

## Health Advisory:

### West Nile Virus Activity Widespread in Missouri

September 8, 2015

This document will be updated as new information becomes available. The current version can always be viewed at <http://www.health.mo.gov>

The Missouri Department of Health & Senior Services (DHSS) is now using 4 types of documents to provide important information to medical and public health professionals, and to other interested persons:

**Health Alerts** convey information of the highest level of importance which warrants immediate action or attention from Missouri health providers, emergency responders, public health agencies, and/or the public.

**Health Advisories** provide important information for a specific incident or situation, including that impacting neighboring states; may not require immediate action.

**Health Guidances** contain comprehensive information pertaining to a particular disease or condition, and include recommendations, guidelines, etc. endorsed by DHSS.

**Health Updates** provide new or updated information on an incident or situation; can also provide information to update a previously sent Health Alert, Health Advisory, or Health Guidance; unlikely to require immediate action.

Health Advisory  
September 8, 2015

**FROM: GAIL VASTERLING  
DIRECTOR**

**SUBJECT: West Nile Virus Activity Widespread in Missouri**

#### Current Situation

As of September 8, 2015, the Missouri Department of Health and Senior Services (DHSS) has received reports of West Nile virus (WNV) activity in all parts of the state. Seven neuroinvasive human cases (St. Louis City-3, St. Louis County-3, and Schuyler County-1) and four positive blood donors (St. Louis, St. Charles, Miller, and Cape Girardeau Counties) have recently been identified. Eight equine cases have been reported year-to-date (Howell, Oregon, Lawrence, Gentry, Cole, Warren, Washington, and Miller Counties). Equine cases can be a sentinel event for human cases, with equine cases preceding those occurring in people. Additionally, 25 dead bird sightings have been noted across the state in species that are known to be sensitive to WNV infection. Currently, no testing of sick or dead wild birds for WNV is being routinely conducted. Two Missouri counties (St. Louis and Jefferson) have reported numerous positive mosquito samples they collected and tested throughout the summer.

#### Background

WNV is an arthropod-borne virus (arbovirus) that is a member of the flaviviridae family. WNV is most commonly spread by bites from infected *Culex* species of mosquitoes. In addition to transmission of disease through insect bites, WNV can also be transmitted through transplants of infected organs and blood products. WNV can cause febrile illness, encephalitis, and/or meningitis.

Approximately 80% of people who become infected with WNV will not experience any symptoms of infection, and less than 1% will develop the more serious, neuroinvasive form of WNV disease. Individuals who do develop symptoms of WNV illness may experience a sudden onset of febrile illness that often includes headache, myalgia and/or arthralgia. Other commonly reported symptoms of illness include gastrointestinal tract symptoms and maculopapular rash. Serious illness can occur in people of any age. However, people over 60 years of age are at the greatest risk for severe disease. People with certain medical conditions, such as cancer, diabetes, hypertension, kidney disease, and people who have received organ transplants, are also at greater risk for serious illness. Fatigue and muscle weakness may linger for weeks or months following acute illness caused by WNV.

#### Laboratory Testing

Although WNV is the most common cause of arboviral encephalitis in the United States, there are several other arboviral encephalitides present in the country and in other regions of the world. Several pathogens cause clinical symptoms and presentations similar to WNV infection. If a patient is experiencing illness consistent with WNV infection, serum and/or cerebral spinal fluid specimens should be submitted to the Missouri State Public Health Laboratory (MSPHL) for analysis. There is no charge for this testing.

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Laboratory results help health care providers explain and provide therapy for lingering fatigue and muscle weakness. Positive test results also enable quantification of the WNV disease burden in Missouri, providing seasonal, geographic, and demographic patterns regarding human morbidity and mortality. These data, in turn, give local public health agencies the ability to assess available programs and priorities within their communities.

The most recommended screening assay for laboratory diagnosis of human WNV is the IgM assay. MSPHL offers the IgM microsphere immunoassay (MIA) and IgM enzyme-linked immunosorbent assay (ELISA) for the identification and differentiation of WNV and St. Louis encephalitis virus (SLEV). Due to low specificity, IgG antibody tests are not useful in the diagnosis of acute WNV infection.

Because the IgM MIA and ELISA tests can cross-react among the various species in the flavivirus genus (e.g., WNV, SLEV, dengue, yellow fever, Japanese encephalitis), they should be viewed as screening tests only. For a case to be considered confirmed, serum samples that are antibody-positive on initial screening should be evaluated by a more specific test. Currently, the plaque reduction neutralization test (PRNT) is the recommended test for differentiating among flavivirus infections. For definitive results, paired acute and convalescent specimens are recommended.

Instructions for submitting diagnostic specimens for serological testing for WNV and SLEV are available on the MSPHL website at <http://www.health.mo.gov/lab/westnile.php>. MSPHL specimen pickup and courier delivery information is available at <http://www.health.mo.gov/lab/courierservices.php>.

## **Prevention of WNV**

The best way to avoid illness due to WNV infection is to avoid mosquito bites. When going outdoors, using an insect repellent on the skin that contains DEET, picaridin, or another EPA-approved ingredient that is effective for mosquitoes can help prevent bites. Appropriate clothing, such as long pants and sleeves (when weather permits) can minimize exposed skin. Permethrin is a repellent that can be applied to clothing or gear that will be used outdoors. It is a long-lasting product that can withstand multiple washes before re-applying. Do not use permethrin directly on the skin.

Around the home, several precautions can be taken to reduce WNV risk, primarily removing standing water from yards. Mosquitoes that carry WNV prefer to breed in locations that have standing water, such as birdbaths, buckets, flower pots, tires, and pool covers. By emptying these items or changing the water weekly, the number of mosquitoes around homes can be reduced. To prevent mosquitoes from entering homes, it is recommended that residents use air conditioning if it is available. Screens should be installed and maintained on all windows and doors around the home to minimize mosquito entry.

Mosquito control activities are most often handled at the local level, such as through county or city government. The type of mosquito control methods used by a program depends on the time of year, the type of mosquitoes to be controlled, and the habitat structure. Methods can include elimination of mosquito larval habitats, application of insecticides to kill mosquito larvae, or spraying insecticides from trucks or aircraft to kill adult mosquitoes. Local mosquito or vector control programs can provide information about the type of products being used and the criteria they use to trigger mosquito control spraying. Contact information may be found in the blue (government) pages of the phone book.

## **Additional Guidance**

- Information for Health Care Providers, Centers for Disease Control and Prevention (CDC) <http://www.cdc.gov/westnile/healthcareproviders/index.html>
- West Nile Virus in the United States: Guidelines for Surveillance, Prevention, and Control (CDC) <http://www.cdc.gov/westnile/resources/pdfs/wnvGuidelines.pdf>

- West Nile Virus (WNV) Fact Sheet (CDC)  
[http://www.cdc.gov/westnile/resources/pdfs/wnvFactsheet\\_508.pdf](http://www.cdc.gov/westnile/resources/pdfs/wnvFactsheet_508.pdf)
- DHSS WNV website  
<http://www.health.mo.gov/living/healthcondiseases/communicable/westnilevirus/index.php>
- Missouri WNV Data and Statistical Reports  
<http://www.health.mo.gov/living/healthcondiseases/communicable/westnilevirus/reports.php> (These data are updated weekly, April through October)
- Before the Swarm: Guidelines for the Emergency Management of Vector-Borne Disease Outbreaks (Association of State and Territorial Health Officials) <http://www.astho.org/programs/environmental-health/natural-environment/before-the-swarm/>

Questions should be directed to DHSS' Office of Veterinary Public Health at 573/526-4780 or 800/392-0272 (24/7).