Rocky Mountain Spotted Fever

Rocky Mountain Spotted Fever (RMSF) is a Class C disease. It must be reported to the state within five business days.

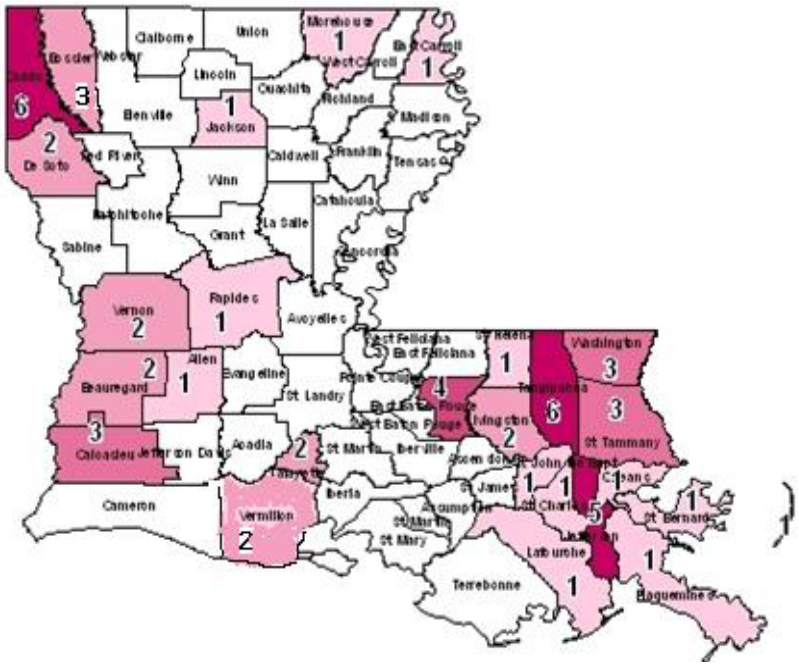
Rickettsia rickettsii, a bacterial organism spread to humans by the bite of ixodid (hard) ticks, is the etiologic agent of RMSF. The two major vectors of RMSF in the U.S. are the American dog tick, *Dermacentor variabilis* and the Rocky Mountain wood tick, *Dermacentor andersoni*. Other domestic tick species have been shown to be infected with *Rickettsia rickettsii* or have been identified as experimental vectors in laboratory studies. Some domestic ticks have no role in transmission in the U.S. but are considered important vectors in Central and South America. Although the vector of RMSF is the tick, exposure to ticks or tick-infested habitats is only reported in sixty percent of the cases.

The rickettsial organism is maintained in nature in a complex life cycle involving ticks and mammals. The tick acts as both vector and reservoir of the disease. Humans are accidental hosts and do not play a role in the natural transmission cycle. Even in areas from which most human cases are reported, only about one percent to three percent of the tick population carries the organism, therefore the risk of exposure is relatively low.

The disease is endemic in areas of North, Central and South America. Other closely related organisms cause different types of spotted fevers worldwide. Over half of the U.S. cases are reported from the south Atlantic region (which extends from Delaware south to Florida). Infection also occurs in the Pacific coastal region and the west south-central region, (which includes Arkansas, Louisiana, Oklahoma and Texas). Although initially identified in the Rocky Mountain states in 1896, a very small percentage of cases has recently been reported from this area.

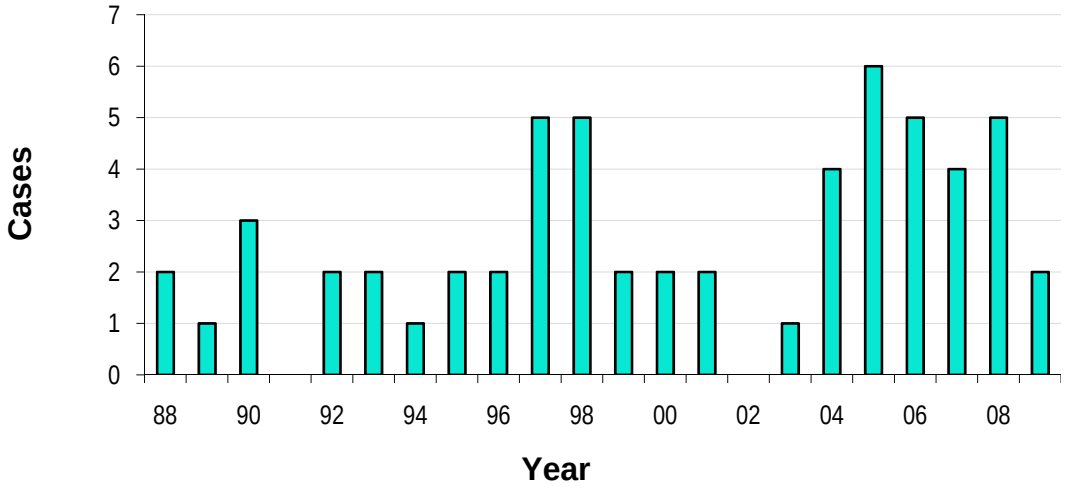
Approximately 250 to 1200 cases of RMSF are reported in the United States annually, but the likelihood exists that the disease is significantly under-reported. Since 1988, RMSF has been reported sporadically from all regions of Louisiana. (Figure 1)

