

Is there a vaccine for Ebola?

What is Ebola?

Ebola virus disease, also known as Ebola, is a severe and often fatal illness whose fatality rate *can reach 90 percent*. The illness affects humans and nonhuman primates (monkeys, gorillas, and chimpanzees). Ebola first appeared in 1976 in the Democratic Republic of Congo and Sudan. It is transmitted to people from wild animals and spreads in the human population through *human-to-human transmission of body fluids* (blood, sweat, saliva, feces, urine, etc.). There is a period of two to twenty-one days between the moment of infection and the moment when symptoms are seen. There is currently an Ebola epidemic in West Africa.

- Symptoms:** Fever, weakness, muscle pain, headache and sore throat followed by vomiting, diarrhea, and bleeding
- Prevention:** Do not touch an Ebola patient's body or corpse without protective gear; wash hands regularly; avoid physical contact; do not eat bush meat
- Treatment:** Provide supportive care, particularly rehydration therapy; immediately alert health authorities to any potential infection

Is there an Ebola vaccine currently available?

No. Currently, *there is no vaccine against Ebola*. Scientists do have some experimental vaccines but these are still in the testing stage. Because it is not yet known whether the experimental vaccines are safe and effective, they cannot be used by the general public.

What is being done to develop a vaccine?

Many people are trying to develop a vaccine – and develop it as quickly as possible.

The National Institutes of Health (NIH) in the United States, GlaxoSmithKline, the United States Department of Defense, the Public Health Agency of Canada, and Thomas Jefferson University are all supporting *fast-track vaccine research*. A vaccine developed by the NIH was recently tested in animals and found to protect chimpanzees from Ebola infection. It was given in combination with a Depovax “primer” that has been used with other vaccines and cancer therapies to boost the body's immune response prior to administering a vaccine.

How would a vaccine work?

Two of the vaccines being developed now are based on an *adenovirus* -- a type of cold virus -- that's found in chimpanzees. The viruses deliver genetic material derived from two species of Ebola virus, including the Zaire strain responsible for the current outbreak. Those genes trigger the development of antibodies that can specifically defend against Ebola. Another vaccine is being modeled on the existing *rabies* vaccine. None of the proposed vaccines contains infectious material and therefore should not trigger an Ebola infection.

When will there be human trials?

In the United States and the United Kingdom, scientists *have already begun phase 1 clinical trials* of an experimental Ebola vaccine. This means that they are administering a small amount of the vaccine to volunteers. They will monitor the volunteers to see if (1) their immune system responds to the vaccine; and (2) they have side effects. This vaccine was co-developed by the National Institute of Allergy and Infectious Diseases (within the NIH) and GlaxoSmithKline.

In the first stage, a small group of healthy volunteers will receive the vaccine as an injection. If they have no side effects, then they will receive a higher dose. If that goes well, then a larger group of volunteers will receive the dose. All participants in the trial will be evaluated nine times over a 48-week period. *It is expected that healthy volunteers in Gambia and Mali will soon join the trial.*

In addition, the United States will soon begin a second phase 1 clinical trial on another experimental vaccine, this one developed by the Public Health Agency of Canada. In September, the Canadian government *shipped up to 1,000 doses* of that vaccine to Liberia at that government's request.

What are the next steps?

The results of the human trials are expected in *December 2014*. In the meantime, funding from an international consortium formed to fight Ebola will enable GlaxoSmithKline to begin *manufacturing up to 10,000 additional doses* of the vaccine. If results are positive, the World Health Organization may decide to allow emergency immunizations in high-risk communities. Once the vaccine is approved, there will likely be a bigger trial in which the vaccine will be given to health care workers or lab workers who are fighting the spread of the virus.

If the vaccine is approved for public use, then it will be administered to people in the communities where outbreaks occur. The greatest challenge then will be rolling out the vaccine in countries with *weak health systems*.

Total eradication of Ebola is, however, quite unlikely as it is endemic amongst several forest animals in West and Central Africa.

For more information

- ❑ [Ebola Information Site \(WHO\)](#)
- ❑ [Frequently Asked Questions about Ebola \(WHO\)](#)
- ❑ [Ebola Information Site \(CDC\)](#)
- ❑ [Questions and answers on experimental treatments and vaccines for Ebola \(CDC\)](#)
- ❑ [Ebola vaccine \(MedTV\)](#)