



Communicable Disease Case Reporting and Investigation Protocol  
**SPOTTED FEVER RICKETTSIOSIS**  
(Including Rocky Mountain spotted fever)

**I. IDENTIFICATION AND DEFINITION OF CASES**

- A. **Clinical Description:** Spotted fever group rickettsia (SFGR) is a group of tickborne species of Rickettsia. Rocky Mountain spotted fever (RMSF) is an illness within the spotted fever rickettsioses caused by the bacteria *Rickettsia rickettsii*. In the United States, the pathogen is transmitted by the bite of an infected tick species including *Dermacentor variabilis* (American dog tick), *D. andersoni* (Rocky Mountain wood tick), and *Rhipicephalus sanguineus* (brown dog tick).

The infection is characterized by fever, headache, abdominal pain, vomiting, myalgia, and lack of appetite. Most people with RMSF infections develop some type of rash two to five days after the onset of fever. Rash may appear as small, flat, pink, non-itchy macules and later become a red or purple petechial rash on the wrist, arms, ankles, trunk, and may sometime spread to the palms and soles. However, some RMSF patients never develop a rash. Symptoms usually begin two to 14 days after an infected tick bite and can be severe, or even fatal if not treated early in the infection with antibiotics. Long-term problems may result from RMSF disease including damage to the blood vessels (vasculitis), bleeding or clotting in the brain or other vital organs, and neurologic deficits.

Other human illness associated with SFGR includes disease caused by the bacteria *Rickettsia parkeri*. The bacteria are transmitted by the bite of an infected *Amblyoma maculatum* tick. Symptoms appear to be similar to RMSF but may be milder and an eschar may appear at the site of the tick bite.

**B. Laboratory Criteria:**

- Confirmatory laboratory evidence:
  - a. A fourfold change in IgG antibody titer to *R. rickettsii* or other SFGR antigen by Immunofluorescence assay (IFA) or Complement Fixation (CF) test between two paired serum samples (one collected the first week of illness and the second collected two to four weeks later), **OR**
  - b. Detection of *R. rickettsii* or other SFGR rickettsia DNA by PCR assay, **OR**
  - c. Demonstration of SFGR antigen in a skin biopsy or autopsy sample by immunohistochemical staining (IHC), **OR**
  - d. Isolation of *R. rickettsii* or other SFGR rickettsia from a clinical specimen in cell culture.
- Supportive laboratory evidence: Serologic evidence of elevated IgG (with or without IgM) antibody reactive with *R. rickettsii* or other SFGR antigen by IFA, enzyme-linked immunosorbent assay (ELISA), dot-ELISA, or latex agglutination.

**Note:** ELISA tests are not quantitative and are not to be used to evaluate changes in antibody titer; therefore, they are not useful as a confirmatory test. IgM tests are not used in the serodiagnosis of acute infections because of the high possibility of false positive results due to possible persistence of antibody levels for months or years. CDC uses the positive cutoff titer of  $\geq 1:64$  but positive cutoffs may be different for each laboratory.

**C. Wisconsin Surveillance Case Definition:**

- **Confirmed:** A clinically compatible illness with confirmatory laboratory evidence of infection (see above).
- **Probable:** A clinically compatible illness with only supportive laboratory evidence of infection (see above).
- **Suspect:** A supportive or confirmatory laboratory result in the absence of clinical information.

**II. REPORTING**

- A. **Wisconsin Disease Surveillance Category II – Methods for Reporting:** This disease shall be reported to the patient's local health officer or to the local health officer's designee within 72 hours of recognition of a case or suspected case, per Wis. Admin. Code § [DHS 145.04 \(3\) \(b\)](#). Report electronically through the Wisconsin

Electronic Disease Surveillance System (WEDSS), or mail or fax a completed Acute and Communicable Disease Case Report ([F-44151](#)) to the address on the form.

- B. **Responsibility for Reporting:** According to Wis. Admin. Code § [DHS 145.04\(1\)](#), persons licensed under Wis. Stat. ch. [441](#) or [448](#), laboratories, health care facilities, teachers, principals, or nurses serving a school or day care center, and any person who knows or suspects that a person has a communicable disease identified in [Appendix A](#).
- C. **Laboratory Criteria for Reporting:** Laboratory evidence of infection by methods listed above. All positive results should be reported.

### III. CASE INVESTIGATION

- A. **Responsibility for case investigation:** It is the responsibility of the local health department (LHD) to investigate or arrange for investigation of suspected or confirmed cases as soon as is reasonably possible. A case investigation may include information collected by phone, in person, in writing, or through review of medical records or communicable disease report forms, as necessary and appropriate.
- B. **Required Documentation:**
  - 1. Complete the WEDSS disease incident investigation report including appropriate disease-specific tabs, and complete the [Wisconsin Tickborne Rickettsial Disease Case Report form](#).
  - 2. Upon completion of investigation, set WEDSS disease incident process status to “Sent to State.”

### IV. PUBLIC HEALTH INTERVENTIONS AND PREVENTION MEASURES

- A. In accordance with Wis. Admin. Code § [DHS 145.05](#), local public health agencies should follow the methods of control recommended in the current editions of *Control of Communicable Diseases Manual*, edited by David L. Heymann, published by the American Public Health Association, and the American Academy of Pediatrics’ *Red Book: Report of the Committee on Infectious Diseases*, unless otherwise specified by the state epidemiologist.
- B. Obtain travel history for the month preceding onset of symptoms to determine site of probable exposure.
- C. Patient education as needed to minimize future tick exposure.

### V. CONTACTS FOR CONSULTATION

- A. Local health departments and tribal health agencies: <https://www.dhs.wisconsin.gov/lh-depts/index.htm>
- B. Bureau of Communicable Diseases, Communicable Diseases Epidemiology Section, Vectorborne Epidemiologists: 608-267-9003
- C. Wisconsin State Laboratory of Hygiene: 1-800-862-1013

### VI. RELATED REFERENCES

- A. Heymann DL, ed. Rickettsioses (Spotted Fever Group). In: *Control of Communicable Diseases Manual*. 20th ed. Washington, DC: American Public Health Association, 2015: 514-521.
- B. Pickering LK, ed. Rocky Mountain Spotted Fever. In: *Red Book: 2015 Report of the Committee on Infectious Diseases*. 30th ed. Elk Grove Village, IL: American Academy of Pediatrics, 2015: 682-684.
- C. Centers for Disease Control and Prevention website: <http://www.cdc.gov/rmsf/index.html>
- D. Centers for Disease Control and Prevention. Diagnosis and Management of Tickborne Rickettsial Diseases: Rocky Mountain Spotted Fever and Other Spotted Fever Group Rickettsioses, Ehrlichioses, and Anaplasmosis - United States. *MMWR*. 2016;65:1-44
- E. Wisconsin Tickborne Rickettsial Disease Case Report form: <https://www.dhs.wisconsin.gov/forms/f0/f00336.pdf>