

ZIKA VIRUS: WHAT OBSTETRICIANS NEED TO KNOW

BY

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:Virology

The Zika virus belongs to the Flaviviridae family and the Flavivirus genus

Zika virus is an enveloped virus and has a single stranded unsegmented RNA genome

The RNA genome encodes 10 types of proteins. One of these proteins encapsulates the virus

:Epidemiology

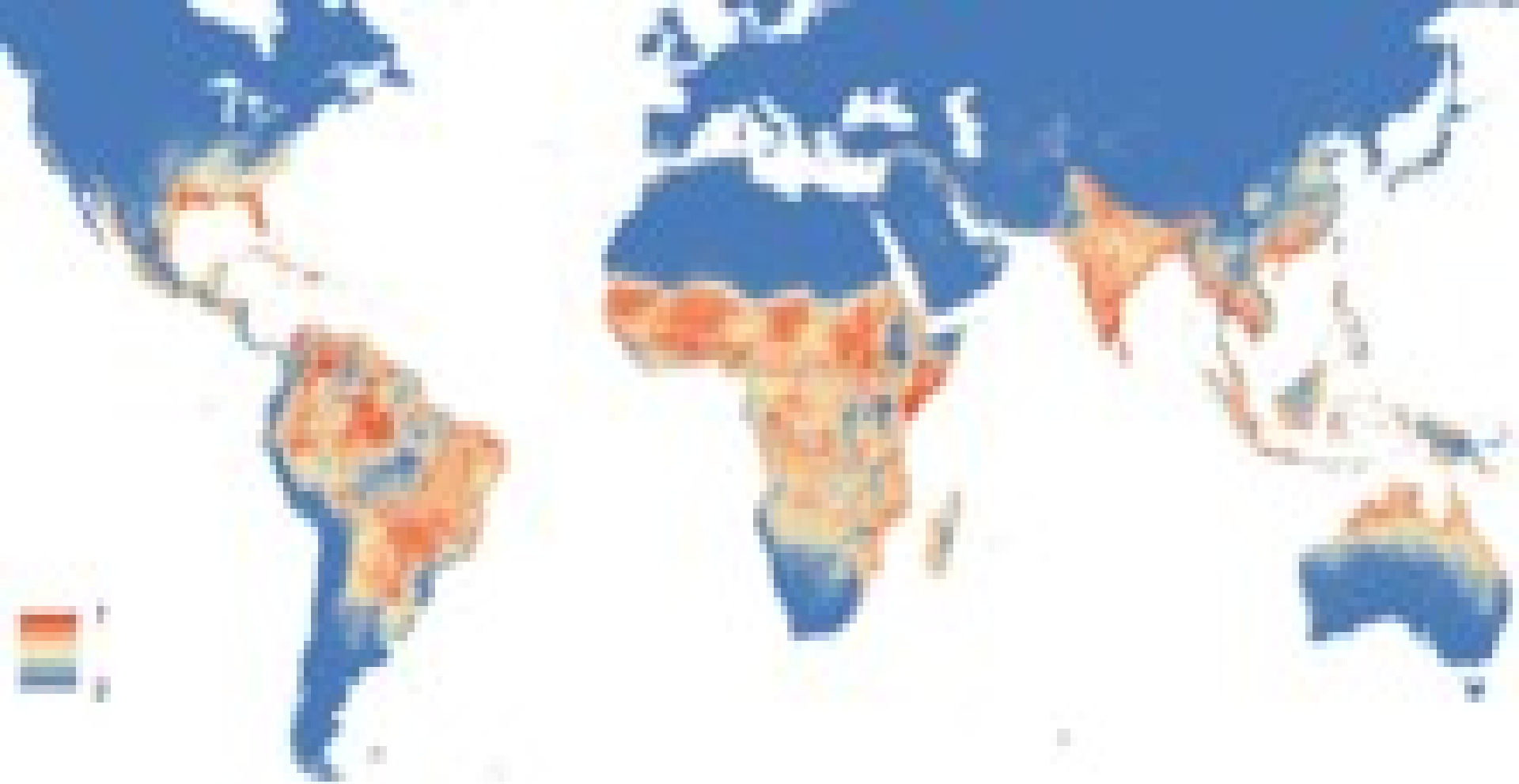
First isolated from a monkey in Uganda in 1947

Prior to 2007, only sporadic human disease cases reported from Africa and southeast Asia

In 2007, first outbreak reported in Micronesia

:Epidemiology

In 2015, reports drew attention to the rapid spread of Zika virus in Latin America and the Caribbean and by August 2016, more than 50 countries have experienced a local transmission of Zika virus.



blue=none, red=highest occurrence(

:Transmission

The primary vertebrate that host the virus are monkeys in a mosquito-monkey-mosquito cycle, with only occasional transmission to humans.

