

Zika outbreak may be coming to an end

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This picture shows a district in Salvador, the Brazilian metropolis where scientists have elucidated the Zika burden. Credit: Ianei Carneiro

Scientists have measured the Zika burden in a Brazilian metropolis, and their data indicate that the outbreak may be coming to an end and further outbreaks in the region seem unlikely. The study has also provided new evidence supporting the link between Zika infection during pregnancy

and malformations in newborns. A third finding is important with regard to intervention measures: Zika virus infection predominantly affects poor regions.

In 2016, news about the Zika [virus](#) in Brazil made the headlines in Europe for the first time. With approximately 65 million people affected, it is one of the largest epidemics in the last few years. The Olympics additionally fueled fears that the virus could spread globally. When the first cases of newborns with microcephalic malformations of the brain were observed in connection to Zika, it became apparent that further research was called for. The DZIF responded to this global challenge and, under the leadership of Jan Felix Drexler, Charité - Universitätsklinikum Berlin, initiated a German alliance project with Brazilian scientists to investigate the pathogenesis and epidemiology of Zika.

Population immunity is giving the virus less latitude

"The spread of the Zika virus in northeastern Brazil has been so intense that the current Zika epidemic could soon be over," explains Drexler. People who have undergone Zika virus infections usually become immune to the virus. Consequently, fewer people can now contract Zika virus infections and subsequently serve as a source of the virus for mosquitoes. According to the authors of the study, "Outbreaks in the same region are therefore rather unlikely." The Zika virus is currently spreading from Brazil to neighbouring countries, but according to Drexler, the outbreak may gradually fade out on its own. However, to date, it is still unclear whether the virus can hide in other animals and subsequently cause new outbreaks in humans.

Laboratory-based data on the spread of the virus available for the first time

The study is the first laboratory-based epidemiological study since the start of the Zika epidemic. Samples from 910 humans in Salvador, northeast Brazil, were tested for Zika virus antibodies, as well as for other viruses transmitted by mosquitoes such as Chikungunya and dengue. The samples were obtained before, during and after the peak of the Zika outbreak. An infection rate of over 60 percent was observed in this metropolis. With mathematical modeling and sociodemographic data alongside the laboratory values, the scientists used a multidisciplinary approach to elucidate the speed of virus spread, areas most affected by Zika and the link to malformations in newborns.

Link between Zika and microcephaly

"The increased number of newborns with microcephaly observed during the Zika [outbreak](#) in Brazil is linked to Zika infection of the mother during early pregnancy," explains Drexler. Data from the Brazilian metropolis have confirmed this suspicion and, together with other studies, enable the researchers to estimate the absolute risk of microcephaly upon infection of the mother during pregnancy: approximately one out of 100 mothers infected during early pregnancy will bear a child with microcephaly.

Link between Zika and poverty

Analysis of geospatial data and socioeconomic status demonstrated a connection between the likelihood of Zika [infection](#) and increased poverty. "We can see that poorer regions are more severely affected by Zika," confirms Drexler. "Reasons for this can currently only be assumed." The scientists suspect that living conditions contribute to the situation. "Mosquitoes can more easily access these homes and people are more exposed." According to the authors of the study, these findings could be taken into consideration for developing future intervention

measures, such as ensuring that people living in poorer regions have better access to protection against mosquitoes. In addition, more targeted use of the potential vaccines and drugs that scientists are currently working on intensively could be planned.

More information: Eduardo Martins Netto et al, High Zika Virus Seroprevalence in Salvador, Northeastern Brazil Limits the Potential for Further Outbreaks, *mBio* (2017). [DOI: 10.1128/mBio.01390-17](https://doi.org/10.1128/mBio.01390-17)

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