

Zika Virus – Myths and Facts

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ABSTRACT

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After the successful World Cup football tournament in Brazil there was a unprecedented and unexplained spurt in the number of microcephaly cases in Brazil. Expert opinion is divided on the significance of this. International health agencies took cognizance of the problem and this led to the constitution of medical committees to analyse this phenomenon. After several rounds of debate the Expert Committee of World Health Organization came out with several documents that shed more light on the problem. These documents also gave clear guidelines on the approach to the problem and management. Recent guidelines aim at reducing the incidence of new cases. An expert team constituted by the IMA Research Cell examined this problem to advice its members on the various aspects of the problem after analysing the various published data on the problem.

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INTRODUCTION

Though the Zika virus was first discovered in 1947 in the Zika forest in Uganda, it has never bothered human beings. Only about 15 cases have been reported till 2007, when a massive outbreak was reported from Yap Island in the Pacific Ocean.

EPIDEMIOLOGY

Zika virus is a member of the Flaviviridae virus family and the Flavivirus gene, and is transmitted by the day-time active *Aedes* mosquitoes such as *A. aegypti*. The illness it causes is similar to a mild form of dengue fever and can be treated by rest. Only one in five individuals who catch the virus develops symptoms, which disappear within a week.

There is a possible link between Zika virus and microcephaly in newborn babies by mother-to-child transmission. Data suggests that new born babies of mothers who had a Zika virus infection during the first trimester of pregnancy are at an increased risk of microcephaly. Brazil has counted a surge of almost 4000 cases of microcephaly in new-borns since

October 2015. The abnormally small heads of these babies often are accompanied by incomplete brain development, which can lead to a lifetime of health problems. In severe cases, newborns do not survive for long. Brazil has seen an unusual surge of Zika cases over the past two years- possibly after the virus arrived with the World Cup travellers in 2014. Last year more than 1.5 million were affected. Brazil saw 20 times more microcephaly cases in 2015 than normal.

MODES OF TRANSMISSION

Zika virus is transmitted to humans primarily by the bite of infected *Aedes* mosquito. The mosquito vectors typically breed in domestic water-holding containers: they are aggressive day time biters and feed both indoors and outdoors near human dwellings. Perinatal, in utero, and possible sexual and transfusion events have also been reported. Zika virus RNA has been identified in asymptomatic blood donors during an ongoing outbreak.^{1,3,4}

Symptoms – for the Public Knowledge

1. Fever
2. Rashes

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3. Joint pain
4. Conjunctivitis or red eyes

Doctors – Whom and When to Suspect

1. The diagnosis of Zika virus infection should be suspected in individuals with the relevant epidemiologic exposure (travel to an area where the Aedes mosquito is present and where imported or local cases have been reported, within two weeks prior to onset of illness) and characteristic clinical symptoms (two or more of the following): low grade fever (37.6-38.5°C), maculopapular rash, arthralgia-small joints of the hands and feet and non-purulent conjunctivitis.^{6,7}
2. Based on the typical clinical features, the differential diagnosis for Zika virus is broad.
3. In addition to Dengue, other considerations include leptospirosis, malaria, rickettsia, group A streptococcus, rubella, measles and parvovirus, Enterovirus, adenovirus and alphavirus infections (eg Chikungunyaviruses).

Confirmation tests

The diagnosis is definitely established by

1. Polymerase chain reaction (PCR)
2. Serology test

If the patient is in 0-7 days of onset of symptoms

Do RT-PCR of serum for detection of Zika virus DNA

Testing is positive only for a brief window (3-7 days) when the infected person has viremia in blood. Negative tests do not rule out infection. RT-PCR testing for dengue virus and Chikungunya virus should also be pursued.

If the patient presents after 4 days of the onset of symptoms

Do Zika virus IgM (serology test)

Neutralizing antibody titres that are \geq 4 fold higher than dengue virus neutralizing antibody titres in serum indicates Zika.

