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Ebola virus disease: A Global threat

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INTRODUCTION:

'The 2014 Ebola epidemic is the largest in history, affecting multiple countries in West Africa' as stated by CDC in the overview of Ebola Outbreak taking place currently.

Till 2013 occurrence of the diseases was restricted in Africa. In 2014 the cases also occurred in Europe and America. One Indian person died in Liberia due to Ebola Virus infection. At this moment the disease Ebola is not present in Asia but the Asians are at risk of acquiring the disease at any moment. Health department & health personnel's of all Asian countries are quite worried about occurrence of disease due to high case fatality rate. Ebola virus disease (EVD) was first identified in 1976 in an area of Sudan (now part of South Sudan), and in Zaire (now the Democratic Republic of the Congo). The disease typically occurs in outbreaks in tropical regions of sub-Saharan Africa.[1]Through 2013, the World Health Organization reported a total of 1,716 cases in 24 outbreaks.[1] The largest outbreak to date is the ongoing epidemic in West Africa, which is centered in Guinea, Sierra Leone and Liberia. As of 11 November 2014, this outbreak has 14,413 reported cases resulting in 5,504 deaths.[1]

Ebola virus disease (EVD; also Ebola haemorrhagic fever, or EHF), or simply Ebola, is a disease of humans and other primates caused by Ebola viruses.

Signs and symptoms typically start between two days and three weeks after contracting the virus as a fever, sore throat, muscle pain, and headaches.

Then, vomiting, diarrhea and rash usually follow, along with decreased function of the liver and kidneys. At this time some people begin to bleed both internally and externally. The disease has a high risk of death, killing between 25 percent and 90 percent of those infected with the virus, averaging out at 50 percent.(1) This is often due to low blood pressure from fluid loss, and typically follows six to sixteen days after symptoms appear.

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CAUSE: Ebola virus (taxonomic group) and Ebola virus (specific virus)

RESERVOR: The natural reservoir for Ebola has yet to be confirmed; however, bats are considered to be the most likely candidate species.[2] Three types of fruit bats (Hypsignathus monstrosus, Epomops franqueti and Myonycteris torquata) were found to possibly carry the virus without getting sick.[3] Plants, arthropods and birds have also been considered possible viral reservoirs.[1]

TRANSMISSION: Between people, Ebola disease spreads only by direct contact with the blood or body fluids of a person who has developed symptoms of the disease. Body fluids that may contain ebolaviruses include saliva, mucus, vomit, feces, sweat, tears, breast milk, urine and semen.

Ebola may be spread through large droplets; however this is believed to occur only when a preson is very sick. The Ebola virus may be able to persist for up to 7 weeks in the semen of survivors after they recovered, which could lead to infections via sexual intercourse.[1] Ebola may also occur in the breast milk of women after recovery, and it is not known when it is safe to breastfeed again[4]. Otherwise, people who have recovered are not infectious.

Airborne Transmission: Human to human transmission of EBOLA through the air has not been reported to occur during Ebola outbreaks and airborne transmission has only been demonstrated in very laboratory conditions, then only from pigs to primates but not from primates to primates. Spread of Ebola by water or food, other than bush meat, has also not been observed. No spread by mosquitos or other insects has been reported. [5]

SIGN & SYMPTOMS: The length of time between exposure to the virus and the development of symptoms of the disease is usually 2 to 21 days. Symptoms usually begin with a sudden influenza-like stage characterized by feeling tired, fever, pain in the muscles and joints, headache, and sore throat.[1,6,7] The fever is usually higher than 38.3 °C (100.9 °F).[8] This is often followed by vomiting, diarrhea and abdominal pain. Next, shortness of breath and chest pain may occur, along with swelling, headaches and confusion.[7] In about half of the cases, the skin may develop a maculopapular rash (a flat red area covered with small bumps).[8]

In some cases, bleeding manifestation may started 5 -7 days after the first symptom like vomiting of blood, coughing up of blood, or blood in stool. Bleeding into the skin may create petechiae, ecchymoses or hematomas, but heavy bleeding is uncommon, if it occurs, it is usually located in gastrointestinal tract. Recovery may begin between 7 and 14 after the start of symptom. Death, if it occurs, follows typically 6-16 days from the start of symptom. Those who survive often have ongoing muscle & joint pain, liver inflammation & decreased hearing among other difficulties. They developed antibodies against Ebola that last at least 10 years, but it is unclear, if they are immune to repeated infections. If someone survives Ebola, they can no longer transmit disease.[6]

DIAGNOSIS:

Nonspecific laboratory testing

Possible laboratory indicators of EVD include a low platelet count; an initially decreased white blood cell count followed by an increased white blood cell count; elevated levels of the liver enzymes alanine aminotransferase (ALT) and aspartate aminotransferase (AST); and abnormalities in blood clotting often consistent with disseminated intravascular coagulation(DIC) such as a prolonged prothrombin time, partial thromboplastin time, and bleeding time.[9]

Specific laboratory testing

The diagnosis of EVD is confirmed by isolating the virus, detecting its RNA or proteins, or detecting antibodies against the virus in a person's

blood. Isolating the virus by cell culture, detecting the viral RNA by polymerase chain reaction (PCR) and detecting proteins by enzyme-linked immunosorbent assay (ELISA) are methods best used in the early stages of the disease and also for detecting the virus in human remains. Detecting antibodies against the virus is most reliable in the later stages of the disease and in those who recover.[10]

PREVENTION & MANAGEMENT:

Infection control

People who care for those infected with Ebola should wear protective clothing including masks, gloves, gowns and goggles. The US Centers for Disease Control (CDC) recommend that the protective gear leaves no skin exposed. These measures are also recommended for those who may handle objects contaminated by an infected person's body fluids. In 2014, the CDC began recommending that medical personnel receive training on the proper suit-up and removal of personal protective equipment (PPE); in addition, a designated person, appropriately trained in biosafety, should be watching each step of these procedures to ensure they are done correctly. In Sierra Leone, the typical training period for the use of such safety equipment lasts approximately 12 days.[11,12]

Isolation

Isolation refers to separating those who are sick from those who are not. Quarantine refers to separating those who may have been exposed to a disease until they either show signs of the disease or are no longer at risk. Quarantine, also known as enforced isolation, is usually effective in decreasing spread. Governments often quarantine areas where the disease is occurring or individuals who may transmit the disease outside of an initial area.

In the United States, the law allows quarantine of those infected with ebola viruses. During the 2014 Ebola disease outbreak, Liberia closed schools.[13,14]

Contact tracing

Contact tracing is considered important to contain an outbreak. It involves finding everyone who had close contact with infected individuals and watching for signs of illness for 21 days. If any of these contacts comes down with the disease, they should be isolated, tested and treated. Then the process is repeated by tracing the contacts' contacts.[15]

CONTROL OF OUT BREAK:

Control of outbreaks requires coordinated medical services, along with a certain level of community engagement. The medical services include: rapid detection of cases of disease, contact tracing of those who have come into contact with infected individuals, quick access to laboratory services, proper care and management of those who are infected and proper disposal of the dead through cremation or burial.[1] Prevention includes limiting the spread of disease from infected animals to humans.[1] This may be done by handling potentially infected bush meat only while wearing protective clothing and by thoroughly cooking it before consumption. It also includes wearing proper protective clothing and washing hands when around a person with the disease. Samples of body fluids and tissues from people with the disease should be handled with special caution.[1]

Countries should get ready for a long and sustained effort for time to come to fight this emerging health problem in the world.

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