

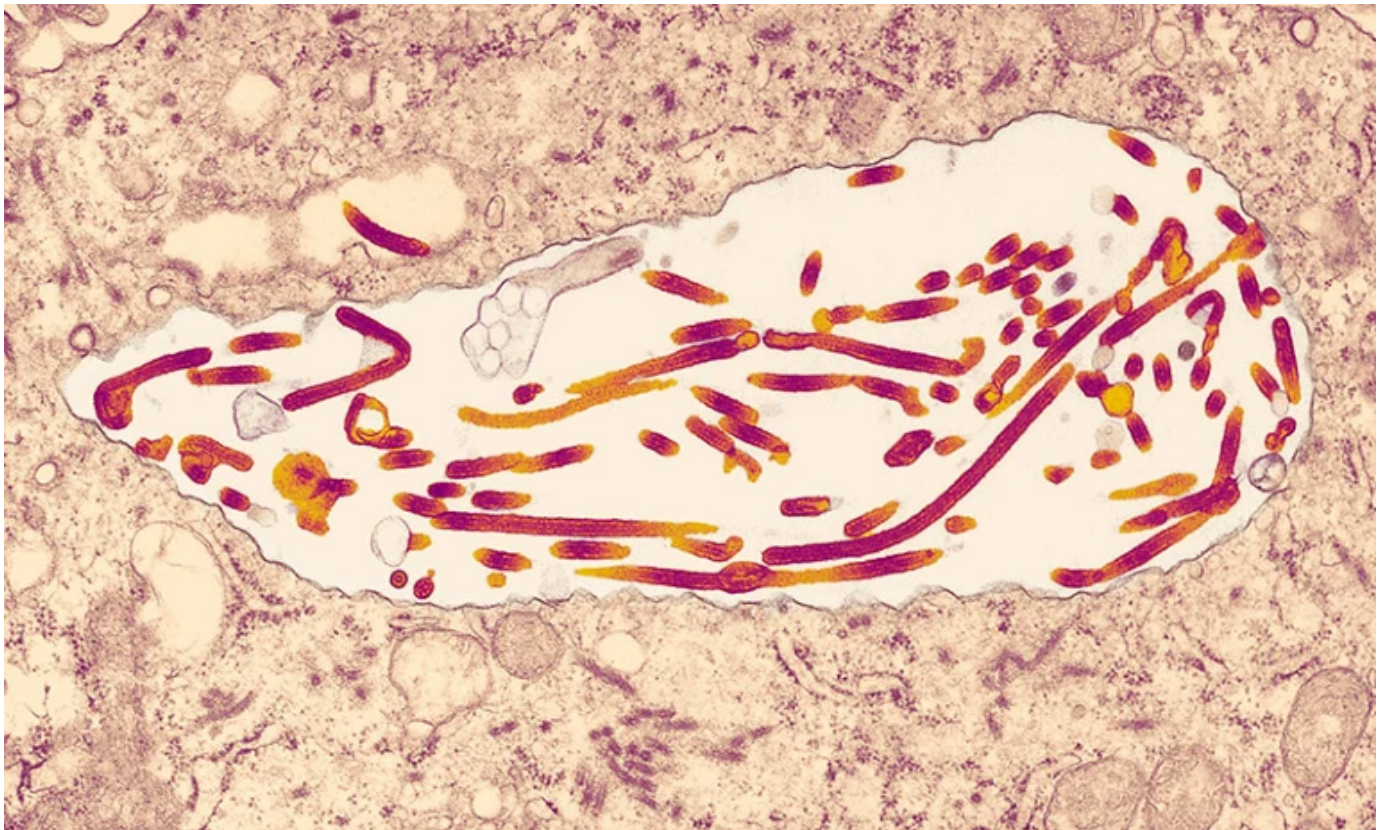
[nature](#) > [news](#) > article

NEWS | 15 February 2023

Marburg virus outbreak: researchers race to test vaccines

Control measures such as quarantine could end the outbreak in Equatorial Guinea quickly – good news for inhabitants but a mixed blessing for clinical trials.

[Ewen Callaway](#)



Marburg virus particles in infected tissue. The virus causes a deadly disease characterized by haemorrhagic fever. Credit: AMI Images/Science Photo Library

Health officials worldwide are sprinting to test whether experimental vaccines can protect against a deadly illness, after Equatorial Guinea confirmed its first outbreak of Marburg virus disease on 13 February. The virus is related to Ebola, and causes similar symptoms of haemorrhagic fever. It has a fatality rate of up to 88%.

