

Arboviral Infection

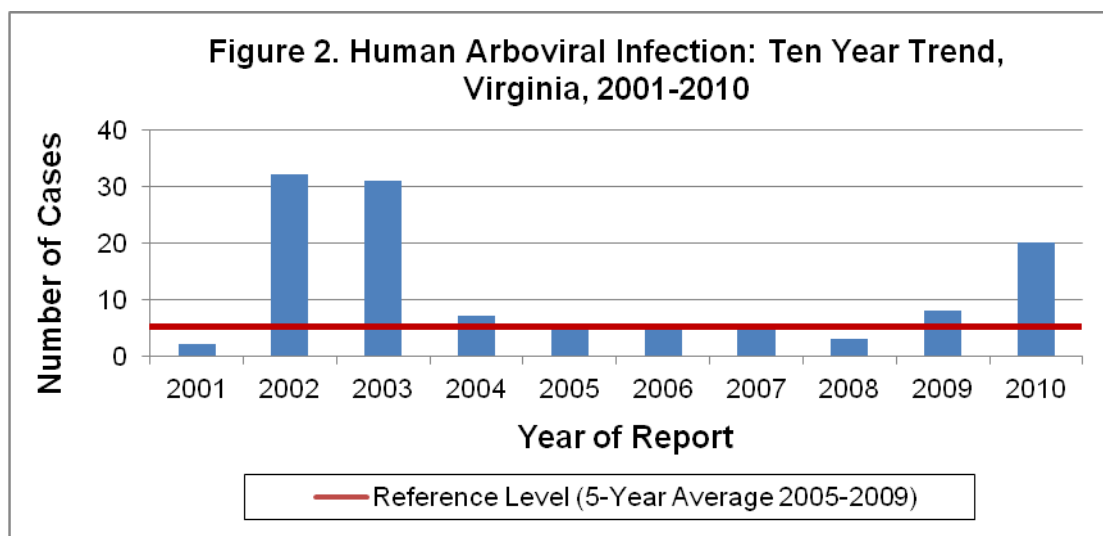
Agent(s): In Virginia, the agents of arboviral infection listed from most to least common are the mosquito-borne West Nile virus (WNV), LaCrosse encephalitis (LAC) virus, St. Louis encephalitis (SLE) virus and Eastern equine encephalitis (EEE) virus. Other arboviral agents reported in Virginia include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

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; 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.



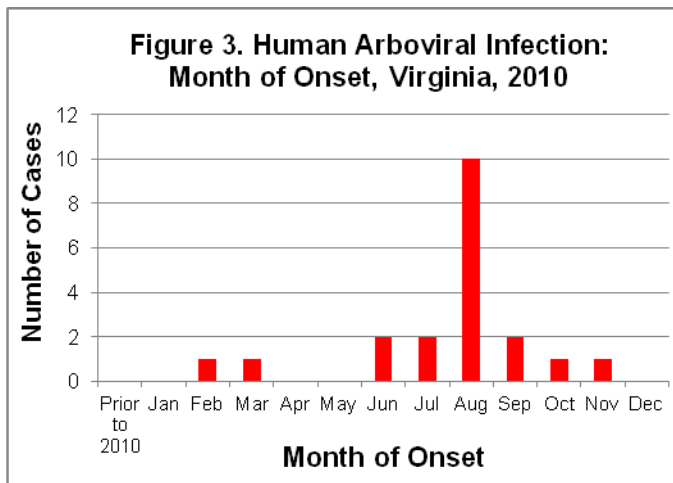
Human

The twenty human arboviral infections reported in 2010 is substantially higher than the annual average of five arboviral infections recorded in Virginia over the past five years (Figure 2). However, the majority of the 2010 arboviral infections were imported cases, including 14 cases of dengue fever and one case of chikungunya virus infection. The other five infections were all cases of WNV acquired in Virginia.

WNV activity has decreased significantly since 2002 and 2003 when the virus first appeared in Virginia. The five cases identified in 2010 represent a slight increase from the five-year average of 2.8 WNV cases per year. Four of the five WNV infections occurred in males, one in a male child under 10 years of age, and four in men over 50 years of age. The fifth case occurred in a female over 60 years of age and was fatal. All of the WNV cases occurred in urbanized areas including four from northern Virginia (two each from Alexandria and Fairfax County), and one from southwestern Virginia (Roanoke City). Most of Virginia's WNV infections identified since 2002 have occurred in urbanized sections of northern Virginia.

The 14 imported cases of dengue fever were seen in travelers returning from dengue endemic areas in south Asia and the American tropics. Ages ranged from 9 to 59 years. The imported case of chikungunya occurred in a male in the 40-49 year age group after returning from a trip to India.

The majority of WNV infections (80%) occurred in July and August, which is typical for arboviral disease in Virginia. One case had an onset date in early October (Figure 3). Onsets for the imported dengue fever cases ranged from February through September, with the majority occurring from June through September. The imported chikungunya case had onset in November.



Animal

Zoonotic surveillance for WNV and EEE is conducted each year using mosquitoes, sentinel chickens and horses. There is no mosquito or zoonotic testing program for LAC or SLE viruses.

During 2010, a total of 234,537 mosquitoes were tested for WNV. These mosquitoes were tested as "pools" (i.e., batches of up to 50 mosquitoes). Of the 7,997 pools tested for WNV, 276 were positive, indicating that they contained at least one WNV positive

mosquito. In 2010, WNV positivity in the tested mosquito pools from northern Virginia was higher than in any year since 2006 and was the fourth highest year on record since 2001. The relatively high mosquito infection rates in northern Virginia may explain why four human WNV cases were reported from that region. In 2010, no cases of WNV infection in equines were reported. Sentinel chicken testing revealed 15 WNV positive chickens in the Hampton Roads area of Virginia.

The 2010 season had the lowest levels of EEE activity since 2002. Of the 83,998 mosquitoes (2,201 pools) tested for EEE in the Hampton Roads region of Virginia, only eight pools were positive. A single horse, from the Hampton Roads region of Virginia, tested positive for EEE in 2010. Sentinel chicken testing for EEE detected only six positive chickens in the Hampton Roads area.