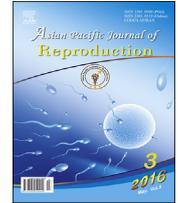


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## A new looming of Zika virus

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## ABSTRACT

Zika virus (ZIKV) is a member of the virus family *Flaviviridae* and the genus *Flavivirus*, transmitted by daytime-active *Aedes* mosquitoes, such as *A. aegypti*. ZIKV will continue to spread and it will be difficult to determine how the virus will spread over time. Sign and symptoms of ZIKAVD (Zika virus disease) were conjunctivitis (red eyes), back pain, birth defect-abnormal brain development known as microcephaly and it is diagnosed through PCR (polymerase chain reaction) and virus isolation from blood samples.

## 1. Introduction

Zika virus (ZIKV) is a member of the virus which family “*Flaviviridae*” and the genus *Flavivirus*, transmitted by daytime-active *Aedes* mosquitoes, for example *Aedes aegypti* (Figure 1). Its name comes from the Zika Forest of Uganda, where the virus was first isolated in 1947 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



Figure 1. Mosquito cause ZIKAVD.

(ZIKAVD) have been recorded in Africa, the Americas, Asia and the Pacific [1]. ZIKV is a spread to people through mosquito bites. The illness is frequently mild with symptoms lasting from several days to a week. Severe disease requiring hospitalization is uncommon. In May 2015, the Pan American Health Organization (PAHO) issued an alert regarding the first confirmed ZIKV infection in Brazil. Another in Brazil led to reports of Guillain-Barré Syndrome (GBS) and pregnant women giving birth to babies with birth defects and poor pregnancy outcomes. In response, CDC has issued travel notices for people traveling to regions and certain countries where; ZIKV transmission is ongoing.

ZIKV particles diameter are 40 nm, with an outer envelope and a dense inner core [2,3] (Figure 2). ZIKV is transmitted in a

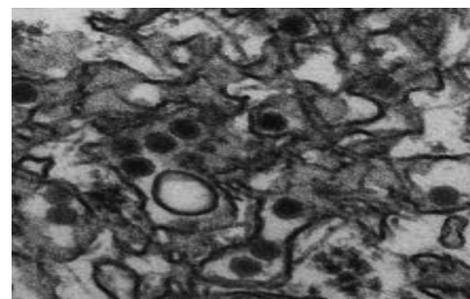
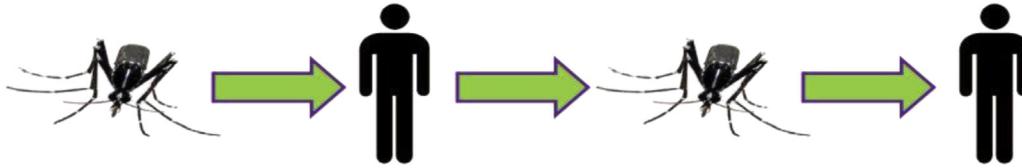


Figure 2. Electron micrograph of ZIKAV.

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**Figure 3.** ZIKV is transmitted in a person-to-mosquito-to-person transmission cycle.

person-to-mosquito-to-person transmission cycle (Figure 3). Reservoirs may include primates other than humans.

In humans, the virus causes a usually mild illness known as Zika fever, which since the 1950s has been known to occur within a narrow equatorial belt from Africa to Asia. In 2014, the virus vastly spread eastward across the Pacific Ocean to French Polynesia, then to Easter Island and in 2015 to Mexico, Central America, the Caribbean, and South America, where the Zika outbreak has reached pandemic levels [4].

ZIKV is related to dengue, yellow fever, Japanese encephalitis, and West Nile viruses [5]. The illness which it causes is similar to a mild form of dengue fever [6], is treated by rest [7], and cannot yet be prevented by drugs or vaccines [8]. There is a possible link between Zika fever and microcephaly which is a neuro-development disorder containing in newborn babies by mother-to-child transmission [9–11], and also impact on neurologic conditions which is in infected adults, including cases of the Guillain-Barré Syndrome (GBS) [12].

## 2. Geographical source

Prior to 2015, ZIKV outbreaks have occurred in areas of Africa, Southeast Asia, and the Pacific Islands. In May 2015, the Pan American Health Organization (PAHO) issued an alert regarding the first confirmed Zika virus infections in Brazil. Presently, outbreaks are happening in many countries. ZIKV will continue to spread and it will be difficult to determine how the virus will spread over time.

