

SPOTTED FEVER RICKETTSIOSIS

(Including Rocky Mountain spotted fever)

Last revised July 29, 2011

I. IDENTIFICATION

- 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 United States, the pathogen is transmitted by the bite of an infected tick species including American dog tick (*Dermacentor variabilis*), Rocky Mountain wood tick (*D. andersoni*), and brown dog tick (*Rhipicephalus sanguineus*).

The infection is characterized by fever, headache abdominal pain, vomiting, myalgia, and lack of appetite. Most people with RMSF infections may develop some type of rash, 2-5 days after the onset of fever. Rash may appear as small, flat, pink, non-itchy macules and later becomes 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 2-14 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 the bacteria *Rickettsia parkeri*. The infection is transmitted by a bite of an infected *Amblyoma maculatum* tick. Symptoms appear to be similar to RMSF but may be milder and the presence of an eschar at the site of the tick may appear.

- B. **REPORTING CRITERIA:** Clinical diagnosis with laboratory confirmation.

C. **LABORATORY CRITERIA FOR CONFIRMATION:**

- A fourfold change in IgG antibody titer to *Rickettsia 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 second 2-4 weeks later), **OR**
- Detection of *R. rickettsii* or other SFGR rickettsia DNA by PCR assay, **OR**
- Demonstration of SFGR antigen in a skin biopsy or autopsy sample by immunohistochemical staining (IHC), **OR**
- Isolation of *R. rickettsii* or other SFGR rickettsia from a clinical specimen in cell culture

SUPPORTIVE LABORATORY:

- 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 not useful as a confirmation test. IgM tests are not use in the serodiagnosis of acute infections because of the high possibility of false positive results and antibody levels may persist for months or years. CDC uses the positive cutoff titer of $\geq 1:64$ but positive cutoff may be different for each laboratory.

D. WISCONSIN CASE DEFINITION:

Confirmed RMSF:

A clinically compatible illness that is laboratory confirmed (see above).

Probable RMSF:

A clinically compatible illness with only supportive laboratory result (see above).

II. ACTIONS REQUIRED / PREVENTION MEASURES

A. WISCONSIN DISEASE SURVEILLANCE CATEGORY II:

Report to the patient's local health department either electronically through the Wisconsin Electronic Disease Surveillance System (WEDSS), by mail or fax using an Acute and Communicable Disease Case Report ([F-44151](#)), or by other means within 72 hours upon recognition of a case or suspected case.

B. EPIDEMIOLOGY REPORTS REQUIRED:

- *Electronically* – Report through WEDSS, including appropriate disease-specific tabs
OR
- *Paper Copy* – Acute and Communicable Diseases Case Report ([F-44151](#)) AND Wisconsin Tickborne Rickettsial Disease Case Report Form

C. PUBLIC HEALTH INTERVENTIONS:

In accordance with Wisconsin Administrative rule DHS 145.05, local public health should follow the methods of control recommended in the current edition of *Control of Communicable Diseases Manual*, edited by David L. Heymann, published by the American Public Health Association.

- Obtain travel history for the month preceding onset of symptoms to determine site of probable exposure.
- Patient education as needed to minimize future tick exposure.

III. CONTACTS FOR CONSULTATION

A. LOCAL HEALTH DEPARTMENT – REGIONAL OFFICES – TRIBAL AGENCIES:

<http://www.dhs.wisconsin.gov/localhealth/index.htm>

B. BCDER / COMMUNICABLE DISEASE EPIDEMIOLOGY SECTION: Diep (Zip) Hoang Johnson, Vectorborne Coordinator at (608) 267-0249, email: diep.hoangjohnson@wi.gov

C. WISCONSIN STATE LABORATORY OF HYGIENE / SEROLOGY: (608) 262-0248)

IV. RELATED REFERENCES

- Heymann DL, ed. Rickettsioses, Tick- and Mite-Borne. In: *Control of Communicable Diseases Manual*. 19th ed. Washington, DC: American Public Health Association, 2008: 521-529
- Pickering LK, ed. Rocky Mountain spotted fever. In: *Red Book: 2009 Report of the Committee on Infectious Diseases*. 28th ed. Elk Grove Village, IL: American Academy of Pediatrics, 2009: 573-575

Wisconsin Division of Public Health Communicable Disease Surveillance Guideline

- Centers for Disease Control and Prevention. Nationally notifiable infectious conditions, United States 2010. http://www.cdc.gov/osels/ph_surveillance/nndss/phs/infdis.htm
- Centers for Disease Control and Prevention. Diagnosis and management of tickborne rickettsial diseases: Rocky Mountain spotted fever, ehrlichioses, and anaplasmosis- United States. *MMWR*. 2006;55:1-27