

## Transmission of Zika Virus Through Sexual Contact with Travelers to Areas of Ongoing Transmission — Continental United States, 2016

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*On February 26, 2016, this report was posted as an MMWR Early Release on the MMWR website (<http://www.cdc.gov/mmwr>).*

Zika virus is a flavivirus closely related to dengue, West Nile, and yellow fever viruses. Although spread is primarily by *Aedes* species mosquitoes, two instances of sexual transmission of Zika virus have been reported (1,2), and replicative virus has been isolated from semen of one man with hematospermia (3). On February 5, 2016, CDC published recommendations for preventing sexual transmission of Zika virus (4). Updated prevention guidelines were published on February 23.\* During February 6–22, 2016, CDC received reports of 14 instances of suspected sexual transmission of Zika virus. Among these, two laboratory-confirmed cases and four probable cases of Zika virus disease have been identified among women whose only known risk factor was sexual contact with a symptomatic male partner with recent travel to an area with ongoing Zika virus transmission. Two instances have been excluded based on additional information, and six others are still under investigation. State, territorial, and local public health departments, clinicians, and the public should be aware of current recommendations for preventing sexual transmission of Zika virus, particularly to pregnant women (4). Men who reside in or have traveled to an area of ongoing Zika virus transmission and have a pregnant partner should abstain from sexual activity or consistently and correctly use condoms during sex with their pregnant partner for the duration of the pregnancy (4).

Zika virus disease is an arboviral disease and a nationally notifiable condition in the United States (5). For the purposes of this report, a confirmed or probable case of sexually transmitted Zika virus disease was defined as an illness meeting the confirmed or probable arbovirus surveillance case definition in a person whose only known risk factor was sexual contact with a partner who recently traveled to an area with ongoing Zika virus transmission (6).

During February 6–22, 2016, two confirmed and four probable cases of Zika virus sexual transmission were reported to CDC by health officials from multiple states. Median patient age was 22.5 years (range = 19–55 years), and several women were pregnant. In all cases where type of sexual contact was documented, the contact included condomless vaginal intercourse

and occurred when the male partner was symptomatic or shortly after symptoms resolved. Three illustrative cases are presented.

**Case 1.** In mid-January, immediately after returning to the United States from a 10-day trip to the Caribbean, a man developed illness with fever, arthralgia, bilateral conjunctivitis, and a maculopapular, pruritic rash. The illness lasted 6 days. No hematospermia or prostatitis was noted. On the 1st or 2nd second day of illness, he had condomless vaginal intercourse with his female partner. The woman developed a febrile illness 13–14 days after sexual contact, with rash, conjunctivitis, and myalgia. Zika virus RNA was detected in the woman's serum by reverse transcription-polymerase chain reaction (RT-PCR) assay. Test results for the man are pending. The woman had no recent history of travel outside of the continental United States, and local mosquito-borne transmission of Zika virus was not considered possible; the vectors that transmit the virus are not present or active where she lives, based on the location and current temperatures.

**Case 2.** In late January, a man returned to the United States after a 4-week trip to Central America. The same day, he developed fever, arthralgia, generalized pruritus, myalgia, and eye discomfort. He had condomless vaginal intercourse with his female partner several times during the following 8 days. Ten days after the man's return, his female partner developed fever, pruritic rash, arthralgia, eye pain, photophobia, headache, vomiting, and myalgia. Zika virus infection in the woman was confirmed by RT-PCR testing of serum. Serum collected from the man tested positive for Zika virus immunoglobulin M (IgM) antibodies; confirmation is pending. The woman had no recent history of travel outside the continental United States, and current local mosquito-borne transmission of Zika virus was not considered possible where she lives.

**Case 3.** In mid-January, a man returned from Central America with fever, rash, arthralgia, conjunctivitis, headache, and myalgia. His symptoms began 3 days earlier and persisted until approximately 3 days after his return. On the day of his return, he had sexual contact with his female partner. Ten days later, the woman developed rash, arthralgia, conjunctivitis, and myalgia. Serum collected from the woman tested positive for Zika virus IgM; confirmation is pending. Test results for the man are pending. The woman had no recent history of travel outside of the continental United States, and current local mosquito-borne transmission of Zika virus was not considered possible where she lives.

\* <http://emergency.cdc.gov/han/han00388.asp>.

**Summary****What is already known about this topic?**

Zika virus is spread primarily by *Aedes* species mosquitoes, though recent reports have described two instances of sexual transmission of Zika virus, and replicative virus has been isolated from semen of one man with hematospermia. CDC released interim guidance for prevention of sexual transmission of Zika virus on February 5, 2016.

**What is added by this report?**

This report provides information on six confirmed and probable cases of sexual transmission of Zika virus from male travelers to female nontravelers. This suggests that sexual transmission of Zika virus might be more common than previously reported.

