Five Questions: Desiree LaBeaud on the Zika virus

May 23 2016

Aedes mosquitoes transmit the Zika virus. Credit: Wikipedia

The infectious disease expert discusses the local risks of contracting the Zika virus, what precautions residents can take and what travelers outside the United States should do to avoid infection with the virus.

The warm weather of summer is an invitation to mosquitoes, which may carry the risk of disease, such as Zika virus. Desiree LaBeaud, MD, is an associate professor of pediatric infectious disease at the School of Medicine who has focused her efforts on understanding the risk factors and long-term health consequences of arboviral infections, including Zika.

She recently shared her thoughts about the local risks of contracting the virus, what precautions residents can take, as well as what travelers outside the United States should do to avoid infection with the virus.

Q: What kind of risks could Zika pose this summer to Bay Area residents?

LaBeaud: While there is currently a minimal risk of Zika virus spreading to the Bay Area, there are a number of factors that could contribute to a local outbreak. The vector that transmits Zika virus and many other viruses are Aedes mosquitoes. Aedes mosquitoes have been found in many areas of California, including Menlo Park, Atherton, San Mateo and Hayward. Without exposure to the virus, these mosquitoes cannot transmit Zika virus.

People returning from summer vacations in areas of South and Central America or the Caribbean may be infected with Zika virus without experiencing any symptoms of Zika disease. There is a very low risk of a recent traveler starting a local outbreak in the Bay Area. The traveler would have to have an active infection, which occurs within two to seven days after initially being bitten by an infected mosquito, and would then have to be bitten by another Aedes mosquito in the Bay Area that could pass along the infection. The Aedes mosquito density is much lower in the Bay Area than it is in South and Central America and other tropical regions of the world. Also, we spend more time indoors here, decreasing outbreak risk.

Q: Are there specific precautions people should take to protect themselves from the virus?

LaBeaud: The Centers for Disease Control suggests avoiding travel to areas affected by the current outbreak. For those who are planning on

traveling to Latin America or the Caribbean, we highly suggest mosquito repellant. Pack clothing that will provide adequate coverage (long sleeves and long pants), treat your clothing with mosquito repellant (like permethrin) before traveling, and apply mosquito repellant (DEET, picaridin) liberally and often. Avoiding the mosquito vector is your best chance of minimizing your risk of infection.

If you are concerned about being exposed at home despite there being a low risk for local exposure, be sure to survey your house and yard for containers that collect water. Standing water in small containers—cups, flowerpots, bird baths, garden fixtures, children's toys or play structures, for example— is the preferred environment for Aedes mosquito breeding. Dumping out standing water will reduce mosquito breeding around your home.

Q: What are the known health risks associated with Zika?

LaBeaud: Typically, Zika virus can cause a broad range of symptoms that have been described as "dengue-like syndrome." Symptoms may include fever, headache, rash, muscle and arthritic joint pain, conjunctivitis (red eyes), and eye pain. These symptoms are usually mild and only last a few days. About 80 percent of people who have been infected experience no symptoms. Symptoms of infection may be worse in children or people with compromised immune systems.

There are some severe disease presentations that may be linked to Zika virus, including microcephaly in newborns—children born with unusually small brains—and a severe neurologic disorder known as Guillain-Barré syndrome. The CDC is currently performing an extensive investigation to determine whether microcephaly and Guillain-Barré syndrome are linked to Zika virus and what may increase a patient's

likelihood of experiencing these serious problems. During a previous Zika virus outbreak in French Polynesia, the incidence of Guillain-Barré syndrome increased 20 times.

Some researchers believe that people in these regions may have a genetic or physiological susceptibility to a more severe form of Zika disease. Others believe that the strain of virus that is causing the current outbreak has mutated to be particularly virulent. Another thought is that previous exposure or co-infection with another virus—such as dengue virus, that is endemic in currently affected regions—may increase one's risk for severe Zika disease.

Q: Are there Zika-prone areas of the world that travelers should avoid?

LaBeaud: The current outbreak has been reported in 33 countries across South and Central America and throughout the Caribbean islands. Brazil has experienced a significantly large outbreak since May 2015. Zika virus transmission was documented in a total of 57 countries and territories. Six countries—Argentina, Chile, France, Italy, New Zealand and the United States of America—have now reported locally acquired infection through sexual transmission. Vietnam is the country to most recently report mosquito-borne Zika virus transmission.

Q: There are certain species of mosquito that are vectors for transmitting the virus. What makes these particular mosquitoes such powerful transmitters of Zika?

LaBeaud: Aedes mosquitoes, specifically Aedes aegypti and Aedes albopictus, are the vectors for Zika virus and many other viruses. The

female mosquitoes take blood meals from larger mammals in order to stimulate the development of eggs. These mosquitoes are anthropophilic, which means they prefer to feed on people. These mosquitoes specifically bite during the day, making people more susceptible to bites.

Aedes mosquitoes breed near the home environment. There are often containers with small amounts of rainwater or other pooled water located near the home, such as tires, containers specifically used for water collection, empty planters and bowls. Breeding near the home makes them more likely to bite humans, as they do not need to travel far for a blood meal.

Aedes aegypti females are also nervous feeders, so any movement during feeding will make them fly off. This means that it takes on average four or five human feedings for them to have a full blood meal to lay eggs, and the mosquito infects all of them. That means she can transmit viruses very efficiently!

Provided by Stanford University Medical Center