

Zika virus concerns for Michigan residents

How concerned should Michiganders be about being infected with the Zika virus? An MSU entomologist responds.

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E. Lansing - News of another mosquito-borne disease, Zika virus, reaching the Americas and spreading rapidly has caused concern in the United States and prompted the World Health Organization (WHO) and Centers for Disease Control and Prevention (CDC) to issue precautionary warnings to travelers. Because the virus is associated with birth defects (microcephaly) in infants born to infected mothers, some governments in affected areas have made the radical announcements that all women should avoid getting pregnant for two years.

Zika virus is a tropical/subtropical disease that originated in Uganda and has recently spread and established in the tropical western hemisphere in addition to other areas outside of central Africa. Most of us living in the United States have nothing to worry about unless we travel to Mexico, the Caribbean or Central and South America and perhaps certain parts of Africa and French Polynesia. Brazil seems to be a focal area and so anyone considering attending the summer Olympic Games should be aware of the risk. Additionally, locally acquired cases of Zika have been recently reported in Puerto Rico. There is potential for local transmission in southern states such as Florida, and possibly other areas of the U.S., but no mosquito-transmitted cases have yet been reported here.

Zika virus is a member of the Flaviviridae family and so shares some characteristics with dengue, yellow fever and West Nile virus. Its origin has been traced to the Zika forest area in Uganda and there have been small outbreaks in Southeast Asia and some Pacific islands. Most people are relatively unaffected by infection, but others show symptoms similar to infection by viruses in this group – fever, joint aches, rashes and conjunctivitis. Of particular concern is the presumed capacity to infect human fetuses' nervous systems. Other evidence of neuro-invasive properties is the increase in Guillain-Barré syndrome cases, a neuromuscular disease, after Zika spreads through an area.



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The virus is transmitted from human to human primarily through bites of yellow fever mosquitoes, the species *Aedes aegypti*. This same species transmits another unrelated virus that has also spread rapidly throughout tropical America in the last few years – Chikungunya.



The yellow fever mosquito, *Aedes aegypti*, spreads several diseases including Zika. Photo credit: Stephen Ausmus, USDA ARS

Another mosquito capable of transmitting many of the same diseases, which is associated with Zika transmission in Africa and elsewhere, is *Aedes albopictus*, the Asian tiger mosquito. Both species are notorious for living and breeding near human dwellings and aggressively feeding on humans. They can thrive in urban, suburban and rural areas and are difficult to control. They feed mainly during the day, but may occasionally feed at night in well-lit areas. Because of this behavior, bed nets are ineffective and people living in affected areas need to rely more on effective window screening, repellents and mosquito control measures.

Neither of the principal vector species is found in Michigan, however, *Aedes albopictus* has made it to northern Ohio and we will likely see established populations in southern Michigan in the near future. *Aedes aegypti*, the main vector, will not establish here until our climate warms dramatically because it cannot tolerate even mild winter conditions. Therefore, the chance of contracting Zika via local transmission by mosquitoes in Michigan is extremely low to non-existent.

There is, however, limited evidence the virus can be transmitted among humans via sex. It has been found in semen and a recent case of Zika in Texas was attributed to sexual transmission via a person who had travelled to an area of endemic infection. Even so, the primary means of Zika spread is through mosquitoes, and controlling them will be the main way to thwart this disease.

In Michigan, we have more to worry about with the mosquito-borne diseases West Nile virus and Eastern Equine Encephalitis, and the tick-borne Lyme disease. Awareness

and sensible use of repellents is a viable strategy for avoiding our endemic insect-borne diseases, and is wise if you travel to tropical Americas. Such precautionary awareness should have been standard procedure for travelers regardless of the recent outbreak of Zika, because there have always been serious mosquito-transmitted diseases in tropical America.

Reducing the risks associated with Zika revolves around knowing that if you are travelling to an area with virus activity, the vector mosquitoes can be active at all times of the day, not just dusk and dawn and so precautions are needed at all times. It also means using condoms if having sex with anyone who lives in or has recently travelled to areas with the infection. These precautions are especially important for woman who are pregnant or who are trying to become pregnant.

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