

Zika Virus

Zika fever is caused by the Zika virus (ZIKV), an arthropod-borne virus (arbovirus). The Zika virus is a member of the *Alphavirus* genus in the family *Togaviridae*. It is related to dengue, yellow fever, West Nile and Japanese encephalitis, viruses that are also members of the virus family *Flaviviridae*.

Zika virus (ZIKV) is a flavivirus related to yellow fever, dengue, West Nile, and Japanese encephalitis viruses. In 2007 ZIKV caused an outbreak of relatively mild disease characterized by rash, arthralgia, and conjunctivitis on Yap Island in the southwestern Pacific Ocean. This was the first time that ZIKV was detected outside of Africa and Asia. The history, transmission dynamics, virology, and clinical manifestations of ZIKV disease are discussed, along with the possibility for diagnostic confusion between ZIKV illness and dengue. The emergence of ZIKV outside of its previously known geographic range should prompt awareness of the potential for ZIKV to spread to other Pacific islands and the Americas.

History of Zika virus

In 1947, scientists researching yellow fever placed a rhesus macaque in a cage in the Zika Forest (zika meaning "overgrown" in the Luganda language), near the East African Virus Research Institute in Entebbe, Uganda. The monkey developed a fever, and researchers isolated from its serum a transmissible agent that was first described as Zika virus in 1952 (see figure 1). It was subsequently isolated from a human in Nigeria in 1954. From its discovery until 2007, confirmed cases of Zika virus infection from Africa and Southeast Asia were rare. In 2007, however, a major epidemic occurred in Yap Island, Micronesia. More recently, epidemics have occurred in Polynesia, Easter Island, the Cook Islands and New Caledonia.

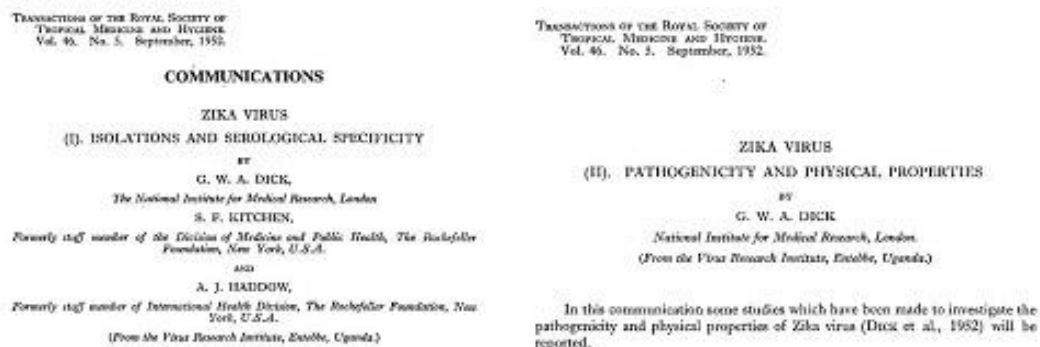


Figure 1: Two papers by G. W. A. Dick describing the properties of the Zika virus. Download original publication. Published in *Trans R Soc Trop Med Hyg* (1952) 46 (5).

The first outbreak of the disease outside of Africa and Asia was in April 2007, on the island of Yap in the Federated States of Micronesia (see figure 2). The condition was characterized by rash, conjunctivitis, and arthralgia, and was initially thought to be dengue. The Chikungunya and Ross River viruses were also suspected. However, serum samples from patients in the acute phase of illness contained RNA of Zika

virus. The Zika fever disease process was relatively mild: there were 49 confirmed cases, 59 unconfirmed cases, no deaths and no hospitalizations.

A recent larger outbreak of Zika virus outside Africa and Asia was confirmed in April 2015, in Brazil. In the district of Camaçari and the neighbor Salvador city, capital of the state of Bahia, healthcare authorities confirmed that a previously unknown disease affecting around 500 patients with flu-like symptoms followed by rash and arthralgia is indeed an ongoing outbreak of Zika fever, as proved by RT-PCR technique by researchers from Federal University of Bahia. Local authorities link the outbreak to recent increased flow of foreign visitors prompted by the 2014 FIFA World Cup, coupled with the large population of insect vectors such as *Aedes aegypti* and *Aedes albopictus* mosquitoes that inhabit the region. The spread follow a similar pattern to the also recent outbreak of chikungunya virus in the same region.

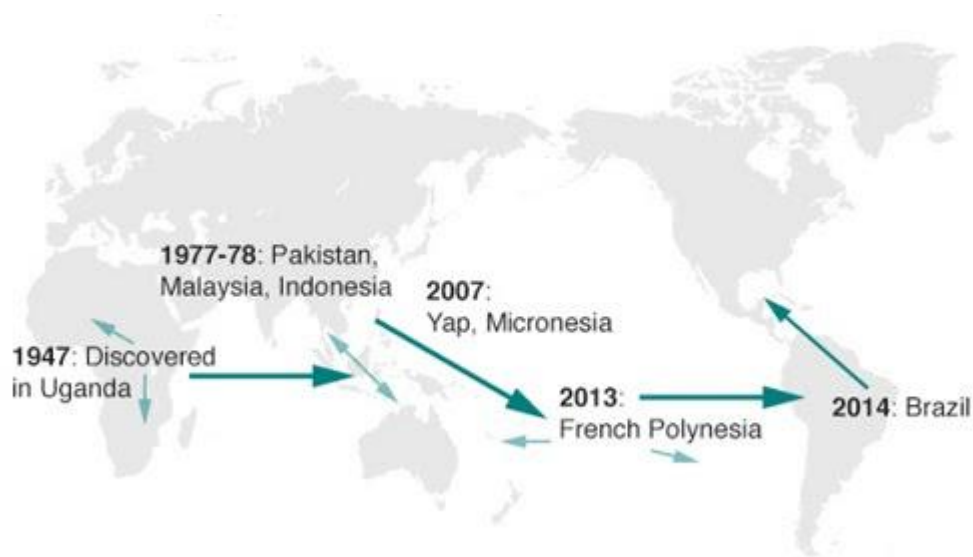


Figure 2: How Zika virus spread from Uganda in Africa. Source: Lancaster University.

