

The Hidden Costs of Mosquito-borne Disease

Everything has a cost. Costs are measured in different ways, such as money cost, consequential cost, or emotional cost. Recently a new cost was added to the United States' health bill: West Nile Virus. Since its introduction into the United States in 1999, the West Nile Virus has cost Americans millions of dollars each year. This money is spent on West Nile research in domestic and wild animals as well as in human populations. Some of these research dollars have resulted in effective treatment for infected animals, and prevention of the virus in healthy animals.

American research of the West Nile Virus began many years before it was found within our borders. In late summer 1999, when it was identified in New York, we already had a knowledge base in place. American researchers at various universities and laboratories have generated a wealth of information on its history as a threat in foreign countries. West Nile virus was originally isolated in Uganda, a small country in Africa, in 1937. By the 1960's, many African countries as well as several European countries had confirmed cases of the virus. Veterinary scientists are constantly increasing their understanding of this disease. Field veterinarians are also adding to this knowledge as they work with infected animals.

American human and animal populations were not threatened until the first case of West Nile Virus was confirmed in New York in August 1999. Since then, researchers have tried to find containment and preventative methods to stop the spread of West Nile Virus. One important step in this procedure is to determine how the disease spreads and who or what is susceptible to it. The mosquito is the main carrier of West Nile Virus. As an infected mosquito bites other living organisms, it injects a slight amount of blood into the victim. This blood, if infected with West Nile Virus, can then infect the victim with the virus. The virus is transmittable to most

mammals and birds, as well as some species of reptiles and amphibians. In birds and other small animals, the virus causes paralysis and usually death. West Nile Virus can also be fatal to larger animals and humans who become exposed. Study of the virus has cost a substantial amount, but has provided generous amounts of information for our defense against the disease.

High research costs do eventually pay off. A veterinary supply company, Fort Dodge, released a vaccine against West Nile Virus in 2002 called West Nile- Innovator[®]. One or two doses of this vaccine, yearly injected by an authorized veterinarian, will substantially increase a horse's resistance to succumbing to West Nile Virus. Over thirteen million doses of the West Nile- Innovator[®] have been safely administered throughout the United States since its creation, protecting roughly forty percent of the domestic equine population. In this way, West Nile prevention has cost American equine enthusiasts a large sum of money.

The costs of West Nile Virus mentioned to this point are easily measured in a dollars and cents method. However, many hidden costs are present. Abstract costs such as animal suffering, productivity loss, and emotional distress are much more difficult to assess and quantify.

West Nile Virus causes weakness in limbs, lack of coordination, and even paralysis in its victims. These are not pleasant symptoms, and result in anguish and suffering. This misery costs a considerable amount, though not in a monetary sense. Due to their pained state, animals affected with West Nile Virus are not efficient at their work. Often, they are unable to perform any strenuous tasks while battling the virus. This loss of productivity also has a cost, in addition to the monetary expense of treatment. The most extreme cost of the West Nile Virus is life itself. One in three horses struck with the virus eventually pay this price. In reality, it is the owners who are forced to watch their equine friend die or pay to have him put down. In an indiscreet way, West Nile Virus causes the victims and those around them a great deal of emotional distress.

While these damages cannot be measured in dollars, they must be accounted for when measuring the overwhelming cost of the West Nile Virus invasion.

The possibility of eradicating West Nile Virus is slim. Since the virus is easily transmitted and so many species are susceptible to it, creating a totally disease free country again is unlikely. The costs of this procedure would be enormous. Mosquito levels would have to be near nothing and most domestic animals would need to be vaccinated against West Nile Virus. This would take considerable financial commitment from the citizens of the United States. More than likely, it would require law enforcement and government financing to have every horse vaccinated against the virus. That would possibly lead to upset citizens who only want to be left alone. The likelihood is that West Nile Virus is here to stay. Those who are concerned for their animals need to vaccinate them to offer protection.

West Nile Virus has been very publicized since its appearance in the United States. Most Americans have been cautioned about the threat that the virus poses to our economy and way of life. The costs of the West Nile Virus will only increase in the frequency of infected animals increases and it becomes a more common illness. We, as citizens of Michigan and the United States, can take a stand to keep the costs as low as possible. Methods are in place for residents to report suspected cases of West Nile Virus in animals to a prevention board. Also, general mosquito control practices in one's back yard or barnyard can help limit the risk of one's animals becoming exposed to the virus. We must practice such control methods as eliminating breeding areas, especially standing water. Also we need to limit the time animals are outdoors when mosquitoes are most active: dusk and dawn. Another way to protect animals is to screen off their living areas so mosquitoes cannot get into sheltered areas. These management tips can keep one's animals from being the next victim.

Further research will be done at universities around the country as veterinarians turn in more data over the years. College students and researchers worldwide will be working to find new methods of controlling West Nile Virus. Although it is a terrible virus that does incredible damage to the livestock industry and wildlife, it is exciting to think that I could be one of the research students who finds a clue that leads to eradication of the disease or a new vaccine that will be effective in controlling the virus' effect in animals.

Even though everything has a cost, not everyone has to pay the price. Use preventative measures to protect yourself and your animals from having to pay the obvious and hidden costs of West Nile Virus. Don't let you or your animals be the next victim.

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