

6.7 Vectorborne Diseases

Vectorborne diseases typically refer to a disease that transferred from one organism to another by means of a third organism, such as an insect or tick. Examples of vectorborne diseases include Lyme disease, West Nile virus, Rocky Mountain spotted fever, malaria and Dengue fever. Residents diagnosed with Rocky Mountain spotted fever, malaria or Dengue fever acquired their infection outside of Kalamazoo County; residents diagnosed with Lyme disease or West Nile virus may or may not have been infected in Kalamazoo County. Potential transmission of Lyme disease and West Nile virus are discussed separately in subsequent report sections.

**Vectorborne Diseases Reported to Kalamazoo County
Communicable Disease Surveillance Program, 2004 – 2008**

Vectorborne Disease	Number of cases reported
Dengue Fever*	3
Lyme Disease**	7
Malaria*	4
Rocky Mountain Spotted Fever*	3
West Nile Virus*	2

*Michigan Disease Surveillance System, completed cases as of 7/28/09

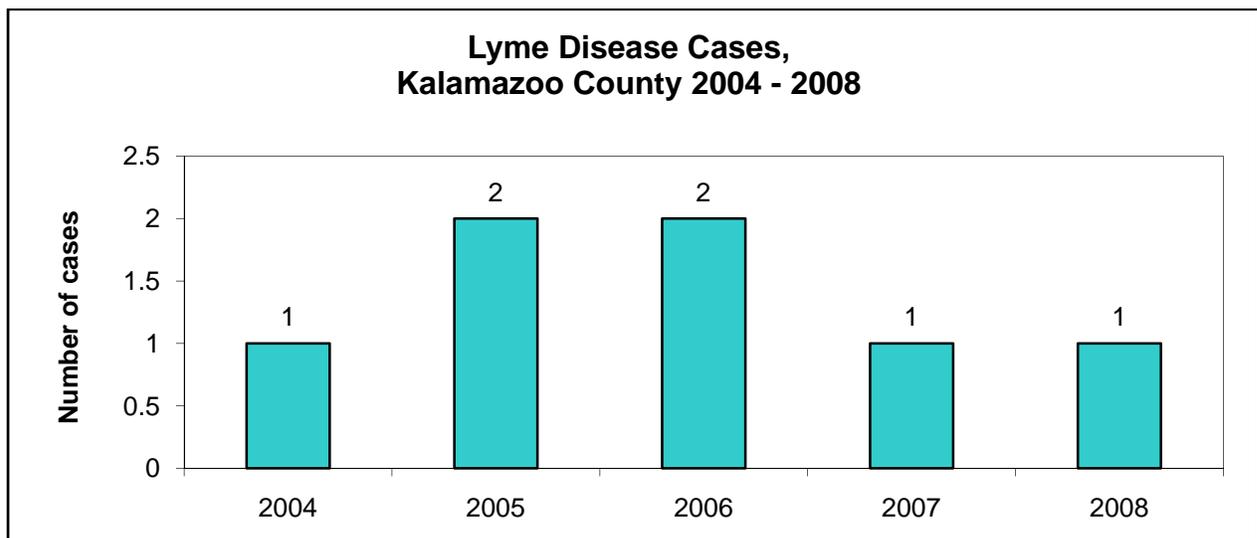
**Michigan Department of Community Health, Bureau of Epidemiology, Communicable Diseases Division

6.7.1 Lyme Disease

Lyme disease is caused by the bacterium *Borrelia burgdorferi* and is transmitted to humans by the bite of infected blacklegged ticks. Typical symptoms include fever, headache, fatigue, and a characteristic skin rash called erythema migrans. If left untreated, infection can spread to joints, the heart, and the nervous system. Lyme disease is diagnosed based on symptoms, physical findings (e.g., rash), and the possibility of exposure to infected ticks; laboratory testing is helpful in the later stages of disease. Most cases of Lyme disease can be treated successfully with a few weeks of antibiotics. Steps to prevent Lyme disease include using insect repellent, removing ticks promptly, landscaping, and integrated pest management.¹

Kalamazoo County is considered an area with elevated risk for Lyme disease. This is because there are known populations of the vector for Lyme disease, the blacklegged tick (*Ixodes scapularis*), in Kalamazoo County. Lyme disease carrying ticks may be found at any site where the presence of the black legged tick has been confirmed.²

From 2004-2008 there were seven cases of Lyme disease confirmed in Kalamazoo County residents. Three of these cases were most likely exposed while in Kalamazoo County rather than from exposure while traveling.

