



The Johns Hopkins Office of Critical  
Event Preparedness and Response

## **CEPAR Guidance: Zika Virus**

March 28, 2016

**Johns Hopkins Institutions**  
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This document contains guidance from the Johns Hopkins Office of Critical Event Preparedness and Response (CEPAR) regarding Zika virus. The guidance was developed by senior Johns Hopkins institutional leaders and subject matter experts, and follows current guidelines from the U.S. Centers for Disease Control and Prevention (CDC) and the American College of Obstetricians and Gynecologists (ACOG).

As understanding of Zika virus, its modes of transmission and health effects continue to evolve, this guidance will be updated.

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**Executive Summary**

The Johns Hopkins Office of Critical Event Preparedness and Response (CEPAR), on behalf of the Johns Hopkins Institutions, ***strongly advises all women faculty, staff, students and trainees who are or may become pregnant against travel to [Zika virus endemic areas](#)***. Men whose sexual partners are pregnant or trying to conceive should abstain from sex or use condoms consistently and correctly for the duration of the pregnancy after traveling to a region with active Zika virus transmission.

## **Introduction**

### **Zika Virus Epidemiology**

Zika virus is a blood-borne pathogen transmitted by the *Aedes* mosquito species. It is related to other viruses that cause infectious diseases including dengue, yellow fever, Japanese encephalitis and West Nile. Since first described in the late 1940s, Zika virus has been contained to specific geographic parts of Africa and Asia. It has spread in the last two years, and during the last year, has reached parts of Central and South Americas and the Caribbean, where *Aedes* mosquito species transmit the virus. It has also spread to the borders of Europe (Portuguese archipelago, Netherlands, parts of the Black Sea coast). The Zika virus could spread to parts of the continental United States where *Aedes* mosquito species exist (Southeast and Gulf states) resulting in mosquito-borne transmissions. At this time, it is postulated that such transmissions within the continental U.S. would be limited due to the widespread use of air-conditioning and mosquito control programs.

On January 22, 2016, the CDC activated its [Emergency Operations Center](#) (EOC) to respond to outbreaks of Zika virus infection occurring in the Americas and increased reports of birth defects and Guillain-Barré syndrome in areas affected by Zika virus. On February 1, 2016, the World Health Organization (WHO) declared a [Public Health Emergency of International Concern](#) (PHEIC) because of clusters of microcephaly and other neurological disorders in some areas affected by Zika virus. On February 8, 2016, the CDC elevated its EOC activation to Level 1, the highest level. Currently, more than 150 travel-related Zika virus infections have been reported in the continental U.S., including four cases in Maryland and 42 cases in Florida.

### **Zika Fever Symptoms**

In most infected individuals, Zika virus causes no symptoms. About one in five (20%) people infected with Zika virus develop symptoms, including: fever, headache, malaise, maculopapular rash, joint pain and conjunctivitis. Symptoms are usually mild and self-limited, lasting several days to a week. The incubation period is typically a few days to a week after exposure. People rarely require hospitalization or die from Zika virus infection. Most of the concern about the virus comes from its possible association with Guillain-Barré syndrome and congenital abnormalities that may occur if the infection is acquired during pregnancy and passed via the placenta to the developing fetus. The full potential of disease expression of the virus remains unknown.

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## **Diagnosis**

While recommendations may change as we learn more about the virus, the CDC currently recommends that all pregnant women who have traveled during pregnancy to areas with known, active Zika virus transmission be tested for the virus, whether or not they display symptoms of Zika virus infection. In addition to testing for the presence of the virus, screening with fetal ultrasound is also recommended for pregnant women with a history of travel to the affected regions during pregnancy. Testing may also be offered to non-pregnant returning travelers if they have two or more symptoms of Zika virus infection within two weeks of returning from an affected area.

Zika virus infection can be diagnosed during the acute phase of disease by reverse transcriptase-polymerase chain reaction (RT-PCR) on serum. After the acute infection has passed, testing for IgM and neutralizing antibodies to detect prior Zika virus infection is available, but interpretation of these tests is complicated due to cross-reaction with other flaviviruses or vaccines for these viruses. When there is concern about congenital infection, Zika virus testing can be performed on amniotic fluid.

