



EMERGING AND/OR UNCOMMON VECTOR-BORNE DISEASES – 6/21/17

Vector-borne diseases (transmitted by mosquitoes or ticks) are a major public health concern and are some of the most commonly reported communicable diseases in NJ. There are several vector-borne diseases, however, both bacterial and viral, that have either been present in NJ or are emerging, but may not be routinely diagnosed/reported. Underreporting may result from a lack of clinician awareness, unavailability of commercial laboratory testing, and in at least one case, non-mandatory public health reporting requirements. To better characterize these less commonly reported vector-borne illnesses in NJ, this memo provides a brief description of some of these pathogens and testing information.

Borrelia miyamotoi: *B. miyamotoi* is a bacterial illness transmitted to humans by the blacklegged tick, which is the same tick that transmits Lyme disease, Babesiosis, and Powassan. It was first reported in humans in the US in 2013 and there have been less than 60 cases reported to date (no human cases reported in NJ). *B. miyamotoi* has been identified in ticks in NJ since 1999. Clinical information is limited, but symptoms include fever, chills, and headache, and less often with joint pain and fatigue. Unlike Lyme disease, rash is uncommon. Specific laboratory testing for *B. miyamotoi* (PCR/serology) is available at certain commercial laboratories (separate from *B. burgdorferi* testing). *B. miyamotoi* is not reportable in NJ, but NJDOH requests that clinicians and laboratories report positive laboratory test results to the local health department (LHD) where the patient resides.

Eastern equine encephalitis (EEE): EEE is a rare but potentially severe disease transmitted by mosquitoes with only a few cases reported in the US each year. NJ last reported a case of EEE in 2016, which was the first case since 2003. EEE is routinely identified through routine surveillance testing in horses and mosquitoes each year. Most infections are asymptomatic, but severe encephalitic cases begin with an abrupt onset of headache, high fever, chills, and vomiting, progressing to disorientation, seizures, or coma. Approximately 1/3 of persons with encephalitis will die from the disease and many who survive have disabling and progressive sequelae. Serologic testing (CSF, serum) is available at certain commercial laboratories. Clinicians who suspect EEE in a patient can contact their LHD or NJDOH to request testing (serology/PCR) at the public health laboratory.

Jamestown Canyon and La Crosse (LAC) viruses: Jamestown Canyon and La Crosse viruses are part of California serogroup viruses and are transmitted by mosquitoes. Historically, most cases of LAC neuroinvasive disease were reported from the upper Midwestern states, but recently, cases have been reported from mid-Atlantic and southeastern states (no cases have been reported in NJ). Many people infected with LAC are asymptomatic. Among people who become ill, initial symptoms include fever, headache, nausea, vomiting, and fatigue. Severe neuroinvasive disease occurs most often in children <16yrs, often involves encephalitis, and can include seizures, coma, and paralysis. Fatal cases are rare (<1%) and most patients seem to recover completely. Neurologic sequelae have been reported in some cases. Serologic testing is the primary method for diagnosis in serum or CSF (preferred) and is available at some commercial laboratories. A positive IgM test result should be confirmed by neutralizing antibody testing of acute- and convalescent-phase serum specimens at a state public health laboratory. NJ reported its first case of Jamestown Canyon virus in 2015. Clinical data on Jamestown Canyon virus infections is limited, and testing is not widely available. Clinicians who suspect Jamestown Canyon in a patient can contact their LHD or NJDOH to request testing at the public health laboratory.

Powassan (POW): Powassan virus is a flavivirus transmitted by the woodchuck tick and the blacklegged tick, the same tick that transmits Lyme disease, Babesiosis, and *B. miyamotoi*. Approximately 75 cases of POW virus disease were reported in the United States over the past 10 years. Since 2013, NJ has reported 4 cases of POW, including a recent case in 2017. Initial symptoms include fever, headache, vomiting, and generalized weakness. The disease usually progresses to meningoencephalitis, which may include meningeal signs, altered mental status, seizures, aphasia, paresis, movement disorders, or cranial nerve palsies. Approximately 10% of reported cases are fatal. Serologic testing remains the primary method of diagnosis and is not widely available at commercial laboratories. Clinicians who suspect POW in a patient can contact their LHD or NJDOH to request testing (CSF preferred, serum) at the public health laboratory.