



## PREVENTION AND CONTROL OF EBOLA DISEASE - A REVIEW

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**ABSTRACT** Ebola virus disease (EVD), formerly known as Ebola haemorrhagic fever, is a severe, often fatal illness affecting humans and other primates. The incubation period, that is, the time interval from infection with the virus to onset of symptoms, is from 2 to 21 days. It can be difficult to clinically distinguish EVD from other infectious diseases such as malaria, typhoid fever and meningitis. There is no proven treatment for Ebola but simple interventions early on can significantly improve chances of survival. Health workers have an obligation to provide the best medical care to improve patient survival, but also to provide symptom relief and palliation when required. Transmission of Ebola virus disease occurs through contact with infected body fluids, or contaminated surfaces or equipment. Reducing the risk of wildlife-to-human transmission, Reducing the risk of human-to-human transmission, Outbreak containment measures, Reducing the risk of possible sexual transmission, Reducing the risk of transmission from pregnancy related fluids and tissue.

**KEYWORDS :** EVD, Symptoms**INTRODUCTION**

Ebola virus disease (EVD), formerly known as Ebola haemorrhagic fever, is a severe, often fatal illness affecting humans and other primates.

The virus is transmitted to people from wild animals (such as fruit bats, porcupines and non-human primates) and then spreads in the human population through direct contact with the blood, secretions, organs or other bodily fluids of infected people, and with surfaces and materials (e.g. bedding, clothing) contaminated with these fluids.

The average EVD case fatality rate is around 50%. Case fatality rates have varied from 25% to 90% in past outbreaks.

The first EVD outbreaks occurred in remote villages in Central Africa, near tropical rainforests. The 2014–2016 outbreak in West Africa was the largest and most complex Ebola outbreak since the virus was first discovered in 1976. There were more cases and deaths in this outbreak than all others combined. It also spread between countries, starting in Guinea then moving across land borders to Sierra Leone and Liberia. It is thought that fruit bats of the Pteropodidae family are natural Ebola virus hosts.

**Symptoms**

The incubation period, that is, the time interval from infection with the virus to onset of symptoms, is from 2 to 21 days. A person infected with Ebola cannot spread the disease until they develop symptoms.

Symptoms of EVD can be sudden and include: fever, fatigue, muscle, pain, headache, and sore throat. This is followed by vomiting, diarrhea, rash, symptoms of impaired kidney and liver function, and in some cases internal and external bleeding (e.g. oozing from the gums, blood in the stools). Laboratory findings include low white blood cell and platelet counts and elevated liver enzymes.

It can be difficult to clinically distinguish EVD from other infectious diseases such as malaria, typhoid fever and meningitis. A range of diagnostic tests have been developed to confirm the presence of the virus.

**Diagnosis**

It can be difficult to clinically distinguish EVD from other infectious diseases such as malaria, typhoid fever and meningitis. Many symptoms of pregnancy and Ebola disease are also quite similar. Because of risks to the pregnancy, pregnant women should ideally be tested rapidly if Ebola is suspected.

Confirmation that symptoms are caused by Ebola virus infection are made using the following diagnostic methods:

- antibody-capture enzyme-linked immunosorbent assay (ELISA)
- antigen-capture detection tests
- serum neutralization test
- reverse transcriptase polymerase chain reaction (RT-PCR) assay

- electron microscopy
- virus isolation by cell culture.

Careful consideration should be given to the selection of diagnostic tests, which take into account technical specifications, disease incidence and prevalence, and social and medical implications of test results. It is strongly recommended that diagnostic tests, which have undergone an independent and international evaluation, be considered for use.

- Diagnostic tests evaluated through the WHO Emergency Use Assessment and Listing process

**Current WHO recommended tests include:**

- Automated or semi-automated nucleic acid tests (NAT) for routine diagnostic management.
- Rapid antigen detection tests for use in remote settings where NATs are not readily available. These tests are recommended for screening purposes as part of surveillance activities, however reactive tests should be confirmed with NATs.

