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Clinical Review

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ZIKA VIRUS: WHAT DO EMERGENCY PHYSICIANS NEED TO KNOW?

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☐ **Abstract—Background: Zika virus currently dominates headlines, creating public fear due to its complications. With the ease of worldwide travel, this disease has spread rapidly to the U.S. Objectives: To provide physicians with an updated clinical review of the epidemiology, pathogenesis, diagnosis, management, and mimics of zika virus. Discussion: This flavivirus is spread by the bite of the *Aedes* mosquito during daylight. The ease of worldwide travel has allowed the virus to spread to Mexico and the U.S. Main transmission route is via blood contact or sexual activity involving mucous membranes. Incubation ranges from 2 to 12 days, but only 20% of patients experience symptoms. Fever is low grade with conjunctivitis, arthralgias, myalgias, and a maculopapular rash. Chikungunya and Dengue Fever differ in that patients experience higher fever and no conjunctivitits. The dreaded complication of Zika virus is microcephaly in infants born to infected mothers. Guillain-Barre Syndrome is also linked to the virus. Historical factors including travel history are paramount, and diagnosis includes PCR or serology. No current treatment regimen exists beyond symptom control. The emergency physician must seek to rule out other similar diseases such as malaria, chikungunya, and dengue fever. Conclusion: Zika virus has created public fear due to complications, and this flavivirus spread by the *Aedes* mosquito presents similarly to Chikungunya and Dengue Fever. The dreaded complication of Zika virus is microcephaly in infants born to infected mothers. This review provides key information concerning the disease and management.**

☐ **Keywords—Zika virus; flavivirus; mosquito; Aedes; blood; microcephaly**

INTRODUCTION

Zika virus is a flavivirus spread by the Aedes mosquito. Transmission occurs through mosquito bite, sexual contact, or blood transfusion. Cases have been confirmed in Central and South America, Mexico, and the U.S. The disease causes symptoms in 20% of infected individuals. Treatment includes managing symptoms of the disease.

This disease has garnered public attention because of the risk of microcephaly in the infants of infected mothers. Zika virus can present similarly to chikungunya, dengue fever, and malaria, diseases that may have worse outcomes. Emergency physicians must evaluate the patient for these diseases, and obtaining a travel history is paramount.

This review seeks to provide an evidence-based update and summary for Zika virus. The review discusses the epidemiology, presentation of the virus, differentiation from other diseases, diagnosis, and management of this disease. Emergency physicians are on the front line for diagnosing and managing this disease and improving patient understanding.

DISCUSSION

Clinical Importance

In January 2016, the U.S. and European Centers for Disease Control and Prevention advised that pregnant

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women postpone travel to any area where Zika virus transmission was currently occurring (1–3). Just 1 year earlier, the majority of the public had never heard of Zika virus. This virus currently dominates headlines unseen since the Ebola virus epidemic of 2014. Because of the public perception of this virus and potential complications, emergency providers must know when to be concerned for this virus and what conditions to consider.

Epidemiology

Zika virus was first discovered in the Zika Forest of Uganda in a rhesus monkey in 1947 (4). Until the early 2000s, it was largely confined to Africa and Asia. The first major outbreak of Zika virus occurred in the Yap Islands of Micronesia in 2007, in which >70% of the population ≥3 years of age was infected (5–7). Another outbreak occurred in French Polynesia in 2013, affecting 32,000 people (8). In May 2015, Zika virus was confirmed in Brazil, and recently a Zika virus outbreak has been reported in the Americas and Caribbean (9,10). As of February 2016, areas with active Zika virus transmission include American Samoa, Barbados, Bolivia, Brazil, Cape Verde, Colombia, Costa Rica, Curacao, Dominican Republic, Ecuador, El Salvador, French Guiana, Guadeloupe, Guatemala, Guyana, Haiti, Honduras, Jamaica, Martinique, Mexico, Nicaragua, Panama, Paraguay, Saint Martin, Samoa, Suriname, Tonga, the U.S. territories of Puerto Rico and the Virgin Islands, and Venezuela (Figure 1).

