

Diagnosis

Symptoms of Marburg infection are similar to many other diseases and a laboratory test, under maximum biological containment conditions, is needed to confirm infection. A number of tests can confirm the presence of the virus, such as:

- Enzyme-Linked Immunosorbent Assay (ELISA).
- Antigen detection tests.
- Serum neutralization tests.
- Reverse-Transcriptase Polymerase Chain Reaction (RT-PCR).
- Virus isolation by cell culture.

Treatment

No specific treatment is available for Marburg fever. Severe cases require supportive care and rehydration. Several drug and vaccine candidates are in clinical development.

Viral Hemorrhagic Fevers–Zika Virus

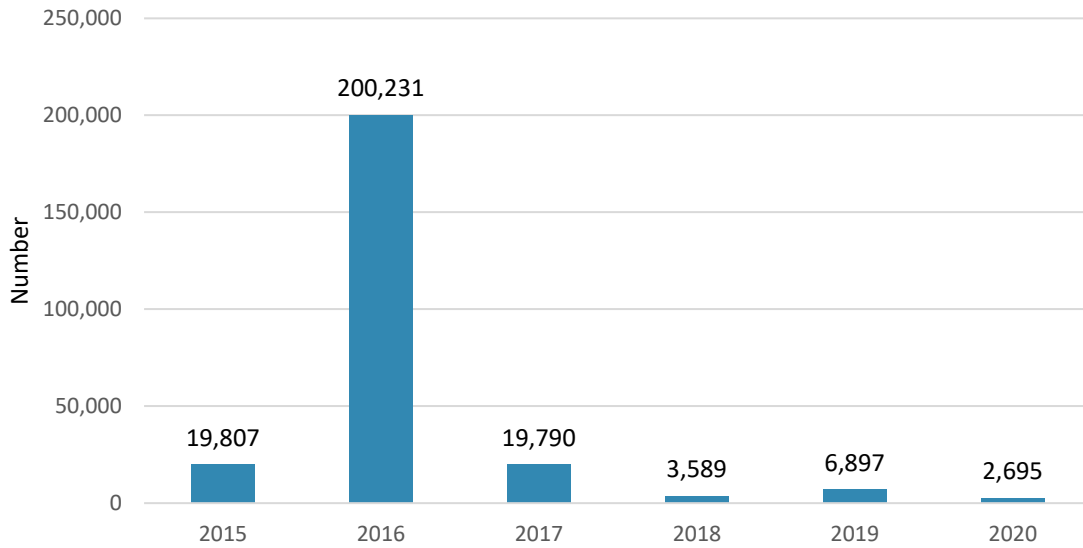
Incidence and Geographical Distribution

Zika is a Flavivirus, transmitted primarily by the Aedes mosquito. Apart from physical manifestations such as a mild fever, rash and muscle pain, the infection in pregnant women causes babies to be born with unusually small heads, a condition known as microcephaly. Zika is also a trigger for Guillain-Barré Syndrome, a neurological disorder that can lead to paralysis or death.

The largest outbreak of Zika was in 2015-2016 and affected a total of 71 countries and territories, mainly in the Americas, with additional cases also reported in Singapore and the Pacific Islands. In 2017, the disease resurfaced in parts of India, with three cases reported in May, 2017. South-East Asia, Thailand and Singapore recorded more than 400 cases of Zika infection, and 19 of the 27 countries in the Western-Pacific region had confirmed cases, making it the worst affected region after the Americas.

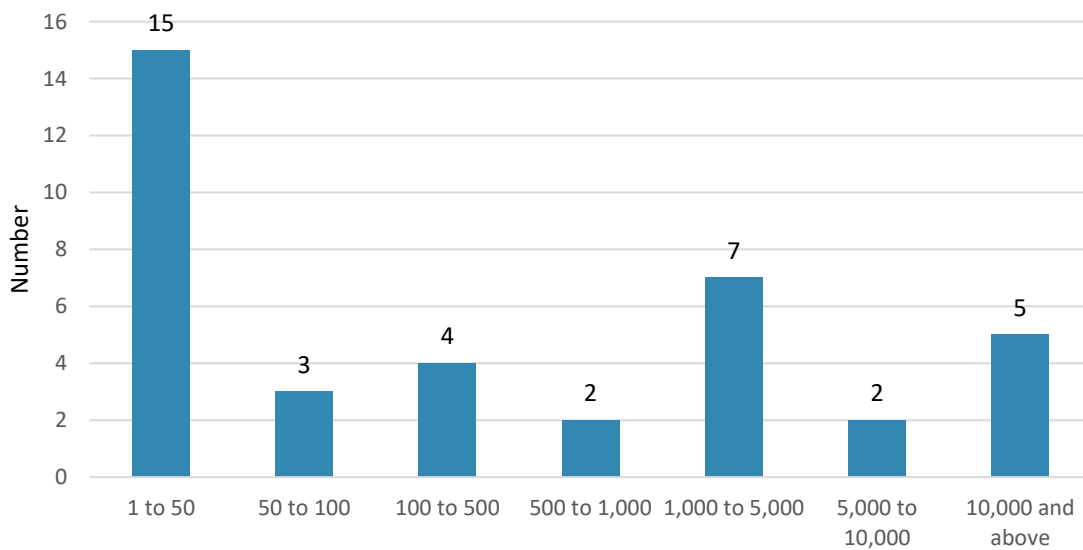
As of 2019, WHO reported that of the countries and territories affected by Zika virus, 49 were from the Americas. Since 2017, the number of cases in the U.S. started to decline and there were no confirmed cases in the U.S. in 2018, 2019 and 2020.