Figure 1: RMSF reported cases by parish, (including both confirmed and probable) Louisiana, 1988-2009



In 2009, two cases were reported in Louisiana. Reported occurrence of RMSF in the state ranges from two to six cases per year. Since 2000, cases have been classified as confirmed or probable based on the level of diagnosis determined in each circumstance. The number of reported cases appears to be increasing. This increase reflects a national trend that is particularly influenced by increased numbers of cases reported from suburban areas, presumably due to human migration into naturally pristine or forested areas. (Figure 2)

Figure 2: RMSF reported cases, (including both confirmed and probable) Louisiana, 1988-2009

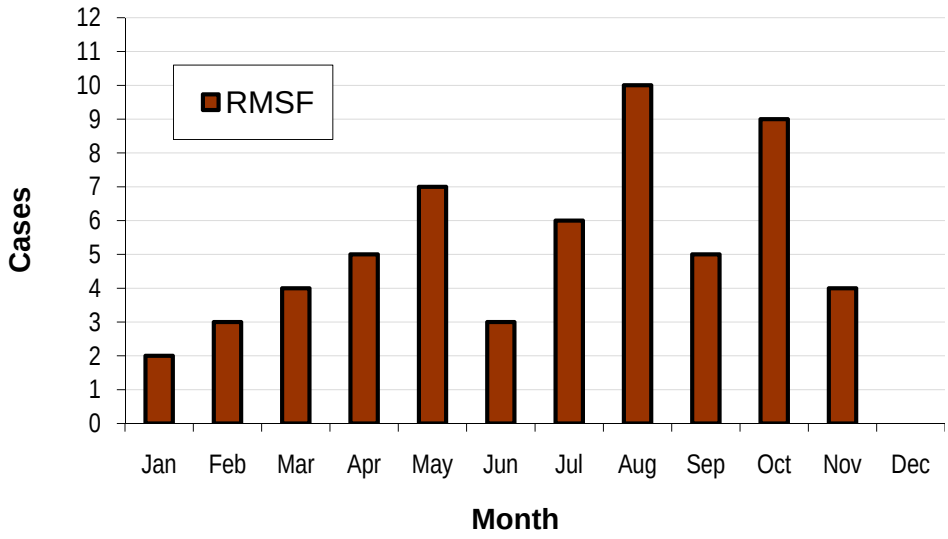


Early infections, which are often difficult to diagnose, are characterized by sudden onset of fever, headache and myalgia, followed by rash. Early diagnosis can be difficult. Without prompt, appropriate antibiotic therapy, the disease can be fatal. The case fatality rate in persons who become ill from RMSF is three percent to five percent. If epidemiological and clinical clues lead to a high degree of suspicion, therapy should never be delayed while waiting for laboratory confirmation.

Laboratory confirmation is usually done by serology. Several well validated serologic assays are available, but the reference standard is indirect immuno-fluorescence (IFA). PCR and isolation of the organism from tissues are other means of diagnosis.

