




North Carolina Department of Health and Human Services  
Division of Public Health

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Date: 1 APR 2015  
To: NC Medical Providers

From: Dr. Megan Davies, State Epidemiologist   
Subject: Annual Update on Diagnosis and Surveillance for Arboviral disease (2 pages)

**Arboviral Diseases:**

Per North Carolina law, neuroinvasive arboviral diseases are reportable by health care providers to their local health department. These infections are transmitted by the bite of an infected mosquito and the spectrum of illness ranges from asymptomatic to fever, altered mental status, and acute signs of central or peripheral neurologic dysfunction and, rarely, death. La Crosse encephalitis (LACE) is the most commonly reported arboviral disease in North Carolina (figures 1, 2) and during 2014 LACE cases represented all of the domestically acquired arboviral disease cases. Although LAC infection has been reported across the state, historical data demonstrates that several southwestern counties report over 75% of all LACE cases. While LaCrosse virus infection was first characterized in and named after LaCrosse, Wisconsin, most cases are now reported from focal regions of the eastern US, specifically in Appalachia. [1] West Nile virus infection (WNV) and Eastern Equine encephalitis (EEE) are neuro-invasive diseases also reported in North Carolina, but are much less common than LAC. Over the past five years, fewer than 10 cases total have been reported annually.

Chikungunya, Dengue, and Yellow Fever are also reportable diseases. These infections are associated with travel to endemic areas and there is no transmission occurring within North Carolina. In 2014 there were 48 cases of Chikungunya and 7 cases of Dengue reported to the Division of Public Health; all were travel associated. These conditions should be considered in a person with a clinically compatible illness and appropriate travel history. Patients with these conditions should be advised to wear insect repellent as they may serve as a source of infection for local mosquito populations for up to one week post symptom onset. *Aedes albopictus*, a competent vector for both Chikungunya and Dengue, can be found throughout NC. There have been no cases of Yellow Fever reported in NC in the past 10 years.

**Diagnosis:**

Serologic testing for arboviral diseases is offered at no charge from the State Laboratory of Public Health (NCSLPH). The submission form, DHHS 3445, is available at <http://slph.state.nc.us/virology-serology/special-serology.asp>. Early diagnosis of La Crosse encephalitis is critical to adapting therapy and eliminating unnecessary treatment; and also important for surveillance of the disease. The sensitivity and rapidity of diagnosis of the MAC ELISA test provide a powerful tool for the clinically relevant serodiagnosis of LAC virus infections in humans. [2] MAC ELISA testing is performed by the NCSLPH. Additionally serologic testing by the IFA methodology is available at the NCSLPH. We encourage providers to collect acute AND convalescent (e.g., after two-three weeks) specimens to confirm diagnosis using this methodology.

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

We encourage all providers to educate their patients about personal protective measures that can be used to minimize their risk of acquiring these conditions. The Centers for Disease Control (CDC) has excellent resources on these and emerging arboviral diseases available at <http://www.cdc.gov/ncidod/dvbid/arbor/index.htm>. There also is updated information on the Division of Public Health's Communicable Diseases website at <http://epi.publichealth.nc.gov/cd/diseases/arbo.html>. If you have any questions or concerns, please call Carl Williams or Jodi Reber at 919-733-3419.

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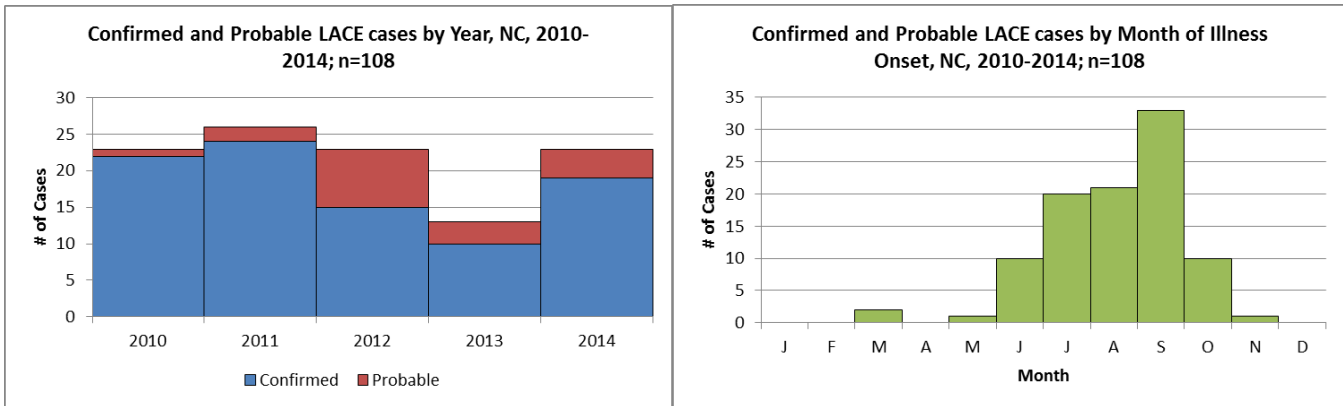
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**References:**

- 1.Haddow and Odoi. The Incidence Risk, clustering, and Clinical Presentation of La Crosse Virus Infections in the Eastern US, 2003-2007. PLoS ONE 4(7):e6145
- 2.Calisher et.al. Serodiagnosis of La Crosse virus infections in humans by detection of immunoglobulin M class antibodies. J Clin Microbiol 1986;23:667-71

**Figures 1, 2**



**LACE, Average Incidence by County, NC, 2010-2014, n=108**  
**Cases are Reported by County of Residence**

