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Date: 10 April 2012
To: NC Medical Providers
From: Dr. Megan Davies, State Epidemiologist
Subject: 2012 Update; Diagnosis and Surveillance for Lyme disease

From January 2009 through December 2011, 57 cases of confirmed Lyme disease and over 200 cases of probable Lyme disease (LD) have been reported in North Carolina (NC). Of the confirmed cases 13 are believed to have been acquired in NC based on not having any history of travel outside the county of residence during the incubation period. The North Carolina Division of Public Health would like to ensure that health care providers consider the possibility of LD in the appropriate clinical scenario and treat potential cases of LD early if the disease is suspected based on clinical findings.

Surveillance for Lyme disease

Surveillance for LD is complex and requires a combination of clinical and laboratory evidence of infection. Cases of LD may be categorized (and reported to CDC) as confirmed or probable. Except in Wake County (which is designated as endemic for Lyme disease for surveillance purposes) all cases of Erythema Migrans (EM) must be accompanied by appropriate laboratory testing to fulfill the case definition requirements. All late manifestations of LD (musculoskeletal, cardiac, and nervous) must also be accompanied by appropriate laboratory testing to fulfill the case definition requirements. Appropriate laboratory testing for surveillance includes any of the following:

1. Two tier serologic testing (see: http://www.cdc.gov/lyme/healthcare/clinician_twotier.html)
    a. Positive or equivocal EIA followed by IgM and IgG Western Blot (WB) if symptoms <= 30 days
    b. Positive or equivocal EIA followed by IgG WB if symptoms >30 days
2. Positive Culture for *B. burgdorferi*
3. CSF antibody positive for *B. burgdorferi* by Enzyme Immunoassay (EIA) or Immunofluorescence Assay (IFA), when the titer is higher than it was in serum (essential for a surveillance diagnosis of Lyme encephalomyelitis).

If Lyme disease is suspected in a patient DPH requests that appropriate laboratory tests be ordered to support a surveillance diagnosis. Note that serologic testing is often too insensitive in the acute phase (the first two weeks) of infection and may be falsely negative. If laboratory testing is not supportive of a surveillance diagnosis please consider reordering convalescent testing two to four weeks later.

Examples of appropriate testing offered by commercial labs are given in the table below:

	Lyme disease
Quest Diagnostics (Chantilly VA)	Test Number 10672; CPT Code 86618 (EIA & WB)
LabCorp	Test Number 258004; CPT Code 86618(x2) (EIA & WB)
Mayo Medical Laboratories	Test ID: LYME (9129); CPT Code 86618 (EIA) & Test ID: LYWB (9535); CPT Code 86617x2 (WB)

Erythema Migrans Rash is Not Always Lyme disease

STARI (southern tick associated rash illness) is a confounder for LD surveillance and is the primary reason that all cases of EM must be accompanied by laboratory evidence of infection to qualify as a case of LD for surveillance purposes. STARI most often follows the bite of the Lone Star tick (*A. americanum*) which is the most common tick in NC and is not a known vector for LD. As the range of the Lone Star Tick expands there is evidence that STARI is also expanding in geographic range. [1] In the south it is recommended that EM rashes be treated as if early LD, regardless of what the true cause of the rash may be. [2] Early and appropriate antimicrobial therapy is essential to prevent disseminated or late manifestations of Lyme disease.

Please contact Carl Williams or Jodi Reber at 919-733-3419 with any questions or concerns that you have regarding surveillance of Lyme disease. Your time and consideration on this topic are greatly appreciated.

References:

1. Feder, et. al. Southern Tick Associated Rash Illness (STARI) in the North: STARI following a Tick Bite in Long Island, New York. CID, 53(10), 2011, pp. 142-146.
2. Blanton, et. al. Southern Tick Associated Rash Illness: Erythema Migrans is not always Lyme disease. Southern Medical Journal, 101(7), 2008, pp. 759-760