Currently, testing for Zika virus is only available through public health officials, and requires discussion with a state epidemiologist to approve and arrange for the testing to occur. There are no commercially available diagnostic tests for Zika virus at this time. In most states, testing is arranged via the CDC. Some states (such as Maryland and Florida) already have the capacity to test for Zika virus. At this time, other specimens are sent to the CDC for testing. The availability of testing is changing rapidly.

## **Treatment**

There is no known preventive or curative medication for Zika virus infection. Treatment is generally supportive, including rest, fluids, analgesics and antipyretics. Fever is generally treated with acetaminophen. Aspirin and non-steroidal anti-inflammatory medications are generally not used in pregnancy and should be avoided until dengue (which can be associated with hemorrhage) can be ruled out. A Zika virus vaccine is being developed, but will not be available in the near future.

## **Transmission**

Zika virus is primarily transmitted by *Aedes* mosquito bites. There is evidence that the virus also can be sexually transmitted from a man to his sexual partners, although this is not believed to be a primary means of transmission. Zika virus is not known to be spread through routine, direct human-to-human contact, although it has been isolated in humans from blood, saliva, semen, amniotic fluid, urine and tears. Evidence of potential male to female sexual transmission, including during pregnancy, is growing. It is unknown if an infected woman can spread the disease to sexual partners. Transmission via blood transfusions has been reported. Zika virus usually remains in the blood of an infected person for about a week, and rarely can be detected for longer periods. It is not known how long the virus can persist in semen following an infection. In one individual, viral antigen was found in semen at least two weeks following exposure, possibly being present up to 10 weeks or more after falling ill.

## **Zika Virus in Pregnancy**

The main concern with Zika virus is the potential health impact on the developing fetus when pregnant women become infected. There have been reports of a serious birth defect of the brain called *microcephaly* in the babies of mothers who contracted Zika virus while pregnant. A causal link is “strongly suspected but not yet scientifically proven” according to the World Health Organization. Spread of the virus at the time of delivery from mother to newborn is also possible, but is considered rare. Such transmission would not be associated with microcephaly or any other birth defect. There is no evidence of spread of Zika virus from breast milk. Currently, there is no evidence to suggest that Zika virus infection poses a risk of birth defects for future pregnancies.

Knowledge of the link between Zika virus and birth defects is evolving, but until more is known, the CDC recommends special precautions for pregnant women. Pregnant women in any trimester should consider postponing travel to any areas with local transmission of Zika virus. Pregnant women who travel to one of these areas should talk to their physician first and strictly follow the recommended steps to avoid mosquito bites during their trip. The CDC recommends that men who live in or travel to an area with Zika virus, and have a pregnant partner, abstain from intercourse or use condoms “consistently and correctly” for the duration of the pregnancy. Similarly, until more is known, the CDC also recommends that women trying to become pregnant (sexually active or at risk of pregnancy) and their male partners talk to their healthcare provider before traveling to areas with Zika virus. It may be advisable for such persons to follow the same recommendations as given to women with confirmed pregnancies as noted in this paragraph and in paragraphs below.

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The most recent health provider guidance from the CDC is to offer Zika virus testing to pregnant women who have traveled to areas with ongoing Zika virus transmission, even if they are without symptoms.<sup>1</sup> The ACOG recommends following the woman for evidence of fetal infection using fetal ultrasounds every three to four weeks.<sup>2</sup>

## **Prevention of Zika Virus During Travel**

Mosquitos that carry Zika virus mostly bite during the day. Mosquito prevention strategies include wearing extremity covering clothing, using Environmental Protection Agency (EPA) registered insect repellents, wearing permethrin-treated clothing and gear, and staying in air-conditioned space. According to the CDC and ACOG, insect repellents containing DEET, picaridin, and IR3535 are safe during pregnancy.

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<sup>1</sup> Oduyebo T., Petersen E. E., Rasmussen S. A., et al. Update: Interim Guidelines for Health Care Providers Caring for Pregnant Women and Women of Reproductive Age with Possible Zika Virus Exposure — United States, 2016. MMWR Morb Mortal Wkly Rep 2016;65 (Early Release):1–6.

<sup>2</sup> <http://www.acog.org/About-ACOG/News-Room/Practice-Advisories/Practice-Advisory-Interim-Guidance-for-Care-of-Obstetric-Patients-During-a-Zika-Virus-Outbreak>.

