



# TRENDS-in-MEDICINE

## BULLETIN: ZIKA VIRUS UPDATE

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by Lynne Peterson

In a teleconference with reporters, Thomas Frieden, MD, MPH, director of the Centers for Disease Control and Prevention (CDC), reviewed what is known about Zika and the latest recommendations. The bottom line: The CDC's priority is to prevent infection in pregnant women, "Spread in other populations is much less a concern because 4 of 5 Zika infections are asymptomatic, and the symptoms are generally mild...The real effect is on development of the brain of the fetus."

### Highlights

- **Microcephaly.** The link between Zika and microcephaly in infants is getting "stronger and stronger every day," and Dr. Frieden called it "scary."
  - A woman who had been infected with Zika on a trip gave birth in Hawaii to an anencephalic (the worst form of microcephaly) baby.
  - This is the first time in >70 years that a virus has been associated with birth defects. The last was rubella. And CDC is not aware of any mosquito-borne diseases causing infant disease on this scale.
  - The lack of cases of microcephaly outside Brazil (and the Hawaiian case) is not surprising because there hasn't been long enough exposure to Zika in other countries to see that yet, but CDC expects to see cases as babies come to term and are born in other affected countries.
  - *Asked about the finding by researchers in Brazil of antibodies in the spinal fluid of babies born with microcephaly, Dr. Frieden said the CDC has not yet seen the details on that.*
  - CDC does not know if infants born to mothers infected with Zika that do not have microcephaly will develop other neurological deficits as they grow up.
- **Guillain-Barré.** One case of Zika-associated Guillain-Barré was identified in Puerto Rico. Dr. Frieden said it is "very challenging to make a causal link" between Zika and Guillain-Barré in an individual case because Guillain-Barré can follow diarrhea with campylobacter infection, the flu, or "a range" of other infections. But "there does appear to be one case."
- **Testing.**
  - There are a limited number of IGM test kits available, so the CDC is reserving them for pregnant women. Even then, "not everyone who wants a test will be able to get one."
  - CDC is making its test technology available to unnamed companies in the hopes that more tests can quickly be made available so more people can be tested.
  - The IGM test for Zika infection "is performing better than we hoped. We are more confident in this test. It is not perfect. There is no perfect test for Zika, but we need to roll out this test, and that is what we are doing...We wish more tests were available...We are fortunate we have test kits at all."

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- There are two ways to test for virus in semen. “PCR is very sensitive, and that will be positive even when an individual is not infectious, even if the virus is dead...A culture is more specific, but it is less sensitive and may miss some people who are infectious.”

#### ■ **Transmission.**

- Zika only remains in the blood for ~7 days.
- How long Zika lasts in semen is not known, and it will be “weeks or months” before that is known. There is a confirmed U.S. case of sexual transmission from a man to his partner (but Dr. Frieden wouldn’t say if the partner was a man or woman) in Dallas. Dr. Frieden also didn’t say whether the man with infected semen is being monitored by local authorities so he doesn’t expose other people. Dr. Frieden didn’t say it, but the man reportedly became infected on a trip to Venezuela.
- The Zika virus risk is greatest in the first trimester of a pregnancy and the early part of the second trimester. The CDC does not know whether a man with Zika-infected semen who impregnates a woman creates a fertilized egg at high risk.
- Zika virus has been found in saliva and urine, but the CDC is not sure what this means for transmission or how long the virus lasts in those secretions. And CDC is not recommending against *kissing* someone who has traveled to a Zika-infected region. There are only three cases in the world literature of Zika in milk and urinary secretions. (*Maybe they haven’t been published yet!*)
- Dr. Frieden said, “We wish we had a test to say someone is infective.”

#### ■ **Mosquitos.**

- The Zika-carrying mosquito is not a typical mosquito: It bites all day (not just at dusk and dawn), it can breed in just the water in a bottle cap, and it bites “relatively painlessly, so you don’t swat and kill it.”
- Mosquito control efforts are “variable” across the U.S., with some superb and some “less so.” However, “very high levels of mosquito control are necessary to drive down the risk.” At least that is the case with dengue fever, which is carried by the same mosquito, but the CDC thinks the same will be true for Zika.

■ **Blood supply.** Dr. Frieden said Zika is gone from the blood in a week, but CDC “wouldn’t be surprised” to see occasional spread by transfusion. He said the American Association of Blood Banks’ guidance on deferring blood donations for 28 days “leaves a margin of safety for blood transfusions.”

#### **In other news on Zika this week:**

■ **WHO.** The World Health Organization declared Zika a global emergency.

■ **Blood.** The Red Cross asked donors not to give blood for 28 days after visiting an area with reported Zika cases/mosquitos.

■ **Mosquitos.** Intrexon is working on a genetically-modified mosquito that could be used to combat the Zika outbreak.

■ **Testing.** Genekam Biotechnology has developed a diagnostic PCR test for Zika that can also measure the amount of Zika pathogens in the blood. The test, which can only be used in specialized facilities and laboratories, has been deployed for use in Brazil.

■ **Vaccine.** Several companies are now racing to see if they can develop a Zika vaccine, including:

- Sanofi Pasteur.
- NewLink Genetics.
- Protein Sciences, which claims it will have a Zika vaccine ready for testing in a matter of weeks. The company reportedly is discussing partnerships with “major organizations” in Brazil and the U.S. The company gets support from the Department of Defense and received a large government contract from BARDA for national pandemic preparedness.

#### **CDC guidance**

CDC also issued new interim guidance on preventing sexual transmission of the Zika virus today. While stressing that mosquito bites remain the primary way that the Zika virus is transmitted, CDC acknowledged that sexual transmission of Zika virus infection is possible. (*I guess they had to say that since there is a confirmed case!*) Because there currently is no vaccine or treatment for Zika virus, the

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best way to avoid Zika virus infection is to prevent mosquito bites. (*And that is just not realistic for people in tropical areas. Are people going to Mexico on vacation going to wear pants and long-sleeved shirts on the beach? No.*)

**The new recommendations include:**

- **Pregnant women and their male sex partners** should discuss the male partner's potential exposures and history of Zika-like illness with the pregnant woman's healthcare provider. Doctors should consult CDC guidelines on testing of pregnant women.
- **Men with a pregnant sex partner** who reside in or have traveled to an area of active Zika virus transmission should consistently and correctly use condoms during sex (vaginal, anal, or oral) – (*Hmmm, I never thought about the use of condoms for oral sex*) – or abstain from sexual activity for the duration of the pregnancy (*a better idea*). Dr. Frieden added that the concern is any form of “insertive sex.”
- **Non-pregnant women and men with non-pregnant sexual partners who live in or have traveled to Zika-affected areas** should consider using condoms consistently or abstaining from sexual activity, though the CDC pointed out:
  - Zika virus illness is usually mild, with 80% of people never having symptoms.
  - When symptoms do occur, they usually last several days to a week.
  - The “science is not clear” on how long the risk should be avoided.
- **Healthcare providers should:**
  - Offer testing to pregnant women *without* Zika symptoms 2-12 weeks after returning from areas with ongoing Zika virus transmission.
  - Discuss birth control methods in the context of the potential risks of Zika virus transmission with women of reproductive age.
- **Pregnant women residing in areas with ongoing Zika transmission:**
  - If they have symptoms, should be tested.
  - If they don't have symptoms, should be tested when they begin prenatal care.
  - Should have follow-up testing in the middle of the second trimester. In addition to the routine ultrasound in the second trimester, an additional ultrasound may be in order, at the discretion of the doctor.

