

How Scary Is This Ebola Outbreak? An expert on epidemics answers your questions

Howard
Markel

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Editor's Note: The World Health Organization has declared the ebola outbreak an "[international health emergency](#)." More than 1,000 people have died from it already. Public health officials say it's the worst ebola epidemic they've ever seen. What exactly is ebola? What makes this outbreak different? What can we be doing to help the world fight this disease? To answer those questions, we asked [Howard Markel](#), a physician and medical historian at the University of Michigan, who is an expert on epidemics and the author of [When Germs Travel](#).

What makes this particular epidemic so threatening and frightening?

To begin, [Ebola](#) is one of the most deadly viruses known in the world today. It is extremely infectious and can kill up to 90% of those who contract it. There are five strains of the virus with the Zaire strain being the most deadly. Preliminary (and unconfirmed) reports of the outbreak in Guinea this past March suggest that it was the Zaire strain that was prevalent there.

There is no vaccine against Ebola and while a new drug called [ZMapp](#) appears to have helped save the lives of two American missionary treated with it, data is still sketchy and primarily based on animal models. Moreover, there are very limited supplies of this drug even if it is scientifically proven to be effective. The treatment, then, includes making sure the patient is well-hydrated, which may require intravenous fluids, and is breathing well on his own or supplying oxygen therapy (which may require ventilation and intubation of the patient). In the event of organ failure, specific supportive measures are added as well.

The problem is that while these medical treatments are readily available in resource-rich places like U.S. hospitals, they can be quite scarce in the African locales where they are currently needed most.

What are the symptoms of Ebola Virus?

Early [symptoms](#) are non-specific and include sudden onset of fever, muscle aches, headaches, and sore throat. These symptoms appear 2 to 21 days after being infected with the virus and can be easily confused with the early stages of other illnesses such as malaria, meningitis, and bubonic plague. Some patients develop rashes, hiccups, reddened eyes, serious chest pain, shortness of breath and difficulty swallowing. As the patient gets more ill, he or she develops severe vomiting, diarrhea, kidney and liver problems, and serious internal and external bleeding. These last (and most serious) symptoms cause a deadly syndrome called viral hemorrhagic fever. Ebola is one of several viruses that can cause viral hemorrhagic fever and it wreaks havoc on many organ systems in the human body.

How is Ebola transmitted?

According to the World Health Organization, the [fruit bat](#) appears to be the natural host of the Ebola virus in Africa. These bats pass the virus onto other animals. Typically, humans come into the picture when they have contact with the bodily fluids of infected animals or infected human beings. The latter commonly occurs when a person is taking care of a person who is ill with Ebola, but does not realize that person has Ebola. The patient in question is usually vomiting, experiencing diarrhea, or bleeding. The caregiver—whether a relative or a health care worker—comes in close contact with the ill person's infectious bodily fluids.

To make matters worse, there are many places (including hospitals) in Africa where access to running water is limited. This scenario prevents the caregiver from thoroughly washing his or her hands—and other parts of the body—that

may have come in contact with the infectious bodily fluids of the ill person. Other times, health workers might become infected by accidentally puncturing their skin with a contaminated needle that was used on an Ebola patient. Moreover, close physical contact with the body and bodily fluids of a person who died of Ebola can be a risk.

Can you catch it on an airplane?

It is highly unlikely that healthy airline passengers are at risk. To begin, if a patient is actively ill with Ebola, he or she is not likely to be well enough to get to the airport and then board a plane. In the remote chance that this does occur, passengers can take heart in the fact that the Ebola is not an airborne virus and transmission occurs from direct close contact with the ill person's bodily fluids, (e.g., blood vomit, stools, etc.).

What are the public health authorities doing to prevent the spread of Ebola to the United States?

The WHO is advising that anyone concerned about contracting Ebola should avoid traveling to areas where Ebola is active and should avoid close contact with Ebola patients. The U.S. Centers for Disease Control and Prevention has issued specific guidance policies for airport staffs, airline pilots and air crews on how to avoid spread of the disease, including recognizing the symptoms and having clear response protocols of what to do and who to call when encountering any passenger with Ebola-like symptoms. These protocols include keeping that passenger away from others, wearing surgical rubber gloves, and making sure the passenger in question wears a surgical mask. Cleaning staff are also instructed to wear rubber gloves and wipe down all airplane surfaces (such as armrests, trays, seats, light switches, bathrooms, etc.) with a chlorine containing solution. Cargo from the Ebola-stricken areas should not be a risk unless the item or packaging has been soiled with infected blood or bodily fluids.

What can and should the U.S.—publicly and privately—be doing to help other countries to fight this outbreak?

In the short term, wealthy nations like the United States, in concert with the WHO and non-governmental organizations such as [Doctors Without Borders](#), should continue to donate medical supplies and personnel to help treat those who are ill as well as those who are suspected of having contact with the ill. All health care workers who travel to Africa also need to become familiar with cultural practices, such as burial rites and family structures, in the affected West African villages, towns and cities so as to provide culturally sensitive, compassionate, and successful health care. All of us can donate money to help these individuals and organizations do their important work.

What should we be doing for the future? This isn't going to be the last such outbreak.

In the long term, we all need to work to correct the harsh injustice of a continent where health care is inaccessible for too many; where fresh, running water is scarce; and where electrification and modern roadways are problematic. These infrastructure problems make epidemics worse, then undermine efforts to fight them, as we are seeing at present. The problem with Africa's health is not just Ebola. It's [the lack of adequate health care—not enough hospitals doctors, nurses, and medical supplies](#).

Epidemics get our attention. But, once they've subsided or been contained, society usually gets a case of collective amnesia. We saw it with SARS, MEERS, and influenza—once the crisis faded from the news, it was back to the same practices and conditions that gave rise to that epidemic in the first place. This is the saddest lesson for any student of the history of epidemics and the most serious threat for all of us living in a world of newly emerging and re-emerging infectious diseases.

Howard Markel is a pediatrician, a consultant to the U.S. Centers for Disease Control, and the George E. Wanz Distinguished Professor of the History of Medicine at the University of Michigan. He is the author of several books, including When Germs Travel.

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