The World Health Organization (WHO) in Geneva, Switzerland, convened an urgent meeting yesterday to discuss the feasibility of testing Marburg vaccines that are in various stages of development. But the odds are against a successful trial, they say, because other control measures such as quarantine could end the outbreak before a single vaccine dose can be administered.

“I cannot emphasize enough the need for speed,” said John Edmunds, an epidemiologist at the London School of Hygiene & Tropical Medicine, at the WHO meeting.

RELATED



The radical plan for vaccine equity

The outbreak is in the north of Equatorial Guinea, in the Kié-Ntem province, which borders Cameroon and Gabon. It has been linked to 9 deaths among 25 suspected cases, with the first known case dating to early January. This makes it larger than many of the 16 Marburg outbreaks that have previously been detected, Edmunds tells *Nature*. “Outbreaks have tended to be

small and finish relatively quickly after effective interventions have been put in place.”

The exceptions are a 1998–2000 outbreak in the Democratic Republic of the Congo that was linked to 154 cases and 128 deaths, and a 2004–05 epidemic in Angola that caused 227 deaths among 252 reported cases.

Challenging logistics

At this week’s WHO meeting, officials discussed the practicalities of testing Marburg virus vaccines in Equatorial Guinea. All the leading contenders are viral-vector

vaccines, similar to the COVID-19 vaccine developed by AstraZeneca and the University of Oxford, UK.

The Sabin Vaccine Institute in Washington DC has a candidate vaccine that uses a modified chimpanzee adenovirus to deliver instructions for cells to make a Marburg virus protein, whereas a candidate made by Janssen in Beerse, Belgium, uses the human adenovirus on which the company's successful COVID-19 vaccine was based (Janssen is a subsidiary of Johnson and Johnson).

Candidates from Public Health Vaccines (PHV) in Cambridge, Massachusetts, the International Aids Vaccine Initiative (IAVI) in New York City and Auro Vaccines in Pearl River, New York, are based on weakened forms of vesicular stomatitis virus – the vector that is used in the first approved Ebola vaccine.

RELATED



The slow roll-out of the world's first malaria vaccine

None of the vaccines is available in large quantities, developers said at the meeting: availability ranges from a few hundred doses in the case of the Sabin and PHV vaccines to a few thousand for Janssen's candidate. IAVI has no available doses of its vaccine, which is being co-developed with US pharma giant Merck, based in Rahway, New Jersey. Only the Janssen and Sabin vaccines have been tested in humans, in early-stage

trials in the United States. Monkey studies suggest that all the leading candidates offer strong protection against Marburg virus disease.

If a vaccine trial in Equatorial Guinea were to go ahead, an independent group of experts that advises the WHO would make decisions about which vaccines to test, says Ana Maria Henao-Restrepo, who co-leads the WHO's R&D Blueprint effort to lay the groundwork for such studies during outbreaks. Any trial would also require the permission and involvement of Equatorial Guinea's government.

Even if a trial can get off the ground, it's unlikely that enough cases will develop before the current outbreak comes under control for researchers to determine

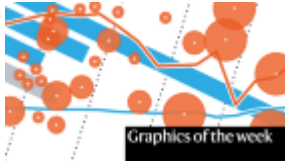
conclusively whether any vaccine is effective or not, Edmunds says. “It’s a double-edged sword, isn’t it? It’s good news for public health and the people of Equatorial Guinea, but perhaps bad news for science.”

But evidence pointing to the effectiveness of any vaccine could be gathered across multiple outbreaks, researchers at the meeting said. A vaccine trial in Equatorial Guinea could also provide valuable data on the safety of vaccines and the immune response they generate in populations at risk of future outbreaks.

doi: <https://doi.org/10.1038/d41586-023-00468-5>

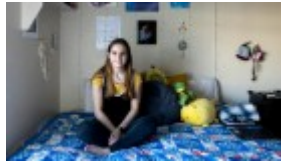
Latest on:

[Diseases](#) Vaccines



Puzzling planetary rings, and more – this week’s best science graphics

NEWS | 15 FEB 23



How a pioneering diabetes drug offers hope for preventing autoimmune disorders

NEWS FEATURE | 15 FEB 23



How social media affects teen mental health: a missing link

COMMENT | 14 FEB 23

Nature (*Nature*) | ISSN 1476-4687 (online) | ISSN 0028-0836 (print)