New outbreaks in Ebola virus: Over view and prevention: A review article

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I. INTRODUCTION

Ebola disease first occurred in 1976 in two simultaneous outbreaks: one outbreak was of Sudan virus disease in Nzara in what is now South Sudan, and the other outbreak was of Ebola virus disease in Yambuku, in what is now the Democratic Republic of the Congo. The latter occurred in a village near the Ebola River, from which the disease takes its name.
EBOLA is a severe acute viral illness often characterized by sudden onset of fever, intense weakness, muscle pain, headache and sore throat. This is followed by vomiting, diarrhoea, rash, impaired kidney and liver function, and in some cases, both internal and external bleeding.

- Ebola disease is a severe, often fatal illness in humans.
- Three different viruses are known to cause large Ebola disease outbreaks: Ebola virus, Sudan virus and Bundibugyo virus.
- The average Ebola disease case fatality rate is around 50%. Case fatality rates have varied from 25–90% in past outbreaks.
- Early intensive supportive care with rehydration and the treatment of symptoms improves survival.
- Approved vaccines and treatments are only available for one of the viruses (Ebola virus) and are under development for the others.
- Outbreak control relies on a package of interventions including intensive supportive care of patients, infection prevention and control, disease surveillance and contact tracing, laboratory services, safe and dignified burials, vaccination if relevant, and social mobilization.

Ebola disease (EBOD) is a rare but severe illness in humans. It is often fatal.

Ebola disease is caused by viruses that belong to the Orthoebolavirus genus of the filoviridae family. Six species of Orthoebolaviruses have been identified to date, with three known to cause large outbreaks:

- Ebola virus (species Orthoebolavirus zairense) causes Ebola virus disease.
- Sudan virus (species Orthoebolavirus sudanense) causes Sudan virus disease.
- Taï Forest virus (species Orthoebolavirus taiense) causes Taï Forest virus disease.
- Bundibugyo virus (species Orthoebolavirus bundibugyoense) causes Bundibugyo virus disease.
- Two other types of orthoebolaviruses have not affected people to date:
- Reston virus (species Orthoebolavirus restonense) has caused disease in non-human primates like macaques.
- Bombali virus (species Orthoebolavirus bombaliense) was more recently identified in bats.

Early intensive supportive care including rehydration and treatment of specific symptoms, can improve survival. Seeking early care can be lifesaving.

II. MODE OF TRANSMISSION

It is thought that fruit bats of the Pteropodidae family are natural hosts of the Orthoebolavirus. The virus can get into the human population when people have close contact with the blood, secretions, organs or other bodily fluids of infected animals such as fruit bats, chimpanzees, gorillas, monkeys, forest antelope or porcupines found ill or dead or in the rainforest.
People can get infected with the virus from another person by direct contact (through broken skin or mucous membranes) with:

- The blood or body fluids of a person who is sick with or has died from Ebola disease; and

- Objects or surfaces that have been contaminated with body fluids (like blood, feces, vomit) from a person sick with the disease or who has died from the disease.
- People cannot transmit the disease before they have symptoms, and they remain infectious as long as their blood contains the virus.
- Health and care workers have frequently been infected while treating patients with Ebola disease. This occurs through close contact with patients when infection control precautions are not strictly practiced.
- Burial ceremonies that involve direct contact with the body of a person who has died can also contribute to the transmission of Ebola disease.

III. SIGNS AND SYMPTOMS

The incubation period or interval from infection to onset of symptoms varies from 2 to 21 days.

The symptoms of Ebola disease can be sudden and include fever, fatigue, malaise, muscle pain, headache and sore throat. These are followed by vomiting, diarrhoea, abdominal pain rash, and symptoms of impaired kidney and liver functions. It is important for health and care workers to be on the lookout for these symptoms.

Despite a perception that bleeding is a common symptom, this is less frequent and can occur later in the disease. Some patients may develop internal and external bleeding, including blood in vomit and faeces, bleeding from the nose, gums and vagina. Bleeding at the sites where needles have punctured the skin can also occur.

The impact on the central nervous system can result in confusion, irritability and aggression.

IV. DIAGNOSIS

Confirmation that the person has an Orthoebolavirus infection is made using the following diagnostic methods:

- Reverse transcriptase polymerase chain reaction (RT-PCR) assay
- Antibody-capture enzyme-linked immunosorbent assay (ELISA)
- Antigen-capture detection tests
- Virus isolation by cell culture.

Samples collected from patients are an extreme biohazard risk; laboratory testing on non-inactivated samples should be conducted under maximum biological containment conditions. All non-inactivated biological specimens should be packaged using the triple packaging system when transported nationally and internationally

V. TREATMENT

For Ebola virus disease, WHO made strong recommendations for treatment with mAb114 (ansuvimab™) or REGN-EB3 (Inmazeb™) that are both monoclonal antibodies. For other Ebola diseases, such as SVD or BVD, there are no approved therapeutics.

Supportive care:

- Patients have a much better chance of surviving if they receive:
- Fluids and electrolytes (body salts) by mouth or into their veins.
- Medicine to support blood pressure, reduce vomiting and diarrhea, and to manage fever and pain.
- Treatment for other infections, if they occur.

VI. VACCINE

For Ebola virus disease:

Two vaccines are approved: Ervebo (Merck & Co.) and Zabdeno and Mvabea (Janssen Pharmaceutica). Ervebo vaccine is recommended as part of outbreak response,

VII. PREVENTION AND CONTROL

Community engagement is key to successfully controlling any outbreak. Outbreak control relies on using a range of interventions, such as clinical care, surveillance and contact tracing, laboratory services, infection prevention and control in health facilities, safe and dignified burials, vaccination (only for Ebola virus disease) and social mobilization.

Raising awareness of risk factors and protective measures that individuals can take is an effective way to reduce human transmission. Risk reduction messaging should focus on several factors:

- Avoid contact with body fluids

- Avoid contact with body fluids, including:
- Blood, urine, feces, saliva, sweat, vomit, breast milk, amniotic fluid, semen, and vaginal fluid from people who are sick
- Semen from someone who has recovered from Ebola disease until testing shows that the virus is no longer in the semen
- Also, avoid contact with:
- Clothes, bedding, needles, medical equipment, or other items that may have touched an infected person's blood or body fluids
- The body of someone who is suspected or confirmed to have had Ebola disease (for instance, as part of a funeral or burial practices)
- Bats, forest antelopes, primates, and blood, fluids, or raw meat from these or unknown animals

VIII. WEAR PERSONAL PROTECTIVE EQUIPMENT

Wear personal protective equipment if you come in contact with people who are sick or have died from Ebola disease, their blood and body fluids, or objects covered with their blood or body fluids.
Monitor your health. If you return from an area with an ongoing Ebola outbreak, monitor your health for 21 days. Seek medical care immediately if you develop symptoms of Ebola disease

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