

How we know Zika virus causes Guillain-Barre Syndrome and birth defects

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Transmission electron micrograph (TEM) of Zika virus. Credit: Cynthia Goldsmith/Centers for Disease Control and Prevention

A structured analysis of the evidence confirms that infection with mosquito-borne Zika virus is a cause of the neurological disorder Guillain-Barre Syndrome (GBS), in addition to microcephaly and other

congenital brain abnormalities, according to a systematic review published in *PLOS Medicine* by Nicola Low of the University of Bern, Switzerland, and colleagues in the World Health Organization (WHO) Zika Causality Working Group.

In March 2016, WHO stated that there was a strong scientific consensus that Zika virus is a cause of GBS, microcephaly, and other neurological disorders. However, decisions about causality must be assessed systematically to guide public health actions. In the new work, the WHO group defined specific questions about the relationship between Zika virus and clinical outcomes, setting a framework of ten dimensions to define causality. They then reviewed existing literature for studies that addressed the outcomes—either GBS or congenital brain abnormalities—and convened a panel of experts to assess the review findings.

Based on 72 studies published up to May 30, 2016, that included data on Zika and congenital brain abnormalities, the team concluded that at least eight of the ten criteria for causality were met. Based on 36 studies published in the same time frame with data on Zika and GBS, the researchers concluded that at least seven of the ten criteria for causality were met. In addition, papers published after the initial literature review—between May 30 and July 29, 2016—strengthened the initial findings that Zika virus is causative of brain abnormalities and GBS. However, there are remaining questions about the link that will need to be addressed with continuing studies.

"Rapid and systematic reviews with frequent updating and open disseminating are now needed, both for appraisal of the evidence about Zika virus infection and for the next public health threats that will emerge," the authors say. "This rapid [systematic review](#) found sufficient evidence to conclude that Zika virus is a cause of congenital abnormalities and is a trigger of GBS."

More information: Krauer F, Riesen M, Reveiz L, Oladapo OT, Martínez-Vega R, Porgo TV, et al. (2017) Zika Virus Infection as a Cause of Congenital Brain Abnormalities and Guillain-Barré Syndrome: Systematic Review. *PLoS Med* 14(1): e1002203. [DOI: 10.1371/journal.pmed.1002203](https://doi.org/10.1371/journal.pmed.1002203)

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