

Birth Defects Linked to Zika Include More Than Microcephaly

- By [Tara Haelle](#) 4/6/2016

<http://www.everydayhealth.com/zika/living-with/birth-defects-linked-zika-include-more-than-microcephaly/>

Scientists are learning more about how the Zika virus might harm the brains of babies developing in pregnant women.



Zika virus infection during pregnancy comes with potential risks to the fetus

Fast Facts

- [Pregnant women infected by Zika](#) are much more likely to have a baby with microcephaly or other severe birth defects.
- The [Zika virus](#) appears to have mutated in 2000 and become able to attack developing brain cells in a fetus.
- The best ways to [prevent Zika](#) are by avoiding travel to areas with the virus, using mosquito repellent, and staying in air-conditioned buildings with closed windows.

A clearer picture of [the risks Zika](#) poses for pregnant women is emerging with the recent publication of several studies following women who were infected. While the evidence is stronger than ever that some Zika-infected pregnant women's babies will develop problems, not all [pregnant women](#) who become sick from [Zika virus](#) will have a pregnancy complication or a baby with birth defects.

"I think we've clarified in the last few weeks the link between Zika and microcephaly and other horrific birth defects," says [Peter Jay Hotez, MD, PhD](#), dean of the National School of Tropical Medicine at Baylor College of Medicine in Houston. In microcephaly, a baby's much smaller-than-average head size is accompanied by a smaller brain and developmental difficulties. "Several papers have come out clearly showing the structural changes in the brain, and now a very plausible mechanism for it," Dr. Hotez says.

Multiple Birth Defects Have Been Identified in Addition to Microcephaly

The [largest of these studies](#) followed 88 pregnant women from Rio de Janeiro, Brazil, between September 2015 and February 2016, starting within five days after they each developed a rash. A rash is one of the most common symptoms of Zika infection,

along with fever, joint pain, and red or itchy eyes. Of the 88 women, 72 tested positive for Zika, according to the study, which was published March, 2016 in the *New England Journal of Medicine (NEJM)*.

“Our study is different from others to date because we first identified pregnant women with Zika virus infection acutely when they presented with a rash, and subsequently followed their pregnancies,” says study author Karin Nielsen-Saines, MD, a pediatrician at Mattel Children’s Hospital and professor of pediatrics in the division of infectious diseases at the David Geffen School of Medicine, both at UCLA. “Most studies have been case reports of abnormal findings which then try to establish a link to prior Zika virus infection,” she says. In those types of individual cases, it’s harder for doctors to know if the Zika infection is a coincidence or not.

In the *NEJM* study, however, two women with Zika virus infection had miscarriages in the first trimester, and ultrasounds of 12 of the 42 women showed fetuses with some kind of abnormality. None of the ultrasounds in the 16 women who tested negative for Zika showed any abnormalities. Other women who tested positive for Zika did not get ultrasounds because the medical facility was too far away or they were afraid of finding out about birth defects.

The abnormalities seen in the ultrasounds of pregnant women with Zika included microcephaly, hardened calcium deposits in the brain, a breakdown in brain tissue, brain swelling, and poor growth of the fetuses. Two women also had stillbirths, and one baby was born in an emergency cesarean section because there was too little amniotic fluid in the womb.

The researchers expected to find that birth defects were more likely when women were infected during a particular trimester, but that was not the case, Dr. Nielsen-Saines says.

“We noted cerebral malformations develop in fetuses of women infected from 8 weeks of pregnancy to as late as 27 weeks of gestation,” she says. “We saw fetal demise [death] in the third trimester of pregnancy as well.”

Stillbirths and Miscarriages Are Also Linked to Zika

Late pregnancy loss was also seen in both of the other recent Zika virus studies, including [a case study published](#) in February 2016 in the journal *PLOS Neglected Tropic Diseases*. Researchers described the case of a 20-year-old woman whose fetus showed severely slowed growth in week 18 of pregnancy. The woman did not remember having had symptoms of a Zika infection, however. Additional ultrasounds later in the pregnancy showed problems similar to those seen in the Brazilian women in the first study, as well as an abnormal buildup of fluid inside the fetus’s body. The fetus died at 32 weeks of pregnancy.

The [third study](#), reported by Dana Meaney-Delman, MD, and other scientists at the Centers for Disease Control and Prevention (CDC), followed nine pregnant women in the United States who had traveled to [countries where Zika was circulating](#). Up until February 17, 2016, these women, and 10 others under observation, are the only pregnant women in the United States with confirmed Zika infections.

Two of the women had miscarriages in the first trimester, and two chose to have abortions after ultrasounds revealed severe defects in the fetuses’ brains. One woman gave birth to a baby with microcephaly, two women gave birth to healthy babies, and the other two women’s pregnancies are continuing without any current problems. Several of the women who lost their fetuses or had fetuses with defects showed Zika infection.

“It looks like Zika is inhibiting development of the brain, not just [associated with] small head size, and it’s associated with stillbirths,” Hotez says. “That’s why I called it the virus from hell, because it really is something terribly evil happening that’s blocking the brain of the unborn baby.”

How the Zika Virus Works

The most recent evidence suggests that the Zika virus is attacking neural stem cells in the brain — the cells that help the brain develop, Hotez explains. From what scientists have been able to piece together, it seems that some genes in the virus mutated around the year 2000 and developed the ability to attack the central nervous system of a fetus. “It’s every mother’s worst nightmare,” Hotez says.

But many questions remain, including what percentage of pregnant women who become infected will experience a problem with their pregnancies or babies.

“Although we had a very high number of abnormalities, it’s important to also emphasize that 71 percent of the pregnancies seem to be normal to date,” Nielsen-Saines said about their *NEJM* study. “Women who have Zika virus infection in pregnancy should be followed very closely by their obstetricians with serial ultrasound monitoring to follow fetal development,” she adds. The women should also be followed through the third trimester, because the virus seems able to cause problems with the placenta as well.

Mosquitoes carrying the Zika virus have not arrived in the U.S. mainland so far, though Hotez is concerned they could appear along the Gulf Coast in the spring.

How to Prevent Zika Virus Infection

The [CDC has issued a travel advisory](#) recommending that [pregnant women postpone](#) any trips to countries where Zika is circulating. The best way to reduce risk of infection for those in Zika-infected areas is to prevent mosquito bites. Stay inside homes and

buildings with air conditioning, keep windows closed, and [use mosquito repellent](#). In addition, you can prevent getting Zika through sex by [using condoms](#) if your male partner has been to an area that has the Zika virus.

If you're pregnant and do travel to or return from these areas with Zika symptoms — a rash with fever, red or itchy eyes, and joint pain or a headache — you should contact your pregnancy care provider or local health department to request a test. The most recently developed tests can detect Zika infection within several hours. Women who test positive should have regular ultrasounds to look for problems.

And remember, many pregnant women become infected with Zika and give birth to healthy babies.