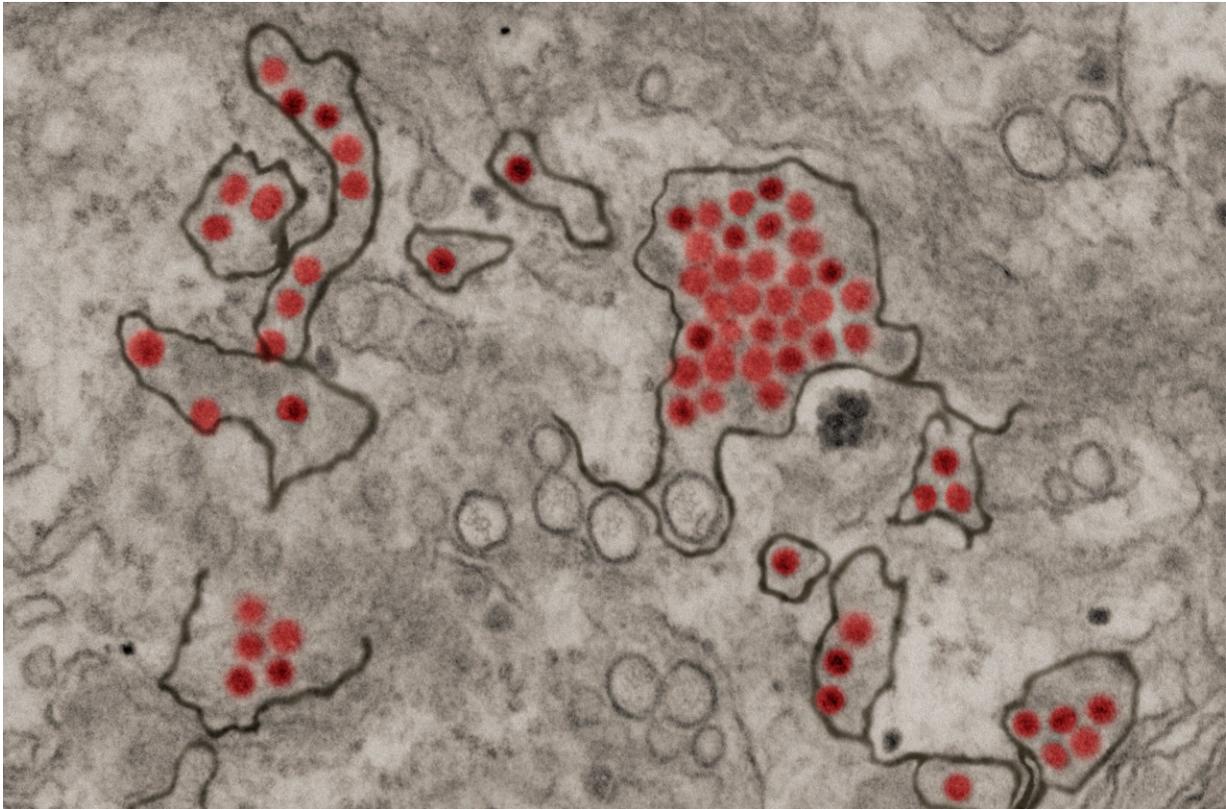


A Zika vaccine could save suffering and costs

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Zika virus particles (red) shown in African green monkey kidney cells. Credit: NIAID

Global climate change has raised concerns that mosquito-borne diseases could become increasingly prevalent in the United States as warmer temperatures lead to increased mosquito activity.

The 2015-2016 Zika outbreak, which impacted much of the Americas, prompted efforts to accelerate the development of a Zika vaccine. According to the Centers for Disease Control and Prevention (CDC), about 10 percent of babies born in the U.S. whose mother was confirmed with the Zika virus during pregnancy had associated [birth defects](#). The birth defects, like congenital Zika syndrome, can be devastating, fatal, and costly. According to the World Health Organization (WHO), in high-income countries like the U.S., the associated costs of caring for a single child with Zika-related birth defects have been estimated to be as high as \$10 million.

A new study led by researchers at the CUNY Graduate School of Public Health and Health Policy (CUNY SPH) and the National School of Tropical Medicine at Baylor College of Medicine found that routinely giving the Zika vaccine to women of childbearing age could save money if the risk of Zika is around that of other mosquito-borne diseases like dengue and chikungunya. These diseases have been endemics in many parts of Latin and South America. Both are febrile, cause severe joint pain and could be life threatening if left untreated. According to the CDC, the same mosquito that carries the Zika virus, the *Aedes* species mosquito, also carries dengue and chikungunya.

The team developed a [computer model](#) representing [women of childbearing age](#) in different countries in the Americas. The model represented what happens to a woman if she becomes infected with Zika, how it varies with pregnancy, and the potential benefits of a vaccine to prevent the Zika infection.

As the study demonstrates, it is critical for officials to monitor the incidence of Zika infections in their region to determine whether the risk becomes comparable to that of dengue and chikungunya. This information could help determine whether a routine vaccination would be necessary.

"The end of the 2015-2016 outbreak doesn't mean that Zika has gone away as a threat," says Bruce Y. Lee, executive director of PHICOR, headquartered at CUNY SPH. "Cases may still continue to occur in different locations. Plus, future outbreaks are still possible. Therefore, it is important to be proactive about preventing the further spread of Zika."

The findings, which were published in the *American Journal of Preventive Medicine*, show how computer simulation modeling can help guide vaccine development. Results from the model provide scientists, manufacturers, public health officials, funders, and policy makers targets to aim for when developing the Zika vaccine and deciding when and where to use it.

"The study shows that a Zika vaccine doesn't have to offer near perfect protection to be valuable," says Sarah M. Bartsch, project director at PHICOR and lead author of the study. "In fact, the study shows that in many cases a vaccine that only offers protection as low as 25 percent can still produce cost savings in certain situations."

More information: Sarah M. Bartsch et al, The Potential Economic Value of a Zika Vaccine for a Woman of Childbearing Age, *American Journal of Preventive Medicine* (2020). [DOI: 10.1016/j.amepre.2019.10.023](https://doi.org/10.1016/j.amepre.2019.10.023)

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