

Zika Virus Disease: Epidemiological Aspects and Management

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Received: February 22, 2016; **Published:** April 13, 2016.

Introduction

In the United States, at least 72 individuals have been diagnosed with Zika virus infection or disease and at least four pregnant women have been confirmed to have this virus since the latest outbreak began. The United States Centers for Disease Control and Prevention has confirmed the first American case of Zika virus infection in a non-traveler in continental United States after the individual's sexual partner returned from an affected area and developed clinical symptoms. Zika virus is a member of the Flaviviridae family and is related to other pathogenic vector-borne flaviviruses including dengue, Japanese encephalitis, yellow fever, chikungunya, and West-Nile viruses, but produces comparatively mild clinical manifestations in humans. There are two geographically distinct Zika virus lineages: the African lineages which have recently emerged in the Pacific and the Americas and the Asian lineages. It was first isolated in 1947 from a monkey in the Zika forest, Uganda, then in mosquitoes (*Aedes africanus*) in the same forest in 1948 and in a Nigerian in 1952. This virus is a disease transmitted by mosquitoes, particularly the *Aedes aegypti*, *Aedes albopictus*, *Aedes polynesiensis*, *Aedes vittatus*, and *Aedes hensilli* mosquitoes are considered as potential vectors of Zika virus. Of those who do experience clinical symptoms, they are usually mild and include fever, arthralgia, conjunctivitis (red eyes) or rash including headache and myalgia. Around 80% of people infected with Zika virus do not have any clinical symptoms. The incubation period is likely to be a few days to a week and the illness is usually mild with symptoms lasting for several days to a week. A significant increase of patients with Guillain-Barre' syndrome (GBS) was reported during the 2014 outbreak in French Polynesia and the Americas since 2015. Causal relationships are currently under investigations. A similar increase along with unusual increase of congenital microcephaly was identified in same regions in northeastern Brazil in 2015. Since 2007, several islands of the Pacific region have experienced outbreak. Historically, the disease has occurred in Southeast Asia, Africa, and islands in the Pacific Ocean and the disease is considered an emerging infectious disease with potential to spread to new areas. In May, 2015, Zika virus was first identified in northeastern Brazil and then the virus has since spread throughout the Central America, Caribbean, and South America.

The World Health Organization (WHO) declared this virus a "Public Health Emergency of International Concern" since February 1, 2016. Pathologically, they showed more evidence that correlates a dangerous birth defect to the Zika virus by identification of the Zika-virus genetic material in brain tissue from two dead infants with microcephaly. The serologic and molecular testing that includes reverse transcriptase-polymerase chain reaction (RT-PCR) for viral RNA, and immunoglobulin (Ig) M ELISA and plaque reduction neutralization test (PRNT) for Zika virus antibodies can make the diagnosis of Zika virus infection. There is no prophylaxis, treatment, and vaccine to prevent against Zika virus infection. Therefore, prevention personnel measures are suggested to avoid mosquito bites, particularly during daytime. The United States Centers for Disease Control and Prevention suggests that pregnant woman consider postponing travel to any area where Zika virus transmission is ongoing and spreading. Integrated vector management aiming to reduce mosquito vector density in a sustainable manner is of primary importance. Inter sectoral collaboration and efficient public communication strategies to ensure community participation are required for sustainable vector control program.

Volume 2 Issue 3 April 2016

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Citation: Attapon Cheepsattayakorn and Ruangrong Cheepsattayakorn. "Zika Virus Disease: Epidemiological Aspects and Management". *EC Bacteriology and Virology Research* 2.3 (2016): 98.