



## MY BUGABOO

# Zika virus

## —What IPs need to know

BY IRENA KENNELEY, PhD, CNE, CIC

### GREETINGS, FELLOW INFECTION PREVENTIONISTS!

**THE SCIENCE OF** infectious diseases involves hundreds of bacteria, viruses, fungi, and protozoa. The amount of information available about microbial organisms poses a special problem to infection preventionists (IPs). Obviously, the impact of microbial disease cannot be overstated. Traditionally, the teaching of microbiology has been based mostly on memorization of facts (the “bug parade”). Too much information makes it difficult to tease out what is important and directly applicable to practice. This quarter’s My Bugaboo column features information about the human pathogen and outbreak of infections caused by the Zika virus. The intention is to convey succinct information to busy IPs for common etiologic agents and healthcare-associated infections.

Please feel free to contact me with questions, suggestions, and comments at [irena@case.edu](mailto:irena@case.edu).

### BACKGROUND

The virus known as Zika is a member of the flavivirus family, and its primary mode of transmission is through the bite of an *Aedes aegypti* mosquito. Zika virus was first discovered in 1947 in the Zika forest of Uganda. The first reported human case occurred in 1952. In the past, outbreaks of Zika virus infections have been reported in tropical Africa, Southeast Asia, and the Pacific Islands. The Centers for Disease Control and Prevention (CDC) estimates that since 2007, unreported outbreaks probably occurred in many locations. Because the symptoms of Zika disease are very similar to many other diseases, many cases have probably gone unrecognized.<sup>1,2</sup>

### SIGNIFICANCE

In May 2015, the Pan American Health Organization (PAHO) issued an alert confirming the first Zika virus outbreak in Brazil. On Feb. 1, 2016, the World Health Organization (WHO) declared Zika virus a public health emergency of international scope. The WHO also projected that the

Zika virus will likely spread to new geographic areas.<sup>3</sup>

Active Zika virus transmission (as of April 18, 2016) has been documented in 35 countries and territories in the Americas. It is believed that most transmission has occurred through mosquito bites and from mother to fetus. Sexual transmission has been documented in Florida and Texas.<sup>3</sup>

### ZIKA DISEASE SYMPTOMS

Symptoms of Zika disease commonly include fever, rash, joint pain, and conjunctivitis. Generally, the symptoms are mild and resolve after several days to a week. Death is extremely uncommon, and symptoms can be so mild some people don’t know they have been infected. The CDC estimates that about 80 percent of Zika

This is a digitally-colored transmission electron micrograph (TEM) of Zika virus, which is a member of the family *Flaviviridae*. Virus particles, here colored red, are 40 nm in diameter, with an outer envelope, and an inner dense core.

