

## Zika virus disease and summer Olympics Games Rio de Janeiro, Brazil, 2016

Muktikesh Dash

Associate Professor, Dept. of Microbiology, SCB Medical College & Hospital, Cuttack, Odisha

Email: mukti\_mic@yahoo.co.in

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The world's biggest multi-sport event summer Olympics Games 2016 officially known as the Games of the XXXI Olympiad, and commonly known as Rio 2016 due to take place Rio de Janeiro, Brazil, from 5<sup>th</sup> to 21<sup>st</sup> August, 2016. More than 10,500 athletes from 206 National Olympic committees (NOCs) will take part.<sup>[1]</sup> These sporting events will take place at 33 venues in the host city Rio de Janeiro and at least 5 venues in the cities of São Paulo, Belo Horizonte, Salvador, Manaus and Brazil's capital Brasilia. International Olympic Committee (IOC) have predicted around 4,80,000 tourists will arrive at Rio de Janeiro for this mega event.<sup>[2]</sup> Similar to the other tropical countries the tourists will be at risk of acquiring gastrointestinal illnesses and vector-borne infections.

The re-emerging mosquito-transmitted Zika virus (ZIKAV) is currently experiencing an outbreak in Brazil along with many destinations of Americas since early 2015 thereby threatening world's mega event. Two species in the stegomyia subgenus of aedes — *A. aegypti* and, to a lesser extent, *A. albopictus* — have been linked with nearly all known ZIKAV outbreaks including Americas.<sup>[3]</sup> Both *A. aegypti* and *A. albopictus* bite primarily during the daytime and are widely distributed throughout the tropical and subtropical world. The non-mosquito modes of transmission include mother to foetus during pregnancy, sexual transmission to partners of returning male partners who acquired ZIKAV infection abroad, through a blood transfusion and breast milk.<sup>[4,5,6,7,8]</sup> After few days of incubation period, ZIKAV disease produces symptoms which are similar to other arboviral infections such as dengue, and which include fever, skin rashes, conjunctivitis, muscle and joint pain, malaise and headache. These symptoms usually last for 2 to 7 days.

After a comprehensive review of evidence, there is scientific consensus that ZIKAV is a cause of microcephaly and Guillain-Barré syndrome. In the outbreak in French Polynesia, 38 cases of Guillain-Barré syndrome occurred among an estimated 28,000

persons who sought medical care.<sup>[9]</sup> A preliminary report from Brazil indicated that fetal abnormalities detected by ultrasonography were present in 29% of women with ZIKAV infection during pregnancy.<sup>[10]</sup> Infection of ZIKAV may be suspected on the basis of symptoms and recent history of travel to an area with active ZIKAV transmission. ZIKAV has been detected in serum, plasma, urine, amniotic fluid, semen and saliva. The main stays of diagnosis of ZIKAV infection are detection of viral nucleic acid by RT-PCR usually within 7 days of onset of symptoms and the detection of IgM antibodies by IgM-capture enzyme-linked immunosorbent assay (MAC-ELISA).<sup>[11]</sup> Serology is the preferred method in specimens from patients with onset of symptoms after 7 days.<sup>[12]</sup>

ZIKAV disease is usually mild and requires no specific treatment. Currently, no ZIKAV vaccine exists; thus, prevention and control measures centre on avoiding mosquito bites, reducing sexual transmission and controlling mosquito vector.

Recently in May 2016, a group of 150 have published an open letter to Director-General World health organization (WHO) calling for 2016 Olympics Games in Rio de Janeiro to be delayed or moved to another location because of the threat posed to public health by ZIKAV.<sup>[13]</sup> The Brazilian strain of ZIKAV is to be learnt more about the effects of the virus harms health in ways that science has not observed before. The cases of ZIKAV disease in Rio de Janeiro have increased more than four times in January through April 2016 compared with in the same period in 2015. In particular, when an estimated 4,80,000 foreign tourists flock into Rio for the Games, potentially becoming infected, and returning to their homes where both the local aedes mosquitoes and sexual transmission can establish new infections.

WHO said on the basis of current assessment, cancelling or changing the location of the 2016 Olympics will not significantly alter the international spread of ZIKAV.<sup>[14]</sup> Brazil is 1 of almost 60 countries and territories which to date report continuing transmission of ZIKAV by mosquitoes. People continue to travel between these countries and territories for a variety of reasons. The best way to reduce risk of disease is to follow public health travel advice. WHO advises pregnant women not to travel to areas with ongoing ZIKAV transmission. This includes Rio de Janeiro. Pregnant women's sex partners returning from areas with circulating virus should be counseled to practice safer sex or abstain throughout the pregnancy.