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**Purpose of CEPAR Guidance**

The purpose of this guidance is to define the Johns Hopkins Institutions<sup>3</sup> (JHI) position on Johns Hopkins-related, as well as personal, travel to places with active transmission of Zika virus. This guidance applies to all faculty, staff, students and trainees. Hopkins-related travel includes, but is not limited to, education and training activities (as either teacher or learner), field research, collaborative scholarly activities, conference attendance/participation and providing health care. Personal travel may include vacation, visiting family or volunteering in a clinical or other health care capacity unrelated to a Johns Hopkins initiative or response. This guidance applies to both short-term and long-term travel whether for work or personal reasons.

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<sup>3</sup> Johns Hopkins Institutions refers to all Johns Hopkins entities including the Johns Hopkins University, Johns Hopkins Health Systems/Johns Hopkins Medicine and the Johns Hopkins University Applied Physics Laboratory.



## **General Statements on Safe Sex Practices and Deferral of Pregnancy Related to Travel to Zika Virus Endemic Areas**

The [CDC](#) has recently updated their advice regarding timing of pregnancy and prevention of sexual transmissions of Zika virus. Their recommendations are based on the longest known risk period. Women diagnosed with Zika virus, or symptoms following possible exposure, should wait at least eight weeks after first symptoms before trying to get pregnant. Men with diagnosed Zika virus, or symptoms following possible exposure, should wait at least six months after first symptoms to have unprotected sex. For both men and women with possible exposure but no symptoms, the CDC recommends a minimum of eight weeks post possible exposure before trying to get pregnant.

Although there are currently no data on the transmission of Zika virus from infected women to their sexual partners, women who have traveled to affected areas may wish to consider safe sex practices upon return as well.

The Food and Drug Administration (FDA) guidance related to blood donation recommends deferral of blood donation if a sexual partner has been in a Zika virus endemic area within the past three months. CEPAR will stay abreast of developments and communicate with the Hopkins community as additional information becomes available.

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**CEPAR Work-Related Travel Policy**

The Johns Hopkins Office of Critical Event Preparedness and Response on behalf of the Johns Hopkins Institutions, *strongly advises all women faculty, staff, students and trainees who are or may become pregnant against travel to [Zika virus endemic areas.](#)*

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**CEPAR Work Related Travel Guidelines**

**University Faculty and Staff**

As with all anticipated Johns Hopkins-related travel, all Johns Hopkins University employees, faculty, staff, students and trainees planning travel to a [country or region with active Zika virus](#) transmission should preregister with the [Johns Hopkins International Travel Registry \(JHITR\)](#).

**Health System Personnel**

At this time the JHITR system is not available to Health System Personnel.

**Graduate Students/Trainees**

As with other university personnel, graduate students and should register in JHITR.

**Undergraduate Students**

Undergraduate students must petition for approval to travel to all countries with travel warnings (including those from CDC and the State Department). Such travel requires preapproval from the student's parents, advisor, school dean, director of study abroad and JHU chief risk officer. Undergraduate students must register their intended travel in JHITR.

**Upon Return (for all travelers)**

Any Johns Hopkins faculty, staff, student or trainees who have traveled to a Zika virus endemic area on a Johns Hopkins sanctioned initiative and believes they may have been exposed to Zika virus may utilize [Johns Hopkins Occupational Health Services](#) or [Student Health Services](#), as applicable for guidance. Pregnant women should contact their obstetrician on return. Consultation for those who are pregnant is also available from the Johns Hopkins Division of Maternal-Fetal Medicine. Johns Hopkins Occupational Health or Student Health will make a prompt referral to this division upon request.

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**Non-Work Related Travel Guidelines**

**General Statement**

Johns Hopkins Office of Critical Event Preparedness and Response on behalf of the Johns Hopkins Institutions, *strongly advises all women faculty, staff, students and trainees who are pregnant or trying to conceive (or otherwise sexual active and at risk of pregnancy), against travel to [Zika virus endemic areas](#)*. Men whose sexual partners are pregnant or trying to conceive should abstain from sex or use condoms consistently and correctly for the duration of the pregnancy after traveling to a region with active Zika transmission.