

# **History of Mosquito Borne Disease in Michigan**

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All the problems throughout people's lives today have them worried, but there are things that don't make the list, such as mosquitos. What many people don't realize is how much trouble one little bite could add to their already troublesome lives. Symptoms ranging anywhere from a mild headache to death, a family friendly environment could quickly turn into a battle for your life in a matter of seconds if the right precautions aren't taken to keep those pesky little insects away. Mosquito borne disease is a very prominent factor in the health of many people across the world. Originating from birds, deer, and other mammals, mosquitos are almost always to blame. When they feed on an infected host and then change course to another person or animal, the infection spreads. Since mosquitos are a hard thing to control and every year the chance of new and repeated disease outbreaks are renewed, many of the diseases are currently of concern for many people around the state and the world. Malaria was of concern, being one of the first of the diseases to reach Michigan, others such as St. Louis Encephalitis (SLE), Eastern Equine Encephalitis (EEE), Dog Heartworm, Jamestown Canyon Virus, and the West Nile Virus where at one time and are still currently found in the region and cause major health concerns in the area.

Wild birds and mosquitos are to blame for the transmission of many mosquito borne diseases, such as St. Louis Encephalitis, commonly abbreviated SLE. The last major epidemic being in 1975 when almost 100 cases were reported here in Michigan, four ending tragically in death. Between 1975 and 1982 one to six cases were reported annually and an additional three cases were reported in 2002, mainly because of the West Nile outbreak. The symptoms usually last anywhere from four days to two weeks and typically include fever,

headaches, and various neurological symptoms. As with many other diseases, it is most severe in persons over fifty. Although it has not been a major concern for many years, each year holds the possibility of another major outbreak.

Many animals are also susceptible to mosquito borne diseases which can lead to health problems and death. Among these illnesses are Eastern Equine Encephalitis, abbreviated EEE, and Dog Heartworm. Eastern Equine Encephalitis originated in the East Coast of the US and quickly spread West and was found in Michigan in 1942. Most frequently, wild birds host the virus, some even able to harbor it without actually becoming ill, serving as a reservoir. As with many other illnesses, the mosquito feeds off of the host and then transmits the disease to its next victim, which can include other birds, deer, pheasants, horses, other animals, or humans. Once bitten, if a vaccination wasn't previously administered, the infection usually spreads, causing severe disease and quite often death. Horses are mainly affected and noticed, mostly because of the high mortality rates, standing at 90 to 95%. On rare occasions, humans also have the potential of being infected. In 1980, the first Michigan resident contracted the disease, the ten year old boy, regrettably, lost the tragic battle for his life. In 1983, twelve cases occurred, and an additional five cases in 1984, with intermittent reports of human cases in 1991, 1993, 1995, and 1997, with another teenager dying in 2001, making it a serious concern to many people. Deer were found with the disease in Kent and Montcalm counties in 2005, but no additional cases have yet been reported. Eastern Equine Encephalitis, is known as the most serious mosquito borne disease in the country because of its 50-70% mortality rate in humans and its ability to spread relatively easy. It still remains a logical threat to the citizens of the United

States and Michigan residents now as it did in the past. Dog heartworm is known to be present in all counties of the Lower Peninsula and the occasional county in the Upper Peninsula, but it isn't a major problem, as it can be prevented with a yearly vaccination. If a canine was to contract the disease, its detection is delayed because of the difficult diagnosis. Once the worms are present, they need to mature and mate, producing microfilariae which then begin to circulate through the bloodstream, allowing detection. The process taking around five to six months, setting back diagnosis, as well as treatment options. Depending on the health of the animal, and the age of the worm, there may be two phases to treatment, since the adult worms and the microfilariae need separate treatment. Treatment also has the possibility of causing severe toxic reactions. Heartworm became a problem in the mid 1960s and continued through the 1970s but still has potential risks today.

The Jamestown Canyon Virus was first seen in Michigan in 1980, when a young girl was infected and was hospitalized for 27 days. It took 15 months to get back to normal thanks to the illness she contracted. The Jamestown Canyon Virus among the California Group of mosquito borne diseases, occurs mostly in adults, although the occasional child can also be at risk. Whitetail deer seem to be the point of blame for the transmission of this particular strain of the California group. It seems that as deer populations grow, so does the antibody prevalence, and as they diminish, the antibody prevalence does as well, which goes to show that the spread of this particular disease is directly dependent upon the deer population in your particular area. Mild illness and various neurological problems are the wrath that the Jamestown Canyon Virus carries, varying from just days to months or even years to get back to normal after coming down

with the illness. Potentially causing enormous strains on your job, family, or lifestyle, depending on your various daily activities. Luckily only twelve cases were reported between 1980 and 1982, eleven being adults. Since 1982, no additional cases were reported, shifting our focus to more destructive and deadly diseases.

The most known and most common mosquito borne disease in recent years is the West Nile Virus. First recognized in New York in 1999, it quickly spread to the majority of the United States. By 2002, 644 human cases were reported in Michigan alone, 51 ending in death. Since 2002, anywhere from 20 to 40 cases are reported annually. Many animals are also found with the disease, horse deaths being relatively higher than many other species. Different species of birds such as the blue jay, crow, and raven seem to be especially susceptible to the disease and can serve as hosts for mosquitos to prey upon. Once a mosquito feeds off an infected bird, it then spreads to other animals and humans alike, however it cannot be spread from human to human through physical contact. When humans are infected with the disease, mild illness, fevers, rashes, swelling, head aches, and body aches may occur. Rarely does it result in death, but when it hits, it usually hit the elderly the hardest. Encephalitis, which can also be contracted through the West Nile Virus, results in severe headaches, high fever, stiff neck, confusion, loss of consciousness, muscle weakness, and even the occasional coma. Since the major outbreak in the early years of the new millennium, it doesn't seem to be such a major concern although it is certainly something on everybody's mind as they remember what effect it had on their daily activities and lives of people close to them. It remains something that we all try to prevent.

The prevention of infection is actually a series of small but relatively simple actions.

Things as easy as keeping quality screens in your house windows, and dumping out standing water bins you have lying outside that aren't essential can greatly diminish your chance of being infected. If you're going to be outside, plan to bring plenty of extra repellent as its best to continue application throughout the night to maintain the quality and safety that the initial application provides. Also, if you have horses or other farm animals that may be at risk of being infected with any of these varying diseases, have them vaccinated annually and try to keep them in barns or stalls during the times at night when mosquitos are most active. Attempting to help your fellow neighbors and your community as a whole by reporting any dead birds you find is also a good preventative measure that should be taken so together we can keep all of the mosquito borne diseases at bay and keep them out of our lives for good.

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