Anyone considering travel to the Olympics should:

1. Travelers should follow the advice provided by their countries' health authorities, and consult a health worker before travelling.
2. Whenever possible, during the day, protect from mosquito bites by using insect repellents and by wearing clothing – preferably light-colored – that covers as much of the body as possible.
3. Safer sex should be practiced (for example, use condoms correctly and consistently) or should abstain from sex during the stay and for at least 8 weeks after the return, particularly if tourists had or are experiencing symptoms of ZIKAV.
4. Air-conditioned accommodation should be chosen (where windows and doors are usually kept closed to prevent the cool air from escaping, and mosquitoes cannot enter the rooms).
5. Tourists should avoid visiting areas in cities and towns with no piped water or poor sanitation (ideal breeding grounds of mosquitoes), where the risk of being bitten by mosquitoes is higher.

WHO and Pan American health organization (PAHO) is providing public health advice to the Government of Brazil and the Rio 2016 Organizing Committee, on ways to further mitigate the risk of athletes and visitors contracting ZIKAV during the Games. An important focus of WHO advice revolves around measures to reduce populations of *Aedes* mosquitoes which transmit chikungunya, dengue and yellow fever in addition to ZIKAV.

Based on the current assessment of ZIKAV circulating in almost 60 countries globally and 39 countries in the Americas, there is no public health justification for postponing or cancelling the games. WHO will continue to monitor the situation and update their advice.

## References

1. 2016 Summer Olympics. [Accessed: June 2, 2016]. Available from: [http://www.en.wikipedia.org/wiki/2016\\_Summer\\_Olympics](http://www.en.wikipedia.org/wiki/2016_Summer_Olympics).
2. The Rio Times. [Accessed: June 2, 2016]. Available from: <http://www.Riotimesonline.com/brazil-news/rio.../ioc.predicts-4,80,000-tourists-in-rio-2016/>.
3. Grard G, Caron M, Mombo IM, et al. Zika virus in Gabon (Central Africa) —2007: a new threat from *Aedes albopictus*? PLoS Negl Trop Dis 2014;8(2):e2681.
4. Zika virus infection among U.S. pregnant travelers — August 2015–February 2016. MMWR Morb Mortal Wkly Rep 2016;65:211-4.
5. Notes from the field: evidence of Zika virus infection in brain and placental tissues from two congenitally infected newborns and two fetal losses — Brazil, 2015. MMWR Morb Mortal Wkly Rep 2016;65:159-60.
6. Foy BD, Kobylinski KC, Chilson Foy JL, et al. Probable non-vector-borne transmission of Zika virus, Colorado, USA. Emerg Infect Dis 2011;17:880-2.
7. Marano G, Pupella S, Vaglio S, Liumbruno GM, Grazzini G. Zika virus and the never-ending story of emerging pathogens and transfusion medicine. Blood Transfus 2016;14:95-100.
8. Dupont-Rouzeyrol M, Biron A, O'Connor O, Huguon E, Descloux E. Infectious Zika viral particles in breast milk. Lancet 2016 March 1 (Epub ahead of print).
9. Rapid risk assessment: Zika virus infection outbreak, French Polynesia. Stockholm: European Centre for Disease Prevention and Control, February 14, 2014(<http://ecdc.europa.eu/en/publications/Publications/Zika-virus-French-Polynesia-rapid-risk-assessment.pdf>).
10. Brasil P, Pereira JP Jr, Raja Gabaglia C, et al. Zika virus infection in pregnant women in Rio de Janeiro — preliminary report. N Engl J Med. DOI: 10.1056/NEJMoa1602412.
11. Lanciotti RS, Kosoy OL, Laven JJ, et al. Genetic and serologic properties of Zika virus associated with an epidemic, Yap State, Micronesia, 2007. Emerg Infect Dis 2008;14:1232-9.
12. Busch MP, Kleinman SH, Tobler LH, et al. Virus and antibody dynamics in acute West Nile virus infection. J Infect Dis 2008;198:984-93.
13. Health experts call for Rio Olympics to be moved over Zika threat. [Accessed: June 2, 2016]. Available from: <http://www.wsj.com/articles/health-experts-call-for-rio-olympics-to-be-moved-over-Zika-threat-1464400127>.
14. Zika health advice Olympics 2016. [Accessed: June 2, 2016]. Available from: <http://www.who.int/mediacentre/news/releases/2016/zika-health-advice-olympics/en/>.

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