**The preferred specimens for diagnosis include:**

- Whole blood collected in ethylenediaminetetraacetic acid (EDTA) from live patients exhibiting symptoms.
- Oral fluid specimen stored in universal transport medium collected from deceased patients or when blood collection is not possible.

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

**Treatment**

There is no proven treatment for Ebola but simple interventions early on can significantly improve chances of survival. This includes rehydration with fluids and body salts (given orally or intravenously), and treatment of specific symptoms such as low blood pressure, vomiting, diarrhea and infections.

A range of potential treatments including blood products, immune therapies and drug therapies are currently being evaluated.

Hand hygiene is the most effective way to prevent the spread of the Ebola virus.

An experimental Ebola vaccine known as rVSV-ZEBOV proved highly protective against the deadly virus in a major trial in Guinea in 2015. It is being used in response to the current outbreak in the Democratic Republic of the Congo using a ring vaccination protocol.

During an outbreak, health partners apply a package of interventions including case management, surveillance, contact tracing, laboratory testing, safe burials and community engagement.

Working with communities to reduce risk factors for Ebola transmission is critical to controlling outbreaks.

### Case management, infection prevention and control

#### Case management

Health workers have an obligation to provide the best medical care to improve patient survival, but also to provide symptom relief and palliation when required. In the context of patients with Ebola and other viral haemorrhagic fever diseases, clinical care must be strengthened whilst minimizing the risk of onwards transmission to others, including health workers. It is critical that health workers improve their understanding of the disease and adhere to best practices of infection control at all times

#### Result and Discussion

##### Infection prevention and control

Transmission of Ebola virus disease occurs through contact with infected body fluids, or contaminated surfaces or equipment. Adherence to WHO guidelines for infection prevention and control will minimize the risk of transmission in health-care settings and in the community. All people coming into contact with potential Ebola virus disease cases, contaminated surfaces or equipment must be familiar with infection prevention and control procedures.

Good outbreak control relies on applying a package of interventions, including case management, surveillance and contact tracing, a good laboratory service, safe burials and social mobilisation. Community engagement is key to successfully controlling outbreaks. Raising awareness of risk factors for Ebola infection and protective measures (including vaccination) 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, monkeys, apes, forest antelope or porcupines and the consumption of their raw meat. Animals should be handled with gloves and other appropriate protective clothing. 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 bodily fluids. Gloves and appropriate personal protective equipment should be worn when taking care of ill patients. Regular hand washing is required after visiting patients in hospital, as well as after taking care of patients at home.
- Outbreak containment measures, including safe and dignified burial of the dead, identifying people who may have been in contact with someone infected with Ebola and monitoring their health for 21 days, the importance of separating the healthy from the sick to prevent further spread, and the importance of good hygiene and maintaining a clean environment.
- Reducing the risk of possible sexual transmission, based on further analysis of ongoing research and consideration by the WHO Advisory Group on the Ebola Virus Disease Response, WHO recommends that male survivors of EVD practice safer sex and hygiene for 12 months from onset of symptoms or until their semen tests negative twice for Ebola virus. Contact with body fluids should be avoided and washing with soap and water is recommended. WHO does not recommend isolation of male or female convalescent patients whose blood has been tested negative for Ebola virus.
- Reducing the risk of transmission from pregnancy related fluids and tissue, Pregnant women who have survived Ebola disease need community support to enable them to attend frequent antenatal care (ANC) visits, to handle any pregnancy complications and meet their need for sexual and reproductive care and delivery in a safe way. This should be planned together with the Ebola and Obstetric health care expertise. Pregnant women should always be respected in the sexual and reproductive health choices they make.

### CONCLUSION

#### Strategy, and coordination

In order to be prepared to respond to all acute public health emergencies, including a potential Ebola virus disease event, countries

need to review and enhance national public health emergency preparedness and response plans, and national command and coordination structures.

This includes setting up or adapting an Incident Management Structure and an Emergency Operations Centre to support emergency health operations, as well as validation of the national emergency response plan for emerging infectious diseases, through simulation exercises.

### REFERENCES

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