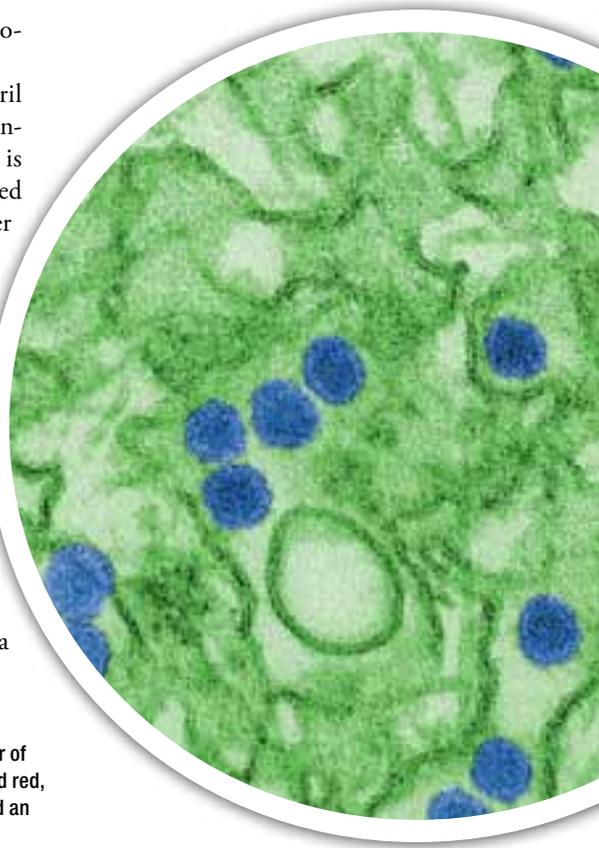


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While standing in an outdoor environment, the pregnant woman depicted here was in the process of applying a mosquito repellent to any exposed skin. Application of repellants will help to protect her from being bitten by a possible mosquito disease vector, and in turn, her unborn baby from a vector-borne disease including Zika virus. Here, after having sprayed the repellent into her hand, she was now applying it to sensitive areas such as her face and neck. You'll also note that this soon-to-be mother was dressed, so as to cover her exposed skin, thereby hiding it from the bite of hungry mosquitoes.



## WHAT IPs NEED TO KNOW

- Primary mode of transmission is mosquito-borne.
- Sexual transmission has been reported.
- Zika is a nationally notifiable infection (arboviral disease).
- If a person has Zika, the virus remains in the bloodstream after first symptoms appear for about one week. Those infected must take steps to prevent mosquito bites to help prevent the spread.
- *Aedes aegypti* bites in the daytime.
- Zika may remain in semen from 2–10 weeks (in reality, this is not known); condoms are to be used.
- Pregnant women should not travel to areas affected by Zika virus (if possible).

virus infections are asymptomatic. Recent evidence suggests that maternal (vertical) transmission of Zika virus infection may have adverse fetal outcomes, such as congenital microcephaly; thus, they may be linked. Another possible association of Zika infection is Guillain-Barré syndrome.<sup>3,4,10</sup>

### ADDITIONAL MODE OF TRANSMISSION

Transmission of the Zika virus via the mosquito-borne route has been noted, but there are reports of sexual transmission, and this is of special concern during pregnancy. The CDC reports of probable sexual transmission from a man to a woman where sexual contact occurred several days before the onset of symptoms. Sexual transmission of Zika virus from infected women to their sex partners has not been reported. Sexual transmission of viral infections is reduced by consistent and correct use of latex condoms.<sup>2,3,5</sup>

### DIAGNOSTICS

Zika virus is an arboviral disease and is a **nationally notifiable infection**. Suspected Zika cases are to be reported to state and local health departments. The most current information on Zika virus infection for healthcare providers and case definitions can be found at [www.cdc.gov/zika/hc-providers/index.html](http://www.cdc.gov/zika/hc-providers/index.html). Early diagnosis may prevent further local transmission.<sup>3</sup> Currently, there are no FDA-approved tests available that can detect Zika virus in clinical specimens in the United States. However, the CDC has developed a laboratory test to detect Zika virus in human sera and spinal fluid (CSF). The Federal Drug Administration (FDA) has issued an Emergency Use Authorization (EUA) for the CDC's Zika virus laboratory test (Zika MAC-ELISA) to certified laboratories as a diagnostic tool to detect Zika virus.<sup>6,7</sup>

### PREVENTION

Today there is no vaccine to prevent Zika virus disease. Prevention efforts are targeted to avoiding mosquito bites. The *Aedes aegypti* mosquito is active during the daytime, and this species is known to spread dengue and chikungunya viruses as well.<sup>5</sup>

The Zika virus can be found in the blood during the first week of infection. Zika virus can be passed from an infected person to another through mosquito bites. Therefore, to prevent the further spread of infection, it is recommended that one should avoid mosquito bites—especially during the first week of illness. We know that the Zika virus is present longer in semen than in blood. The CDC estimates Zika virus can be isolated from semen at least two weeks and possibly up to 10 weeks after onset of illness; to help prevent transmission, it is recommended that latex condoms be used.<sup>3,8,9,10</sup> 

*Irena L. Kenneley, PhD, APRN-BC, CIC, is assistant professor at Case Western Reserve University, Frances Payne Bolton School of Nursing in Cleveland, Ohio.*

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