

### Virus

- Zika virus is an RNA virus belonging to the family *Flaviviridae*, genus *flavivirus*. Yellow fever, dengue fever and West Nile disease are also caused by flaviviruses.
- The mosquito-borne virus was first isolated from a rhesus monkey in 1947 in the Zika forest, Uganda, and detected in humans in Uganda in 1952.
- There are two main evolutionary lineages of Zika – African and Asian - and the virus causing current outbreak in the Americas belongs to the Asian lineage.

### Transmission

- The virus is spread primarily by mosquito bites.
- Zika virus circulates in the blood of an infected individual for up to a week after infection. Mosquitoes that bite during this period can be infected and, after an additional incubation period within the mosquito of one week or more, transmit the virus.
- Rare cases of sexual transmission have been documented and transmission via blood transfusions and saliva is also possible, but neither is thought to be of major concern.
- Isolation of the virus in stillborn infants suggests the Zika virus can be transmitted from mother to child during pregnancy but has not been proved conclusively in the majority of cases.

### Disease vector

- *Aedes* mosquitoes, which also spread dengue, yellow fever and chikungunya, are thought to be the primary carrier of Zika virus in the current outbreak.
- The knowledge of which species of *Aedes* carries Zika and is responsible for the current outbreak is limited, but *Aedes aegypti* is assumed to be the most common carrier.
- In one Micronesian outbreak, *Aedes henselii* appears to have been the primary vector of transmission
- *Aedes* mosquitoes live around buildings in urban areas and biting activity occurs in early morning and late afternoon hours (although biting can occur throughout the daytime). Species of *Aedes* mosquitoes whose ranges cover parts of the U.S. include *Aedes aegypti* and *Aedes albopictus*.

### Current Outbreak

- The current outbreak in the Americas was first reported in Brazil in May 2015 where there are an estimated 0.5 – 1.5 million cases of infection. Seventeen other countries in the Americas have also reported local transmission as of January 2016.
- As of January 2016, local transmission has not been reported in the United States.

### Symptoms of infection

- 1 in 5 people infected with the virus develop a flu-like disease, which has an uncertain but short incubation period of a few days before symptoms start to develop.
- Fever, skin rash, joint pain or red eyes are the most common symptoms and signs. Others include muscle pain, headache, pain behind the eyes and vomiting.
- In adults and children beyond infancy, Zika virus does not cause as serious symptoms as related viruses like yellow fever or dengue fever.

### [Link to birth defects](#)

- Brazil has seen a 20-fold increase in cases of microcephaly, a serious birth defect where babies are born with smaller than usual heads and will require lifelong care.
- Public health officials have suggested a causal link between Zika virus infection in pregnant women and microcephaly, although this link is not conclusively proven in the vast majority of cases.
- As of the first week of January 2016, 3,530 cases of microcephaly have been recorded in Brazil, compared to an average of 163 cases per year from 2010-2014.
- In January 2016, three children presumed to have been infected with Zika during pregnancy were reported to have defects in eye development along with microcephaly.
- No other flavivirus is known to have effects on the developing fetus.
- On 15 January 2016 the CDC issued a travel alert asking pregnant women to consider postponing travel to areas with ongoing Zika outbreaks.

### [Link to Guillain-Barre Syndrome](#)

- Guillain-Barre Syndrome is a rare illness where the body's own immune cells attack the nervous system, which can lead to paralysis in the most severe cases.
- Increases in GBS cases have been observed concurrent with Zika outbreaks in French Polynesia and Brazil, though a definitive causal relationship has not been established.
- Increases in GBS cases have also been observed concurrent with outbreaks of other viruses including chikungunya and dengue fever.

### [Diagnosis, treatment and vaccine](#)

- Preliminary diagnosis is based on symptoms and patients' geographic location, travel history and activities, and is confirmed through a blood test.
- There is currently no specific antiviral treatment or vaccine available for Zika virus. All treatments are directed at reducing symptoms of the illness.
- The Brazilian government and the US National Institutes of Health have recently begun vaccine development efforts.

### **References and Further Information**

World Health Organization pages related to Zika virus:

- <http://www.who.int/mediacentre/factsheets/zika/en/>
- [http://www.paho.org/hq/index.php?option=com\\_docman&task=doc\\_view&Itemid=270&gid=32879&lang=en](http://www.paho.org/hq/index.php?option=com_docman&task=doc_view&Itemid=270&gid=32879&lang=en)

Centers for Disease Control and Prevention information pages related to Zika virus:

- <http://emergency.cdc.gov/han/han00385.asp>
- [http://wwwnc.cdc.gov/eid/article/21/2/14-1363\\_article](http://wwwnc.cdc.gov/eid/article/21/2/14-1363_article)
- [http://wwwnc.cdc.gov/eid/article/21/12/15-1167\\_article](http://wwwnc.cdc.gov/eid/article/21/12/15-1167_article)
- [http://www.ninds.nih.gov/disorders/gbs/detail\\_gbs.htm](http://www.ninds.nih.gov/disorders/gbs/detail_gbs.htm)
- <http://wwwnc.cdc.gov/travel/notices/alert/zika-virus-puerto-rico>
- <http://www.cdc.gov/zika/hc-providers/diagnostic.html>
- <http://emergency.cdc.gov/han/han00385.asp>

Other resources:

- [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(16\)00003-9/fulltext?rss=yes](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(16)00003-9/fulltext?rss=yes)
- <http://www.nejm.org/doi/full/10.1056/NEJMp1600297>

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