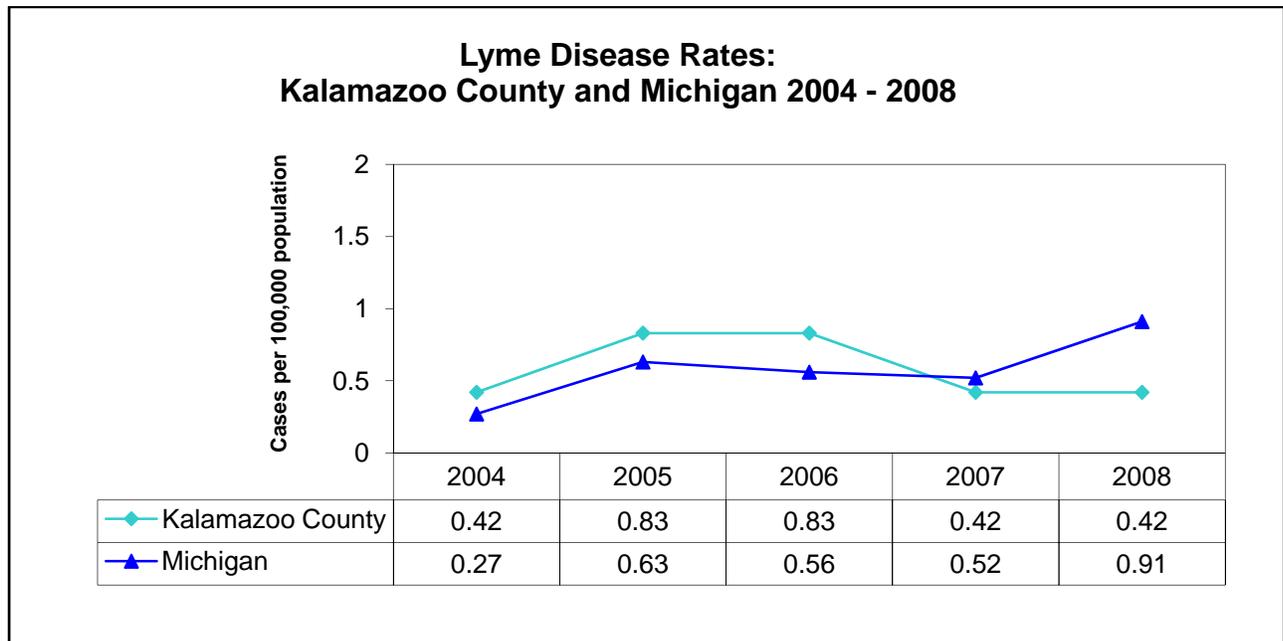


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¹ Centers for Disease Control and Prevention, Division of Vector-Borne Infectious Diseases, accessed 6/11/07 online at <http://www.cdc.gov/ncidod/dvbid/lyme/index.htm>.

² Michigan State University Department of Microbiology and Molecular Genetics and Michigan Department of Community Health, data as of October 2004.

Lyme Disease incidence rates in Kalamazoo County were similar to Michigan rates from 2004 through 2007, and in 2008 the state rate was slightly higher.



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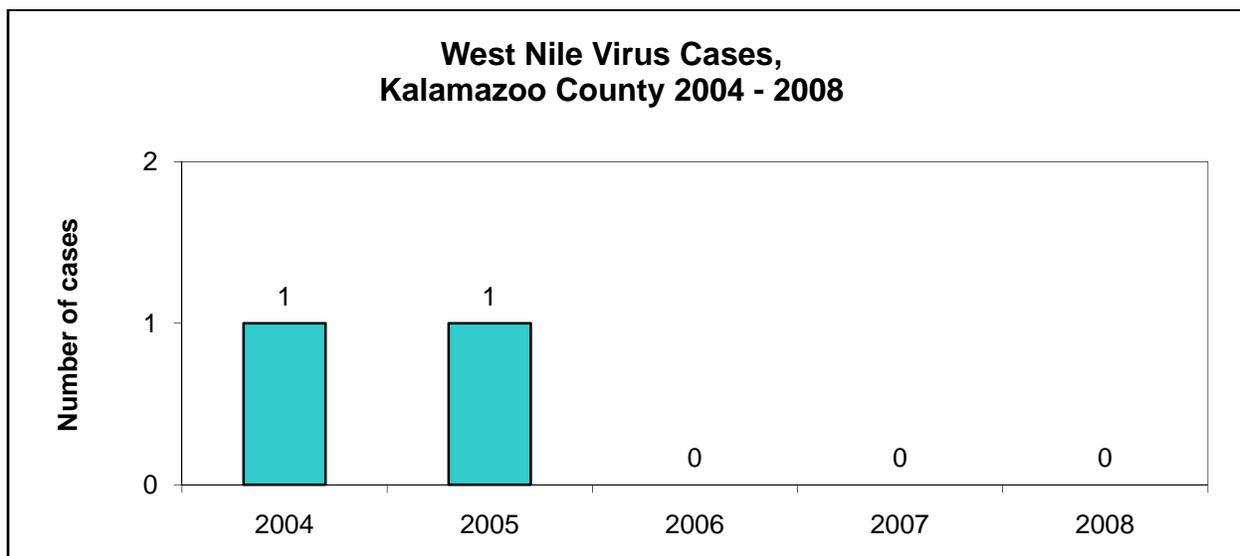
6.7.2 West Nile Virus

