Ebola: A Global Health Crisis

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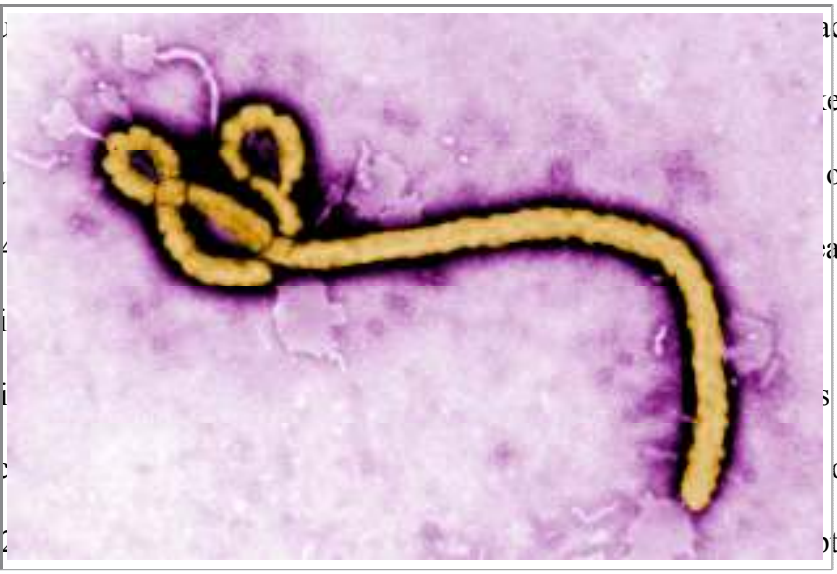
Introduction

Ebola virus disease has been all over the news around the globe in 2014. With the current reemergence of the disease in Liberia, Guinea, Sierra Leone, Nigeria and now Mali, many people around the world are beginning to wonder what this disease is capable of and where it comes from. Ebola virus was first discovered in 1976 during two simultaneous outbreaks in Sudan and the Democratic Republic of Congo. Since then, outbreaks of Ebola have appeared sporadically throughout time, occurring mainly in African countries. Although researchers do not know the natural reservoir of the ebola virus, it has been predicted that the first human infection came from coming in contact with an infected animal.

There are a few ways in which a person can become infected with the ebola virus. The virus is spread by direct contact (Transmission, 2014). This happens when the infected patient's bodily fluids, s ct with broken skin or mucous ers dealing with those infected a of exposure (Exposure, 201 ad through needles or comi



Source: Centers for Disease Control and

Ebola vi s and symptoms are non-specific onset of symptoms is 2- toms of infection include onset of high fever, fatigue, muscle pain or sore throat. As the disease progresses, symptoms range from vomiting and diarrhea to decreased kidney function and both internal and external bleeding. Since there is no vaccine or cure for Ebola, symptoms are treated as they appear in order to help the chances of survival. Some of the treatment (Treatment, 2014) methods include IV fluids, electrolyte balance and maintaing oxygen and blood pressure.

Because the method of human infection is still unclear to researchers, there are limited ways of preventing the spread of Ebola. However, health care workers and those in contact with infected persons can prevent the spread of disease by wearing the correct protective clothing (Prevention, 2014). It is also important to isolate infected patients and to make sure that infection control measures are being utilized and properly monitored according to the guidelines (Infection control, 2014) set forth by the Centers for Disease Control and Prevention and World Health Organization.

Past Outbreaks

According to the Centers for Disease Control and Prevention, there have been at least 26 Ebola outbreaks with at least 1 human diagnosed case since it's discovery in 1976 (Outbreaks chronology, 2014). These numbers do not include cases categorized as asymptomatic. All of these outbreaks have occurred in African countries, many outbreaks of which occurred in the Democratic Republic of Congo, Uganda, Gabon and Sudan. Many of these outbreaks were caused by humans killing, handling and eating bush meat contaminated with the virus. For example, during the 1996 outbreak in Gabon, a dead chimpanzee was found in the forest and eaten. 19 people involved in the butchery of the animal became ill and also infected family members and as a result, 21 out of 37 reported cases were fatal (Outbreaks chronology, 2014). Many of the additional outbreaks occurred in the same manner. Many of the outcomes of these outbreaks reported a 50% or higher death rate among the cases.

