

West Nile Virus Surveillance in Kansas

"By understanding your risk for West Nile Virus in Kansas you can take steps to protect yourself, your family, and your community."

—Ingrid Garrison, DVM, MPH, Dipl.ACVP, State Public Health Veterinarian

This data story will focus on West Nile Virus (WNV) which is the leading cause of domestically acquired mosquito-borne disease in the United States and Kansas. Included in the story will be background information, surveillance overview, data charts, informative links to reports and additional resources.

Surveillance and data analysis was conducted by the Infectious Disease Epidemiology and Response section who partnered with the Kansas Environmental Public Health Tracking Program within the Bureau of Epidemiology and Public Health Informatics, Kansas Department of Health and Environment to provide this data story. The program is committed to the advancement of environmental health in the state to support KDHE's goal "to protect and improve the health and environment of all Kansans."

West Nile Virus is spread to people through the bite of an infected mosquito.

West Nile Virus (WNV) was first identified in the United States in 1999 and had spread throughout the country by 2006. The first case in Kansas was reported in 2002. Natural transmission of WNV involves a mosquito to bird to mosquito cycle. Mosquitos become infected when they feed on birds infected with WNV. Those infected mosquitos then spread West Nile virus to people and other animals, such as horses, when they bite them. The most effective way to avoid West Nile Virus disease is to prevent getting bit by mosquitos. Being aware of the risk level of WNV activity can help you to take steps to reduce your exposure to this disease. KDHE has developed a WNV risk factor model to assign a level of risk by region.

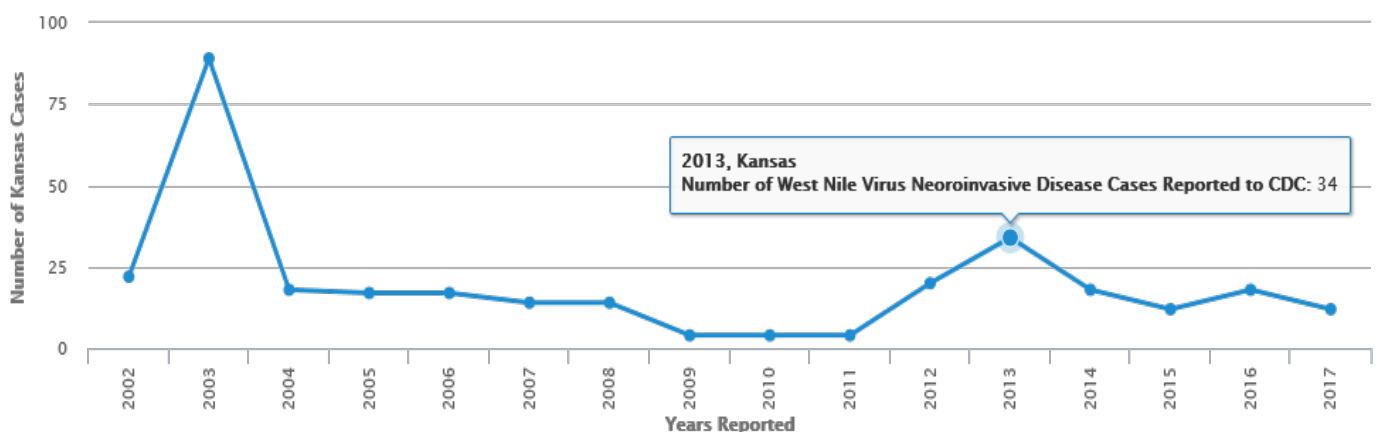


Most people, approximately 8 out of 10, who become infected with WNV do not develop any symptoms, but about 1 in 5 infected people will develop a fever with other symptoms (e.g. headache, body aches, joint pains, vomiting, diarrhea, or rash). Those people that do become ill usually recover completely, however the symptoms of fatigue and weakness can last for weeks after the first symptoms appear. About 1 in 150 people who are infected develop a severe illness such as encephalitis (inflammation of the brain) or meningitis (inflammation of the membranes that surround the brain and spinal cord). About 1 out of 10 people who develop severe illness will die.

From 2013 to 2016,
128 Kansans died
from West Nile
Virus infections.

If you think that you or a family member might have West Nile Virus, talk with your healthcare provider!

Incident of West Nile Virus Neuroinvasive Disease Cases Reported to CDC by Year, Kansas



