

Ebola hemorrhagic fever is a 20 year old virus that, with a mortality rate of 50% to 90%, is one of the world's deadliest viruses. Its causative organism is called Ebola virus. Ebola virus is a member of filoviridae, a family of negative-strained RNA viruses. The filoviridae family consists of five known members, Marburg, Ebola Zaire, Ebola Sudan, Ebola Reston, and Ebola Tai.

Ebola virus is spread in a number of ways. An outbreak starts when an infected animal or insect, called a vector, transmits the virus to a human. Scientists know that monkeys are both a vector and victim of Ebola, but other vectors are unknown. The natural reservoir for the virus, or organism that is immune to it and carries it is also unknown. A search for the reservoir will take a long time because there are so many possibilities, since Africa is in the tropics. Another way that humans can get Ebola is by eating an infected animal or drinking the milk of an infected animal.

Ebola is spread from human to human by contact with infected blood, infected body fluids, or through sexual contact. Even after a person recovers completely from Ebola, it may stay in the semen for up to seven weeks. In the African outbreaks it has also been transmitted by the reuse of needles because the health care systems are so under financed. Ebola wasn't thought to be an airborne virus, but recent studies by the US Army Medical Research Institute of Infectious Diseases and the CDC found that monkeys showed Ebola like symptoms after being exposed to aerosolized Ebola. The studies also found that the virus is many times present in the respiratory systems of Ebola victims. Although the 1989 outbreak in Reston, Virginia wasn't harmful to humans, it was found that droplet and vomit transmission played a major role in spreading the disease through the quarantine facility.

The onset of the Ebola virus is very quick. The incubation period ranges anywhere from two days to twenty-one days. After signs of the virus appear, the victim can die within days, or at the most, a week. There are a few stages after being infected with the virus. The symptoms of the first stage include headaches, fever, muscle pain, fatigue, chills, and loss of appetite. The second stage consists of vomiting, diarrhea, abdominal pain, sore throat, and chest pain. The last stages are very ugly. They consist of severe clotting and hemorrhaging. The clots form throughout the body and shut off blood to many organs, especially the brain, liver, and spleen. These organs that don't receive blood begin to decay. Blood leaks into tissues, fills internal cavities, and stops clotting. Blood leaks through the skin and all other openings. The skin becomes very easily ripped and the victim can bleed profusely just by being touched. Then the body's connective tissues lose their stretchiness and become very spongy. Hemorrhages and blood clots in the brain cause the person's face to become expressionless and frozen. The Ebola virus spreads to all fluids in the body and the victim eventually dies from blood loss and shock. When the victim dies all that is left is a decayed body filled with virus particles.

Ebola virus is diagnosed in only one way. It is diagnosed in specialized laboratory tests on blood specimens. These tests look for Ebola antigens, antibodies, or the isolated virus in the specimens. Since the virus is so deadly, these diagnostic tests are an extreme biohazard and are performed only with extreme caution.

The Ebola virus is the world's third deadliest infectious disease, behind HIV, and rabies, which has a vaccine. The only treatment that can be given to Ebola victims is support. They are usually very dehydrated and need management of fluid and electrolyte balance. Victims may sometimes require IV feeds to replace liquids. Before shock occurs it may be helpful to replace plasma albumin. There is currently no cure or vaccine for the Ebola virus., although it is recorded that someone in the United Kingdom was infected with Ebola Zaire and was injected with the plasma of a recovered Ebola Zaire victim and recovered fully. The opposite was also shown when recovered Ebola Reston monkeys were infected with Ebola Zaire and died faster than monkeys infected with just the Ebola Zaire strain. Therefore, it is thought that plasma injections only work on common strain victims.

The first occurrence of the Ebola virus was discovered in July of 1976 near the Ebola River in Northern Zaire after a worker in a cotton factory in Nzara, Sudan became very ill. Later that year a similar virus spread through more than 50 villages along the river in Zaire. This outbreak caused about 500 deaths. Scientists from the CDC in Atlanta named the new virus Ebola, subtype Zaire. The virus that caused the outbreak in Sudan was later called Ebola Sudan. In 1976 a child in Tandala, Zaire died of a hemorrhagic fever. In 1976 another outbreak occurred in Sudan and the first case was pinpointed to the same room in the cotton factory that the victim in 1976 had worked in.

In 1989 another strain of Ebola was found in Reston, Virginia. This strain was named Ebola Reston. This outbreak was traced to monkeys that had been imported from the Philippines. The monkeys infected four humans, but this strain of Ebola was found only to give humans flu-like symptoms.

From January through August of 1995 there was a major outbreak in and around Kikwit, Zaire. In this outbreak there was a mortality rate of 77%, with 315 cases and 244 deaths. In May of 1995 the city was put under quarantine and troops monitored it. On July 14, 1995 the last reported victim of Ebola was discharged from the hospital. Health officials waited twice the maximum incubation period and on August 24, 1995, 42 days after the last reported victim recovered, the outbreak was declared over and the quarantine was lifted.

On December 19, 1995 a small Ebola scare in the Cote d'Ivoire/Liberia border region was declared over. In this small outbreak only one person was infected, but he survived. Mr. Jasper Chea was infected with the virus while dissecting a dead monkey. He recovered in a local hospital. This new strain of Ebola was called Ebola Tai.

The most recent Ebola outbreak was officially declared over after two incubation periods without any other new cases on April 23, 1996. This outbreak of the disease occurred in Gabon, Africa. This outbreak resulted in 21 deaths out of 37 cases, a 57% fatality rate.

An interesting side-note to the history of Ebola is that from 430-425 BC a deadly plague killed 300,000 in Athens. Scientists from the CDC suggest that this ancient plague was actually Ebola. Scientists found many similarities between this plague and the recent Sudan and Zaire outbreaks. They also found paintings on Greek islands near Athens that have pictures of green monkeys. This theory is questioned by Kevin DeCock, of the London School of Hygiene and Tropical Medicine because he says that "one of the main symptoms of Ebola is copious quantities of blood, which does not feature in Thucydide's (ancient Athenian who recorded the plague) account."

Since Ebola is still an active virus and there is no cure or vaccine there is a lot of research being done. Most of the research focuses around pinpointing the reservoir organism. Two major institutions are taking up this research, the WHO and the CDC. The CDC is starting this research by collecting animals and insects to experiment with. The WHO is looking for the reservoir in Cote d'Ivoire. In Cote d'Ivoire the chimpanzees get infected with Ebola every other Autumn, but there has never been enough money to research this. The WHO is doing this research and raising money to do other research on Ebola. There is also research for a possible cure or vaccine.

