Infectious Disease Epidemiology Report

Eastern Equine Encephalitis and West Nile Virus - Maine, 2015

Background

Mosquito-borne diseases are transmitted through the bite of an infected mosquito. These diseases can be viral, called arboviruses, or parasitic in nature. Mosquito-borne diseases have symptoms that range from very mild to very severe. In severe cases, encephalitis and other serious complications may occur, making mosquito-borne diseases a significant public health concern.

There is a risk of catching a mosquito-borne disease anywhere mosquitoes can be found. In Maine, eastern equine encephalitis (EEE) and West Nile virus (WNV) are considered endemic. This report summarizes the surveillance of EEE and WNV in Maine during 2015.

Eastern Equine Encephalitis

EEE is a viral disease that occurs in the eastern half of the United States. EEE can cause disease in humans, horses, and some birds. Symptoms can range from mild flu-like illness to encephalitis, coma and death. Because of the high mortality rate (33%), EEE is regarded as one of the most serious mosquito-borne illnesses in the United States.

West Nile Virus

WNV occurs throughout the United States and can cause disease in humans, birds, and other mammals. Many persons infected with WNV will have no obvious symptoms. In persons who develop illness, symptoms may include: headache, fever, altered mental status, tremors, convulsions, paralysis, meningitis, and encephalitis. WNV can be fatal.

Methods

All cases of mosquito-borne diseases in humans are investigated. Standardized case report forms are completed for all cases. All human and non-human (ie. mosquitoes, birds, or other mammals) arboviral cases are entered into Maine CDC's surveillance system and also into ArboNET, federal CDC's arboviral surveillance system. Cases are classified using the Council of State and Territorial Epidemiologists case definitions for each specific disease.

Results

In 2015, there was one human case of EEE in a mature adult (>65 years) in York County. This individual became ill in late September, was hospitalized, and expired. This was the first EEE death identified in a Maine resident.

In 2015, there was one human case of WNV in an adult from Cumberland County. This individual became ill in early September and was hospitalized.

Two mosquito pools tested positive, one for EEE and one for WNV in Maine, both in York County.

Discussion

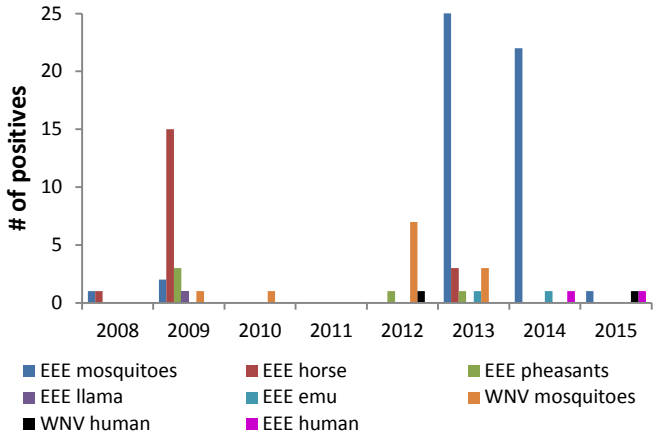
Maine detected the first locally acquired case of EEE in a Maine resident in 2014, with the first death occurring in 2015. Maine detected our first locally acquired case of WNV in a Maine resident in 2012, and had a second case in 2015. This emphasizes the risk of the disease here in Maine and the importance of preventing mosquito bites.

The timing of these findings means it is important to maintain vigilance and prevention efforts against mosquitoes into the fall, until there have been two hard frosts.

Arboviral activity in mosquitoes was low in 2015 with only two positive pools. The positive EEE mosquito pool was collected on September 11, and the positive WNV pool was collected on September 20. Arboviral activity has increased over the last few years. Maine only had two positive pools in 2015, but saw human cases of both EEE and WNV which is the first year we have had both diseases in Maine residents in the same year (Figure 1).

Eastern Equine Encephalitis and West Nile Virus – Maine, 2015

Figure 1. Arboviral Activity – Maine, 2008-2015



Arboviral activity was detected in southern Maine in 2015, but the risk remains throughout the state. Mosquito trapping is conducted primarily in the southern part of the state where Maine has previously had positive results. The lack of positive mosquito pools in the rest of the state is likely due to limited trapping and not lack of virus present in those areas.

As all of these diseases are transmitted by mosquitoes, preventing mosquito bites is essential. It is important to use preventative measures at home and abroad to reduce the risk of acquiring a mosquito-borne disease.

Prevention

To lower the chances of contracting a mosquito-borne disease, measures should be taken to prevent mosquito bites both at home and while traveling:

- Use an EPA-approved repellent. Always follow the instructions on the product's label when using repellents or other pesticides.
- Wear long sleeved shirts and long pants when possible or when mosquitoes are abundant.
- Protect babies with mosquito netting.
- Stay indoors when mosquitoes are especially abundant.
- Mosquito-proof your home by fixing or installing window screens or screen doors.
- Control mosquito populations around your home by cleaning gutters and removing or emptying objects that contain standing water where mosquitoes can lay eggs such as old tires, old cans, and plastic tarps.
- Empty water from flower pots, pet dishes, birdbaths, rain barrels, and buckets at least once a week.

Health care providers are encouraged to consider mosquito-borne diseases in appropriate clinical settings. EEE and WNV are both found in Maine and should be considered for patients who have been exposed to mosquitoes and have a febrile illness with neurological manifestations such as aseptic meningitis, encephalitis, and focal weakness.

All cases of arboviral illness in Maine must be reported within 48 hours by calling 1-800-821-5821, or by faxing reports to 207-287-6865.

Additional information about mosquito-borne diseases can be found at:

- Maine CDC http://www.maine.gov/dhhs/mecdc/infectious-disease/epi/vector-borne/index.shtml
- Federal CDC http://www.cdc.gov/ncezid/dvbd/index.html

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