

# **EBOLA VIRUS DISEASE FACT SHEET**

## **Overview**

Ebola, previously known as Ebola hemorrhagic fever, is a rare and deadly disease caused by infection with one of the Ebola virus species. Ebola can cause disease in humans and nonhuman primates (monkeys, gorillas and chimpanzees).

Ebola is caused by infection with a virus of the family *Filoviridae*, genus *Ebolavirus*. There are five identified Ebola virus species, four of which are known to cause disease in humans: Ebola virus (*Zaire ebolavirus*); Sudan virus (*Sudan ebolavirus*); Taï Forest virus (*Taï Forest ebolavirus*, formerly *Côte d'Ivoire ebolavirus*); and Bundibugyo virus (*Bundibugyo ebolavirus*). The fifth, Reston virus (*Reston ebolavirus*), has caused disease in nonhuman primates, but not in humans.

The natural reservoir host of Ebola virus remains unknown. However, on the basis of evidence and the nature of similar viruses, researchers believe that the virus is animal-borne and that bats are the most likely reservoir. Four of the five virus strains occur in an animal host native to Africa.

## **Signs and Symptoms**

Symptoms of Ebola include:

- Fever;
- Severe headache;
- Muscle pain;
- Weakness;
- Fatigue;
- Diarrhea;
- Vomiting;
- Abdominal (stomach) pain; and
- Unexplained hemorrhage (bleeding or bruising).

Symptoms may appear anywhere from two to 21 days after exposure to Ebola, but the average is eight to 10 days.

Recovery from Ebola depends on good supportive clinical care and the patient's immune response. People who recover from Ebola infection develop antibodies that last for at least 10 years.

## **Causes and Transmission**

Because the natural reservoir host of Ebola viruses has not yet been identified, the

way in which the virus first appears in a human at the start of an outbreak is unknown. However, scientists believe that the first patient becomes infected through contact with an infected animal, such as a fruit bat or primate (apes and monkeys), which is called a spillover event. Person-to-person transmission follows and can lead to large numbers of affected people. In some past Ebola outbreaks, primates were also affected by Ebola and multiple spillover events occurred when people touched or ate infected primates.

When an infection occurs in humans, the virus can be spread to others through direct contact (through broken skin or mucous membranes in, for example, the eyes, nose or mouth) with:

- Blood or body fluids (including but not limited to urine, saliva, sweat, feces, vomit, breast milk and semen) of a person who is sick with or has died from Ebola;
- Objects (like needles and syringes) that have been contaminated with body fluids from a person who is sick with Ebola or the body of a person who has died from Ebola;
- Infected fruit bats or primates (apes and monkeys); and
- Semen from a man who has recovered from Ebola (for example, by having oral, vaginal or anal sex).

A person who has recovered from Ebola illness can no longer transmit the disease, except through semen. The virus may persist in semen for several months; it is not yet known how long the virus remains in semen.

Ebola is not spread through the air, by water, or in general, by food. However, in Africa, Ebola may be spread as a result of handling bushmeat (wild animals hunted for food) and contact with infected bats. There is no evidence that mosquitoes or other insects can transmit Ebola virus. Only a few species of mammals (in particular, humans, monkeys, apes and fruit bats) have shown the ability to spread Ebola virus after becoming infected with it.

Health care providers caring for Ebola patients and family and friends in close contact with Ebola patients are at the highest risk of getting sick, because they may come in contact with infected blood or body fluids. During outbreaks of Ebola, the disease has the potential to spread within health care settings (such as a clinic or hospital) unless careful infection control is practiced. Exposure to Ebola can occur in health care settings where clinical staff are not wearing appropriate personal protective equipment. Laboratory workers are also at risk.

Dedicated medical equipment (preferably disposable, when possible) should be used by health care personnel providing patient care. Proper cleaning and disposal of instruments, such as needles and syringes, also are important. If instruments are not disposable, they must be sterilized before being used again. Without adequate sterilization of instruments, virus transmission can continue and amplify an outbreak.

Ebola virus has been found in the semen of some men who have recovered from Ebola. It is possible that Ebola could be spread through sex or other contact with semen. It is not known how long Ebola might be found in the semen of male Ebola survivors. The time it takes for Ebola to leave the semen is different for each man. Based on the results from limited studies conducted to date, it appears that the amount of virus decreases over time and eventually leaves the semen, but it may take months. It is not known if Ebola can be spread through sex or other contact with vaginal fluids from a woman who has had Ebola.

### **Risk Factors**

Health care providers caring for Ebola patients and family and friends in close contact with Ebola patients are at the highest risk of getting sick because they may come in contact with infected blood or body fluids. Ebola also can be spread through direct contact with objects (like clothes, bedding, needles, syringes/sharps or medical equipment) that have been contaminated with infected body fluids. Sexual transmission can occur, as described above. Additionally, people can become sick with Ebola after coming in contact with infected wildlife. For example, in Africa, Ebola may spread as a result of handling bushmeat (wild animals hunted for food) and contact with infected bats.

