tick-infested areas.
- Wear light-colored clothing so ticks can be seen.
- Wear long-sleeved shirts and tuck pants into socks.
- Apply insect repellants containing DEET to clothing and exposed skin. Read guidelines on can for application on children.
- Check your body thoroughly for ticks.

### ROCKY MOUNTAIN SPOTTED FEVER

The American dog tick, *Dermacentor variabilis*, and Lone Star tick, *Amblyomma americanum*, are responsible for the transmission of Rocky Mountain Spotted Fever (RMSF) in Indiana. The dog tick is the largest of the ticks in Indiana. These ticks are present April to July.

Patients infected with *R. rickettsii* (which causes RMSF) generally visit a physician in the first week of their illness, following an incubation period of about 5-10 days after a tick bite. The early clinical presentation of RMSF is nonspecific and may resemble a variety of other infectious and non-infectious diseases.

#### Initial symptoms may include:

- Fever, nausea, vomiting, severe headache, muscle pain, and lack of appetite

#### Later signs and symptoms include:

- Rash, abdominal pain, joint pain, and diarrhea

The rash first appears 2 - 5 days after the onset of fever and is often not present or may be very subtle when the patient is initially seen by a physician. Younger patients usually develop the rash earlier than older patients. Most often it begins as small, flat, pink, non-itchy spots on the wrists, forearms, and ankles. These spots turn pale when pressure is applied and eventually become raised on the skin. The characteristic red, spotted rash of RMSF is usually not seen until the sixth day or later after onset of symptoms, and this type of rash occurs in only 35 - 65% of patients with RMSF. The rash involves the palms or soles in as many as 50 - 80% of patients; however, this distribution may not occur until later in the course of the disease. As many as 10 - 15% of patients may never develop a rash.

### LYME DISEASE

The black-legged tick, *Ixodes scapularis*, is one of the smallest ticks in Indiana. It is responsible for the transmission of Lyme disease. The first black-legged tick in Indiana was found in Porter County in 1987. These ticks appear from September to November.

#### Signs and Symptoms

Within days to weeks following a tick bite, 80% of patients will have a red, slowly expanding "bull's-eye" rash (called erythema migrans), accompanied by general tiredness, fever, headache, stiff neck, muscle aches, and joint pain. If untreated, weeks to months later some patients may develop arthritis, including intermittent episodes of swelling and pain in the large joints; neurologic abnormalities, such as aseptic meningitis, facial palsy, motor and sensory nerve inflammation (radiculoneuritis) and inflammation of the brain (encephalitis); and, rarely, cardiac problems, such as atrioventricular block, acute inflammation of the tissues surrounding the heart (myopericarditis) or enlarged heart (cardiomegaly).

#### Incubation Period / Mortality Rate

The red "bull's-eye" rash appears usually 7 to 14 days following tick exposure. Some patients present with later manifestations without having had early signs of disease. Lyme disease is rarely, if ever, fatal.

In order from left to right:  
Female, Male,  
Nymph, Larva



CDC image