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Date: 22 March 2011  
To: NC Medical Providers  
From: Dr. Megan Davies, State Epidemiologist *MD*  
Subject: 2011 Update; Diagnosis and Surveillance for Tick Borne Rickettsial diseases (TBRD)

**Spotted Fever Group Rickettsiosis Ehrlichiosis and Anaplasmosis Disease Introduction:**

Tick Borne Rickettsial Diseases (TBRD), including Rocky Mountain spotted fever (RMSF) and infection with other *Rickettsia*, *Ehrlichia* and *Anaplasma* species, continues to be the most common tick borne disease reported in North Carolina. During the time period of 2009-2010 over 500 cases were reported to the state and local health departments, though the actual number of cases is likely much larger. These are reportable conditions per NC law and require prompt treatment when suspected.

**Treatment:**

Regardless of the ultimate cause of infection, if TBRD is suspected the patient should be treated promptly and appropriately with doxycycline. Laboratory confirmation of infection with a TBRD organism may take weeks and therapy should not be delayed pending diagnosis. TBRD are potentially fatal and treatment guidelines can be found at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5504a1.htm>. All TBRD species will respond to therapy with doxycycline and this therapy should never be delayed while awaiting diagnostic certainty.

**Confirmation of Diagnosis and Surveillance:**

Submission of serological specimens for Immunofluorescent Assay (IFA) is the most accepted means to confirm a diagnosis of TBRD for surveillance purposes. Although testing is available RMSF specifically, the test is not species specific and will cross react with other species in the genus *Rickettsia*. Ideally both acute sera (collected within 7-10 days of illness onset) and convalescent sera (collected  $\geq$  4 weeks of illness onset) should be submitted together for analysis.

**What Laboratories can Provide Diagnostic Services for Spotted Fever Rickettsiosis (including RMSF):**

- NC SLPH offers no cost testing for SFGR: <http://slph.ncpublichealth.com/virology-serology/special-serology.asp>
- ARUP Test Number: 0050369; CPT Code: 86757
- LabCorp Test Number: 016592; CPT Code: 86757
- Quest (Chantilly VA) Test Number: 6419; CPT Code 86757

**What Laboratories can Provide Diagnostic Services for Ehrlichiosis and Anaplasmosis:**

- NC SLPH offers no cost testing for Ehrlichia and Anaplasmosis: <http://slph.ncpublichealth.com/virology-serology/special-serology.asp>
- ARUP Ehrlichia Test Number: 0051004; CPT Code: 86666
- ARUP Anaplasmosis Test Number: 0097317; CPT Code: 86666
- LabCorp (Ehrlichia & Anaplasmosis) Test Number: 164722 CPT Code: 86666(x4)
- Quest (Chantilly VA) (Ehrlichia & Anaplasmosis) Test Number: 10611; CPT Code 86666(x4)

**Education of patients, prevention of disease:**

We encourage all providers to educate their patients about personal protective measures they can take to minimize their risk of acquiring these conditions. Information for patients can be found here: <http://www.cdc.gov/ticks/prevention.html>. If you have any questions or concerns please call Carl Williams or Jodi Reber at 919-733-3410.



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### Additional information and Emerging Tick Borne Rickettsial Diseases.

Over the past several years it has become increasingly evident that SFGR share many clinical manifestations and extensive antigenic cross reactivity hampers specific confirmation of the actual causative agent<sup>1,2,3</sup>. In fact while RMSF continues to be the most common tick borne disease reported in Tennessee a recent publication failed to identify any vector species of tick infected with *Rickettsia rickettsii* though infection with other *Rickettsia* species was identified<sup>4</sup>. Therefore, to accurately describe the disease burden in NC and around the United States, any surveillance case with a causative agent from the *Rickettsia* species will be reported as Spotted Fever Rickettsiosis.

If you would like additional assistance in dealing with surveillance for these organisms or have questions please contact Carl Williams or Jodi Reber at 919-733-3410.

### References:

1. Cragun, et. al. The Expanding Spectrum of Eschar-Associated Rickettsioses in the United States. Arch. Dermatol. 2010:146 (No. 6). pp E1-E8.
2. Paddock, et. al. *Rickettsia parkeri* Rickettsioses and Its Clinical Distinction from Rocky Mountain Spotted Fever. CID. 2008:47 (1 November). pp 1188-1196
3. Apperson, et. al. Tick-Borne disease in North Carolina: Is "*Rickettsia amblyommi*" a Possible Cause of Rickettsiosis Reported as Rocky Mountain Spotted Fever? Vector-Borne and Zoonotic Diseases. 2008:8(5). pp 597-606.
4. Mancayo, et. al. Absence of *Rickettsia rickettsii* and Occurrence of Other Spotted Fever Group Rickettsiae in Ticks from Tennessee. Am. J. Trop. Med. Hyg., 2010:83(3). pp. 653–657