

## The Zika virus — where did it come from and where will it end?

### 1) Let's start at the beginning. Where did Zika come from?

Like so many emerging viruses, Zika came out of Africa. It was first isolated in 1947 from a rhesus monkey in Uganda's Zika forest. But it did not cause significant outbreaks of human disease until 2013-14 in French Polynesia. It probably reached the Americas late in 2014, when an infected traveller was bitten by a local mosquito which then transferred the virus to other people.

### 2) What are the symptoms of Zika infection?

They are usually mild or non-existent. Most characteristic are a rash, itchy skin and red eyes. The trouble comes when pregnant women are infected. Then the virus attacks the brain of the fetus, leading to the birth of a baby with a very small head and neurological problems. Zika only began to arouse serious concern among global health experts in October, when authorities in Brazil linked it to a rapid rise in microcephaly in the country's tropical north-east where Zika cases are concentrated.

### 3) How does Zika spread?

It is a typical mosquito-borne virus, transmitted by *aedes aegypti*, the species that carries several other human diseases including dengue and chikungunya. It is unclear why it has spread with explosive speed in the tropical Americas over the past year. The risk of direct transmission between people is very remote, although the virus has been isolated in semen so sexual transmission cannot be ruled out.

### 4) Does the mosquito transmission mean that some parts of the world are safe from Zika infection?

Yes. *Aedes aegypti* only thrives in tropical and subtropical regions. It cannot survive cold winters, so most of the US and Europe are safe — unless global warming gathers pace or the virus mutates and moves into a mosquito species that lives in temperate climates. Most Europeans and Americans are vulnerable only if they travel to an infected region; a few have already returned home with Zika symptoms.

### 5) Is it safe to travel to the tropical Americas?

The only people who should worry are women who are pregnant or planning to become pregnant. They are advised not to travel to areas with high levels of infection unless really necessary, and then to take steps to avoid mosquito bites, including covering bare skin with clothing or insect repellent and using mosquito nets.

### 6) What about the Olympics in Brazil?

It is too early to predict infection levels in and around Rio in August. The authorities hope they will be very low, both because they are working to eliminate pools of stagnant water where mosquitoes breed and because the weather then will be relatively cool and dry, and therefore less hospitable to mosquitoes.

### 7) What is longer-term outlook for the epidemic?

We do not know because serious research into Zika only began three or four months ago when scientists realised the threat posed by the virus to unborn children. The optimistic view is that people in infected regions will quickly build resistance to the virus and the outbreak will burn itself out. But that might be wishful thinking.

### 8) Any chance of a treatment or vaccine?

At the moment there is no reliable diagnostic test for Zika let alone an antiviral drug or vaccine. But research is gathering pace. [GlaxoSmithKline](#) is evaluating the possibility of using its vaccine technology for Zika, and Inovio, a US biotech company, is working on a candidate.

### 9) How about attacking the mosquitoes that carry the virus?

"Vector control" is possible by avoiding the build-up of stagnant water in populated areas and attacking mosquitoes through pesticides, although this approach cannot completely eliminate the mosquitoes. A more futuristic approach, developed by Oxitec of the UK and undergoing field trials in Brazil and elsewhere, uses genetically modified insects to wipe out the mosquitoes: large numbers of GM males are released to breed with all available females, producing offspring that die young. But this technology will not be available on a large scale in time to have much effect on the current Zika epidemic.

【Jan 25, 2016／Financial Times】 rhesus monkey:アカゲザル vector:媒介生物

### ★Ice breaker for active discussion★

1. What do you know about Zika virus?
2. What preventive measures against Zika virus are taken as of now?
3. One of the futuristic approaches against the virus is the GM technology. What can you say about it?
4. What do you think about holding the Olympics in Brazil this summer in light of the current situation?
5. Can you remember any epidemics that hit Japan?
6. Make sentences using the following words: isolate, fetus, mutate repellent, hospitable to and vector.

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