Zika virus is primarily spread by *Aedes Aegypti* mosquitoes, and can also be transmitted through sexual contact or blood transfusion and also maternal fetal transmission either intrauterine or perinatal

:Reported clinical symptoms

- *Macular or papular rash
- *Conjunctivitis
- *Fever & headache
- *Arthralgia & myalgia
- *Vomiting
- *Retro-orbital pain

The disease is usually mild hospitalization is usually not needed and deaths are rare

Zika Virus and Microcephaly

Zika virus infection was identified in several infants born with microcephaly and in early fetal losses. However, the incidence of microcephaly among fetuses with congenital Zika infection is unknown

Diagnostic Testing for Zika Virus

*Reverse transcriptase-polymerase chain reaction (RT-PCR) for viral RNA in serum collected ≤ 7 days after illness onset

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*Serology for IgM and neutralizing antibodies in serum collected ≥ 4 days after illness onset

*Immunohistochemical(IHC) staining for viral antigens or RT-PCR on fixed tissues

Serology Cross-Reactions with Other Flaviviruses:

*Zika virus serology (IgM) can be positive due to antibodies against related flaviviruses (e.g., dengue and yellow fever viruses)

*Difficult to distinguish infecting virus in people previously infected with or vaccinated against a related flavivirus

*Neutralizing antibody testing may discriminate between cross-reacting antibodies in primary flavivirus infections

Zika Virus and Pregnancy:

Limited information is available
the existing data show:

- *No evidence of increased susceptibility during pregnancy
- *Infection can occur in any trimester
- *No evidence of more severe disease



Evidence of maternal-fetal transmission:

*Zika virus RNA identified in specimens of fetal losses

*Zika virus detected prenatally in amniotic fluid



Preventive measures for pregnant women:

*postponing travel to areas where Zika is present

*Avoid mosquito bites (insect repellent, long sleeved shirts, screened or air-conditioned rooms)



Clinical management:

*In confirmed maternal infection antepartum serial US examination every 3-4 weeks

*Histopathological exam of the cord and the placenta and testing of frozen placental tissue and cord tissue for Zika virus RNA



Testing Algorithm for a Pregnant Woman

with History of Travel to an Area with Zika

Virus Transmission:

transmission <http://wwwnc.cdc.gov/travel/notices>

consistent with
weeks of travel

Pregnant woman does NOT
with Zika virus disease during

on

Fetal ultrasound to
or intracranial

Negative test(s) for
Zika virus infection

Either finding is present

ultrasound to detect microcephaly
or intracranial calcifications

Test pregnant woman
for Zika virus infection
Consider amniocentesis
for Zika virus testing

finding is present

No findings present

amniocentesis
virus testing

Pregnant women should be tested if

*There is a history of travel to an area with Zika virus transmission during pregnancy

*There is of two or more of the following symptoms (acute onset of fever, maculopapular rash, arthralgia, or conjunctivitis) during travel or within 2 weeks of travel

*There is fetal microcephaly or intracranial calcification by ultrasound

Zika Virus and Microcephaly

Microcephaly is the clinical finding of a small head when compared to infants of same sex and age. It is indicative of smaller brain volume and often leads to cognitive and/or neurologic issues. It results from arrest or destruction of normally-forming brain tissue (by infection, vascular disruption)



Zika Virus and Microcephaly

The causal relation between Zika virus and microcephaly or other adverse pregnancy outcomes as well as the Impact of timing and severity of maternal infection during pregnancy on the possible risk of microcephaly are largely unknown.



Evaluation and testing of infants with possible congenital infection

*Thorough physical examination
(circumference, length, weight)

*Cranial US

*Neurological, hearing and visual functions tests

Zika Virus Laboratory Testing of Infants

Recommended for

*Infants with microcephaly or intracranial calcifications born to women who traveled to or resided in an area with Zika virus transmission while pregnant

*Infants born to mothers with positive or inconclusive test results for Zika virus infection

Zika Virus Laboratory Testing of Infants

Recommended tests

*Zika virus RNA (PCR), IgM, and neutralizing antibodies on serum or CSF

*histopathologic evaluation (placenta and umbilical cord)

*Zika virus immunohistochemical staining

Zika Virus Remaining Questions

*Incidence of maternal-fetal transmission by trimester

*Factors that influence the risk of microcephaly (e.g., severity of infection, maternal immune response)

*Potential long-term reservoirs of Zika virus

THANK

YOU