

TO: Clinic Directors

FROM: David J. Weber, MD, MPH
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RE: Zika Virus

DATE: 7 March 2016

This memorandum is intended to review the basic microbiology of Zika virus and the most current CDC/NC Health Department recommendations for screening, laboratory testing, and management. For more detailed information on the microbiology and management of Zika virus see the links to the web pages of the NC State Health Department, Centers for Disease Control and Prevention, and World Health Organization listed at the end of this memo. Further information on diagnostic testing is available on the CDC website at: <http://www.cdc.gov/zika/hc-providers/diagnostic.html>. Information on testing at UNC Hospitals is available at: <http://www.uncmedicalcenter.org/uncmc/professional-education-services/mclendon-clinical-laboratories/>.

Zika virus is a mosquito-borne arbovirus in the flavivirus family that causes an infection that is newly emerging in the Western hemisphere. The virus is related to other flaviviruses including dengue virus, yellow fever virus, and West Nile virus. Clinical manifestations of Zika virus infection occur in approximately 20 percent of patients and include acute onset of low-grade fever with maculopapular rash, arthralgia (notably small joints of hands and feet) and conjunctivitis (nonpurulent). Zika virus infection has been associated with Guillain-Barre syndrome. Zika virus infection has also been associated with congenital microcephaly and fetal losses among women infected during pregnancy. At the present there is no vaccine to prevent infection and there is no specific therapy for infected persons.

Outbreaks of Zika virus infection have occurred in Africa, Southeast Asia, and the Pacific Islands; currently, there is an ongoing Zika virus outbreak in the Americas. Updates on areas with ongoing Zika virus transmission are available online (<http://www.nc.cdc.gov/travel/page/zika-travel-information>). Because of the similar geographic distribution and clinical presentation of Zika, dengue, and chikungunya virus infection, patients with symptoms consistent with Zika virus disease should also be evaluated for dengue and chikungunya virus infection, in accordance with existing guidelines. Other diseases to consider in returned travelers with symptoms and signs consistent with Zika virus infection are measles, rubella, leptospirosis, parvovirus B19, rickettsial infection, and group A streptococcus.

Zika virus is transmitted to humans primarily via the bite of an infected *Aedes* mosquito; maternal-fetal transmission can also occur. Zika virus RNA has been detected in blood, urine, semen, cerebrospinal fluid, amniotic fluid, and breast milk. Case reports of sexual transmission (male-to-female) have been described; however, this appears to be an infrequent mechanism for Zika virus. Zika virus is transmissible via blood products. Transmission of Zika virus through breastfeeding has not yet been observed. However, transmission of some other flaviviruses via breast milk has been described. For patients hospitalized with known or suspected Zika virus only Standard Precautions are recommended.

To date NC has reported 5 positive Zika virus tests and 19 negative tests (1 positive for dengue, and 1 positive for chikungunya). NC has 138 pending testing including 109 in pregnant women (98 are asymptomatic; 2 with abnormal ultrasound findings)

The CDC has developed specific guidelines for the following (see attached appendix for specific links), available at: <http://www.cdc.gov/zika/hc-providers/index.html>

- Screening and management of pregnant women
- Sexual transmission
- Evaluation and testing of infants with possible congenital Zika virus infection
- Diagnostic testing

Links for Additional Information About Zika Virus

General Information:

1. Centers for Disease Control and Prevention. Zika Virus. <http://www.cdc.gov/zika/index.html>.
2. Centers for Disease Control and Epidemiology. Zika travel information. <http://wwwnc.cdc.gov/travel/page/zika-travel-information>.
3. North Carolina Department of Health and Human Services. Zika virus. <http://epi.ncpublichealth.info/cd/diseases/zika.html>
4. World Health Organization. Zika virus. <http://www.who.int/topics/zika/en/>.
5. UpToDate. Zika virus infection. Updated 2 February 2016. Available via the UNC Health Science Library.

Diagnostic Testing

1. Centers for Disease Control and Prevention. Zika Virus: Diagnostic testing. <http://www.cdc.gov/zika/hc-providers/diagnostic.html>
2. Centers for Disease Control and Prevention. Instructions for submitting diagnostic specimens to the DVBD Arbovirus Diagnostic Laboratory. <http://www.cdc.gov/ncezid/dvbd/specimensub/arboviral-shipping.html>

Sexual Transmission

1. Centers for Disease Control and Prevention (12 February 2016). Interim Guidelines for Prevention of Sexual Transmission of Zika Virus — United States, 2016. <http://www.cdc.gov/mmwr/volumes/65/wr/mm6505e1.htm>. MMWR 2016;65:120-121.

For Health Care Providers: Obstetricians

1. Centers for Disease Control and Prevention (22 January 2016). Interim guidelines for pregnant women during a Zika virus outbreak – United States, 2016. <http://www.cdc.gov/mmwr/volumes/65/wr/mm6502e1.htm>. MMWR 2016;65:30-33
2. Centers for Disease Control and Prevention (9 February 2016). Questions and Answers for Obstetrical Healthcare Providers: Pregnant Women and Zika Virus Infection. <http://www.cdc.gov/zika/hc-providers/qa-pregnant-women.html>.
3. Centers for Disease Control and Prevention (5 February 2016). Update: Interim Guidelines for Health Care Providers Caring for Pregnant Women and Women of Reproductive Age with Possible Zika Virus Exposure — United States, 2016. http://www.cdc.gov/mmwr/volumes/65/wr/mm6505e2er.htm?s_cid=mm6505e2er.htm_w. MMWR 2016;65:1-6.
4. ACOG-SMFM joint practice advisory: Interim Guidance for Care of Obstetric Patients During a Zika Virus Outbreak. <https://www.smfm.org/publications/220-acog-smfm-joint-practice-advisory-interim-guidance-for-care-of-obstetric-patients-during-a-zika-virus-outbreak>. Accessed 7 February 2016.

For Health Care Providers: Pediatricians

1. Centers for Disease Control and Prevention (29 January 2016). Interim Guidelines for the Evaluation and Testing of Infants with Possible Congenital Zika Virus Infection — United States, 2016. <http://www.cdc.gov/mmwr/volumes/65/wr/mm6503e3.htm>. MMWR 2016;65:63-67.
2. Centers for Disease Control and Prevention (12 February 2016). 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 2016;65:122-127.
3. Centers for Disease Control and Prevention (2 March 2016). Questions and Answers for Pediatric Healthcare Providers: Infants and Zika Virus Infection. <http://www.cdc.gov/zika/hc-providers/qa-pediatrician.html>.