



Spotted fever group rickettsioses

Clinical Guidance Update

Date: May 23, 2018

Public Health Message Type: Alert Advisory Update Information

Intended Audience: Healthcare providers
 Infection preventionists
 Local health departments

Key Points or Updates:

- (1) Spotted fever group rickettsioses (SFGR) are a group of diseases caused by closely related bacteria spread to people through the bites of infected ticks and mites.
- (2) As we enter prime tick season, clinicians should be aware of these diseases and make them part of their differential diagnosis.
- (3) Clinical testing guidance is provided.

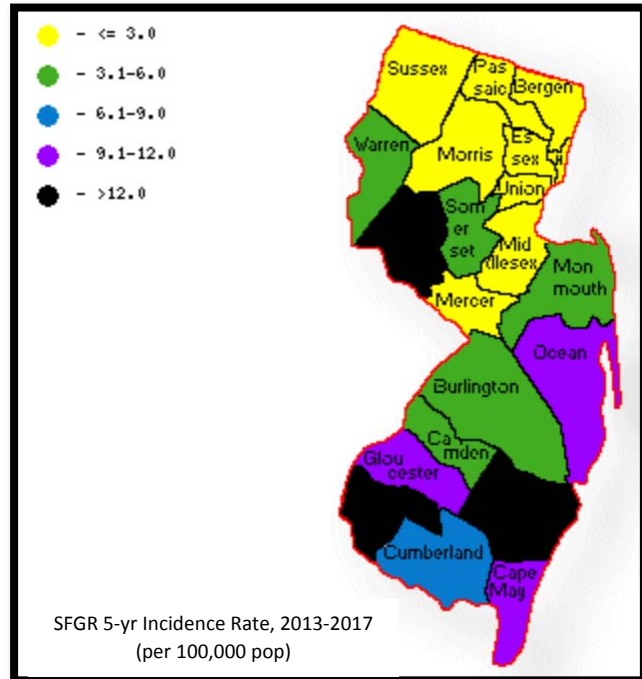
Action Items:

- (1) For persons with non-specific tickborne disease symptoms, clinicians should consider ordering a tickborne disease panel or specific laboratory tests for tickborne diseases endemic in NJ (Anaplasmosis, Babesiosis, Ehrlichiosis, Lyme disease, SFGR). Commercial PCR testing early in the course of disease is very effective in identifying Anaplasmosis, Ehrlichiosis and Babesiosis.
- (2) Obtain convalescent as well as acute serology specimens for all rickettsial disease testing. It often takes 7-10 days after symptom onset to develop sufficient antibody levels detectable through serologic testing.
- (3) Whenever possible, use rickettsial-specific PCR testing methods available at the NJ Public Health and Environmental Laboratory without delaying antibiotic therapy.
- (4) SFGR cases should be reported to the Local Health Department where the patient resides.

Contact Information:

- The Vector-borne Disease Program at the Communicable Disease Service at (609) 826-5964 during business hours
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Spotted fever group rickettsioses (SFGR) are a group of diseases caused by closely related bacteria spread to people through the bites of infected ticks and mites. SFGR cases are increasing both in NJ and nationwide. Over the last ten years, there have been 837 reported cases of SFGR in NJ and ten deaths (age range 3 to 69 years). The counties with the highest incidence rates of SFGR in the last 5 years are Atlantic, Cape May, Gloucester, Hunterdon, Ocean, and Salem. The most severe SFGR is Rocky Mountain Spotted Fever (RMSF) caused by *Rickettsia rickettsii*. RMSF is a rapidly progressing illness which when left untreated can lead to life-threatening illness and death.



Early consideration of rickettsial disease in the differential diagnosis and **timely**

initiation of appropriate antibiotic therapy (doxycycline) is crucial to prevent severe illness. There are other, generally milder SFGRs associated with illness in the US, caused by other rickettsial species, including *R. parkeri*, *R. philipii* (Pacific Coast Fever), and *R. akari* (rickettsialpox). Most SFGRs share the same early non-specific signs and symptoms, which include fever, headache, myalgia and fatigue.