West Nile virus can infect humans, birds, mosquitoes, horses, and some other mammals. The route of human infection with West Nile virus is through the bite of an infected mosquito. Mosquitoes become infected when they bite an infected bird and the virus eventually finds its way into the mosquito's salivary glands. If the infected mosquito then bites a human, the virus may be injected into that person's bloodstream where it can multiply and possibly cause illness. Animals can also be infected in this manner.

It is estimated that 20% of the people who become infected will develop mild symptoms of infection including fever, headache, and body aches, and occasionally a skin rash on the trunk of the body and swollen lymph glands. It is estimated that one in 150 persons infected with the West Nile virus may develop a more severe form of disease. The symptoms of severe infection (West Nile encephalitis) include headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, and paralysis. The incubation period is usually three to 14 days (time from becoming infected until symptoms begin). Symptoms of mild disease will generally last a few days. Symptoms of severe disease may last several weeks and neurological effects may be permanent.

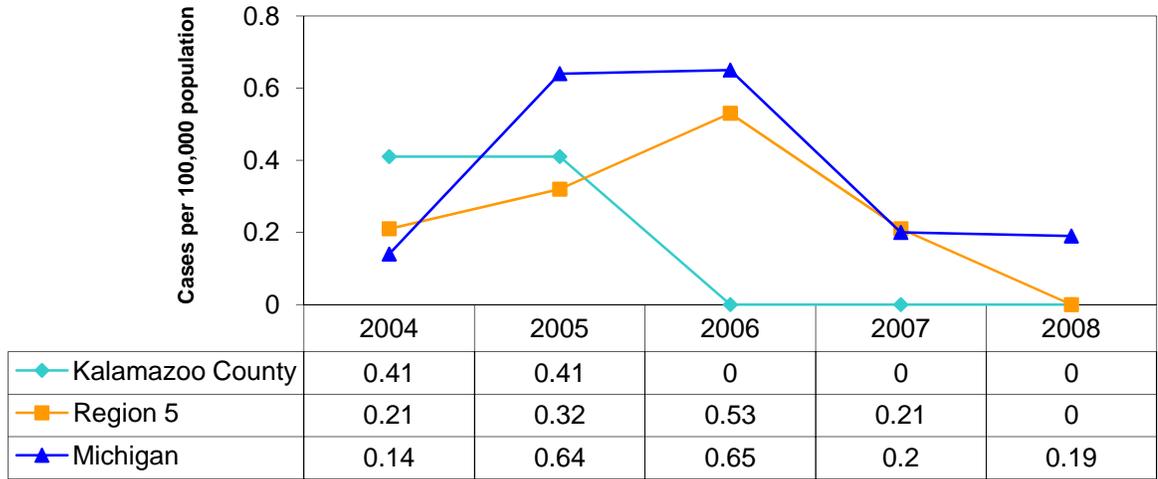
Any person bitten by an infected mosquito is at risk. However, young children, persons over 50, and immune-compromised individuals are at higher risk for serious illness. Outdoor workers and sportsmen engaged in activities where there are large populations of mosquitoes may also be at higher risk due to their increased exposure.

From 2004-2008 there were two cases of West Nile Virus in Kalamazoo County residents. Since 2002, rates in Kalamazoo County and Region 5 have been low and similar to rates in Michigan.



Michigan Disease Surveillance System, completed cases as of 7/28/09

West Nile Virus Rates: Kalamazoo County, Region 5 and Michigan 2004- 2008



Michigan Disease Surveillance System, completed cases as of 7/28/09