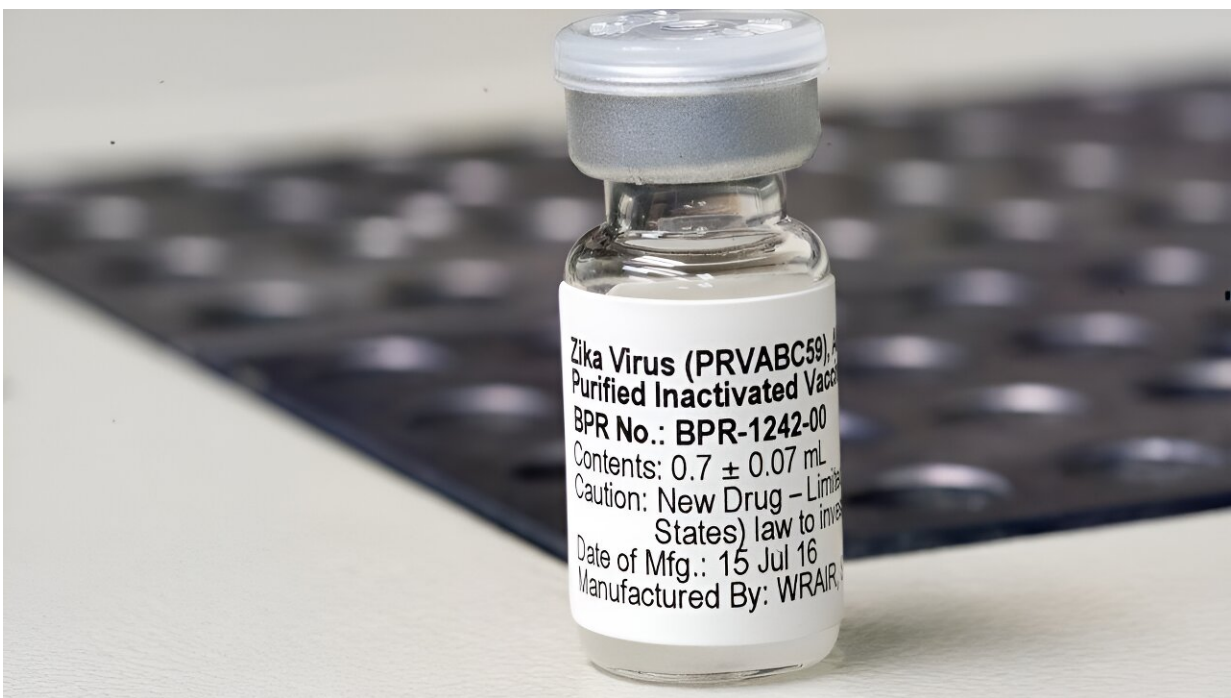


Zika vaccine safe and effective when administered during pregnancy, finds study in marmosets

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A vial of the Zika virus vaccine developed by a team at Walter Reed Army Institute of Research. Credit: WRAIR.

A vaccine against Zika virus is safe and effective when administered both before and during pregnancy, according to new research published in [npj Vaccines](#).

The purified, inactivated Zika vaccine (ZPIV) candidate, developed by Walter Reed Army Institute of Research (WRAIR), is being evaluated in animal models at Texas Biomedical Research Institute (Texas Biomed) in collaboration with WRAIR and Trudeau Institute in New York.

The vaccine candidate has [previously been shown](#) to effectively block prenatal Zika virus transmission when given to nonhuman primates prior to [pregnancy](#). This new study goes a critical step further, studying what happens when the vaccine is administered during pregnancy.

"This is a giant step forward," says Jean Patterson, Ph.D., Professor Emeritus at Texas Biomed. "We have very strong evidence that this vaccine could protect fetal health during the next Zika outbreak."

Mosquitoes primarily transmit Zika virus. It does not typically cause serious illness in most people; the biggest threat is to [pregnant women](#) and developing fetuses. During the 2015–2016 Zika outbreak in the Americas, there was a surge in miscarriages and babies born with extremely small heads and other severe birth defects, collectively called Congenital Zika Syndrome. Zika virus continues to circulate at low levels and has been detected in [89 countries and territories](#) to date.

"Zika virus continues to infect people around the world and present a significant risk to maternal-fetal health," says Stephen J. Thomas, M.D., an inventor of the ZPIV vaccine and a study collaborator. "Because of this, advancing the development of vaccine candidates and studying different use scenarios is incredibly important."

The vaccine candidate has completed Phase 1 clinical trials in humans and was well tolerated and elicited an [immune response](#). But [clinical trials](#) usually exclude pregnant people, leaving key questions unanswered about whether vaccination during pregnancy would be safe and potent.

This new study is believed to be the first to evaluate a Zika vaccine during pregnancy in [nonhuman primates](#). Marmosets, a small nonhuman primate that typically has twins and triplets, are sensitive to Zika virus infection and closely mirror what happens in pregnant humans.

Given the drastic changes that the immune system undergoes during pregnancy, the researchers were not sure if the vaccine, when given during early pregnancy, would generate a protective immune response, such as creating protective antibodies.

"The antibody response when given during pregnancy was similar to the level we observed when administered before pregnancy," says In-Jeong Kim, Ph.D., a principal investigator at Trudeau Institute. "That is very exciting."

The [vaccine candidate](#) prevented placental damage and sufficiently blocked transmission of the Zika virus from mother to fetus. The viral load in placentas and fetuses was significantly lower in the vaccinated group versus the unvaccinated group. Growth and development of fetuses of vaccinated adult marmosets exposed to Zika virus were similar to controls not exposed to the virus. No adverse effects were detected.

What remains to be studied is whether protection will last throughout pregnancy and whether offspring born from vaccinated females challenged with the virus during pregnancy are free of Congenital Zika Syndrome.

More information: In-Jeong Kim et al, Protective efficacy of a Zika purified inactivated virus vaccine candidate during pregnancy in marmosets, *npj Vaccines* (2024). [DOI: 10.1038/s41541-024-00824-0](https://doi.org/10.1038/s41541-024-00824-0)

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