Figure 23
Confirmed Zika Virus Cases in the Americas, 2015-2020
(Number)



Source: BCC Research

Figure 24
Countries (Y) with Number of Confirmed Zika Cases (X) in the Americas,
2015-2016
(Number)



Source: BCC Research

The figure above indicates the number of countries in the Americas region which fall under the various ranges of confirmed Zika cases. The U.S., Puerto Rico, Martinique, Guadeloupe and Brazil reported the greatest number of confirmed cases.

Risk Factors

The Aedes mosquito is the vector transmitting Zika virus from the infected individual to a new host. Sexual transmission is also possible. Transmission from mother to unborn fetus has caused the largest morbidity associated with the disease, and thus pregnant women or women planning to get pregnant in a Zika endemic region are at high risk and should take precautions.

Etiology and Symptoms

Mild symptoms, which are similar to dengue and last for only two to seven days, appear after the incubation period and include fever, skin rash, conjunctivitis, headache, and muscle and joint pain.

Socioeconomic Burden

In February 2016, WHO declared Zika a global public health emergency. This was lifted in November 2016. Although the symptoms of the disease are not severe, it is linked to Guillain-Barré Syndrome, and is known to cause microcephaly and other congenital brain abnormalities in babies born to infected women. Microcephaly leads to an under-developed brain, resulting in developmental delays that frequently impact a baby's ability to perform vital tasks. These complications make Zika a disease with a high socioeconomic burden. The table below gives an estimate of the number of pregnant women affected in the countries with the highest disease burden (the Americas) along with the number of affected newborns.

Table 26
Global Health Burden due to Outbreak of Zika Virus, by Country, 2015-2016
(Number)

Country	Number of Pregnant Women Affected	Congenital Cases/ Microcephaly	Associated Guillain-Barré Syndrome (GBS)	Reported Number of Deaths
Brazil	6,940	9,814	728	6
Guadeloupe	568	0	42	2
Martinique	537	12	28	--
Puerto Rico	2,313	65	67	4
U.S.	953	23	13	1

Source: BCC Research

There have been severe travel advisories and restrictions issued for women who were pregnant or who wished to become pregnant.

Diagnosis

WHO's recommended testing strategy is as follows:

- Nucleic acid testing (to detect presence of virus genetic material) in patients presenting with onset of symptoms of less than seven days. Typical samples include whole blood, serum or patient urine.
- Serology (to detect IgM) and (or) nucleic acid testing if symptoms lasting more than seven days. Preferred samples for this test are whole blood or serum.

Groups that should be prioritized for diagnostic testing, in an outbreak setting, should be symptomatic individuals and asymptomatic pregnant women with possible exposure to Zika virus.

Treatment

Treatment of the disease in non-pregnant individuals is minimal with recommendations for plenty of rest, hydration and pain management with over-the-counter drugs. There is no vaccine currently available, although there are some very early stage candidates in development. Emphasis is also on vector control.

Viral Hemorrhagic Fevers—Yellow Fever

Incidence and Geographical Distribution

Yellow fever is caused by Flavivirus, which is transmitted from one human to other via the bite of infected Aedes and hemogogus mosquitoes. In Africa and Central and South America, 47 countries are endemic or have regions endemic for the disease. This includes 34 countries in Africa and 13 countries in Central and South America.

A recent study on the disease burden of yellow fever published in *eLife* journal, 2021, estimated 109,000 severe cases of yellow fever and 51,000 deaths in in Africa and South America in 2018. Since there is no treatment available, vaccination is the only method to control the infection.