

Arboviral Infection

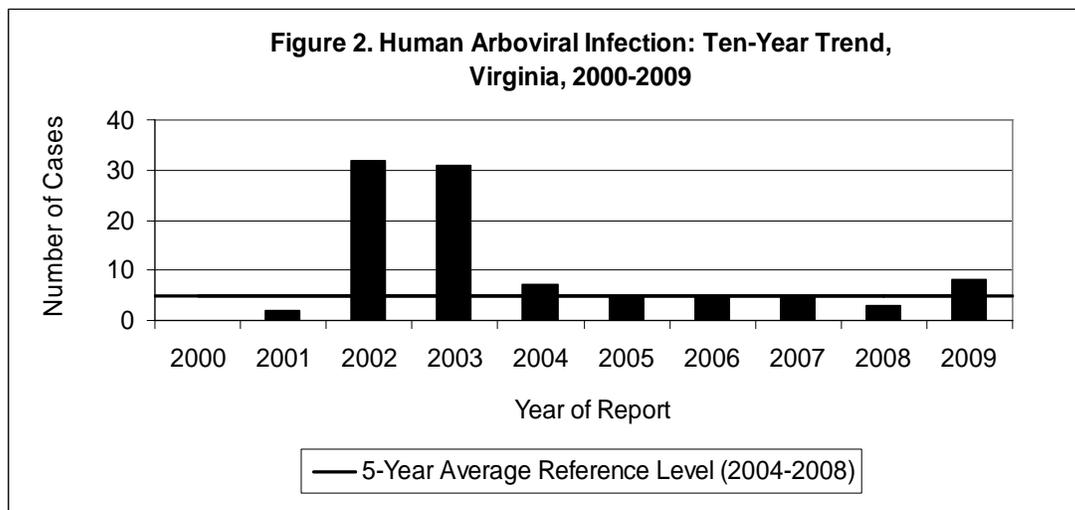
Agent(s): In Virginia, the endemic agents of arboviral infection listed from most to least common are the mosquito-borne West Nile virus (WNV), LaCrosse encephalitis (LAC) virus, St. Louis encephalitis (SLE) virus and Eastern equine encephalitis (EEE) virus. Other arboviral agents reported in Virginia include the imported dengue virus and chikungunya virus.

Mode of Transmission: Most commonly through the bite of an infected mosquito. WNV may also be transmitted by blood products via transfusion or transplanted organs from infected donors or by cuts or punctures with contaminated scalpels or needles and, more rarely, through inhalation or ingestion of dust or particles from infected bird feces.

Signs/Symptoms: Severity of symptoms differs depending on the particular virus, and characteristics of the infected person. Most infections are asymptomatic. Mild cases may appear as fever with headache or as aseptic meningitis. More severe disease can cause encephalitis (i.e., inflammation of the brain) or meningitis (i.e., inflammation of the lining of the brain and spinal cord) and may lead to permanent neurological sequelae or death.

Prevention: Minimizing mosquito bites by avoiding areas infested by mosquitoes and, when in those areas, using mosquito repellents and wearing long-sleeved, loose fitting, light-colored clothing because mosquitoes are not attracted to light colors. Additional control measures include maintaining screens on all open windows and doors and eliminating or regularly dumping all containers that could hold water and breed mosquitoes including buckets, birdbaths and discarded tires.

Other Important Information: WNV and SLE infections are more likely to cause severe disease in persons over the age of 50, but the majority of infections are asymptomatic. LAC is seen primarily in individuals less than 16 years of age. EEE has a high fatality rate and is more likely to affect children under the age of 15 and adults over the age of 50.



Human

Eight human arboviral infections were reported in 2009, which exceeds the average of five arboviral infections recorded in Virginia over the past five years (Figure 2). Among the 2009 arboviral infections, one case of chikungunya virus infection was diagnosed in a Virginia resident who had just returned from India where the person became infected. The other seven infections were acquired in Virginia and included five WNV infections, one LAC virus infection and one Powassan virus infection.

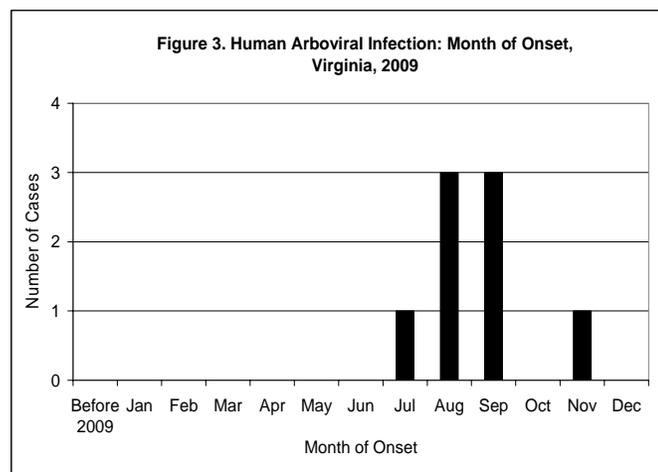
WNV activity has decreased significantly since 2002 and 2003 when the virus first appeared in Virginia. The five cases identified in 2009 represent a slight increase from the five-year average of 3.4 WNV cases per year. All five WNV infections occurred in males over 40 years of age. Three of the cases occurred in urbanized jurisdictions of northern Virginia, including Alexandria, Manassas, and Fairfax County. Most of Virginia's WNV infections identified since 2002 have been from the northern region of the state. The other two WNV infections from 2009 occurred in rural areas of northwest Virginia.

The single case of LAC virus infection seen in 2009 occurred in a highly endemic area in the southwestern part of the state, and was reported in a female in the 1-9 year age group. On average, less than two cases of LAC virus infection are reported annually.

The imported case of chikungunya occurred in a person from the central region who was in the 20-29 year age group.

The Powassan virus infection is the first ever recorded case in Virginia. The infection likely resulted from encountering ticks while deer hunting in the northwestern area of the state. The affected person was a male in the 60 year and older age group.

The majority of arboviral infections (80%) occurred in August and September, which is typical for arboviral disease in Virginia (Figure 3).



Animal

Zoonotic surveillance for WNV and EEE is conducted each year using mosquitoes, sentinel chickens and horses. There is no mosquito testing program for LAC or SLE viruses, but testing of horses or sentinel chickens is used to monitor for these viruses.

During 2009, over 396,854 mosquitoes were tested for WNV. Mosquitoes were tested as “pools” (i.e., batches of up to 50 mosquitoes). Of the 11,733 pools tested for WNV, 133 (1%) were positive (i.e., contained at least one WNV positive mosquito). In 2009, WNV positivity in the tested mosquito pools from northern Virginia was lower than in any year since 2001. This result may be partly due to changes in the laboratory that performs testing for the northern Virginia mosquito pools and in their testing procedures. In 2009, three horses with WNV infection were reported. The three horses were from Pittsylvania, Augusta, and New Kent counties, representing three different regions of the state. Sentinel chicken testing detected 16 WNV positive chickens in the Hampton Roads area of Virginia.

Of the 267,925 mosquitoes (6,266 pools) tested for EEE in the Hampton Roads region of Virginia, 141 (2%) pools were positive. Nine horses and two other mammals tested positive for EEE, all in Hampton Roads and adjacent regions of Virginia. Sentinel chicken testing for EEE detected 59 positive chickens in the Hampton Roads area.