### **Complications**

Approximately 50 percent of Ebola patients die from the disease, either due to severe dehydration from vomiting and diarrhea or as a result of multiple organ failures.

Survivors of Ebola commonly experience neurologic, eye and musculoskeletal problems. Other long term symptoms include headaches, joint pain and hearing problems.

The virus may persist in immune-protected areas such as the eyes and testes long after it has cleared from a patient's bloodstream.

### **Tests and Diagnosis**

Diagnosing Ebola in a person who has been infected for only a few days is difficult because the early symptoms, such as fever, are nonspecific to Ebola infection and often are seen in patients with more common diseases, such as malaria and typhoid fever.

However, a person should be isolated and public health authorities notified if he/she has the early symptoms of Ebola and has had contact with:

- Blood or body fluids from a person sick with or who has died from Ebola;
- Objects that have been contaminated with the blood or body fluids of a person sick with or who has died from Ebola;
- Potentially infected animals such as African fruit bats, apes and monkeys; and
- Semen from a man who has recovered from Ebola.

Samples from the patient can then be collected and tested to confirm infection.

Ebola virus is detected in blood only after onset of symptoms, most notably fever, which accompany the rise in circulating virus within the patient's body. It may take up to three days after symptoms start for the virus to reach detectable levels. There are laboratory tests that can be used to diagnose Ebola within a few days after symptoms begin, later in the disease course, after recovery from illness or after a patient dies.

### **Treatments**

No FDA-approved vaccine or medicine (e.g., antiviral drug) is available for Ebola.

Symptoms of Ebola and complications are treated as they appear. The following basic interventions, when used early, can significantly improve the chances of survival:

- Providing intravenous fluids (IV) and balancing electrolytes (body salts);
- Maintaining oxygen status and blood pressure; and
- Treating other infections if they occur.

Experimental vaccines and treatments for Ebola are under development, but they have not yet been fully tested for safety or effectiveness.

Recovery from Ebola depends on good supportive care and the patient's immune response. People who recover from Ebola infection develop antibodies that last for at least 10 years, possibly longer. It is not known if people who recover are immune for life or if they can become infected with a different species of Ebola.

### **Prevention**

There is no FDA-approved vaccine available for Ebola.

If you travel to or are in an area affected by an Ebola outbreak, make sure to do the following:

- Practice careful hygiene. For example, wash your hands with soap and water or an alcohol-based hand sanitizer and avoid contact with blood and body fluids (such as urine, feces, saliva, sweat, urine, vomit, breast milk, semen and vaginal fluids).
- Do not handle items that may have come in contact with an infected person's blood or body fluids (such as clothes, bedding, needles and medical equipment).
- Avoid funeral or burial rituals that require handling the body of someone who has died from Ebola.
- Avoid contact with potentially infected animals such as African fruit bats, monkeys and apes, or blood, fluids and raw meat from these animals. Avoid

health care facilities where Ebola patients are being treated. The U.S. embassy or consulate is often able to provide advice on facilities.

- Avoid contact with semen from a man who has had Ebola until you know Ebola is gone from his semen.
- After you return, monitor your health for 21 days and seek medical care immediately if you develop symptoms of Ebola.

Health care workers who may be exposed to people with Ebola should follow these steps:

- Wear appropriate personal protective equipment (PPE).
- Practice proper infection control and sterilization measures.
- Isolate patients with Ebola from other patients.
- Avoid direct, unprotected contact with the bodies of people who have died from Ebola.

Notify health officials if you have had direct contact with the blood or body fluids, including, but not limited to, feces, saliva, urine, vomit and semen of a person who is sick with Ebola. The virus can enter the body through broken skin or unprotected mucous membranes in, for example, the eyes, nose or mouth.

### **Disease Patterns**

Ebola viruses are found in several African countries. Ebola was first discovered in 1976 near the Ebola River in what is now the Democratic Republic of the Congo. Since then, outbreaks of Ebola among humans have appeared sporadically in Africa.

The 2014 West Africa outbreak is the largest Ebola outbreak in history and the first Ebola outbreak in West Africa. It is the first Ebola epidemic the world has ever known. See the Centers for Disease Control and Prevention's page on the 2014 Ebola Outbreak in West Africa for more information.

### **Additional Information**

Centers for Disease Control and Prevention: <http://www.cdc.gov/vhf/ebola/>

World Health Organization: <http://www.who.int/mediacentre/factsheets/fs103/en/>

*This fact sheet provides general information. Please contact your physician for specific clinical information.*

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