**What are the implications for public health practice?**

Men who reside in or have traveled to an area of ongoing Zika virus transmission who have a pregnant partner should abstain from sexual activity or consistently and correctly use condoms during sex (i.e., vaginal intercourse, anal intercourse, or fellatio) with their pregnant partner for the duration of the pregnancy.

**Discussion**

The cases described here suggest that sexual transmission of Zika virus is more common than previously reported. To date, all reported cases of sexual transmission of Zika virus have been from symptomatic male partners. Sexual transmission of Zika virus from infected women to their sex partners and from persons who are asymptotically infected has not been reported. Prevention of infection during pregnancy is particularly important because of the growing evidence linking maternal Zika virus infection with congenital microcephaly, fetal loss, and other adverse reproductive health outcomes (7). Whether sexual transmission of Zika virus poses a different risk for congenital infection than that of mosquito-borne transmission is unknown.

Zika virus testing is currently recommended to establish a diagnosis in exposed persons with signs or symptoms consistent with Zika virus disease, and can be offered to asymptomatic pregnant women who have been exposed to Zika virus (8). In these recommendations, exposure has been defined as living in or having traveled to an area with ongoing Zika virus transmission (8). Health care providers should now consider any person who has had condomless sex (i.e., vaginal intercourse, anal intercourse, or fellatio) with a male partner who has traveled to an area of ongoing Zika virus transmission and who has had symptoms of Zika virus disease during travel or within 2 weeks of return as potentially exposed. Routine testing of men who have traveled for the purpose of assessing risk for sexual transmission is not recommended (4).

Men who reside in or have traveled to an area of ongoing Zika virus transmission who have a pregnant partner should abstain from sexual activity or consistently and correctly use condoms during sex with their pregnant partner for the duration of the

pregnancy (4). Pregnant women should discuss their male partner's recent travel history and any illness consistent with Zika virus disease (<http://www.cdc.gov/zika/symptoms>) with their health care provider; providers can consult CDC's guidelines for evaluation and testing of pregnant women (4). At this time, the length of time that virus might persist in semen is unknown. A recent report described detection of Zika virus RNA in semen by RT-PCR as long as 62 days after illness onset; however, infectious virus was not cultured from semen (9). Recommendations for prevention of sexual transmission of Zika virus will be updated as new information regarding the risks for transmission becomes available.

**Acknowledgments**

State and local health departments for assistance with case investigations; Panayotta Delinois, CDC, for administrative support; the Zika 2016 clinical inquiries and sexual transmission teams.

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**References**

- Foy BD, Kobylinski KC, Foy JLC, et al. Probable non-vector-borne transmission of Zika virus, Colorado, USA. *Emerg Infect Dis* 2011;17:880–2. <http://dx.doi.org/10.3201/eid1705.101939>
- Dallas County Health and Human Services. DCHHS reports first Zika virus case in Dallas County acquired through sexual transmission. February 2, 2016. Dallas, TX: Dallas County Health and Human Services; 2016. <http://www.dallascounty.org/department/hhs/documents/February2016Newsletter.pdf>
- Musso D, Roche C, Robin E, Nhan T, Teissier A, Cao-Lormeau VM. Potential sexual transmission of Zika virus. *Emerg Infect Dis* 2015;21:359–61. <http://dx.doi.org/10.3201/eid2102.141363>
- Oster AM, Brooks JT, Stryker JE, et al. Interim guidelines for prevention of sexual transmission of Zika virus—United States, 2016. *MMWR Morb Mortal Wkly Rep* 2016;65:120–1. <http://dx.doi.org/10.15585/mmwr.mm6505e1>
- Council of State and Territorial Epidemiologists. 2015 National Surveillance Case Definition for Arboviral diseases, neuroinvasive and non-neuroinvasive. Atlanta, GA: Council of State and Territorial Epidemiologists; 2015. <http://wwwn.cdc.gov/nndss/conditions/arboviral-diseases-neuroinvasive-and-non-neuroinvasive/case-definition/2015/>
- Pan American Health Organization. Countries and territories with autochthonous Zika virus transmission in the Americas. Washington, DC: Pan American Health Organization; 2016. [http://www.paho.org/hq/index.php?option=com\\_content&view=article&id=11603&Itemid=41696&lang=en](http://www.paho.org/hq/index.php?option=com_content&view=article&id=11603&Itemid=41696&lang=en)
- Meaney-Delman D, Hills SL, Williams C, et al. Zika virus infection among US pregnant women travelers—August 2015–February 2016. *MMWR Morb Mortal Wkly Rep* 2016;65(8).
- Oduyebo T, Petersen EE, Rasmussen SA, 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;65:122–7. <http://dx.doi.org/10.15585/mmwr.mm6505e2>
- Atkinson B, Hearn P, Afrough B, et al. Detection of Zika virus in semen [letter]. *Emerg Infect Dis* 2016;22. Epub February 11, 2016. <http://dx.doi.org/10.3201/eid2205.160107>