

FAQ

The role of biting midges in Germany in the transmission of Zika Virus



How likely is a Zika virus epidemic in Germany caused by biting midges?

Currently, the risk of Zika virus transmission by biting midges in Germany is considered to be relatively low. First, the pathogen must be introduced to Germany by a traveler who has become infected in an affected country. A biting midge sucking blood from this person in Germany must be vector-competent für Zika virus, i.e. it must be able to become infected with the virus, to replicate it in its body and to carry it in its salivary gland to transmit it during another blood meal. Further efficient transmission also depends on the biting midge density.

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Are the Yellow Fever mosquito and the Asian tiger mosquito related species?

The Asian tiger mosquito (*Aedes albopictus*) and the Yellow Fever mosquito (*Aedes aegypti*) are two different biting midge species of the same genus *Aedes*. In Brazil, it is assumed that Zika virus is mainly transmitted by the Yellow Fever mosquito.

Can the Asian tiger mosquito transmit Zika virus?

It has been confirmed that the Asian tiger mosquito is a highly efficient transmitter of numerous viruses, among them e.g. Dengue and Chikungunya virus. Some of these viruses and Zika virus belong to the same virus family, i.e. they are closely related. Laboratory investigations indicate that the Asian tiger mosquito is able to transmit Zika virus.

Does the Asian tiger mosquito represent a threat for a spread of Zika virus in Germany?

In South America the Yellow fever mosquito *Aedes aegypti* seems to be the main transmitter of Zika virus. This species is not present in Western and Central Europe. However, there are indications that the Asian tiger mosquito is also able to transmit Zika virus. Although this species lately has been detected in Germany - at least in the summer months -, the risk of an epidemic transmission of Zika virus by this mosquito is considered to be low, as the spatial distribution of the Asian tiger mosquito still is extremely limited and the population density in general is low.

Can endemic biting midges transmit Zika virus in Germany?

Currently, there are insufficient data on the transmission competence of endemic biting midge species with regard to Zika virus.

What do I do if I find a possibly “dangerous” biting midge?

Currently, there is no reason for concern, as biting midges endemic in Germany are not considered to be particularly effective transmitters of viruses, which represent a health risk for humans, and the number of Asian tiger mosquitos in Germany is very limited. Often the endemic biting midge *Culiseta annulata* is mistaken for the Asian tiger mosquito, as it is very large and has tiger-like stripes (the Asian tiger mosquito has stripes, too, but is a very small species). Interested citizens can become active biting midge researches and support the FLI in the Citizen Science Project “Mückenatlas” by sending in midges. Every midge sent in will be examined and the sender will be informed of the result. Further information can be found under www.mueckenatlas.de.

Are mosquito bites a reason for concern, particularly in Southern Germany?

No. So far, the Asian tiger mosquito has only been found in late summer and in small numbers in Southern Germany. To become infected with Zika virus there must be a human source of infection for the biting midge. After sucking blood from this person, the midge would have to be able to replicate the virus, to transmit it and finally, to find another susceptible human. This cannot be excluded, but is highly unlikely.