David Heymann, an epidemiologist that was on the investigation team for the first outbreak of Ebola in the Democratic Republic, has investigated multiple outbreaks of Ebola since it's original discovery. He notes that these past outbreaks were able to be stopped because they revealed patterns of the disease. These patterns include the initial sign of multiple groups of

people experiencing diarrhea and fever and lethargy, along with other symptoms that can easily be misinterpreted as typhoid fever (Heymann, 2014). He states that ebola emerges in rural settings and the spread of the disease amplifies because of poor hospital protocols and practices, which also put health workers at risk (Heymann, 2014).

Many of these past outbreaks were able to be controlled and stopped by using a "three-pronged strategy" (Heymann, 2014). The first step in this strategy involved identifying and isolating patients. Getting proper protective equipment to healthcare workers handling these patients was a critical requirement in this step. Proper protective equipment includes Following the identification and isolation of patients, healthcare workers monitored contacts of the patients by taking their temperatures two times a day for three weeks. If a contact was diagnosed with a high fever, they were also put into isolation to be monitored for possible ebola infection. Finally, the third step in this prevention strategy included educating the community about the disease and the risks of contracting it. This step included many different organizations, such as the Red Cross and the Red Crescent societies, to educate and provide protective equipment to villagers in order to ensure the cultural practices were not being displaced. Past outbreaks of Ebola were able to be contained and stopped early because cases were still solely reported in rural areas. This is because there was a lower population density as well as stronger community base, which made measures to prevent transmission easier to implement (Heymann, 2014).

High Risk Areas and Populations

Since the discovery of the ebola virus in 1976, all outbreaks have originated in African countries. These countries include the Democratic Republic of Congo, Gabon, South Sudan, Ivory Coast, Uganda and the Republic of Congo (Travel health notices, 2014). There have been cases in other countries such as the Philippines, England and currently the United States,

however these cases did not originate in those countries. Currently, Guinea, Sierra Leone and Libera are the countries most at risk for a higher incidence of ebola, as well as their surrounding countries. The Centers of Disease Control and Prevention recommend that all nonessential travel to these three countries be avoided in order to prevent the spread of ebola to other countries.

It is likely that these African countries are the highest at risk because of their lack of adequate healthcare, improper hygiene methods, cultural burial rites and their lack of educational awareness. Because of the lack of adequate and affordable healthcare in Africa, villagers are unaware of the severity of disease once infected with ebola virus. Most are even unaware that they have an illness of this nature. This results in family members having to take care of sick relatives, leading to the possibility of spreading infection to more people by being in contact with blood, vomit, or other bodily fluids. Lack of educational awareness is a critical key in preventing the spread of ebola virus because infection can be prevented if villagers know how infections occur and what they can do to prevent it. Once someone is diagnosed with ebola, those most at risk of contracting the disease include friends, family and healthcare workers and anyone else caring for that person. Also, travelers to this high risk areas are also at risk of contracting the disease. It is very easy for the disease to potentially spread to other countries because of the lack of education and healthcare, people are unaware they have the disease and got across borders into other countries to visit relatives, aid in funerals, etc. This is how the current in western Africa outbreak occurred.

Current Outbreak

Although citizens of the United States did not hear about the outbreak in Africa until March of 2014, investigators were able to trace the start of the outbreak from a young girl in December of 2013. Patient zero was believed to be a 2 year old toddler from a village in Guinea.

She had suffered from a high fever, black stool and vomiting (Park, 2014). Few days after experiencing painful symptoms in the abdomen, the little girl died. Shortly after her death, her mother started exhibiting symptoms and died a week later. The toddler's little sister also fell victim to the virus and died two weeks after her mother. Lastly, the grandmother in charge of taking care of the youngest girl died, all experiencing the same high fever, black stool, vomiting and abdominal pain (Park, 2014). Although researchers have not confirmed that source of patient zero's contamination, they believe she contracted the virus by consuming contaminated bush meat.

