MAINE HEALTH ALERT NETWORK

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*****ADVISORY – Important Information*****

TO: Veterinarians, FQHC's, Hospitals, ICP's, Public Health-optional, Public health-required, Public Health Nursing, RRC's, State and Federal Agencies

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SUBJECT: Human Arbovirus Update for Healthcare Providers in Maine, August 2008

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Human Arbovirus Update for Healthcare Providers in Maine, August 2008

Summary: This health advisory provides a brief update on the epidemiology and natural history of West Nile virus (WNV) and Eastern Equine Encephalitis (EEE) infections, a summary of surveillance findings in Maine, and guidance for obtaining and submitting clinical diagnostic specimens to the Maine Center for Disease Control (Maine CDC), where tests will be performed free of charge. Testing for mosquito-borne infections should be performed routinely for every person diagnosed with aseptic meningitis or encephalitis during the summer and fall months. Maine CDC will also test physician-submitted serum specimens for persons with other severe and/or persistent unexplained febrile illnesses

Background: In Maine, two mosquito-borne viruses that can cause human disease have been identified through testing of mosquitoes and birds. While no human illnesses caused by these agents have been diagnosed in Maine to date, the potential to see cases continues each summer and fall. West Nile virus (WNV) has been found in the state each year since 2001 through public health surveillance efforts. Eastern equine encephalitis (EEE) was also first identified here by testing of a dead bird in 2001; during 2005, birds, mosquitoes, and horses with encephalitis tested positive for EEE in Maine, as seven cases of human illness were diagnosed in New Hampshire. During 2008, public health teams will be trapping and testing mosquitoes in a number of communities around the state.

Clinical Features of Mosquito-borne Infections

WNV: The incubation period for WNV in humans ranges from 2 to 15 days. However, most people infected with WNV do not show any symptoms. Mild WNV infections can cause fever, headache and body aches, often with a skin rash and swollen lymph glands. More severe infections can cause headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, paralysis and, sometimes, death.

EEE: Symptoms of EEE usually appear 3 to 10 days after the bite of an infected mosquito, and range from mild flu-like illness to encephalitis, coma, and death. The EEE case fatality rate is about 35%-50%. It is estimated that 35% of people who survive EEE will have residual neurological deficits.

Risk Groups

WNV infects many more people than is recognized because about 80% of people infected remain asymptomatic. Human cases of EEE occur relatively infrequently, largely because the primary transmission cycle takes place in swamp areas where human populations tend to be limited. The following groups of people are at relatively higher risk for clinically significant WNV and EEE infection:

- Residents of and visitors to endemic areas
- People who engage in outdoor work and recreational activities

- Persons over age 50 (WNV and EEE) and younger than age 15 (EEE)

Diagnostic Tests for WNV and EEE Infections

Clinical Suspicion: EEE and WNV infections can be suspected based on clinical symptoms and patient history. Diagnosis relies on a high index of suspicion and on results of specific laboratory tests. EEE, WNV or other arboviral infections should be seriously considered in any individual – but especially those over age 50 or younger than age 15 - who has onset of unexplained encephalitis, meningitis, or high fever in the late summer or early fall. The local presence of EEE and WNV enzootic activity should further raise the index of suspicion.

Laboratory Tests: Laboratory testing is required for a confirmed diagnosis. The most efficient diagnostic methods are listed below:

- Detection of IgM antibody in serum collected 3-10 days after onset of illness (note: if a specimen collected less than 10 days after onset of illness is negative, a convalescent serum should be collected and tested for IgM antibody 2-3 weeks after the first collection date).
- Detection of IgM antibody in cerebrospinal fluid collected 3 to 10 days after onset of illness (for persons with meningitis or encephalitis).

Because some other mosquito-borne and tick-transmitted infections can cause indistinguishable clinical presentations, specimens submitted for EEE and WNV testing are also tested for the viruses that cause *St. Louis encephalitis* (not previously seen in Maine) and *Powassan encephalitis* (a tick-transmitted infection that has been documented to have caused 4 human infections in Maine between 2000 and 2004) . Specimens that are positive by an IgM screening test at the Maine Health and Environmental Testing Laboratory (HETL) are sent to the federal CDC in Atlanta for confirmatory testing using the plaque-reduction neutralization (PRNT) technique. PRNT is the current gold standard for ruling out possible false positive results and in distinguishing cross-reactions that can occur between different infections.

Diagnostic testing of serum and cerebrospinal fluid for WNV and EEE infections are available free of charge through HETL. Preliminary results are usually available within 5 to 7 days. To ensure early public health identification of mosquito-borne human disease, Maine CDC requests that specimens from all patients who are being tested for WNV and EEE infection be submitted to HETL (even if specimens are also being sent to commercial laboratories).

Where do I Obtain Specimen Submission Forms?

Specimen submission forms are available at:
http://www.maine.gov/dhhs/boh/ddc/arbovirus/specimen_submission.htm or by calling 1-800-821-5821

For more information please call the Maine CDC disease reporting and consultation line at 1-800-821-5821.