Transmission has also occurred from travelers returning from infected regions to nonendemic countries. Zika virus was reported in the continental U.S. in February 2015 in a patient returning from Venezuela. Subsequently, Zika virus was detected in another individual after sexual contact with this patient (11). These were the first cases of Zika virus in the continental U.S. during the 2015–2016 outbreak. In the United Kingdom, 4 cases have been confirmed since the start of 2016 (12).

Pathogenesis

Zika virus is an arthropod-borne flavivirus (13,14). The disease is related to dengue, yellow fever, West Nile, and Japanese encephalitis viruses (13,14). The virus is spread by the bite of an Aedes mosquito, which feeds during the day and twilight, making bed nets less effective (15,16). These mosquitoes breed in standing water (15). Of note, the Aedes mosquito also transmits the dengue and chikungunya viruses (13–16). Aedes mosquitoes are found in tropical and temperate climates. *Aedes aegyptus* and *Aedes albopictus*

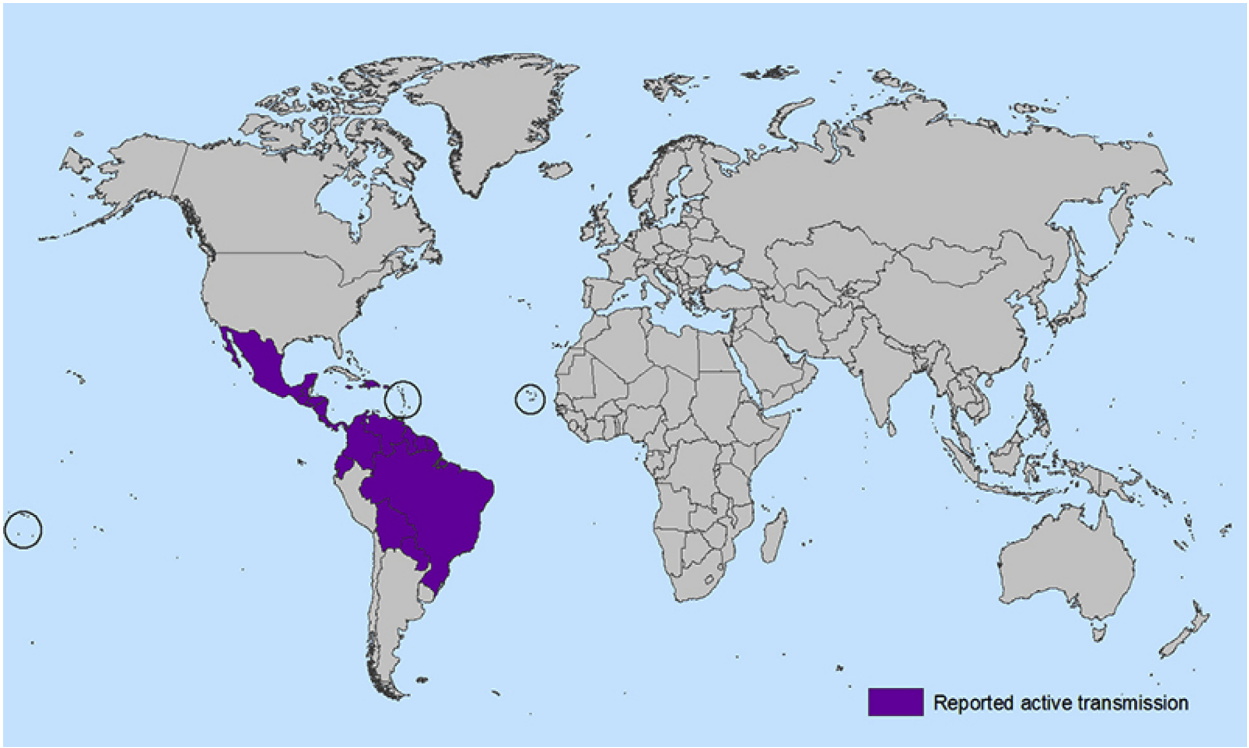

Figure 1. Areas with active Zika virus transmission, available at: http://www.cdc.gov/zika/geo/active-countries.html.