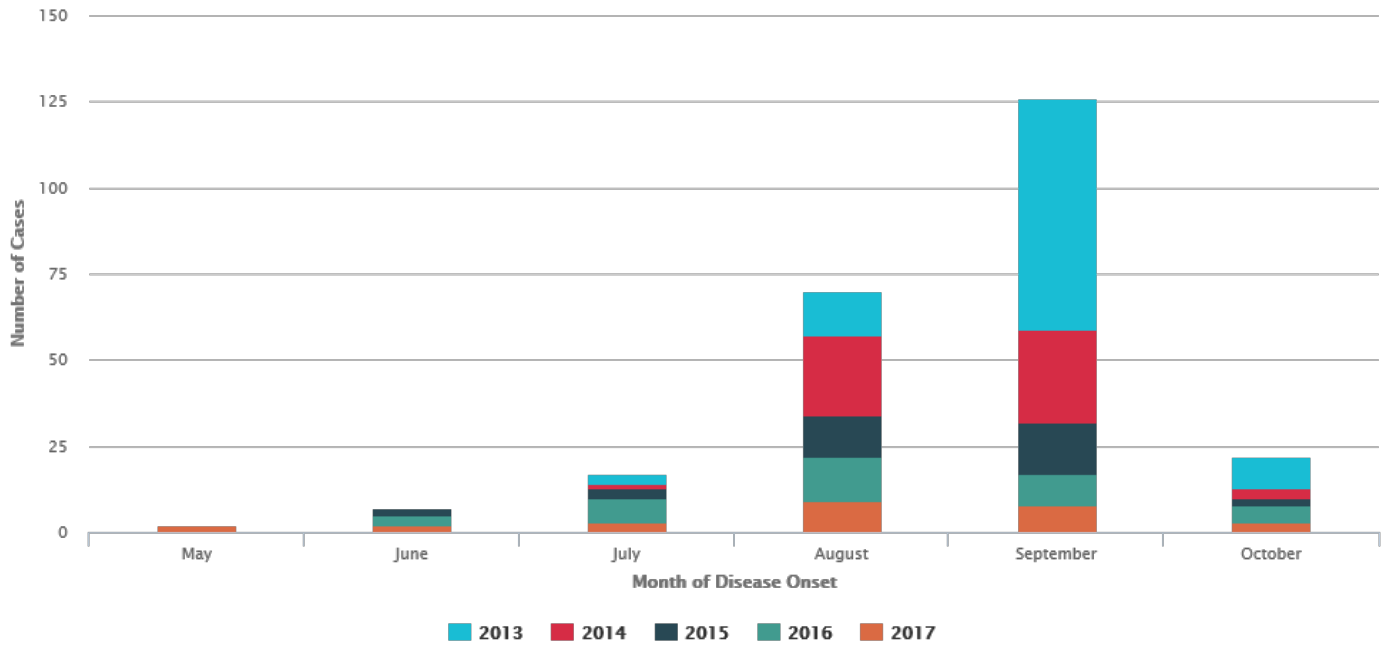
Monitoring West Nile Virus in Kansas

The Kansas Department of Health and Environment (KDHE) began surveillance for West Nile Virus in 2001 with a grant from the Centers for Disease Control and Prevention (CDC). West Nile Virus is a reportable disease for humans in Kansas, which means that healthcare providers or laboratories are required to report cases, when diagnosed in a person, to KDHE. The local health department, in the county where the patient resides, investigates the report, collects information to understand the risk factors, and identify prevention measures for WNV.

Note: West Nile Virus, and all other arboviral diseases, are reportable in Kansas. Healthcare providers or laboratories are required to report cases to KDHE. Cases are classified according to the most recent case definition. Confirmed and probable cases are reported to the CDC and are included as the case count (confirmed + probable = total number of cases). It is important to note that these definitions are to be used for case counts only and are not used for clinical diagnosis. All investigated and completed cases are reported to ArboNET, which is a national arboviral surveillance system managed by the CDC and state health departments.

WNV infection in horses may serve as a sentinel, or early indicator, of WNV activity in Kansas. WNV when diagnosed in horses, is required to be reported to the Kansas Department of Agriculture. In turn, KDA will send this information to KDHE for inclusion as part of the surveillance system. In 2016, three WNV-positive animals were reported to KDHE, a red-tailed hawk and two horses. Kansas does not conduct routine surveillance of dead birds for WNV.

West Nile Virus Month of Disease Onset in Kansas, 2013-2017



Mosquito Trap

Photo of mosquito trap courtesy of Dr. Christopher Rogers

Tracking Mosquitos in Kansas

The risk of acquiring WNV infection depends on many factors including the time of year, number and location of infected *Culex* species of mosquitos, as well as the number of days with sufficient heat. The risk of WNV transmission is lower in the spring and rises through the early and midsummer months as seen in the graphs included in this data story. The peak of risk transmission from mosquitos to humans is usually during July, August, and September. In Kansas, mosquito surveillance is conducted on a weekly basis from mid-May to late October in Reno, Sedgwick, and Shawnee counties. The data from these counties is used as a proxy to estimate WNV risk throughout the entire state. KDHE and the Kansas Biological Survey (KBS) train the local health departments on how to conduct mosquito surveillance. The local health departments will set out traps for one night each week. They pick up the traps the following morning and send the mosquitos to KBS. The mosquitos are identified, counted, and the *Culex* mosquitos are tested for West Nile Virus. This information along with historical human case data, and (new for 2018) temperature data are used to assign a risk level for each of the 6 regions of Kansas.

For a successful county level example of a local mosquito surveillance program click on Sedgwick County, Johnson County, and Reno County.

Summary

Be sure to check the Kansas West Nile Virus Risk Factor Model on the KDHE website during the mosquito season to determine your region's risk level and take action to prevent bites. The WNV risk factor model is updated weekly. For more detailed information about surveillance procedures, measures, and methods, you can refer to the Arboviral Disease Surveillance-Kansas Report, it is updated annually and available on the KDHE website. The CDC states that the most effective way to avoid West Nile Virus disease is to prevent mosquito bites and be aware of West Nile Virus activity in your area and take action to protect yourself and your family.

KDHE provides recommendations to city and county officials on mosquito control efforts using the mosquito surveillance data. For more information on arboviral disease surveillance in Kansas, call the Kansas Department of Health and Environment's Infectious Disease Epidemiology and Response section at 1-877-427-7317 or email at kdhe.epihotline@ks.gov.

This publication was supported by the Grant or Cooperative Agreement Number, 1 NUE1EH001340-01, funded by the Centers for Disease Control and Prevention. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention or the Department of Health and Human Services.