

A Case of Ebola Virus

[Announcer] This program is presented by the Centers for Disease Control and Prevention.

[Mike Miller] Hi, I'm Dr. Mike Miller and today I'm speaking with Dr. Adam MacNeil, an epidemiologist at CDC. Our conversation is based on his case study of an Ebola virus outbreak in Uganda, which appears in CDC's journal, *Emerging Infectious Diseases*. Welcome, Dr. MacNeil.

[Adam MacNeil] Thank you.

[Mike Miller] Dr. MacNeil, Ebola is probably the most terrifying disease that people know about. What does it actually do and is it always fatal?

[Adam MacNeil] First of all, I need to clarify. While it's commonly called Ebola, the disease is actually Ebola hemorrhagic fever, or EHF, and is a disease caused by a group of viruses known as Ebola viruses. The name Ebola is actually the name of a river found in the Democratic Republic of Congo near where some of the first cases were identified. In humans, the virus attacks many parts of the body and causes a severe illness with fever, diarrhea, vomiting, and in some instances, bleeding. Infections, however, are not always fatal. In previous outbreaks, between 40 and 90 percent of known infections have resulted in death.

[Mike Miller] Now, Ebola virus is mostly found in Africa, right? Is it in other parts of the world too?

[Adam MacNeil] All known cases of Ebola hemorrhagic fever in humans have occurred in Africa. There are some types of Ebola virus and closely related viruses found in other parts of the world. And while these cause diseases in some other primates, such as monkeys, none of these viruses have been shown to cause disease in humans.

[Mike Miller] Well look, why don't you tell us about your case review? What happened here?

[Adam MacNeil] This is a single case of Ebola hemorrhagic fever, which occurred in a school-age child in Uganda in May of 2011. Sadly, the child died after developing symptoms in her home village and then rapidly progressing to a disease. However, no additional cases of Ebola hemorrhagic fever occurred and the disease was diagnosed by a laboratory within Uganda. Interestingly, this is one of the few instances in which we've identified a single case of Ebola hemorrhagic fever in an outbreak. This was the first known occurrence of Ebola hemorrhagic fever in Uganda since 2007 and the first time the disease was ever diagnosed at a laboratory within the country.

[Mike Miller] Bats seem to be related to the case of Ebola in your article. What is their role? Is it common for bats to start outbreaks of diseases?

[Adam MacNeil] Well, Ebola virus is a zoonotic virus, meaning that it lives in nature in animals other than humans. The virus is only found in humans during outbreaks. However, we do not know for sure what animal carries Ebola virus, but most evidence currently points to bats.

In the instance of this case, when we investigated the village in which the child had lived, we discovered an abandoned building close to her house with numerous fruit bats living in it. We also discovered bats roosting within the child's school. We were, however, unable to definitively show that she acquired the virus from these bats.

[Mike Miller] Can people give EHF to each other?

[Adam MacNeil] It is possible for Ebola viruses to be transmitted from one person to another person. In a person with EHF, the virus is found in bodily fluids and may be on the skin, and the virus can be acquired through direct contact with the patient or their bodily fluids. Therefore, additional infections commonly occur in family members and medical staff who care for patients with EHF, and additionally can occur in people who have contact with the body of a deceased patient during funeral arrangements or processions.

[Mike Miller] Are there any treatments for EHF, once a person has it?

[Adam MacNeil] There is no specific treatment for Ebola virus. The goal of medical care is to provide as much supportive treatment as possible, so a person's body has a chance to overcome the infection.

[Mike Miller] Well now what about, what about vaccines? Is there a vaccine for this disease?

[Adam MacNeil] Currently there are no licensed vaccines for EHF. However a number of researchers are working on vaccines and there are a number of promising candidates that are being developed.

[Mike Miller] Often, in epidemics, disease spreads before the cause is identified. Are there tests that detect Ebola quickly?

[Adam MacNeil] There are effective tests for Ebola virus, which can be performed in less than a day. However, only a small number of laboratories in Africa are capable of performing these tests. This is challenging because outbreaks often start in remote locations and it can take a long time for samples to reach a laboratory which can perform these tests. When an outbreak is identified, CDC does have a mobile laboratory and often when an outbreak is occurring, they will transport the mobile laboratory to the location of the outbreak to allow for rapid testing.

[Mike Miller] How did quick response help in the case you reviewed?

[Adam MacNeil] In this instance, an astute doctor in Uganda immediately thought of Ebola hemorrhagic fever when he saw the patient. This doctor was aware of how Ebola virus could be transmitted and took actions to ensure the safety of medical staff and family members.

[Mike Miller] Are there any lessons learned from this case? Should there be more surveillance and collaboration among international health organizations?

[Adam MacNeil] I believe this instance demonstrated the importance of having good surveillance, that is, having local staff that is capable of identifying suspect cases and reporting through the public health system, as well as having good local laboratory capacity. In this instance, because of rapid reporting and availability of laboratory testing in Uganda, EHF was detected in an efficient manner and resulted in a rapid response, both from the Uganda Ministry of Health, as well as CDC and other partner agencies.

[Mike Miller] You know, because this is such a fatal illness, should people in areas that have little or no EHF worry about getting it?

[Adam MacNeil] First, I should point out that Ebola hemorrhagic fever is an exceptionally rare disease. The virus lives in animals and except for known cases of human outbreaks, it is not found within humans. To date, there have been no known cases of human EHF in the United States. However, of course, if you have a serious illness, you should always seek medical attention.

[Mike Miller] But what about people who live in Africa? Are there special precautions *they* should be taking?

[Adam MacNeil] Again, I would stress that the overall risk for Ebola virus infection is very low. Since we believe that Ebola virus is carried by bats, it would be recommended to avoid areas with heavy populations of bats, such as caves or mines. Additionally, Ebola virus has, in the past, been transmitted to humans from dead animals collected as bush meat, so we'd recommend avoiding bush meat, particularly dead animals found in the forest. Finally, medical staff should be aware of the rare possibility of encountering someone who appears to have EHF. Contact precautions, such as gloves and gowns, can minimize the risk of exposure to the virus and medical personnel should report any suspect cases of EHF to public health authorities within the government.

[Mike Miller] Are there plans to train doctors to become more aware of this disease? It seems that the doctor working on this case in Uganda possibly averted a major outbreak by being aware of the possibility of EHF.

[Adam MacNeil] We were fortunate that, in this instance, the doctor involved in identifying the case had experience from a previous EHF outbreak in Uganda. The CDC does, however, have a special project in Uganda, working on improving the capacity to identify, diagnose, and prevent viral hemorrhagic fevers, such as EHF. We are working to train public health officers and doctors to recognize and report suspected disease and further developing resources to provide laboratory testing for EHF, as well as other viral hemorrhagic fevers in Uganda.

[Mike Miller] Are there any Websites where people can go to find out about EHF?

[Adam MacNeil] Yes, you can find additional information on the CDC website at www.cdc.gov.

[Mike Miller] Thanks, Dr. MacNeil. I've been talking with Dr. Adam MacNeil about his case study, *Reemerging Sudan Ebola Virus Disease in Uganda, 2011*, which appears in the September 2012 issue of CDC's journal, *Emerging Infectious Diseases*.

You can see the entire article online at www.cdc.gov/eid. If you'd like to comment on this podcast, send an email to ideditor@cdc.gov. I'm Dr. Mike Miller, for *Emerging Infectious Diseases*.

[Announcer] For the most accurate health information, visit www.cdc.gov or call 1-(800)-CDC-INFO