

Ebola virus disease and its public health perspective

“The Ebola epidemic ravaging parts of West Africa is the most severe acute public health emergency seen in modern times. Never before in recorded history has a biosafety level four pathogen infected so many people so quickly, over such a broad geographical area, for so long” - 26th September 2014 ,WHO.

The Ebola virus causes an acute, serious illness which is often fatal if untreated. The average Ebola virus disease (EVD) case fatality rate is around 50%. Case fatality rates have varied from 25% to 90% in past outbreaks. EVD first appeared in 1976 in 2 simultaneous outbreaks, one in Nzara, Sudan, and the other in Yambuku, Democratic Republic of Congo. The latter occurred in a village near the Ebola River, from which the disease takes its name.

The current outbreak in West Africa, (first case notified in March 2014), is the largest and most complex Ebola outbreak since the Ebola virus was first discovered in 1976. There have been more cases and deaths in this outbreak than all others combined. It has also spread between countries starting in Guinea then spreading across land borders to Sierra Leone and Liberia, by air (1 traveller only) to Nigeria, and by land (1 traveller) to Senegal.

The virus family Filoviridae includes 3 genera: Cuevavirus, Marburgvirus, and Ebolavirus. There are 5 species that have been identified: Zaire, Bundibugyo, Sudan, Reston and Tai Forest. The first 3, Bundibugyo ebolavirus, Zaire ebolavirus, and Sudan ebolavirus have been associated with large outbreaks in Africa. The virus causing the 2014 West African outbreak belongs to the Zaire species.

Transmission

It is thought that fruit bats of the Pteropodidae family are natural Ebola virus hosts. Ebola is introduced into the human population through close contact with the blood, secretions, organs or other body fluids of infected animals such as chimpanzees, gorillas, fruit bats, monkeys, forest antelope and porcupines found ill or dead in the rainforest.

Ebola then spreads through human-to-human transmission via direct contact (through broken skin or mucous membranes) with the blood, secretions, organs or other body fluids of infected people, and

with surfaces and materials (e.g. bedding, clothing) contaminated with these fluids.

Health-care workers have frequently been infected while treating patients with suspected or confirmed EVD. This has occurred through close contact with patients when infection control precautions are not strictly practiced. Burial ceremonies in which mourners have direct contact with the body of the deceased person can also play a role in the transmission of Ebola.

People remain infectious as long as their blood and body fluids, including semen and breast milk, contain the virus. Men who have recovered from the disease can still transmit the virus through their semen for up to 7 weeks after recovery from illness.

Symptoms of Ebola virus disease

The incubation period, that is, the time interval from infection with the virus to onset of symptoms is 2 to 21 days. Humans are not infectious until they develop symptoms. First symptoms are sudden onset of fever, fatigue, muscle pain, headache and sore throat. This is followed by vomiting, diarrhoea, rash, symptoms of impaired kidney and liver function, and in some cases, both internal and external bleeding.

Treatment

There is as yet no proven treatment available for EVD. However, a range of potential treatments including blood products, immune therapies and drug therapies are currently being evaluated.

Prevention and control

Good outbreak control relies on applying a package of interventions, namely case management, surveillance and contact tracing, a good laboratory service, safe burials and social mobilization. Community engagement is the key to successfully control outbreaks. Raising awareness of risk factors for Ebola infection and protective measures that individuals can take is an effective way to reduce human transmission. Risk reduction messaging should focus on several factors:

Reducing the risk of wildlife-to-human transmission from contact with infected fruit bats or monkeys/apes and the consumption of their raw meat. Animal products (blood and meat) should be thoroughly cooked before consumption.

Reducing the risk of human-to-human transmission from direct or close contact with people with Ebola symptoms, particularly with their body fluids. Gloves and appropriate personal protective equipment should be worn when taking care of ill patients at home. Regular hand washing is required after visiting patients in hospital, as well as after taking care of patients at home.

During an outbreak, those at higher risk of infection are:

- Health workers;
- Family members or others in close contact with infected people; and
- Mourners who have direct contact with the bodies of the deceased as part of burial ceremonies.

More than 100 healthcare workers have been exposed to the virus while caring for Ebola patients. This happens because they may not have been wearing personal protection equipment or were not properly applying infection prevention and control measures when caring for the patients. Healthcare providers at all levels of the health system – hospitals, clinics, and health posts should be briefed on the nature of the disease and how it is transmitted, and strictly follow recommended infection control precautions.

WHO does not recommend home care and strongly advises individuals and their family members to seek professional care in a treatment centre. Health-care workers should always take standard precautions when caring for patients, regardless of their presumed diagnosis. These include basic hand hygiene, respiratory hygiene, use of personal protective equipment (to block splashes or other contact with infected materials), safe injection practices and safe burial practices. When visiting patients in the hospital or caring for someone at home, hand washing with soap and water is recommended after touching a patient, being in contact with their body fluids, or touching his/her surroundings. People who have died from Ebola should only be handled using appropriate protective equipment and should be buried immediately by

public health professionals who are trained in safe burial procedures. Laboratory workers are also at risk. Samples taken from humans and animals for investigation of Ebola infection should be handled by trained staff and processed in suitably equipped laboratories.

Outbreak containment measures include prompt and safe burial of the dead, identifying people who may have been in contact with someone infected with Ebola, monitoring the health of contacts for 21 days, the importance of separating the healthy from the sick to prevent further spread, the importance of good hygiene and maintaining a clean environment. Isolating patients with suspected or confirmed Ebola virus disease (EVD) in single isolation rooms is recommended. Where isolation rooms are not available, it is important to assign designated areas, separate from other patients, for suspected and confirmed cases. In these designated areas, suspect and confirmed cases should also be separate. Access to these areas should be restricted, needed equipment should be dedicated strictly to suspected and confirmed EVD treatment areas, and clinical and non clinical personnel should be exclusively assigned to isolation rooms and dedicated areas.

Role of WHO

WHO actions include

Disease surveillance and information - sharing across regions to watch for outbreaks; technical assistance to investigate and contain health threats when they occur -such as on -site help to identify sick people and track disease patterns; advice on prevention and treatment options; deployments of experts and the distribution of health supplies (such as personal protection gear for health workers) when they are requested by the country.

Communications to raise awareness of the nature of the disease and protective health measures to control transmission of the virus; and activation of regional and global networks of experts to provide assistance, if requested, and mitigate potential international health effects and disruptions of travel and trade.

WHO's general travel advice

Travelers should avoid all contact with infected patients. Health workers travelling to affected areas should strictly follow WHO's-recommended

infection control guidance. Anyone who has stayed in areas where cases were recently reported should be aware of the symptoms of infection and seek medical attention at the first sign of illness. Clinicians caring for travelers returning from affected areas with compatible symptoms are advised to consider the possibility of Ebola virus disease.

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