Since April 2015, a large, ongoing outbreak of Zika virus has spread to much of South and Central America, and the Caribbean. In January 2016, the CDC issued a level 2 travel alert for people traveling to regions and certain countries where Zika virus transmission is ongoing. The agency also suggested that women thinking about becoming pregnant should consult with their physicians before traveling. According to the CDC, Brazilian health authorities reported more than 3,500 microcephaly cases between October 2015 and January 2016. Some of the affected infants have had a severe type of microcephaly and some have died.

Key facts

- Zika virus disease is caused by a virus transmitted by *Aedes* mosquitoes.

People with Zika virus disease usually have symptoms that can include mild fever, skin rashes, conjunctivitis, muscle and joint pain, malaise or headache. These symptoms normally last for 2-7 days.

- There is no specific treatment or vaccine currently available.
- The best form of prevention is protection against mosquito bites.
- The virus is known to circulate in Africa, the Americas, Asia and the Pacific.
- Zika fever is caused by the Zika virus (ZIKV), an arthropod-borne virus (arbovirus). The Zika virus is a member of the *Alphavirus* genus in the family *Togaviridae*. It is related to dengue, yellow fever, West Nile and Japanese encephalitis, viruses that are also members of the virus family *Flaviviridae*.

Introduction:-

Zika virus is an emerging mosquito-borne virus that was first identified in Uganda in 1947 in rhesus monkeys through a monitoring network of sylvatic yellow fever. It was subsequently identified in humans in 1952 in Uganda and the United Republic of Tanzania. Outbreaks of Zika virus disease have been recorded in Africa, the Americas, Asia and the Pacific.

- Genre: Flavivirus
- Vector: *Aedes* mosquitoes (which usually bite during the morning and late afternoon/evening hours)
- Reservoir: Unknown

Signs and Symptoms :

The incubation period (the time from exposure to symptoms) of Zika virus disease is not clear, but is likely to be a few days. The symptoms are similar to other arbovirus infections such as dengue, and include fever, skin rashes, conjunctivitis, muscle and joint pain, malaise, and headache. These symptoms are usually mild and last for 2-7 days.

Potential complications of Zika virus disease :

During large outbreaks in French Polynesia and Brazil in 2013 and 2015 respectively, national health authorities reported potential neurological and auto-immune complications of Zika virus disease. Recently in Brazil, local health authorities have observed an increase in Guillain-Barré syndrome which coincided with Zika virus infections in the general public, as well as an increase in babies born with microcephaly in northeast Brazil. Agencies investigating the Zika outbreaks are finding an increasing body of evidence about the link between Zika virus and microcephaly. However, more investigation is needed to better understand the relationship between microcephaly in babies and the Zika virus. Other potential causes are also being investigated.

Transmission:

Zika virus is transmitted to people through the bite of an infected mosquito from the *Aedes* genus, mainly *Aedes aegypti* in tropical regions. This is the same mosquito that transmits dengue, chikungunya and yellow fever.

Zika virus disease outbreaks were reported for the first time from the Pacific in 2007 and 2013 (Yap and French Polynesia, respectively), and in 2015 from the Americas (Brazil and Colombia) and Africa (Cape Verde). In addition, more than 13 countries in the Americas have reported sporadic Zika virus infections indicating rapid geographic expansion of Zika virus.

Diagnosis:

Infection with Zika virus may be suspected based on symptoms and recent history (e.g. residence or travel to an area where Zika virus is known to be present). Zika virus diagnosis can only be confirmed by laboratory testing for the presence of Zika virus RNA in the blood or other body fluids, such as urine or saliva.

Prevention:

Mosquitoes and their breeding sites pose a significant risk factor for Zika virus infection. Prevention and control relies on reducing mosquitoes through source reduction (removal and modification of breeding sites) and reducing contact between mosquitoes and people.

This can be done by using insect repellent; wearing clothes (preferably light-coloured) that cover as much of the body as possible; using physical barriers such as screens, closed doors and windows; and sleeping under mosquito nets. It is also important to

empty, clean or cover containers that can hold water such as buckets, flower pots or tyres, so that places where mosquitoes can breed are removed.

Special attention and help should be given to those who may not be able to protect themselves adequately, such as young children, the sick or elderly.

During outbreaks, health authorities may advise that spraying of insecticides be carried out. Insecticides recommended by the WHO Pesticide Evaluation Scheme may also be used as larvicides to treat relatively large water containers.

Travellers should take the basic precautions described above to protect themselves from mosquito bites.

Treatment :

Zika virus disease is usually relatively mild and requires no specific treatment. People sick with Zika virus should get plenty of rest, drink enough fluids, and treat pain and fever with common medicines. If symptoms worsen, they should seek medical care and advice. There is currently no vaccine available.

Source : WHO Fact sheet
Updated February 2016

=====