For patients presenting four to seven days after onset of symptoms

Both RT-PCR and serology may be performed

Pregnancy

1. Health care providers should ask all pregnant women about recent travel

2. Pregnant women with a history of travel to an area with Zika virus transmission and who report two or more symptoms consistent with Zika virus disease (acute onset of fever, maculopapular rash, arthralgia or conjunctivitis) during or within 2 weeks of travel, or who have ultrasound findings of fetal microcephaly or intracranial calcifications, should be tested for Zika virus infection in consultation with their state or local health department.
3. Pregnant women can be infected with Zika virus in any trimester. The incidence of Zika virus infection in pregnant women is not currently known, and the data on pregnant women infected with Zika virus are limited.
4. No evidence exists to suggest that pregnant women are more susceptible to Zika virus infection or experience more severe disease during pregnancy.
5. Testing is not indicated for women without a travel history to an area with Zika virus transmission.
6. In pregnant women with laboratory evidence of Zika virus infection, serial ultrasound examination should be considered to monitor fetal growth and anatomy and referral to a maternal-fetal medicine or infectious disease specialist with expertise in pregnancy management is recommended.
7. There is no specific antiviral treatment for Zika virus: supportive care is recommended.
8. If a pregnant woman travels to an area with Zika virus transmission, she should be advised to strictly follow steps to avoid mosquito bites. Mosquitoes that spread Zika virus bite both indoors and outdoors, mostly during the daytime: therefore, it is important to ensure protection from mosquitoes throughout the entire day. Mosquito prevention strategies include wearing long-sleeved shirts and long pants, mosquito repellent creams, using permethrin-treated clothing and gear, and staying and sleeping in screened-in or air-conditioned rooms. When used as directed on the product label, insect repellents are safe for pregnant women (DEET, Picaridin and IR3535).²

Interim guidelines for testing algorithm for a pregnant woman (CDC Atlanta, 2015)

Travel advisory

1. Based on available evidence, WHO is not recommending any travel or trade restrictions related to Zika virus disease.
2. As a precautionary measure, some national governments have made public health and travel recom-

mentations to their own populations, based on their assessments of the available evidence and local risk factors.

3. The 24 countries and territories at risk are: Brazil, Columbia, El Salvador, French Guinea, Guatemala, Haiti, Honduras, Martinique, Mexico, Panama, Paraguay, Surinam, Venezuela, Commonwealth of Puerto Rico, Barbados, Bolivia, Ecuador, Guadeloupe, Saint Martin, Guyana, Cape Verde, Samoa, US Virgin Islands and Dominican Republic.
4. US has 31 confirmed cases in 11 states and the District of Columbia.
5. Zika virus will probably spread to all countries in North, Central and South America except Canada and Continental Chile because the Aedes mosquitoes, which spread the virus, populate the entire region except for the two countries.⁸

PREVENTION

1. Prevention and control relies on reducing the breeding of mosquitoes through source reduction (removal and modification of breeding sites) and reducing contact between mosquitoes and people. This can be achieved by reducing the number of natural and artificial water-filled habitats that support mosquito larvae, reducing the adult mosquito populations around at-risk communities and by using barriers such as insect screens, closed doors and windows, long clothing and repellents. Since the Aedes mosquitoes (the primary vector for transmission) are day-biting mosquitoes, it is recommended that those who sleep during the daytime, particularly young children, the sick or the elderly, should rest under mosquito nets (bed nets), treated with or without insecticide to provide protection.
2. Eliminate standing water in and around your home:
3. Once a week, empty and scrub, turn over, or throw out items that hold water such as tires, buckets, planters, toys, pools, birdbaths, flowerpots or trash containers. Check inside and outside your home. Tightly cover water containers (buckets, rain barrels) so that mosquitoes cannot get inside to lay eggs. For containers without lids, use wire mesh with holes smaller than an adult mosquito.
4. If you have a septic tank, follow these steps- repair cracks or gaps, cover open vent or plumbing pipes. Use wire mesh with holes smaller than an adult mosquito.
5. Keep mosquitoes out of your home: use screens on windows and doors, repair holes in screens

6. Wear long sleeved shirts and long pants.¹⁰

CDC Recommendations Updated

CDC issued new guidance and information to prevent Zika virus transmission and health effects:¹¹

1. Women with confirmed cases of the Zika virus or who have had symptoms of the virus should wait at least 8 weeks after the start of their symptoms before trying to get pregnant.⁵
2. Men with confirmed cases of the virus or who have had symptoms of the virus are now advised to wait at least 6 months after their symptoms began before having unprotected sex.
3. Women and men without symptoms who have travelled to or had sex with someone who has travelled to a Zika infected area are now advised to wait at least 8 weeks after possible exposure to the virus before the women tries to become pregnant.
4. Men who have travelled to a Zika infected area who have not had symptoms of the virus are now advised to abstain from sex or use a condom for at least 8 weeks after returning from the area.
5. Men who live in a Zika infected area should use condoms or abstain from sex as long as the Zika virus is circulating there.
6. Women and men who do not have the virus but who live in areas where the virus is being transmitted are now advised to talk with their healthcare providers about plans for pregnancy during the ongoing outbreak.
7. The virus can remain in semen for as long as 2 months.
8. The guidelines apply to sexual intercourse as well as oral and anal sex.

END NOTE

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