## 3. Symptoms [13]

ZIKV infection causes the following symptoms (Figure 4): (i) low-grade fever (between 37.8 °C and 38.5 °C); (ii) arthralgia, notably of small joints of hands and feet, with possible swollen joints; (iii) conjunctivitis (red eyes); (iv) back pain; (v) birth defect-abnormal brain development known as “microcephaly”; (vi) myalgia; (vii) headache, retro-ocular headaches; (viii) cutaneous maculopapular rash; (ix) post-infection asthenia which seems to be frequent.

## 4. Diagnosis [14]

ZIKV is diagnosed through PCR (polymerase chain reaction) and virus isolation from blood samples. Diagnosis by serology can be complicated as the virus can cross-react with other flaviviruses such as dengue, West Nile and yellow fever.

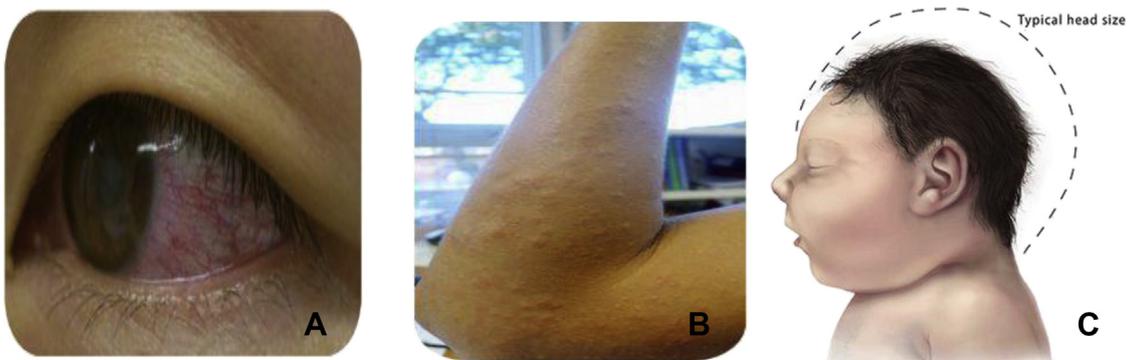
## 5. Treatment

### 5.1. Pharmacological treatment

Do not take aspirin and other non-steroidal anti-inflammatory drugs (NSAIDs), like ibuprofen and naproxen. Aspirin and NSAIDs should be avoided awaiting for dengue can be ruled out to reduce the risk of hemorrhagic bleeding. If you are taking medicine for another medical condition, talk to your healthcare provider before taking additional medication. Paracetamol (acetaminophen), while aspirin and other non-steroidal anti-inflammatory drugs should be used only when dengue has been ruled out to reduce the risk of bleeding [15]. Still vaccine has not prepared but 10–12 years may be needed before an effective ZIKV vaccine is approved by regulators for public use. Bharat Biotech International Limited in Hyderabad says it has patented the Zika vaccine.

### 5.2. Non-pharmacological treatment [16,17]

The non-pharmacological treatment methods including: (i) Get plenty of rest; (ii) Drink fluids to prevent dehydration; (iii) Take medicine such as acetaminophen to relieve fever and pain; (iv) Wear long-sleeved shirts and long pants; (v) Use insect repellents containing DEET, picaridin, oil of lemon eucalyptus (OLE), or IR3535. Always use as directed; (vi) Insect repellents containing DEET, picaridin, and IR3535 are safe for pregnant and nursing women and children older than 2 months when used according to the product label. Oil of lemon eucalyptus products should not be used on children under 3 years of age; (vii) If you use both sunscreen and insect repellent, apply the sunscreen first and then the repellent; (viii) Use permethrin-treated clothing and



**Figure 4.** Symptoms of ZIKV infection including conjunctivitis (A), maculopapular rash on arm (B), and microcephaly (C).

gear (such as boots, pants, socks, and tents); (ix) Use bed nets as necessary; (x) Stay and sleep in screened-in or air-conditioned rooms.

## 6. Discussion

In the above article recently found ZIKV actively slowly spread in the world wide mainly south region. So, public concentration should be reach there because it may be harmful due to public unconsciousness and lack of awareness. Still vaccine has founded or patented based on the preclinical trial and also under clinical trial that company's name is "Bharat Biotech International Limited" located in Hyderabad. Vaccine has not prepared. But, 10–12 years may be needed before an effective ZIKV vaccine is approved by regulators for public use.

## Conflict of interest statement

We declare we have no conflict of interest.

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