



FAQ 10. What are the human health symptoms of mosquito-borne diseases? What is the probability of becoming infected or sick?

As mentioned in FAQ 2, the primary mosquito-borne disease concerns in Delaware for humans are now eastern equine encephalitis (EEE) and West Nile virus (WNV). A large majority of people infected with WNV apparently might never know they've been infected because they are asymptomatic or they have only mild overall discomfort that's not severe enough for them to seek any medical attention. However, this relatively benign reaction is rarely the case with EEE.

Early symptoms of EEE and WNV are flu-like symptoms and include headache, mild fever, body aches, malaise, and swollen lymph glands. (If you live in an area where mosquitoes are abundant, you might want to be somewhat suspicious if you or someone you know comes down with a "summer flu," and seek medical care.) These early symptoms might occur 7 to 10 days after receiving an infectious bite, and might come on slowly or quite suddenly. The most probable time of year in Delaware to contract an arbovirus is during late summer and early fall, from about the last week in July through early October. A more virulent infection for WNV or EEE can progress to severe headache, high fever, neck stiffness, and muscular weakness, and cause behavioral changes including stupor, confusion and disorientation. Patients with these more severe symptoms are often recognized as neuroinvasive cases, in that nervous system functions have become affected or impaired. Progressing to full-blown encephalitis, which fortunately is a rare occurrence, can then cause tremors, convulsions, coma and paralysis. Death occurs in about 5% of patients with full-blown WNV; with any fatalities most common in people over 50 years old and those with impaired immune systems. EEE is more fatal, with death occurring in approximately 33% of the cases. For patients who do not die from full-blown encephalitis (whether caused by WNV or EEE), after-effects usually involve long-term or permanent neurological damage.

Since WNV and EEE are viral diseases, trying to use antibiotics to treat WNV or EEE is not effective, and no effective antiviral drugs have yet been discovered. For full-blown encephalitis, the best that physicians can do is treat the symptoms and problems associated with brain swelling and deal with associated complications where treatable. No human vaccines exist for WNV or EEE, although effective vaccines for both viruses are now available for horses.

Fortunately, transmission of EEE to humans is a relatively rare event, and modern mosquito control programs along the East Coast work hard to make such events even rarer. A major impetus for the start of modern mosquito control programs in the Mid-Atlantic region was the 1959 EEE outbreak in Cape May County, New Jersey that occurred around Labor Day, leading to the deaths of over 20 victims and hospitalizations of over 100 people. Even with a subsequent expansion and increased effectiveness of mosquito control programs in the Mid-Atlantic, localized EEE outbreaks have occurred since then, not only in New Jersey but also in eastern Massachusetts, Rhode Island, upstate New York, southeastern Virginia, and northeastern North Carolina. Fortunately, the numbers of human cases in these EEE outbreaks were relatively low. The most recent documented human case of EEE in Delaware occurred in 1979 -- the Mosquito Control Section takes considerable pride in our keeping things this way, such that EEE does not have major impacts on Delawareans and with the chances of you contracting EEE being very low.

The introduction of WNV into the United States occurred in the New York City area during the summer of 1999 (causing 62 hospitalizations and 7 deaths at that time). Since 1999, the virus has spread southward and westward across the country -- WNV human cases have now been reported in all lower 48 states.

Delaware's first WNV human case occurred in 2002, and Delaware's peak WNV outbreak year for human cases to date happened in 2003, with 17 people reported sickened by WNV (involving 13 neuroinvasive cases), leading to 2 deaths. WNV counts in Delaware then declined considerably until 2012 when there were 9 human cases that resulted in 1 death. The relatively low numbers of WNV human cases in Delaware in terms of total numbers or per capita reflect the results of the State having a modern-day, comprehensive mosquito control keeping pathogen-vectoring populations of mosquitoes as low as practicable.

People can take some comfort that scientists estimate even in areas where WNV has now become established, probably less than 1% of the mosquito populations that can carry this virus are infected, and that if you are unlucky to be bitten by one of these <1%, there's then only about a 1% chance that you'll become severely ill. With the Mosquito Control Section aggressively taking measures to reduce the frequency and intensity that you might get bit, along with your also taking some personal protection measures on your own, the chance of your ever contracting WNV is truly small.

Additional information about the human health problems/symptoms of WNV, or concerns for its possible contraction, can be obtained by calling the **Delaware Division of Public Health (Epidemiology office)** in Dover at **302-744-1033**.