In the United States over ninety percent of patients with RMSF are infected from April to September. In Louisiana since 1988, roughly 91.4% percent of all cases have been infected from March to November. Louisiana's sub-tropical climate likely fosters a longer period of tick activity. (Figure 3)

Figure 3: RMSF reported cases, (including both confirmed and probable) by month of onset
Louisiana, 1988-2009



Nationally the frequency of RMSF is highest in males, Caucasians and children. In Louisiana, Whites comprised 93% of reported cases and only slightly more cases were reported in males (51%) than females; however for cases reported in persons aged 65 years and over, females outnumber males. (Figures 4 and 5)

Figure 4: RMSF cases by age and gender, (including both confirmed and probable) Louisiana, 1988-2009

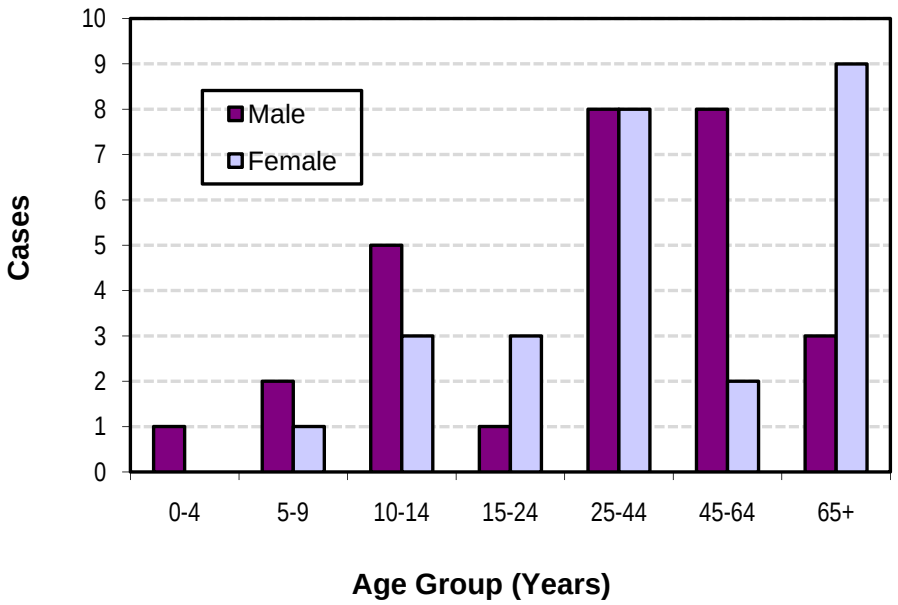
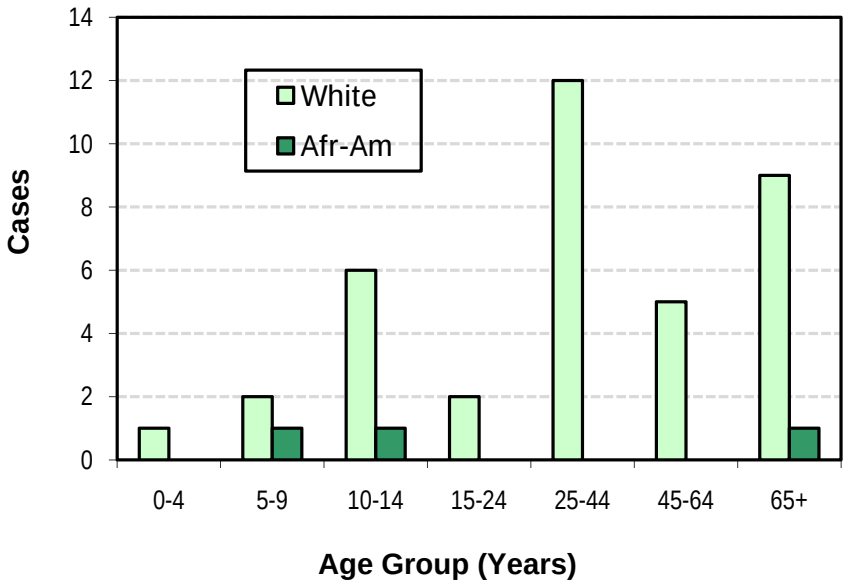


Figure 5: RMSF cases by age and race, (including both confirmed and probable) Louisiana, 1988-2009



The peak incidence of reported cases in the U.S. is between five and nine years of age. In Louisiana, however, most cases (34%) were reported in the 25 to 44 year-old age group.

No licensed vaccine providing immunity to RMSF is available. Limiting exposure to ticks is an important method of prevention. Since elimination of all activities resulting in tick exposure is impossible, protective measures such as wearing light colored clothing, tucking pants legs into socks and applying appropriate repellents to clothing and skin should be employed. Prompt inspection and removal of ticks are also very important. As in many tick transmitted diseases, the tick must be attached for several hours before transmission takes place, thus the importance of tick removal.