Even though this family was in one village in Guinea, the fact that they did not know they were contaminated with the disease and had no way to treat themselves, the diseases was able to cross borders into surrounding countries. When the grandmother of that family died, friends from other villages came to pay their respect and helped with her funeral (Park, 2014), thereby contaminating themselves because during their burring rites they do not use any protective clothing. One person came in contact with another of the exposure and the disease began to spread like wildfire. Once health investigators became aware of what was going on, they began contacting tracing and conducting interviews to find the path of the outbreak.

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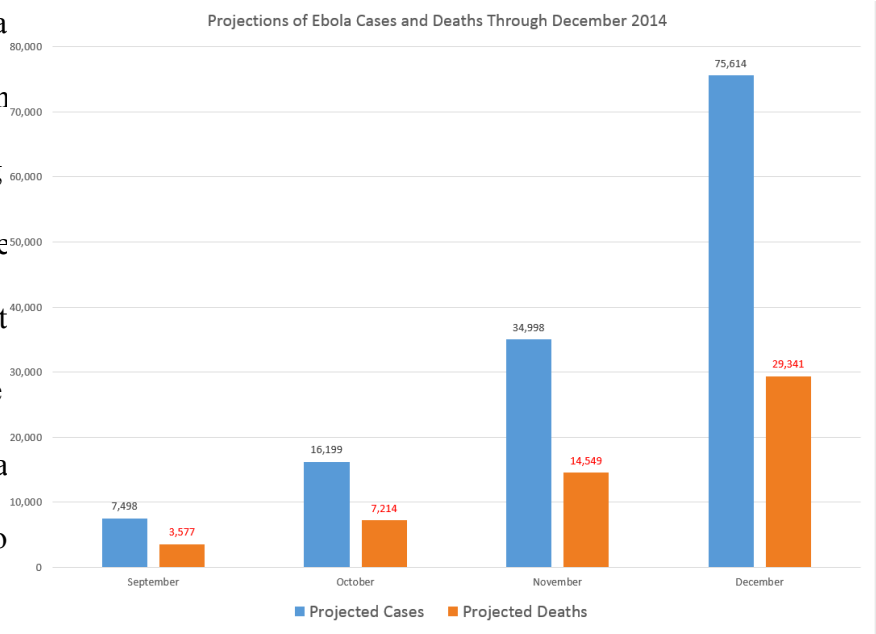
Source: World Health

response efforts, including surveillance, contact tracing, data management, laboratory testing, and health education (What cdc is doing, 2014). Volunteers have also been sent to surrounding countries that have no reported cases to ensure they have proper ebola preparedness teams and plans.

Other international humanitarian organizations, such as Medical Teams International, Doctors without Borders and UNICEF have also aided in the prevention of this outbreak. They have provided awareness campaigns to villagers, provide protective equipment for healthcare workers as well as donating funds for ebola response plans (what's happening, 2014). Military action has also taken effect at the borders of these countries as well as building treatment centers to house those affected by the disease. Currently, there has been 17,256 total cases reported in Guinea, Sierra Leone and Liberia, 10,793 of these cases have been laboratory confirmed. There have been 6,113 deaths (2014 ebola outbreak, 2014).

Vaccine Research

Until recently, there was no specific cure for the ebola virus. Healthcare workers would treat symptoms a al stage. Treatment option ntravenous fluids, balancing ment, 2014). Fortunate ks. Investigation of t nfectious Diseases and the phase one of the human tria lthy people and the goal is to).



Source: Business Forecasting

Conclusion

Ebola will continue to be a global health concern until the people of Africa as well as other high risk areas are educated about prevention methods and healthcare becomes more adequate. The future of a vaccine for ebola is drawing near and researchers and disease investigators are doing everything they can to ensure the outbreak stops spreading and a cure is found.

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