

THE ZIKA VIRUS EMERGES

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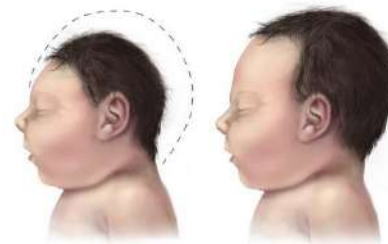
(1) What is the Zika virus (ZIKV), what does it do and how fearful should we be of it? Though you might only have heard of the Zika virus recently, it has been known by scientists for almost 70 years. It was first discovered and isolated in Uganda in a forest called the Zika Forest. This virus comes from the genus of viruses called flaviviruses which includes related viruses like the West Nile virus, yellow fever virus and dengue (fever) virus. All of these viruses are *arboviruses* which means that they are transmitted from person to person by *arthropod vectors*. In terms of disease, a vector is anything that can carry and transmit an infectious agent from one host to the next. An arthropod is any invertebrate which has an exoskeleton and a segmented body. In the case of the Zika virus, its preferred arthropod vector is the *Aedes aegypti* mosquito. Since the Zika virus can be found in the blood of infected humans, mosquitos can pick up this virus and spread it to uninfected humans.



Aedes aegypti mosquito with its characteristic white banded legs.

increasing international travel, the threat of a Zika pandemic (an infection that becomes widespread over large regions and even multiple continents) is of great concern.

(4) The current alarm that has arisen over Zika is not due to the Zika fever symptoms, it is due to the increasing evidence that pregnant women infected with Zika may give birth to children with microcephaly. Microcephaly is a neurodevelopmental birth defect. This means that it involves a disorder that affects the development of the brain. “Micro” is the Latin prefix that means small and “cephaly” comes from the Greek word for head or brain. Most



A baby with microcephaly (left), compared to a baby with a normal head size (right).

(2) Until recently, Zika has been isolated to the equatorial regions of Africa and Asia where it causes symptoms that are referred to as Zika fever, which resemble a very mild case of dengue fever. These symptoms include a fever, rash, joint pain, and conjunctivitis (red eyes). Sometimes headaches and muscle pain are also present. The symptoms begin 2 to 7 days after being bitten by an infected mosquito but the symptoms are not severe and last only a few days to a week. Rest and fluids usually help a person recover fully. Acetaminophen (e.g. Tylenol) can be used for the pain. However, since only 1 in 5 infected people ever develop symptoms, most people don't know they've been infected and Zika hasn't been widely reported in the media until recently.

(3) In 2014, Zika began spreading eastward across the Pacific Ocean where it reached French Polynesia and then jumped over to Easter Island. Zika then spread to Central and South America and the Caribbean in 2015. Zika infected mosquitos did not make it across the ocean, but people infected with Zika did. Local mosquitoes in Zika free zones who bit infected humans would pick up the virus and begin to spread it among the previously uninfected human population, thus beginning a new chain of disease transmission. With ever

babies born with microcephaly are either born with a noticeably small head or a normal one. However, for those born with normal heads, they soon show outward signs of microcephaly when their faces and body grow larger but their skulls do not. This causes the characteristic shrunk head appearance of people with microcephaly. Not only are the heads smaller, the brains within them are also smaller which results in severe intellectual and motor impairment. Some children might also have seizures and life expectancy is reduced.

(5) Microcephaly can be caused by many factors, but an alarming number of cases of microcephaly have shown up in places like

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Brazil where there were 2782 cases of microcephaly reported in 2015 while there were less than two hundred reported cases in each of the two previous years. The rise in microcephaly seems to follow the 2015 outbreak of Zika in Brazil that led to increasing numbers of pregnant women being infected. It will remain to be seen how the 2016 Summer Olympic Games in Brazil affects the international spread of Zika.

(6) Many countries infected with Zika have warned women to postpone getting pregnant until the outbreak of the virus can be contained. The CDC (Centers for Disease Control and Prevention) in the United States along with many other countries have issued

travel warnings advising pregnant women against traveling to Brazil and other infected areas. Effective vaccines currently exist for some flaviviruses, like the yellow fever virus, and now scientists are intensely focusing on developing a vaccine for Zika as well.

(7) Currently, few Europeans and North Americans report Zika infections because the type of mosquitoes that carry Zika are not found where they live. However, there might be evidence that once a person is infected, they may be able to transmit the virus through sexual intercourse. The evidence for this is currently supported by only a few cases, but as more research is done, sexually transmitted Zika may become confirmed.

Article Questions

- 1) Zika is a type of arbovirus. What is an arbovirus?
- 2) List some of the symptoms of Zika fever.
- 3) What is the treatment for Zika fever?
- 4) What is microcephaly and what are some of the symptoms of microcephaly?
- 5) Why should health officials around the world be worried about the 2016 Summer Olympic Games in Brazil?
- 6) Why has the Zika virus not made much of an impact in Europe and North America thus far?
- 7) Why have pregnant women specifically been warned to stay away from countries currently experiencing a Zika outbreak?
- 8) What are two potential ways that a human can contract the Zika virus?