

## BACKGROUND

Rocky Mountain Spotted Fever (RMSF) is a severe disease resulting from infection by *Rickettsia rickettsii*, a bacterium that may be carried by rodents. Despite the name, RMSF can be found throughout the continental United States with most cases being seen in the Atlantic states from Delaware to Florida.

## WHO DOES THE ISSUE IMPACT?

Participating in outdoor activities in which you may come into contact with ticks is the primary risk factor for RMSF. People having frequent contact with dogs are also at higher risk. Males, persons over 40 years of age and Native Americans tend to be at higher risk for contracting RMSF.

## COMPLICATIONS

If RMSF is left untreated it can result in death. Hemorrhages and extended hospitalization are also possible in severe cases. In severe cases, there can be long term consequences to infection. In some cases amputation may be necessary as blood flow can become limited to extremities. Long term neurological deficits and damage to internal organs may also occur. Long term sequelae are the result of an acute infection, chronic infection does not occur.

## SIGNS AND SYMPTOMS

The incubation period in humans is 3-12 day, with an average of 7 days. In the early stages, RMSF fever can be difficult to diagnose. A classic triad of fever, pin-point rash and tick exposure is suggestive; however, the rash appears several days after the other symptoms, and the tick may not have been noticed. The early signs are nonspecific and may include high fever, chills, malaise, severe headache, and gastrointestinal symptoms. Swelling around the eyes and backs of hands may also occur. A rash occurs in about 90% of cases. Initially the rash is maculopapular, then may develop into a petechial rash. A petechial rash is considered a sign of severe disease. Severe symptoms may include altered mental status, coma, respiratory compromise, necrosis, multiorgan system failure. Although recovery is usually rapid with early treatment, untreated patients may die in eight to 15 days and severe cases often require long hospitalization.

## CAUSES AND TRANSMISSION

The major tick vector in the Commonwealth is *Dermacentor variabilis* (American dog tick) which is found primarily in the eastern and mid-western United States and southern Canada. Transmission usually occurs via the tick's infected saliva during feeding. The feeding process stimulates *R. rickettsii* replication; therefore, several hours of attachment are usually needed before infection occurs. The bacteria can also be spread by exposure to a crushed tick's tissues, fluids or feces, which enter the body through breaks in the skin.

## TESTS AND DIAGNOSIS

Physicians may begin treatment in the absence of supportive laboratory testing as lab tests may be negative in the first 7-10 days after the onset of symptoms. A blood sample taken 7-10 days after symptoms onset may show laboratory evidence of *R. rickettsia*. Thrombocytopenia, slight elevations in hepatic transaminases (aspartate transaminase and alanine transaminase), and hyponatremia might be present.

## TREATMENTS

RMSF is treated with an antibiotic known as doxycycline. Treatment should be begun as soon as the physician suspects RMSF and should not be dependent on lab testing results. Doxycycline treatment should be begun within five days of symptoms onset. Fever typically subsides within one to three days of treatment.

## WHAT CAN YOU DO?

To prevent RMSF:

- The risk of being bitten by an infected tick can be decreased by using the following precautions:
  - Use insect repellent containing low concentrations (10 to 30%) of diethyltoluamide (DEET) on clothing and exposed skin;
    - Apply DEET sparingly on exposed skin. Do not apply to the face. Do not use under clothing.
    - Do not use DEET on the hands of young children. Avoid applying to areas around the eyes and mouth.
    - Do not use DEET over cuts, wounds or irritated skin. Wash treated skin with soap and water after returning indoors, and wash treated clothing.
    - Avoid spraying in enclosed areas. Do not use DEET near food.
  - Avoid tick-infested areas;
  - Wear light colored clothing so ticks can be spotted more easily;
  - Tuck pant legs into socks or boots, and shirts into pants;
  - Tape the areas where pants and socks meet;
  - Wear a hat, long sleeved shirt, and long pants for added protection;
  - Walk in the center of trails to avoid overhanging brush; and
  - Check yourself, family members and pets for ticks after leaving potentially tick infested areas and promptly remove any ticks detected.

If you find a tick:

- If you find a tick attached to your skin, there is no need to panic. There are several tick removal devices on the market, but a plain set of fine-tipped tweezers will remove a tick quite effectively. [Prompt and proper tick removal is very important for preventing possible disease transmission.](#)
  - Use fine-tipped tweezers and protect your fingers with a tissue, paper towel, or latex gloves. Avoid removing ticks with your bare hands.
  - Grasp the tick as close to the skin surface as possible and pull upward with steady, even pressure. Don't twist or jerk the tick; this can cause the mouth-parts to break off and remain in the skin. If this happens, remove the mouth-parts with tweezers. If you are unable to remove the mouth easily with clean tweezers, leave it alone and let the skin heal.
  - After removing the tick, thoroughly disinfect the bite and your hands with rubbing alcohol, an iodine scrub, or soap and water.
  - Avoid folklore remedies such as "painting" the tick with nail polish or petroleum jelly or using heat to make the tick detach from the skin. Your goal is to remove the tick as quickly as possible; do not wait for it to detach.

If you suspect that you or a family member might have RMSF:

- See your healthcare provider if you become ill after having been bitten by a tick or having spent time outdoors participating in activities that may result in tick bites like hiking, camping, yard work, gardening, fishing, hunting, dog walking, etc.

## RESOURCES FOR MORE INFORMATION

PA DOH Vectorborne Disease webpage: [Vectorborne Diseases](#)

CDC RMSF website: <https://www.cdc.gov/rmsf/index.html>

*This fact sheet provides general information. Please contact your physician for specific clinical information.*

**If you have any questions, contact us at 1-877-PA-HEALTH.**