Determining whether a patient has a SFGR, and knowing which rickettsial species is causing illness, is challenging for several reasons:

- Up to 10% of the population has pre-existing elevated levels of antibodies that cross-react with *R. rickettsii* or similar organisms but are unrelated to the disease under investigation.
- It takes 7-10 days after symptom onset for acute illness antibodies to be detected, which is after most patients seek medical care and are tested.
- IgM antibodies are less reliable than IgG antibodies and are more likely to be false-positive.
- IgG antibodies persist in some people for years after infection.
- PCR testing conducted too early after infection may be negative because rickettsial bacteria primarily infect vascular endothelial cells and may not initially circulate in peripheral blood.

NJDOH is working with CDC to better characterize SFGR cases in NJ and to determine if reported cases actually reflect an increasing trend of SFGR illness. Clinician assistance is requested to continue reporting cases of SFGR to the local health department and to consider the following laboratory testing recommendations:

- 1. For persons with non-specific tickborne disease symptoms, consider ordering a tickborne disease panel or specific laboratory tests for tickborne diseases endemic in NJ** (Anaplasmosis, Babesiosis, Ehrlichiosis, Lyme disease, SFGR). Commercial PCR testing early in the course of disease is very effective in identifying Anaplasmosis, Ehrlichiosis and Babesiosis.
- 2. Obtain both acute AND convalescent serology specimens (collected 2-4 weeks after the acute specimen)**, specifically indirect immunofluorescence antibody (IFA) assays. If the acute specimen is negative (too early to detect antibody response), a positive convalescent specimen may indicate infection. If the acute specimen is positive, this may be due to persistent or pre-existing, unrelated antibody response. A 4-fold rise in titer will confirm SFGR infection. If initial serology testing is negative for the other rickettsial diseases endemic in NJ (Anaplasmosis, Ehrlichiosis), consider obtaining convalescent serology specimens.
- 3. Use rickettsial species-specific PCR testing methods when possible, in conjunction with serologic testing and without delaying initiation of appropriate antibiotic therapy.** Testing is available through NJ Public Health and Environmental Laboratory (PHEL) including:
 - Whole blood PCR testing for patients at day 3 or greater after symptom onset or those who are seriously ill
 - Detection of DNA in rash and eschar specimens

To arrange for hospitalized or outpatient rickettsial species-specific PCR testing at PHEL, complete the New Jersey Spotted Fever Group Rickettsiosis Investigation Worksheet at link below and fax it to the New Jersey Department of Health Vector-borne Disease Program at 609-826-4874.

http://www.nj.gov/health/cd/documents/topics/vectorborne/sfgr_investigation_worksheet5.07.18.pdf

Then call the New Jersey Department of Health Vector-borne Disease Program at 609-826-5964.

Specimen collection guidance can be found at:

http://www.nj.gov/health/cd/documents/topics/vectorborne/njdoh_sfgr_specimen_collection_guidance05.23.18.pdf

Clinician Resources:

- NJDOH Spotted Fever Group Rickettsiosis Web Page:
<http://www.nj.gov/health/cd/topics/rocky.shtml>
- NJ local health departments (to report SFGR cases): www.localhealth.nj.gov
- Diagnosis and Management of Tickborne Rickettsial Diseases: Rocky Mountain Spotted Fever and Other Spotted Fever Group Rickettsioses, Ehrlichioses, and Anaplasmosis — United States; A Practical Guide for Health Care and Public Health Professionals:
<https://www.cdc.gov/mmwr/volumes/65/rr/pdfs/rr6502.pdf>
- CDC Tickborne Diseases of the United States: A Reference Manual for Healthcare Providers (2018): <https://www.cdc.gov/lyme/resources/TickborneDiseases.pdf>