

With the recent knowledge that a case of Ebola Virus Disease (EVD) has been confirmed in the United States, it is vital for health care professionals to stay well informed about this infectious disease so we can best educate our patients and the public and keep ourselves safe. Early recognition is critical for infection control. Health care providers must be alert for and evaluate any patients suspected of having the Ebola Virus Disease.

# EBOLA VIRUS DISEASE

## Best Practice Reminders for Health Care Professionals

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### History

The World Health Organization (WHO, 2014) and the Centers for Disease Control and Prevention (CDC, 2014) are supporting global and national efforts in the response to an outbreak of Ebola Virus Disease confirmed to be caused by a strain of *Ebolavirus* genus. Ebola, formerly known as Ebola hemorrhagic fever, is a rare and deadly disease. There are five identified species of the Ebola viruses and four are known to cause disease in humans. The Ebola viruses are found in several African countries.

Ebola was first discovered in 1976 near the Ebola River in what is now the Democratic Republic of the Congo. Since then, outbreaks have appeared sporadically in Africa. However, this is the first time the disease has been detected in West Africa and these cases were first reported from the forested areas in south-eastern Guinea. The outbreak has rapidly evolved and several districts have now reported cases and deaths caused by Ebola Virus Disease. A growing number of cases have been reported from neighboring countries with all of them reportedly having crossed from Guinea.

*Ebola is not a new disease.*

*The first reported case was in 1976.*

### Transmission and Infection

- ✓ Fruit bats are believed to be the natural hosts of Ebola virus in Africa.
- ✓ The virus is transmitted from wildlife to humans through contact with infected fruit bats or through intermediate hosts (e.g., monkeys, apes, or pigs that have become infected through contact with bat saliva or feces).
- ✓ People then become infected through contact with the disease-ridden animals, either by the process of slaughtering or consumption of blood, milk, or raw/undercooked meat.
- ✓ **The virus is then passed from person to person through direct contact with the blood, secretions or other bodily fluids of the infected person OR from contact with contaminated needles or other equipment in the location.**

*Ebola is transmitted by direct contact with bodily fluids of an infected person or contact with contaminated needles or equipment.*

## Signs, Symptoms and Risk Factors

Ebola Virus Disease has a **fatality rate of up to 90%**, is a severe acute viral illness, and is often characterized by these signs and symptoms:

- \*Sudden onset of fever
- \*Intense weakness
- \*Muscle pain
- \*Headache
- \*Nausea
- \*Sore throat

These symptoms are then followed by:

- \*Vomiting
- \*Impaired liver and kidney function
- \*Diarrhea
- \*Internal and external bleeding (in some cases)

Laboratory findings frequently include:

- \*Low white cell count
- \*Low platelet count
- \*Elevated liver enzymes

**Risk factors** include:

- 1) Contact with blood or other body fluids or the human remains of a patient known to have or suspected to have EVD within the past 21 days before the onset of any symptoms.
- 2) Residence in or travel to an area where EVD transmission is active.
- 3) Direct handling of bats or non-human primates from disease-endemic areas.

**The incubation period (from infection with the virus to onset of symptoms) is 2 – 21 days.** People will remain infectious as long as their blood and secretions contain the virus, a period that has been reported to be as long as 61 days after onset of the illness. An individual who has both the *signs and symptoms* with the *risk factors* is considered a **Person Under Investigation (PUI)**.

## Diagnosis and Treatment

In considering the diagnosis of Ebola Virus Disease, some of the more common diseases should not be overlooked (e.g., malaria, cholera, meningitis, hepatitis). A definitive diagnosis of EVD is confirmed through laboratory testing. Because samples from patients are a source of infection for others, testing is conducted under maximum biological containment conditions.

No vaccine is available, and there is no specific treatment for EVD. Severely ill patients require intensive supportive care. The patient is usually dehydrated and will require oral rehydration with solutions containing electrolytes or intravenous fluids. Also, maintaining oxygen status and blood pressure along with treating other infections if they should occur are basic interventions that can significantly improve the chances of survival.

*Symptoms may occur 2-21 days from the time of exposure.*

## Preventative Measures

*Follow strict  
infection  
control  
measures to  
avoid potential  
exposure.*

The best way to reduce human infection and subsequent deaths is to raise awareness of the risk factors and taking the protective measures. Health care teams should **follow strict standard, contact, and droplet precautions** and avoid close *unprotected* physical contact with Ebola patients. It is recommended to 1) isolate the patient; 2) wear appropriate PPE (Personal Protective Equipment) plus additional protective equipment might be required in certain situations; 3) restrict visitors; 4) avoid aerosol-generating procedures; and 5) implement environmental infection control measures. Regular hand washing is required.

Most transmission of the EVD to health care workers has been reported when basic infection control measures have not been followed. All health care workers coming in contact with EVD should apply standard precautions and other infection control measures to avoid any exposure to the patient's blood or body fluids and with possible contaminated materials.

## Safe Handling of Human Remains

Only personnel trained in the handling of infected remains and wearing PPE should touch or move any Ebola-infected remains. Handling of human remains should be kept to a minimum, and autopsies on patients with EVD should be avoided. If an autopsy is necessary, the state health department and CDC should be consulted regarding additional precautions. Preparation for burial of the bodies of those individuals who have died from Ebola Virus Disease also carries a high risk of transmission of the virus. Those who have died from the disease should be promptly and safely buried.

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